



CUBIEBOARD
<http://cubieboard.org>

Cubieboard1-Cubie-Screen-android-system-building

Cubie-Screen

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Version	Author	Modification	Check
V-0.1-20150121	Payne	Init version	



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1. Abstract

Cubiescreen is a small capacitive touch screen for cubieboard1&cubieboard2, this is a guide to help you build a android image for the screen base on Cubietech android a10 sdk .The default configuration in a10 android sdk only support HDMI output display ,and without capacitive touch function, So ,you should modify the lcd&ctp configuration.

2. Hardware requirements

- Cubieboard1
- Cubieboard Cubiescreen
- A mouse, keyboard

3. Software requirements

3.1. SDK

<http://dl.cubieboard.org/model/commom/android-source/a10/>

4. Cubieboard1 Cubie-Screen transplantate

4.1. Driver source code

<http://dl.cubieboard.org/addon/Cubiescreen/source/android-cbcs-source.tar.gz>

4.2. Copying files

Unzip the driver source code :

```
$7z x android-cbcs-source.7z
```

Replace the relevant of source code:

```
$cp android-cbcs-source/CB1/driver/lcd* /A10-  
android4.0/kernel/allwinner/common/drivers/video/sunxi/lcd/  
$ cp android-cbcs-source/CB1/driver/ctp.h /A10-  
android4.0/kernel/allwinner/common/include/linux/  
$ cp android-cbcs-source/CB1/driver/ft5x* /A10-  
android4.0/kernel/allwinner/common/drivers/input/touchscreen
```

```
$ cp android-cbcs-source/CB1/driver/pm.h /A10-  
android4.0/kernel/allwinner/common/include/linux/
```

```
$ cp android-cbcs-source/CB1/driver/gpio.h /A10-  
android4.0/kernel/allwinner/common/arch/arm/mach-sun4i/include/mach/
```

4.3. System configuration

path : /A10-android4.0/tools/pack/chips/sun4i/configs/crane/cubieboard/sys_config1.fex

Modify: [disp_init] , [ctp_para] and [lcd0_para]

detailed configuration :

[disp_init]

```
[disp_init]  
disp_init_enable = 1  
disp_mode = 0  
screen0_output_type = 1  
screen0_output_mode = 4  
screen1_output_type = 1  
screen1_output_mode = 4  
fb0_width = 1024  
fb0_height = 768  
  
fb0_framebuffer_num = 2  
fb0_format = 10  
fb0_pixel_sequence = 0  
fb0_scaler_mode_enable = 0
```

[ctp_para]

```
[ctp_para]  
ctp_used = 1  
ctp_name = "ft5x_ts"  
ctp_twi_id = 1  
ctp_twi_addr = 0x38  
ctp_screen_max_x = 800  
ctp_screen_max_y = 480  
ctp_revert_x_flag = 0  
ctp_revert_y_flag = 1  
ctp_exchange_x_y_flag = 0  
  
ctp_int_port = port:PH7<6><default>  
ctp_wakeup = port:PB13<1><default><default><1>  
ctp_io_port = port:PH7<0><default>
```



```
[lcd0_para]
[lcd0_para]
lcd_used           = 1
lcd_x              = 800
lcd_y              = 480
lcd_width          = 0
lcd_height         = 0
lcd_dclk_freq      = 27
lcd_pwm_not_used   = 0
lcd_pwm_ch         = 0
lcd_pwm_freq       = 10000
lcd_pwm_pol        = 0
lcd_if             = 0
lcd_hbp            = 50
lcd_ht             = 920
lcd_vbp            = 3
lcd_vt             = 976
lcd_vspw           = 0
lcd_hspw           = 0
```

4.4. The kernel configuration

Support the driver of ft5x touchscreen need to configure the kernel, are compiled into the kernel with the way of module .

Enter the kernel directory :

```
$cd /A10-android4.0/kernel/allwinner/common/
```

Copy the file of the kernel configuration to kernel root directory and changed the name as .config.

