

Security Classification:

Most Confidential () Confidential () Internal () Public (✓)

RK3399 Linux Buildroot System Development Guide

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Revision History

Date	Version No.	Revision Note	Author	Checker
2017-01-09	V1.0	Initial version	hgc	lby
2017-02-27	V1.1	Add Linux PC download tool	hgc	lby

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一、Compilation

1、uboot compilation

```
cd u-boot && make rk3399_linux_defconfig && make ARCHV=aarch64 -j12 && cd ..
```

2、kernel compilation

```
cd kernel && make ARCH=arm64 rockchip_linux_defconfig && make ARCH=arm64  
rk3399-sapphire-excavator-linux.img -j12 && cd ..
```

3、rootfs system and app compilation

```
cd buildroot && make rockchip_rk3399_defconfig && cd .. && ./build_all.sh -j12  
&& ./mkfirmware.sh
```

4、final image under rockimg directory

Note:

1、cross-compile environment setup:

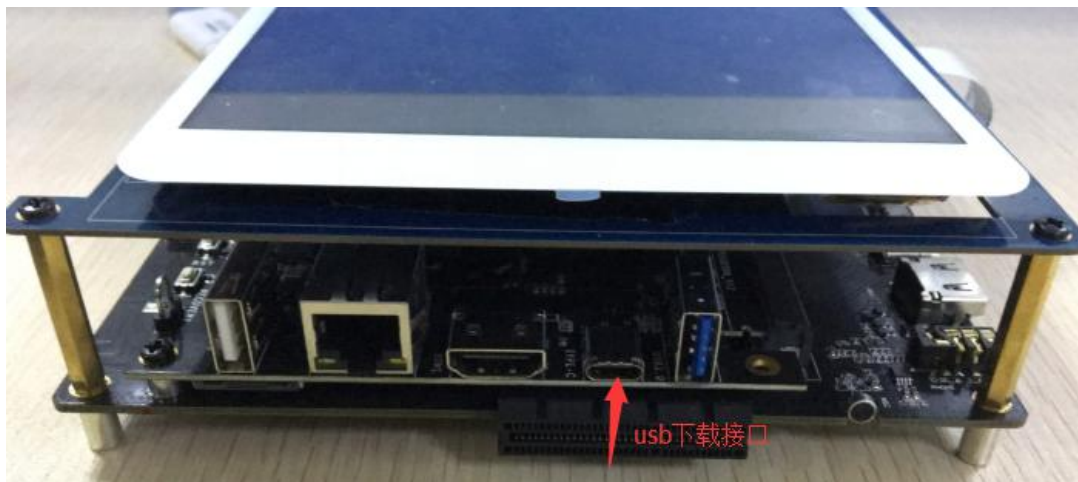
Cross-compile tool is under buildroot/output/host/usr/ directory. Need to set tool bin/ directory and arm-rockchip-linux-gnueabi/bin/ directory as environment variables. Or you can directly "source envsetup.sh" in top directory to config environment variable automatically. But it is only effective for current console.

2、system compile

Run "./build_all.sh", it will find rk_make_first.sh and rk_make.sh automatically in the system, and then execute compiling command. If only need to compile single module, you can enter the module directory and execute rk_make.sh or rk_make_first.sh command.

