

Rockchip RK3588 Linux SDK Release Note

ID: RK-FB-YF-914

Release Version: V1.0.2

Release Date: 2022-08-20

Security Level: ☐Top-Secret ☐Secret ☐Internal ☒Public

DISCLAIMER

THIS DOCUMENT IS PROVIDED "AS IS". ROCKCHIP ELECTRONICS CO., LTD. ("ROCKCHIP") DOES NOT PROVIDE ANY WARRANTY OF ANY KIND, EXPRESSED, IMPLIED OR OTHERWISE, WITH RESPECT TO THE ACCURACY, RELIABILITY, COMPLETENESS, MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR NON-INFRINGEMENT OF ANY REPRESENTATION, INFORMATION AND CONTENT IN THIS DOCUMENT. THIS DOCUMENT IS FOR REFERENCE ONLY. THIS DOCUMENT MAY BE UPDATED OR CHANGED WITHOUT ANY NOTICE AT ANY TIME DUE TO THE UPGRADES OF THE PRODUCT OR ANY OTHER REASONS.

Trademark Statement

"Rockchip", "瑞芯微", "瑞芯" shall be Rockchip's registered trademarks and owned by Rockchip. All the other trademarks or registered trademarks mentioned in this document shall be owned by their respective owners.

All rights reserved. ©2022. Rockchip Electronics Co., Ltd.

Beyond the scope of fair use, neither any entity nor individual shall extract, copy, or distribute this document in any form in whole or in part without the written approval of Rockchip.

Rockchip Electronics Co., Ltd.

No.18 Building, A District, No.89, software Boulevard Fuzhou, Fujian, PRC

Website: www.rock-chips.com

Customer service Tel: +86-4007-700-590

Customer service Fax: +86-591-83951833

Customer service e-Mail: fae@rock-chips.com

Preface

Overview

The document presents Rockchip RK3588 Linux SDK release notes, aiming to help engineers get started with RK3588/RK3588S/RK3588M Linux SDK development and debugging faster.

Intended Audience

This document (this guide) is mainly intended for:

Technical support engineers

Software development engineers

Chipset and System Support

Chipset	Buildroot	Debian
RK3588, RK3588S, RK3588M	Y	Y

Revision History

Date	Version	Author	Revision History
2022-01-15	V0.0.1	Caesar Wang	Alpha version
2022-04-14	V0.1.0	Caesar Wang	Beta version
2022-04-21	V0.1.1	Caesar Wang	Beta version 0.1.1
2022-05-20	V1.0.0	Caesar Wang	Release version
2022-06-20	V1.0.1	Caesar Wang	Update SDK to v1.0.1
2022-08-20	V1.0.2	Caesar Wang	Update SDK to v1.0.2

Contents

Rockchip RK3588 Linux SDK Release Note

1. Overview
2. Main Functions
3. How to Get the SDK
 - 3.1 Get General RK3588 Linux SDK
 - 3.1.1 Get Source Code from Rockchip Code Server
 - 3.1.2 Get Source Code from Local Compression Package
4. Software Development Guide
5. Hardware Development Guide
6. SSH Public Key Operation Introduction
 - 6.1 Multiple Machines Use the Same SSH Public Key
 - 6.2 One Machine Switches Different SSH Public Keys
 - 6.3 Key Authority Management
 - 6.4 Reference Documents

1. Overview

This SDK is based on Debian 11 and Buildroot 2021.11, with kernel 5.10 and U-boot v2017.09. It is suitable for RK3588/RK3588S/RK3588M EVB development boards and all other Linux products developed based on it.

This SDK is suitable for, but not limited to, AIoT products such as ARM PC/industrial boards, providing flexible data path combination interfaces to meet the customized requirements for free combination, please refer to the documents under the project's docs/ directory.

2. Main Functions

Function	Module Name
System	Debian, Buildroot
Partition table	uboot, misc, boot, recovery, rootfs, oem, userdata
File System Type	EXT2/3/4, VFAT, NTFS, UBIFS, SquashFS
Upgrade Recovery	OTA, Recovery
Secure Boot	SecureBoot
Stress Test Tool	ROCKCHIP_TEST
Data communication	Wi-Fi, Ethernet card, USB, SD card, SATA, PCI-e interface
Applications	Multimedia playback, camera preview, settings, browser, file management

3. How to Get the SDK

The SDK is released by Rockchip server. Please refer to Chapter 4 [Software Development Guide](#) to build a development environment.

3.1 Get General RK3588 Linux SDK

3.1.1 Get Source Code from Rockchip Code Server

To get RK3588/RK3588S/RK3588M Linux SDK software package, customers need an account to access the source code repository provided by Rockchip. In order to be able to obtain code synchronization, please provide SSH public key for server authentication and authorization when apply for SDK from Rockchip technical window. About Rockchip server SSH public key authorization, please refer to Chapter 6 [SSH Public Key](#).

