## iTOP-4412 关闭调试串口以及修改串口权限

大家好,今天我们来讲一下 iTOP-4412 的串口设置。

首先 iTOP-4412 可以支持四路串口,分别编号为 0,1,2,3,他们在内核里面的设备节点分别是:/dev/ttySAC0,/dev/ttySAC1,/dev/ttySAC2,/dev/ttySAC3。

iTOP-4412 使用串口 2 作为调试串口,也就是/dev/ttySAC2,如果我们想把串口 2 也作为普通串口来使用,需要修改下内核的配置,重新编译下内核,具体修改方法如下:

首先在内核源码目录下执行命令"make menuconfig"打开内核配置界面,如下图所示:

```
Linux/arm 3.0.15 Kernel Configuration
Arrow keys navigate the menu. <Enter> selects submenus --->. Highlighted letters are hotkeys.
\langle Y \rangle includes, \langle N \rangle excludes, \langle M \rangle modularizes features. Press \langle Esc \rangle \langle Esc \rangle to exit, \langle ? \rangle for Help, \langle / \rangle for
Search. Legend: [*] built-in [ ] excluded \langle M \rangle module \langle \rangle module capable
                     [*] Patch physical to virtual translations at runtime (EXPERIMENTAL)
                          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
                         Floating point emulation
                         Userspace binary formats
                         Power management options
                                                         < Exit >
                                           <Select>
                                                                       < Help >
```

然后选择"Boot options",如下图所示:

```
Linux/arm 3.0.15 Kernel Configuration
Arrow keys navigate the menu. <Enter> selects submenus --->. Highlighted letters are hotkeys. Pressing
\label{eq:continuous} $$\langle Y\rangle$ includes, $\langle N\rangle$ excludes, $\langle M\rangle$ modularizes features. Press $$\langle Esc\rangle $$ to exit, $\langle ?\rangle$ for Help, $\langle /\rangle$ for the exit, $$\langle P\rangle $$ includes, $$\langle N\rangle $$ excludes, $$\langle M\rangle $$ modularizes features. Press $$\langle Esc\rangle $$ to exit, $$\langle P\rangle $$ for Help, $$\langle P\rangle $$ for 
Search. Legend: [*] built-in [ ] excluded <M> module < > module capable
                                                                                                    [*] Patch physical to virtual translations at runtime (EXPERIMENTAL)
                                                                                                                          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
                                                                                                                          Floating point emulation
                                                                                                                          Userspace binary formats
                                                                                                                          Power management options
                                                                                                       v (+)
                                                                                                                                                                                                                                                                                                                                                  < Help >
                                                                                                                                                                                                               <Select>
                                                                                                                                                                                                                                                                                < Exit >
```

然后进入到 Boot options 界面,如下图所示:

```
Arrow keys navigate the menu. (Enter) selects submenus --->. Highlighted letters are hotkeys. Pressing

(Y) includes, (M) excludes, (M) modularizes features. Press (Esc) to exit, (?) for Help, (/) for

Search. Legend: [*] built-in [ ] excluded (M) module (> module capable

[ ] Flattened Device Tree support

(0) Compressed ROM boot loader base address
(0) Compressed ROM boot loader BSS address
(console=ttySAC2, 115200) Default kernel command string

Kernel command line type (Extend bootloader kernel arguments) --->

[ ] Kernel Execute-In-Place from ROM
[ ] Kexec system call (EXPERIMENTAL)
[ ] Build kdump crash kernel (EXPERIMENTAL)
[ ] Auto calculation of the decompressed kernel image address

(Select) (Exit) (Help)
```

然后选择"(console=ttySAC2,115200) Default kernel command string",如下图所示:



然后进入到"Default kernel command string"配置界面,如下图所示:

然后把里面的"console=ttySAC2,115200"改成"console=NULL,115200",如下图所示:

然后保存并退出 menuconfig 界面,回到内核源码目录下,如下图所示:

```
*** End of the configuration.

*** Execute 'make' to start the build or try 'make help'.

root@ubuntu:/home/broswer/iTop4412_Kernel_3.0#

root@ubuntu:/home/broswer/iTop4412_Kernel_3.0#

root@ubuntu:/home/broswer/iTop4412_Kernel_3.0#
```

然后输入"make"命令,开始编译内核,如下图所示:

```
*** End of the configuration.

*** Execute 'make' to start the build or try 'make help'.

root@ubuntu:/home/broswer/iTop4412_Kernel_3.0#

root@ubuntu:/home/broswer/iTop4412_Kernel_3.0#

root@ubuntu:/home/broswer/iTop4412_Kernel_3.0#
```

编译完成后会在"arch/arm/boot"下会生成"zlmage"文件,如下图所示:

```
root@ubuntu:/home/broswer/iTop4412_Kernel_3.0#
root@ubuntu:/home/broswer/iTop4412_Kernel_3.0# cd arch/arm/boot/
root@ubuntu:/home/broswer/iTop4412_Kernel_3.0/arch/arm/boot#
root@ubuntu:/home/broswer/iTop4412_Kernel_3.0/arch/arm/boot#
root@ubuntu:/home/broswer/iTop4412_Kernel_3.0/arch/arm/boot# 1s
bootp compressed Image install.sh Makefile zImage
root@ubuntu:/home/broswer/iTop4412_Kernel_3.0/arch/arm/boot#
```

最好把生成的"zlmage"烧写到开发板上就可以使用串口 2(/dev/ttySAC2)了。

我们在 android 下操作串口有时会遇到没有权限的问题,这就需要修改下 android 的启动脚本,在里面修改下串口的权限。

具体修改方法是:

在 android 源码目录下输入 "vi device/samsung/smdk4x12/conf/init.smdk4x12.rc",如下图所示:

```
root@ubuntu:/home/broswer/iTop4412_ICS#
root@ubuntu:/home/broswer/iTop4412_ICS# vi device/samsung/smdk4x12/conf/init.smdk4x12.rc
```

在里面找到修改权限的地方,如下图所示:

```
#add by cym 20130305 chmod 0777 /linuxrc chmod 0777 /dev/adc chmod 0777 /dev/buzzer_ctl chmod 0777 /dev/max485_ctl_pin chmod 0777 /dev/leds chmod 0777 /dev/rc522
```

上面的 "chmod 777 xxxx" 就是修改设备节点的权限,比如我们现在想修改串口 0(/dev/ttySAC0)的权限,那我们在这下面输入 "chmod 777 /dev/ttySAC0" 就可以了,如下图所示:

```
#add by cym <u>20130305</u>
chmod <u>0777</u> /linuxrc
chmod <u>0777</u> /dev/adc
chmod <u>0777</u> /dev/buzzer_ctl
chmod <u>0777</u> /dev/max485_ctl_pin
chmod <u>0777</u> /dev/leds
chmod <u>0777</u> /dev/rc522
chmod <u>0777</u> /dev/ttySAC0
```

其他几个串口的修改方法也是这样的,修改完以后,保存并退出,回到 android 源码的目录下面,如下图所示:

```
root@ubuntu:/home/broswer/iTop4412_ICS#
root@ubuntu:/home/broswer/iTop4412_ICS#
root@ubuntu:/home/broswer/iTop4412_ICS#
root@ubuntu:/home/broswer/iTop4412_ICS#
```

然后输入"./build\_android.sh "开始编译 android,如下图所示:

```
root@ubuntu:/home/broswer/iTop4412_ICS#
root@ubuntu:/home/broswer/iTop4412_ICS#
root@ubuntu:/home/broswer/iTop4412_ICS#
root@ubuntu:/home/broswer/iTop4412_ICS# ./build_android.sh
```

编译完成后,把生成的"ramdisk-uboot.img"和"system.img"烧到开发板里面,重新启动 android,就可以看到串口 0(/dev/ttySACO)的权限修改了。