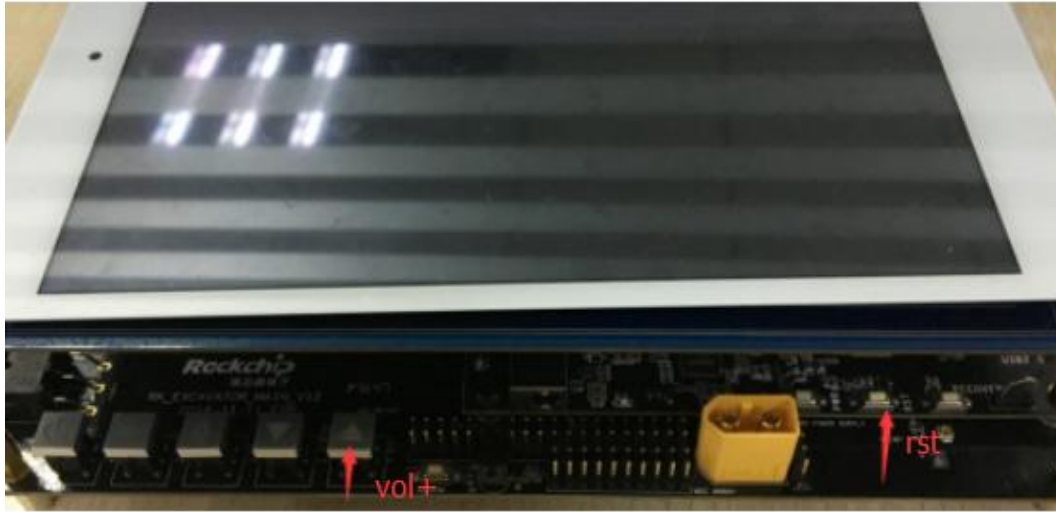
二、Flashing image

1、Connect power cable and usb download cable



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2、 Press and hold vol+ button and then press rst button

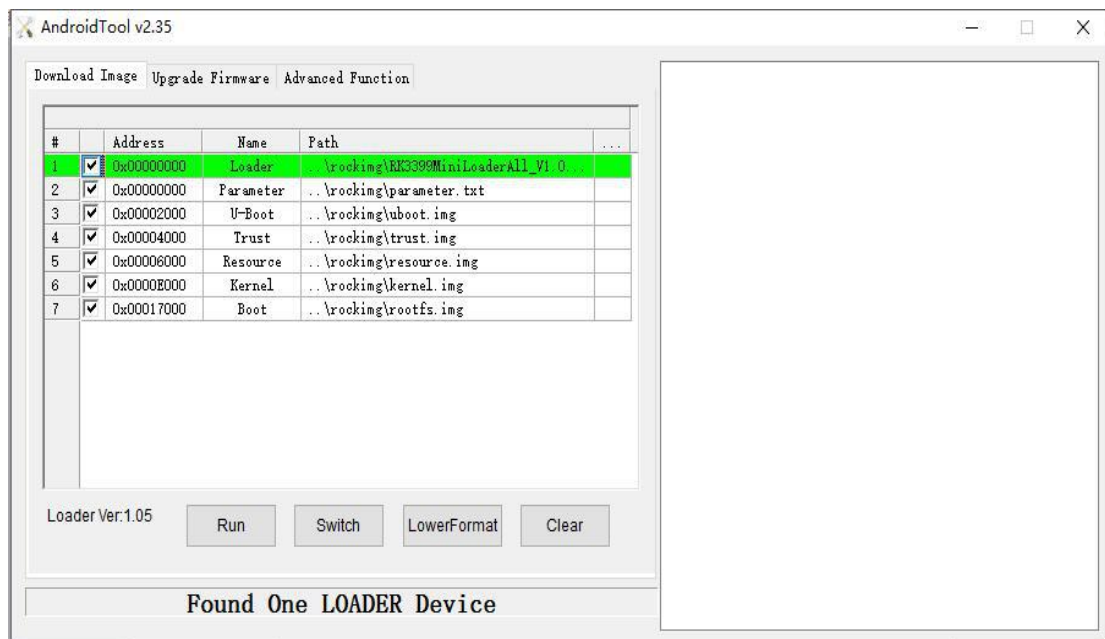


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3、 Running flashing tool with PC

3.1 Window PC

Tool is in tools/windows. Run AndroidTool.exe, choose the target image and then click “Run” button as shown in below picture.



Windows flashing tool operation interface

Note:

- 1、boot partition in tool is corresponding to rootfs partition in Linux project.
- 2、Windows platform needs to install driver which is under tool directory: USB driver\DriverAssitant_v4.4\DriverAssitant_v4.4, directly right-click to use admin ID to run “DriverInstall.exe” to install.