[Operation Introduction.](#)

RK3588_Linux_SDK download command is as follows:

```
repo init --repo-url ssh://git@www.rockchip.com.cn/repo/rk/tools/repo -u \
ssh://git@www.rockchip.com.cn/linux/rockchip/platform/manifests -b linux -m \
rk3588_linux_release.xml
```

Repo, a tool built on Python script by Google to help manage git repositories, is mainly used to download and manage software repository of projects. The download address is as follows:

```
git clone ssh://git@www.rockchip.com.cn/repo/rk/tools/repo
```

3.1.2 Get Source Code from Local Compression Package

For quick access to SDK source code, Rockchip Technical Window usually provides corresponding version of SDK initial compression package. In this way, developers can get SDK source code through decompressing the initial compression package, which is the same as the one downloaded by repo.

Take RK3588_LINUX_SDK_RELEASE_V1.0.0_20220520.tgz as an example. After getting a initialization package, you can get source code by running the following command:

```
mkdir rk3588
tar xvf RK3588_LINUX_SDK_RELEASE_V1.0.0_20220520.tgz -C rk3588
cd rk3588
.repo/repo/repo sync -l
.repo/repo/repo sync -c
```

Developers can update via `.repo/repo/repo sync -c` command according to update introductions that are regularly released by FAE window.

4. Software Development Guide

For software development, please refer to the quick start documents in the project directory:

```
<SDK>/docs/RK3588/Quick-start/Rockchip_RK3588_Quick_Start_Linux_EN.pdf
```

5. Hardware Development Guide

For hardware development, please refer to the user guide document in the project directory:

```
<SDK>/docs/RK3588/Hardware/Rockchip_RK3588_Hardware_Design_Guide_V1.0.pdf
<SDK>/docs/RK3588/Hardware/Rockchip_RK3588S_Hardware_Design_Guide_V1.1.pdf
```

6. SSH Public Key Operation Introduction

Please follow the introduction in the “Rockchip_User_Guide_SDK_Application_And_Synchronization_CN” to generate an SSH public key and send the email to fae@rock-chips.com, to get the SDK code.

This document will be released to customers during the process of applying for permission.

6.1 Multiple Machines Use the Same SSH Public Key

If the same SSH public key should be used in different machines, you can copy the SSH private key file `id_rsa` to “`~/.ssh/id_rsa`” of the machine you want to use.

The following prompt will appear when using a wrong private key, please be careful to replace it with the correct private key.

```
~/tmp$ git clone git@172.16.10.211:rk292x/mid/4.1.1_r1
Initialized empty Git repository in /home/cody/tmp/4.1.1_r1/.git/
The authenticity of host '172.16.10.211 (172.16.10.211)' can't be established.
RSA key fingerprint is fe:36:dd:30:bb:83:73:e1:0b:df:90:e2:73:e4:61:46.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '172.16.10.211' (RSA) to the list of known hosts.
git@172.16.10.211's password: 
```

After adding the correct private key, you can use git to clone code, as shown below.

```
~$ cd tmp/
~/tmp$ git clone git@172.16.10.211:rk292x/mid/4.1.1_r1
Initialized empty Git repository in /home/cody/tmp/4.1.1_r1/.git/
The authenticity of host '172.16.10.211 (172.16.10.211)' can't be established.
RSA key fingerprint is fe:36:dd:30:bb:83:73:e1:0b:df:90:e2:73:e4:61:46.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '172.16.10.211' (RSA) to the list of known hosts.
remote: Counting objects: 237923, done.
remote: Compressing objects: 100% (168382/168382), done.
Receiving objects: 9% (21570/237923), 61.52 MiB | 11.14 MiB/s
```

Adding ssh private key may result in the following error.

```
Agent admitted failure to sign using the key
```

