

Rockchip RK3326 Linux SDK Release Note

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Preface

Overview

The document presents Rockchip RK3326 Linux SDK release notes, aiming to help engineers get started with RK3326 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
RK3326/RK3326-S	2018.02-rc3	N/A	N/A

Revision History

Date	Version	Author	Revision History
2019-04-25	V1.0.0	Ziyuan Xu	Initial version
2019-09-17	V1.2.0	Ziyuan Xu	Update Linux_SDK_V1.2.0 description Update application compile instruction Add the instruction to get source code from github
2020-02-24	V1.3.0	Ziyuan Xu	Improve description for ROS Add description for Debian10
2020-12-03	V1.4.0	Caesar Wang	SDK update to V1.4.0
2021-05-20	V1.5.0	Caesar Wang	Update Hardware/Software Development Guide Add precaution of GPIO power design
2022-06-20	V1.8.0	WJL	SDK update to V1.8.0

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1. Overview

This SDK is based on Buildroot 2018.02-rc3, Yocto 3.4, and Debian 10 or later version with kernel 4.4 and U-boot v2017.09. It is suitable for RK3326 EVB development boards and all other Linux products developed based on it.

2. How to Get the SDK

The SDK is released by Rockchip server. Please refer to Chapter 3 [Software Development Guide](#) to build a development environment.

2.1 General RK3326 Linux SDK Obtain

2.1.1 Get Source Code from Rockchip Code Server

To get RK3326 Linux 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 5 [SSH Public Key Operation Introduction](#).

RK3326_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 \
rk3326_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
```

2.1.2 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 RK3326_LINUX_SDK_V1.8.0_20220620.tgz as an example. After getting a initialization package, you can get source code by running the following command:

```
mkdir rk3326
tar xvf RK3326_LINUX_SDK_V1.8.0_20220620.tgz -C rk3326
cd rk3326
.repo/repo/repo sync -l
.repo/repo/repo sync -c
```

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

3. Software Development Guide

```
<SDK>/docs/RK3326/Quick-start/Rockchip_RK3326_Quick_Start_Linux_EN.pdf
```

4. Hardware Development Guide

```
<SDK>/docs/RK3326/Hardware/Rockchip_RK3326_Hardware_Design_Guide_V1.2_EN.pdf
<SDK>/docs/RK3326/Hardware/Rockchip_RK3326_User_Manual_EVB_V1.1_EN.pdf
```

5. SSH Public Key Operation Introduction

Please follow the introduction in the

“/docs/Others/Rockchip_User_Guide_SDK_Application_And_Synchronization_CN.pdf” 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.

5.1 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
```

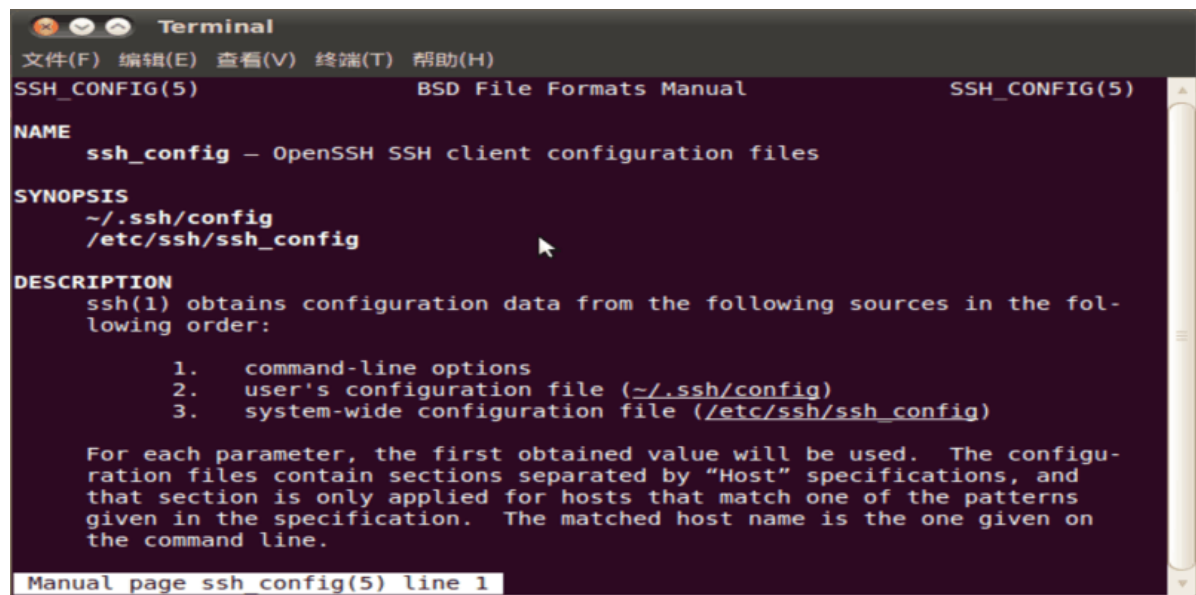
Enter the following command in console to solve:

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

5.2 One Machine Switches Different SSH Public Keys

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

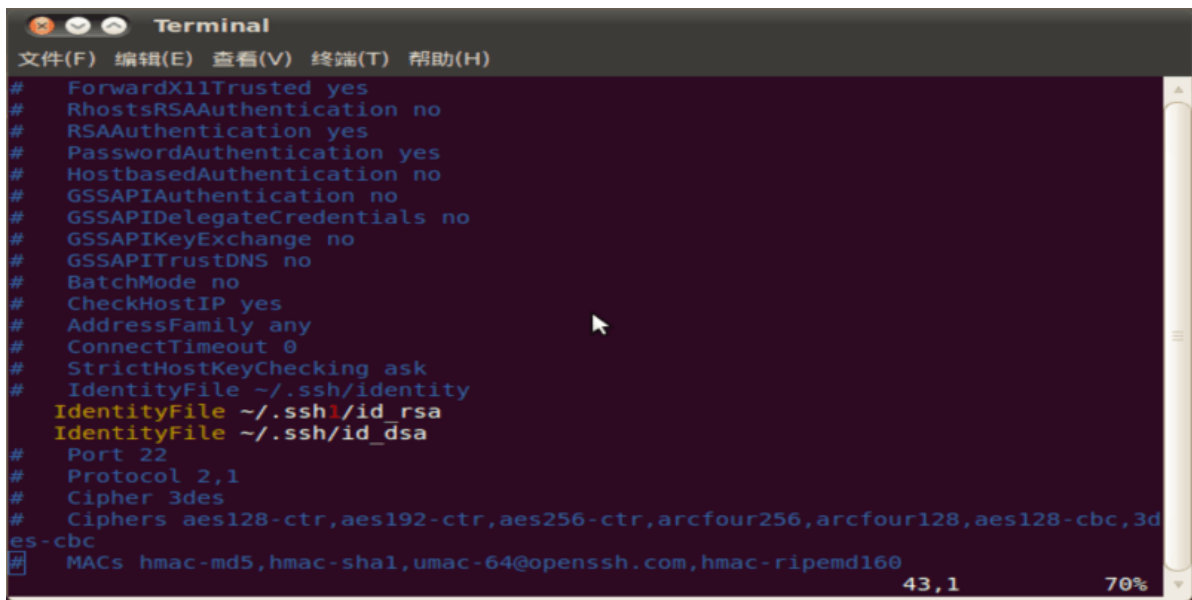
```
~$ man ssh_config
```



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.

A screenshot of a macOS Terminal window titled "Terminal". The menu bar at the top shows "文件(F)", "编辑(E)", "查看(V)", "终端(T)", and "帮助(H)". The terminal displays the output of the 'ssh -v' command, showing various configuration options and their values. The options include ForwardX11Trusted, RhostsRSAAuthentication, RSAAuthentication, PasswordAuthentication, HostbasedAuthentication, GSSAPIAuthentication, GSSAPIDelegatedCredentials, GSSAPIKeyExchange, GSSAPITrustDNS, BatchMode, CheckHostIP, AddressFamily, ConnectTimeout, StrictHostKeyChecking, IdentityFile, Port, Protocol, Cipher, Ciphers, and MACs. The IdentityFile is set to ~/.ssh/id_rsa and ~/.ssh/id_dsa. The Port is 22, Protocol is 2,1, Cipher is 3des, and Ciphers is aes128-ctr, aes192-ctr, aes256-ctr, arcfour256, arcfour128, aes128-cbc, 3des-cbc. The MACs are hmac-md5, hmac-sha1, umac-64@openssh.com, hmac-ripemd160. The terminal status bar at the bottom right shows "43, 1" and "70%".

```
# ForwardX11Trusted yes
# RhostsRSAAuthentication no
# RSAAuthentication yes
# PasswordAuthentication yes
# HostbasedAuthentication no
# GSSAPIAuthentication no
# GSSAPIDelegatedCredentials no
# GSSAPIKeyExchange no
# GSSAPITrustDNS no
# BatchMode no
# CheckHostIP yes
# AddressFamily any
# ConnectTimeout 0
# StrictHostKeyChecking ask
# IdentityFile ~/.ssh/identity
IdentityFile ~/.ssh/id_rsa
IdentityFile ~/.ssh/id_dsa
# Port 22
# Protocol 2,1
# Cipher 3des
# Ciphers aes128-ctr,aes192-ctr,aes256-ctr,arcfour256,arcfour128,aes128-cbc,3des-cbc
# MACs hmac-md5,hmac-sha1,umac-64@openssh.com,hmac-ripemd160
```

5.3 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.

5.4 Reference Documents

For more details, please refer to document

“/docs/Others/Rockchip_User_Guide_SDK_Application_And_Synchronization_CN.pdf”.