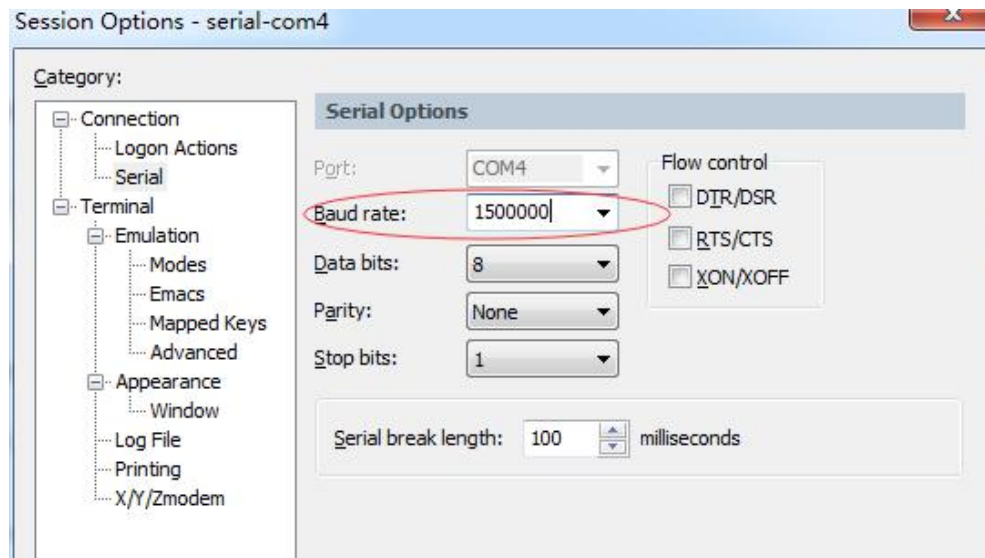
3.2 Linux PC

Tool is in tools/linux/Linux_Upgrade_Tool. Detailed usage method refer to tool package document 《Linux Development Tool User Manual_v1.0.pdf》.

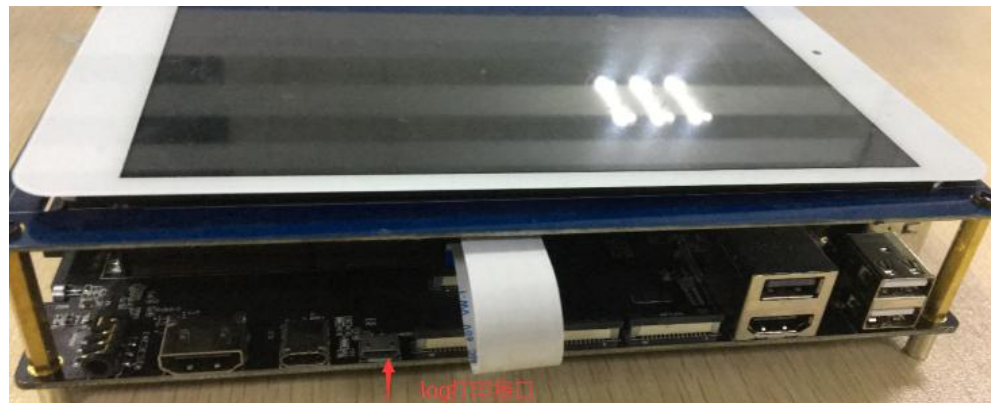
Note: boot partition in tool is corresponding to rootfs partition in Linux project.

三、SecureCRT

1、 baud rate parameters configuration



2、 debugging information print interface



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四、Project directory introduction

There are buildroot、app、kernel、u-boot、device、common、config、docs、external、prebuilts、rockimg、rootfs、tools etc. directories under the project directory. Each directory or its subdirectory corresponds to one git project and submit needs to be done within respective directory.

- 1) buildroot: used for compiling buildroot root file system
- 2) rootfs: deposit debian related files
- 3) app: deposit upper level app, mainly for Carmachin and some testing applications.
- 4) external: relative libs, such as audio, video, network etc.
- 5) kernel: kernel code.
- 6) device/rockchip/rk3399: deposit boot-up initialization script, 3rd party lib, bin,alsa/wifi etc. configuration files. Also deposit compiling script. System root directory' s several sh scripts are all copied from this directory when repo sync, so if want to submit revised script, need to operate under the directory of device/rockchip/rk3399.
 - build_all.sh : compile all 3rd party libs and applications.
 - mkfirmware.sh: pack the final target image.
 - envsetup.sh: terminal environment variable setting.
- 7) docs: deposit project help document.
- 8) prebuilts: deposit gcc and cross-compile tools chain needed for compiling kernel.
- 9) rockimg: deposit compiling output image.
- 10) tools: deposit flashing tool.