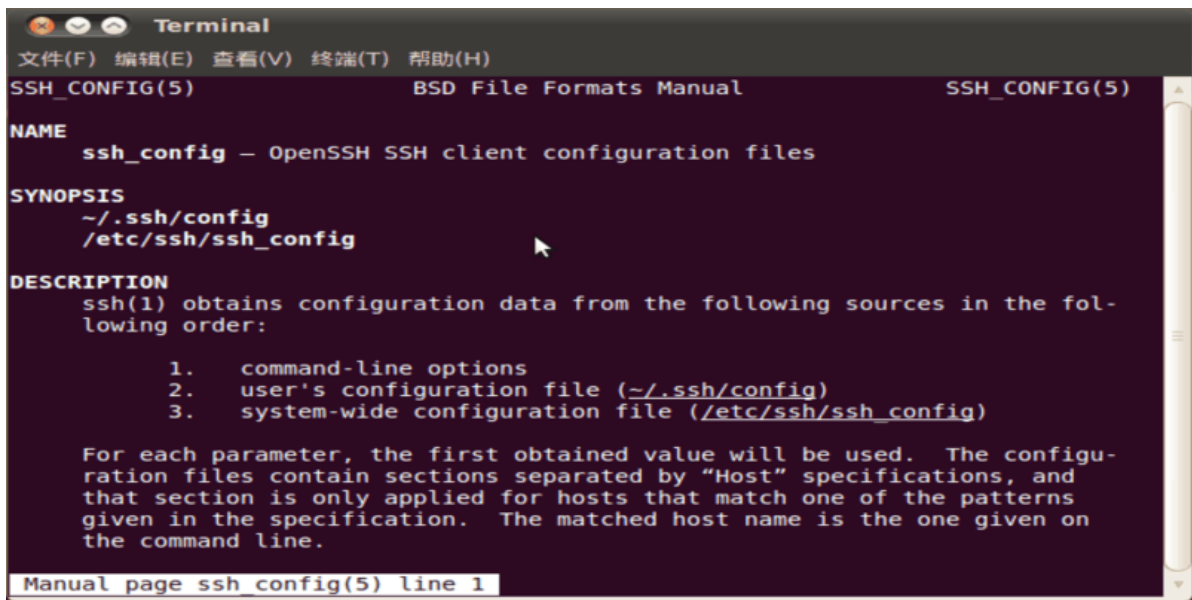
Enter the following command in console to solve:

```
ssh-add ~/.ssh/id_rsa
```

6.2 One Machine Switches Different SSH Public Keys

You can configure SSH by referring to `ssh_config` documentation.

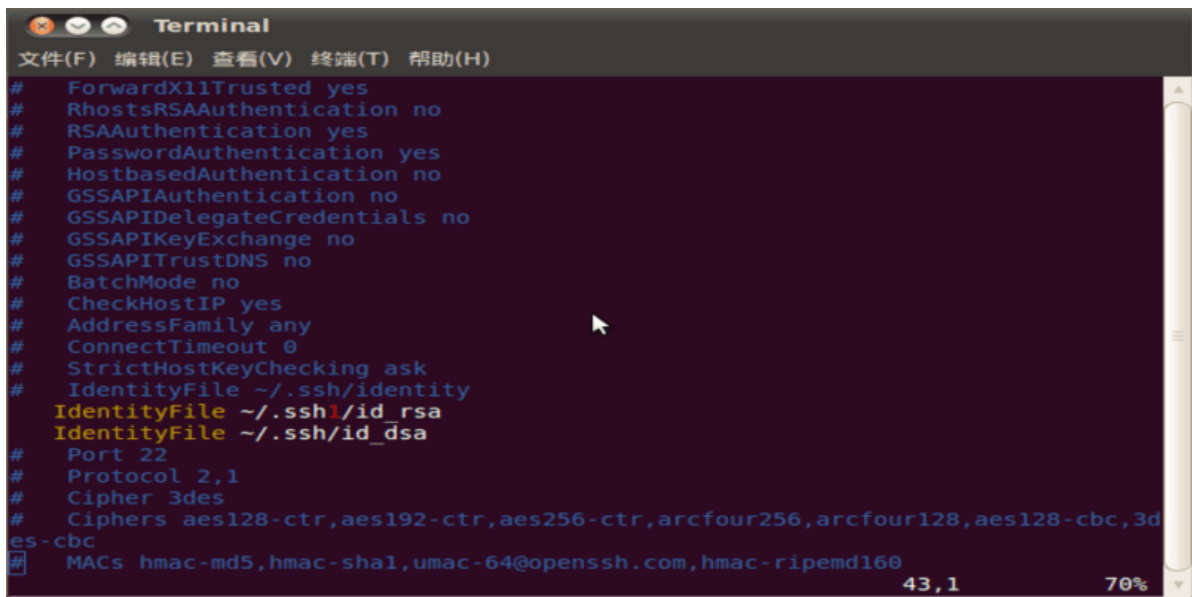
```
~$ man ssh_config
```



Run the following command to configure SSH configuration of current user.

```
~$ cp /etc/ssh/ssh_config ~/.ssh/config
~$ vi .ssh/config
```

As shown in the figure, SSH uses the file “~/.ssh1/id_rsa” of another directory as an authentication private key. In this way, different keys can be switched.



6.3 Key Authority Management

Server can monitor download times and IP information of a key in real time. If an abnormality is found, download permission of the corresponding key will be disabled.

Keep the private key file properly. Do not grant second authorization to third parties.

6.4 Reference Documents

For more details, please refer to document

“/docs/Others/Rockchip_User_Guide_SDK_Application_And_Synchronization_CN.pdf”