Hikey960 UEFI切回FASTBOOT

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OVERVIEW
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1. Debian 系统使用的UEFI的bootloader
2. 对于Hikey960而言， ANDROID最好使用fastboot的bootloader， 其稳定度比UEFI要好。

由于UEFI和fastboot差异非常大， 所以需要通过recovery模式和工具进行切换， 出货的的Android版本和Linaro的Android daily build版本都是基于fastboot的bootloader。

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RECOVERY
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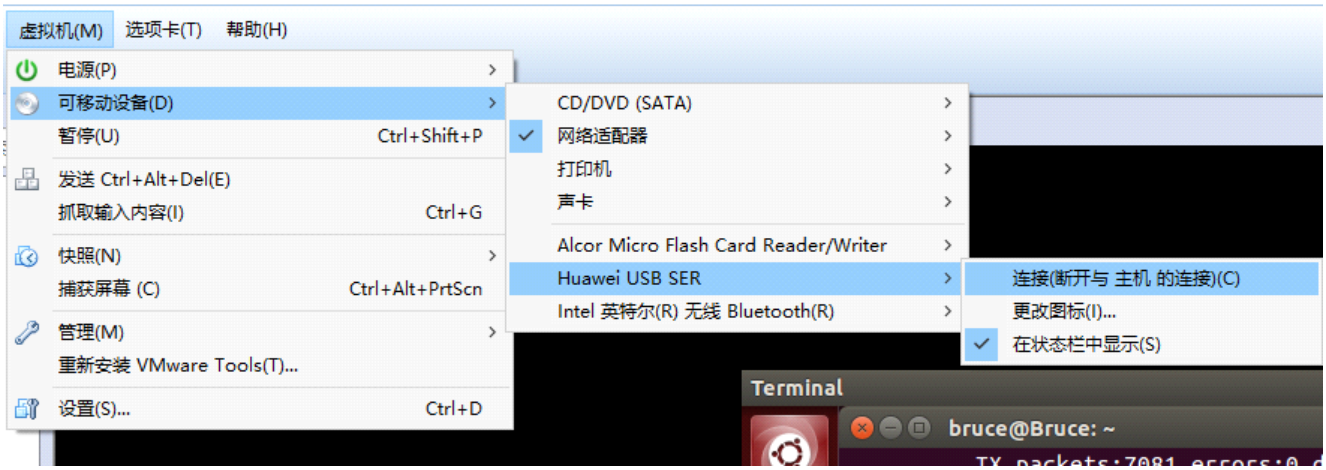
请先阅读https://github.com/96boards-hikey/tools-images-hikey960 ，下载相应的代码和工具，由于原厂没有释放recovery mode的windows usb驱动， 一些操作需要在Linux的机器上完成

1. 将板子设置成recovery mode
   - Remove power from the board
   - Change Jumper/DIP switch settings, to enter recovery/forced-download mode:

Name	Link / Switch	State
Auto Power up	Link 1-2 / Switch 1	closed / ON
Recovery	Link 3-4 / Switch 2	closed / ON
Fastboot	Link 5-6 / Switch 3	open / OFF

   - Apply power to the board using 96Boards compliant power supply
   - Insert USB Type-C cable (OTG port) to the board, and connect the other end to your Linux PC
   - Check whether there is a device node "/dev/ttyUSBx". If there is, it means your PC has detected the target board; If there is not, try to repeat previous steps.

2. 板子上电后在Linux机器上会多出一个usb tty 设备



```
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ ls /dev/tty
tty        tty16      tty24      tty32      tty40      tty49      tty57      tty8       ttyS14     ttyS22     ttyS30
tty0       tty17      tty25      tty33      tty41      tty5       tty58      tty9       ttyS15     ttyS23     ttyS31
tty1       tty18      tty26      tty34      tty42      tty50      tty59      ttyprintk  ttyS16     ttyS24     ttyS4
tty10      tty19      tty27      tty35      tty43      tty51      tty6       ttyS0      ttyS17     ttyS25     ttyS5
tty11      tty2       tty28      tty36      tty44      tty52      tty60      ttyS1      ttyS18     ttyS26     ttyS6
tty12      tty20      tty29      tty37      tty45      tty53      tty61      ttyS10     ttyS19     ttyS27     ttyS7
tty13      tty21      tty3       tty38      tty46      tty54      tty62      ttyS11     ttyS2      ttyS28     ttyS8
tty14      tty22      tty30      tty39      tty47      tty55      tty63      ttyS12     ttyS20     ttyS29     ttyS9
tty15      tty23      tty31      tty4       tty48      tty56      tty7       ttyS13     ttyS21     ttyS3      ttyUSB0
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ ls /dev/ttyUSB0
```

3. 基础代码刷入， 执行recovery脚本， 本示例中的/dev/ttyUSB0需要根据您本机的实际情况传入

```
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ sudo ./recovery-flash.sh /dev/ttyUSB0
[sudo] password for bruce:
Config name: config
Port name: /dev/ttyUSB0
0: Image: ./hisi-sec_usb_xloader.img Downalod Address: 0x20000
1: Image: ./hisi-sec_uce_boot.img Downalod Address: 0x6a908000
2: Image: ./hisi-sec_fastboot.img Downalod Address: 0x1ac00000
Serial port open successfully!
Start downloading ./hisi-sec_usb_xloader.img@0x20000...
file total size 99584
downlaod address 0x20000
Finish downloading
Start downloading ./hisi-sec_uce_boot.img@0x6a908000...
file total size 23680
downlaod address 0x6a908000
Finish downloading
Start downloading ./hisi-sec_fastboot.img@0x1ac00000...
file total size 3430400
downlaod address 0x1ac00000
Finish downloading
< waiting for device >
target reported max download size of 471859200 bytes
sending 'ptable' (196 KB)...
OKAY [  0.013s]
writing 'ptable'...
OKAY [  0.057s]
finished. total time: 0.070s
target reported max download size of 471859200 bytes
sending 'xloader' (151 KB)...
OKAY [  0.013s]
writing 'xloader'
FAILED (remote: flash write prim vrl failure)
finished. total time: 0.045s
```

