Rockchip RK3399 Linux SDK Release Note

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DISCLAIMER

Trademark Statement

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Preface

Overview

The document presents Rockchip RK3399 Linux SDK release notes, aiming to help engineers get started with RK3399 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 Version	Debian Version	Yocto Version	Kernel Version
RK3399	2018.02-rc3	10	3.4	4.4

Revision History

Date	Version	Author	Revision History
2017-01-16	V1.0.0	Guochun Huang	Initial version
2017-02-27	V1.1.0	Guochun Huang	Add Linux PC download tools
2017-06-08	V1.2.0	Caesar Wang	An official release version, adds NPU related instructions. Add Yocto building and github download instructions.
2018-04-08	V1.3.0	Caesar Wang	Update the name of software develop guide
2018-04-11	V1.4.0	Caesar Wang	Update Debian building instructions.
2018-04-18	V1.5.0	Caesar Wang	Fix some mistaken words and repository address
2018-05-17	V2.0.0	Caesar Wang	Integrate Buildroot and Debian documents Add SSH public key operation introduction
2019-01-24	V2.1.0	Caesar Wang	Rename project rootfs chapter to Debian update U-boot config
2019-06-28	V2.2.0	Caesar Wang	Add Yocto introduction ; EVB renamed to excavator
2019-12-03	V2.3.0	Caesar Wang	Update Debian 64 bit building Updated chapters 1, 2, 3 and 9.6 Updated Chapter 5 SDK Directory Introduction Update Chapter 6 Debian10 Building。
2020-04-30	V2.4.0	Caesar Wang	Rewrite the document with Markdown Add and use RK3399 EVB IND by default。
2020-7-22	V2.4.1	Ruby Zhang	Update the company name, the format and the file name of the document
2020-10-13	V2.5.0	Ruby Zhang	Compilation rules for adapting to new version
2020-12-03	V2.5.1	Caesar Wang	debian9/10 merge to debian
2021-05-20	V2.7.0	Caesar Wang	Update Hardware/Software Development Guide Add precaution of GPIO power design
2022-06-20	V2.9.0	Caesar Wang	Split into release and Quick Start documents

Contents

Rockchip RK3399 Linux SDK Release Note

1. Overview
2. Main Functions
3. How to Get the SDK
   - 3.1 Get General RK3399 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 10, Buildroot 2018.02 and Yocto 3.4, with kernel 4.4 and U-boot v2017.09. It is suitable for RK3399 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 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, Yocto
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 RK3399 Linux SDK

3.1.1 Get Source Code from Rockchip Code Server

To get RK3399 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.

RK3399_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 \
rk3399_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 RK3399_LINUX_SDK_RELEASE_V2.9.0_20220620.tgz as an example. After geting a initialization package, you can get source code by running the following command:

```
mkdir rk3399
tar xvf RK3399_LINUX_SDK_RELEASE_V2.9.0_20220620.tgz -C rk3399
cd rk3399
.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/RK3399/Quick-start/Rockchip_RK3399_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/RK3399/Hardware/Rockchip_RK3399_Hardware_Design_Guide_V1.2_EN.pdf
```

6. SSH Public Key Operation Introduction

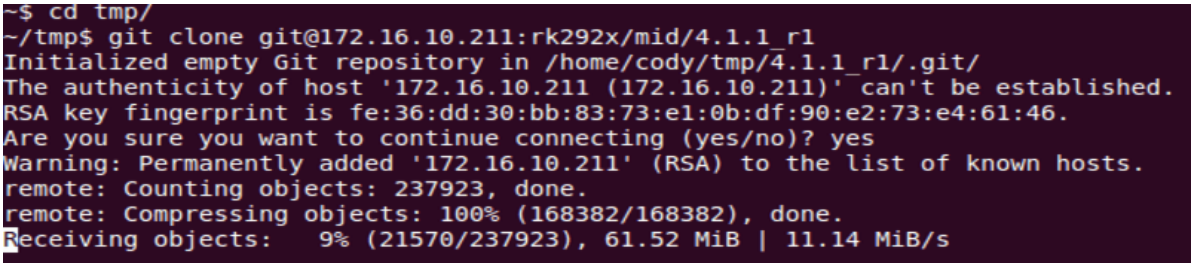
Please follow the introduction in the “Rockchip_User_Guide_SDK_Application_And_Synchronization_CN” to generate an SSH public key and send the email to fae@rock-chips.com, to get the SDK code.
This document will be released to customers during the process of applying for permission.

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.

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



Adding ssh private key may result in the following error.

