

Rockchip SDK Application and Synchronization User Guide

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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

This guide is intended to guide you on how to apply for Rockchip SDKs, and list the application method and process, including the SDK version number supported by each chip and the recommendation index of each version.

Product Version

| Chipset |
|----------------------------|
| All Rockchip Soc platforms |

Intended Audience

This document (this guide) is mainly intended for:

Technical support engineers

Software development engineers

Revision History

| Version | Author | Date | Change Description |
|---------|--------|------------|--------------------------------------|
| V1.0.0 | LB | 2017-12-27 | Initial version |
| V1.0.1 | LGS/LB | 2019-05-09 | Added SDK synchronization processing |
| V1.1.0 | LB | 2021-02-02 | Update SDK version |
| V1.1.1 | LB | 2023-03-24 | Change the SDK application process |
| V1.2.0 | LB | 2023-07-06 | Update the format |

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1. Operating Manual

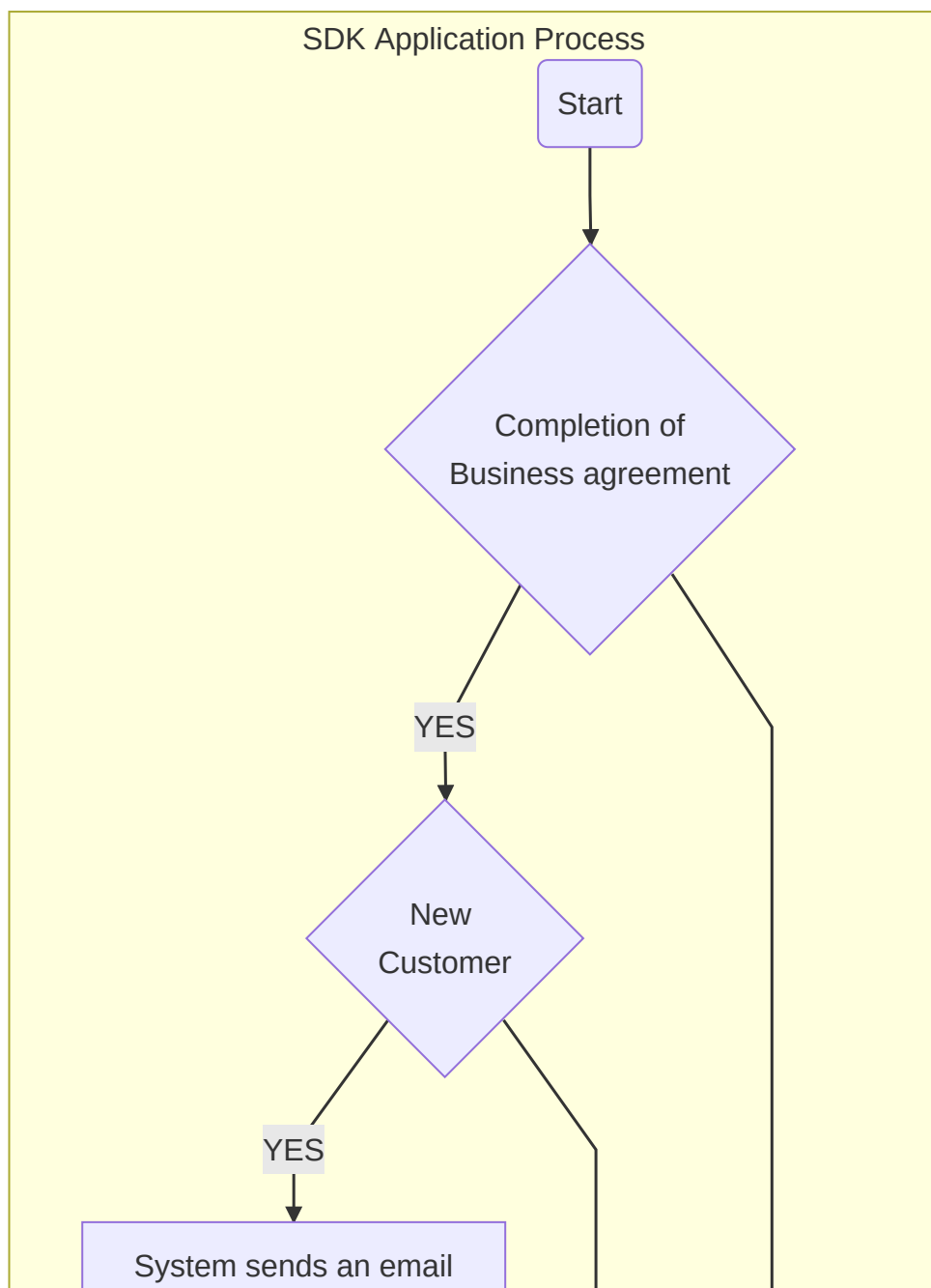
This chapter mainly introduces Rockchip SDK application process, including public key, SDK application form and data receiving window.