红框中的错误是已知问题， 请参考Linaro的文档

```
Known Issues:
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When flashing ontop of the HiSi bootloader, you may see the following
failure:
  sending 'xloader' (151 KB)...
  OKAY [  0.006s]
  writing 'xloader'...
  FAILED (remote: flash write back vrl failure)

This is a transient error and can be ignored.
```

手动完成recovery-flash.sh 中因为红框中的错误而阻塞未能执行完成的部分

sudo fastboot flash nvme hisi-nvme.img
sudo fastboot flash fw_lpm3 hisi-lpm3.img
sudo fastboot flash trustfirmware hisi-bl31.bin

本过程完成的log如下

```
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ sudo ./recovery-flash.sh /dev/ttyUSB0
Config name: config
Port name: /dev/ttyUSB0
0: Image: ./hisi-sec_usb_xloader.img Downalod Address: 0x20000
1: Image: ./hisi-sec_uce_boot.img Downalod Address: 0x6a908000
2: Image: ./hisi-sec_fastboot.img Downalod Address: 0x1ac00000
Serial port open successfully!
Start downloading ./hisi-sec_usb_xloader.img@0x20000...
file total size 99584
downlaod address 0x20000
Finish downloading
Start downloading ./hisi-sec_uce_boot.img@0x6a908000...
file total size 23680
downlaod address 0x6a908000
Finish downloading
Start downloading ./hisi-sec_fastboot.img@0x1ac00000...
file total size 3430400
downlaod address 0x1ac00000
Finish downloading
< waiting for device >
target reported max download size of 471859200 bytes
sending 'ptable' (196 KB)...
OKAY [  0.021s]
writing 'ptable'...
OKAY [  0.034s]
finished. total time: 0.056s
target reported max download size of 471859200 bytes
sending 'xloader' (151 KB)...
OKAY [  0.013s]
writing 'xloader'...
FAILED (remote: flash write back vrl failure)
finished. total time: 0.359s
```

```
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ sudo fastboot flash fastboot hisi-fastboot.img
target reported max download size of 471859200 bytes
sending 'fastboot' (3346 KB)...
OKAY [  0.120s]
writing 'fastboot'...
OKAY [  0.030s]
finished. total time: 0.150s
```

```
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ fastboot flash nvme hisi-nvme.img
< waiting for device >
^C
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ sudo fastboot flash nvme hisi-nvme.img
target reported max download size of 471859200 bytes
sending 'nvme' (128 KB)...
OKAY [  0.013s]
writing 'nvme'...
OKAY [  0.017s]
finished. total time: 0.030s
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ fastboot flash fw_lpm3 hisi-lpm3.img
< waiting for device >
^C
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ sudo fastboot flash fw_lpm3 hisi-lpm3.img
target reported max download size of 471859200 bytes
sending 'fw_lpm3' (212 KB)...
OKAY [  0.019s]
writing 'fw_lpm3'...
OKAY [  0.009s]
finished. total time: 0.028s
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ fastboot flash trustfirmware hisi-bl31.bin
< waiting for device >
^C
bruce@Bruce:/media/bruce/c/hikey960/tools-images-hikey960$ sudo fastboot flash trustfirmware hisi-bl31.bin
target reported max download size of 471859200 bytes
sending 'trustfirmware' (145 KB)...
OKAY [  0.014s]
writing 'trustfirmware'...
OKAY [  0.011s]
finished. total time: 0.024s
```

4. 将板子的状态为fastboot mode， 并将板子 重新上电

Step 5: Explore other modes, proceed to OS installation

- Remove power from the board
- Proceed to OS "Installation" through the HiKey960 documentation landing page

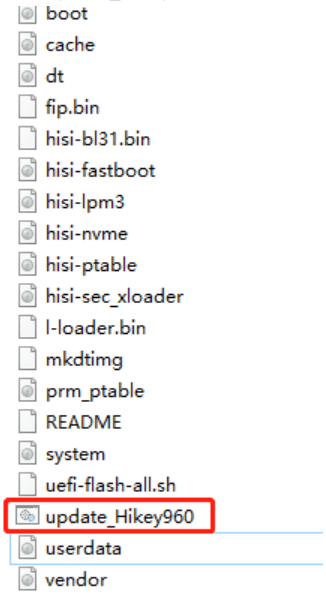
Name	Link / Switch	Normal Mode	Fastboot Mode	Recovery Mode
Auto Power up	Link 1-2 / Switch 1	closed / ON	closed / ON	closed / ON
Recovery	Link 3-4 / Switch 2	open / OFF	open / OFF	closed / ON
Fastboot	Link 5-6 / Switch 3	open / OFF	closed / ON	open / OFF

5. 通刷全版本

以hikey960 hynix的临时版本为了例，

https://pan.baidu.com/s/1zxnsiLo2Yd8wOAvaR3J4fg password：it46

双击update_Hikey960.bat 进行全版本的通刷



6. 板子恢复为正常启动状态，重新上电启动

Name	Link / Switch	Normal Mode	Fastboot Mode	Recovery Mode
Auto Power up	Link 1-2 / Switch 1	closed / ON	closed / ON	closed / ON
Recovery	Link 3-4 / Switch 2	open / OFF	open / OFF	closed / ON
Fastboot	Link 5-6 / Switch 3	open / OFF	closed / ON	open / OFF