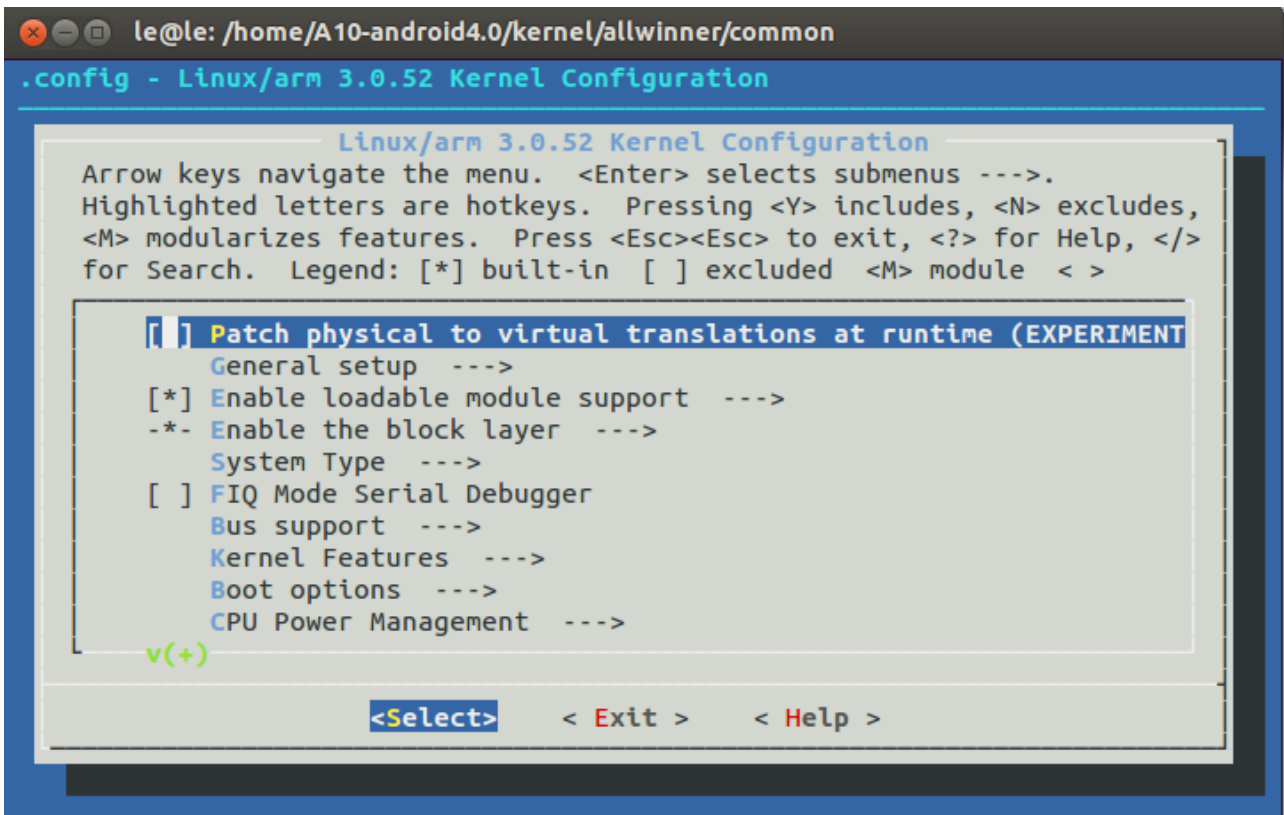
As below:

```
le@le:/home/A10-android4.0/kernel/allwinner/common$ cp arch/arm/configs/cubieboard_defconfig .config
```

Open the interface of kernel configuration

```
le@le:/work/A10-android4.0/kernel/allwinner/common$
le@le:/work/A10-android4.0/kernel/allwinner/common$ sudo make ARCH=arm menuconfig
```

AS follow:



```
le@le: /home/A10-android4.0/kernel/allwinner/common
.config - Linux/arm 3.0.52 Kernel Configuration

Linux/arm 3.0.52 Kernel Configuration
Arrow keys navigate the menu. <Enter> selects submenus --->.
Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes,
<M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </>
for Search. Legend: [*] built-in [ ] excluded <M> module < >

[ ] Patch physical to virtual translations at runtime (EXPERIMENT
  General setup --->
[*] Enable loadable module support --->
-* Enable the block layer --->
  System Type --->
[ ] FIQ Mode Serial Debugger
  Bus support --->
  Kernel Features --->
  Boot options --->
  CPU Power Management --->

v(+)
```

The drive path of ft5x touchscreen :