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

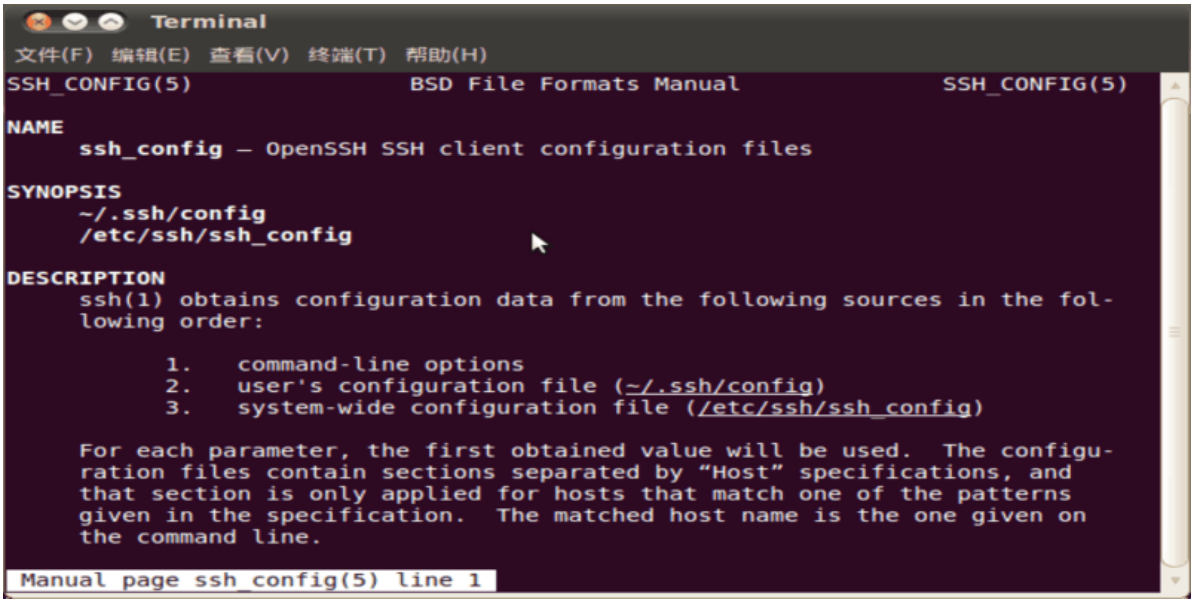
Enter the following command in console to solve:

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

6.2 One Machine Switches Different SSH Public Keys

You can configure SSH by referring to ssh_config documentation.

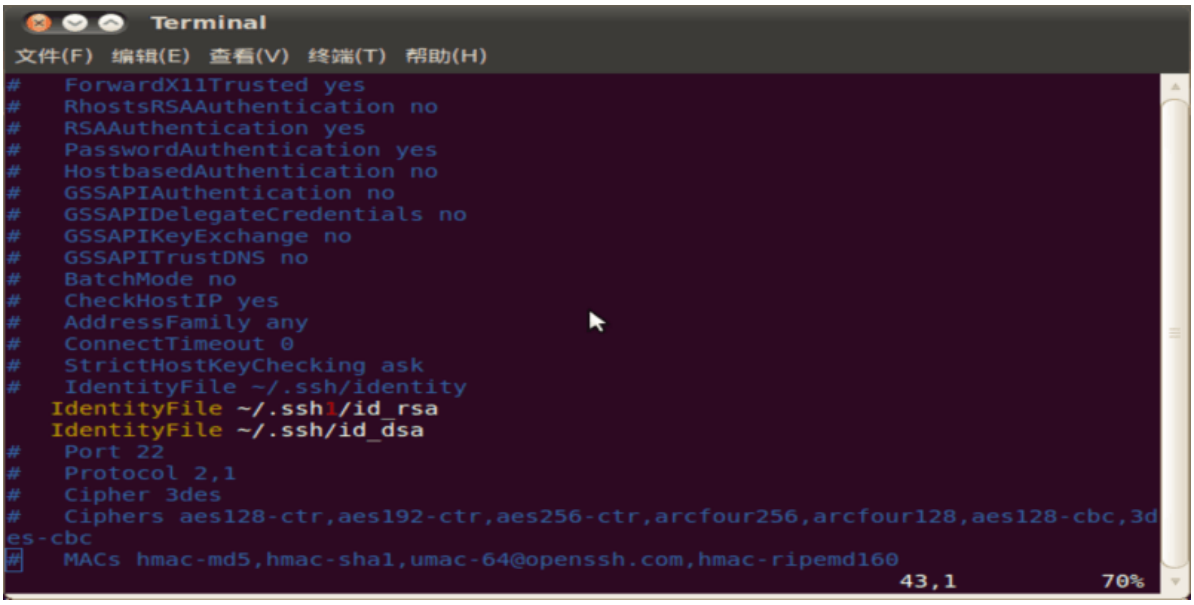
```
~$ man ssh_config
```



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"