->Device Drivers

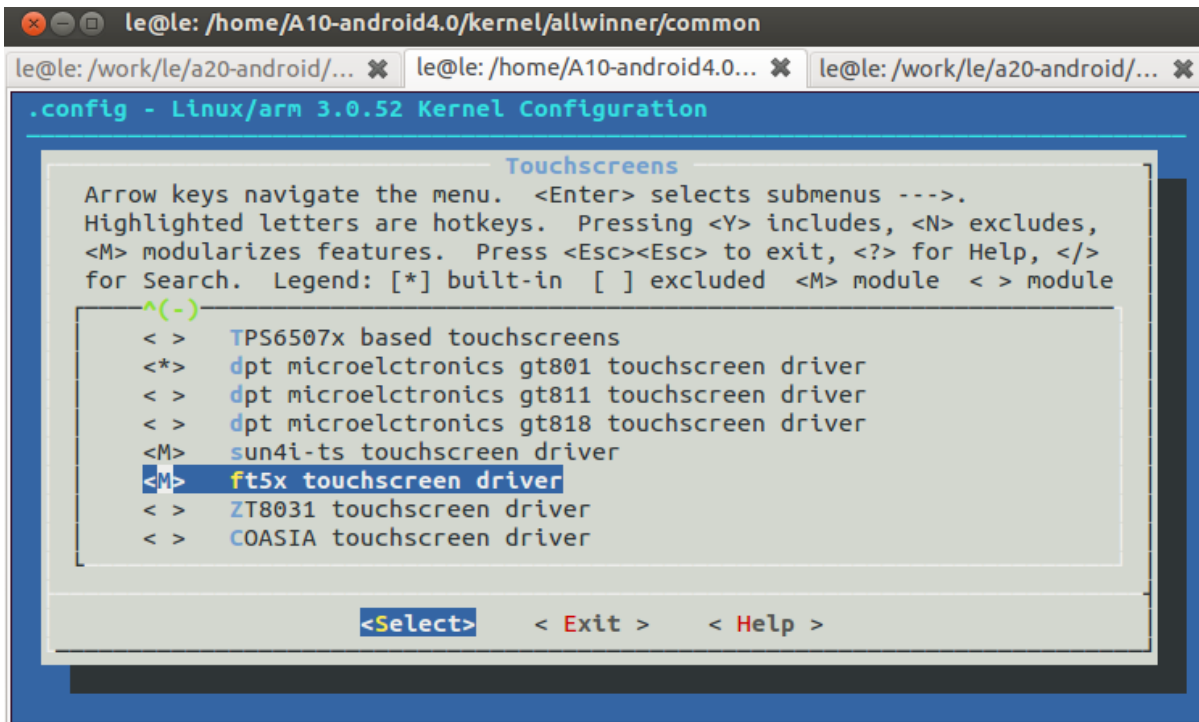
--->Input device support

--->Touchscreens

---> ft5x touchscreen driver

"Ft5x touchscreen driver" options for "M", which could be compiled into module

As follow:



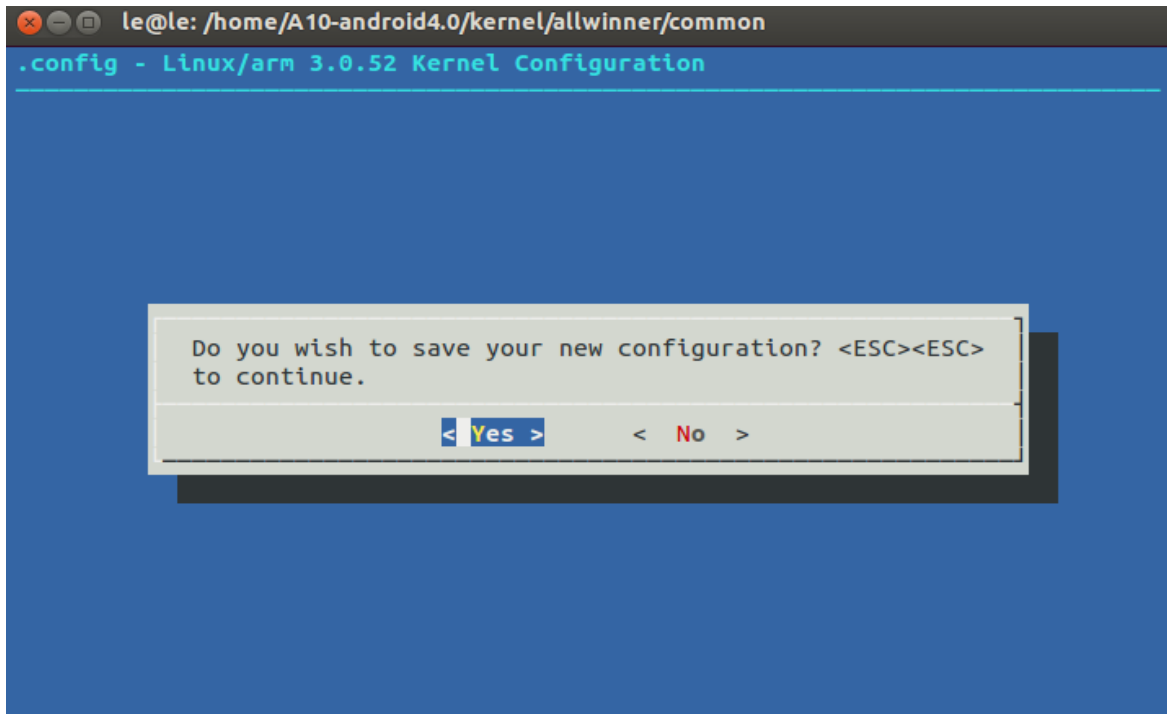
```
le@le: /home/A10-android4.0/kernel/allwinner/common
le@le: /work/le/a20-android/...
le@le: /home/A10-android4.0...
le@le: /work/le/a20-android/...

.config - Linux/arm 3.0.52 Kernel Configuration

                                Touchscreens
Arrow keys navigate the menu. <Enter> selects submenus --->.
Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes,
<M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </>
for Search. Legend: [*] built-in [ ] excluded <M> module < > module
^(-)
< >  TPS6507x based touchscreens
< * >  dpt microelctronics gt801 touchscreen driver
< >  dpt microelctronics gt811 touchscreen driver
< >  dpt microelctronics gt818 touchscreen driver
< M >  sun4i-ts touchscreen driver
< M >  ft5x touchscreen driver
< >  ZT8031 touchscreen driver
< >  COASIA touchscreen driver

< Select >  < Exit >  < Help >
```

Exit saving, select "Yes"



```
le@le: /home/A10-android4.0/kernel/allwinner/common
.config - Linux/arm 3.0.52 Kernel Configuration

Do you wish to save your new configuration? <ESC><ESC>
to continue.

< Yes >  < No >
```


Note: The path is the file of ft5x touchscreen driver:

```
le@le:/home/A10-android4.0/kernel/allwinner/common$ ls drivers/input/touchscreen/ft5x_ts.  
ft5x_ts.c  ft5x_ts.h
```

The related configuration will be saved in the file of .config and copy .config to the default directory and changed the name to cubieboard_defconfig:

```
le@le:/home/A10-android4.0/kernel/allwinner/common$ sudo cp .config arch/arm/con  
figs/cubieboard_defconfig
```

Clear your kernel:

```
le@le:/home/A10-android4.0$ cd kernel/allwinner/common/  
le@le:/home/A10-android4.0/kernel/allwinner/common$ make mrproper
```

4.5. Compile

Enter the source directory:

```
$cd A10-android4.0/
```

removing compiled product:

```
$make clean
```

Initialize the compiler environment, and introduce some auxiliary Shell functions:

```
$source build/envsetup.sh
```

Note: the "source build/envsetup.sh" into build/envsetup.sh scripts, including the next step using the lunch function

Use lunch Function and the specified parameter is "cubieboard-eng"

```
$lunch 4
```

Compile:

```
$make -j8
```

注 : Note: "8" for the number of CPU threads, according to his PC machine



Completed:

```
Block groups: 4
Reserved block group size: 31
Created filesystem with 1197/31296 inodes and 74462/125000 blocks
Install system fs image: out/target/product/cubieboard/system.img
out/target/product/cubieboard/system.img+out/target/product/cubieboard/obj/PACK
AGING/recovery_patch_intermediates/recovery_from_boot.p total size is 299071348
le@le:/home/A10-android4.0$
```

Pack after completed

\$/tools/pack-cm.sh

The firmware will be generated in the lichee/tools/pack

```
le@le:/home/A10-android4.0$ ls tools/pack
chips  out  pack  ptools  sun4i_crane_cubieboard.img
le@le:/home/A10-android4.0$
```

4.6. Install system

<http://dl.cubieboard.org/model/cubieboard1/Doc/android/Android-Nand-Installation-Guide.pdf>