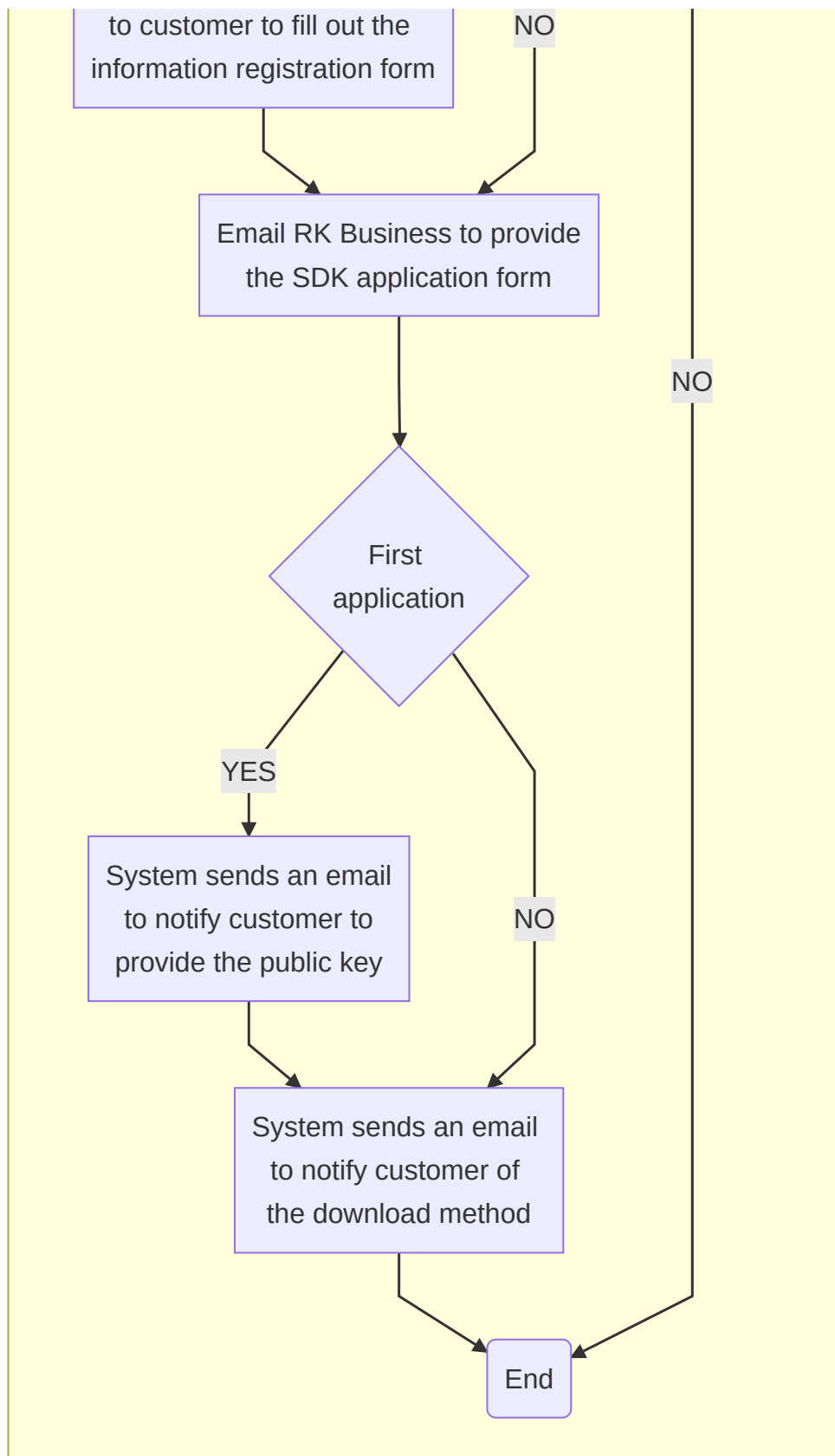
1.1 Process and Steps for Obtaining a SDK

To obtain a Rockchip SDK, do as follows:

1.1.1 Operating Process

The application process of Rockchip's SDK(including all released software materials) is as follows:





1.1.2 Fill Out the Information Registration Form

If you are a new user who establishes cooperation with RockChip for the first time, after signing the relevant business agreement between the two parties, the system will push the "RockChip Customer Information Form" notification email and fill in your company's registration information as follows:

From Rockchip<autowork@rock-chips.com>
Date 7/2023 15:25
To [redacted]
Subject Rockchip Customer



Dear Customer,

Please click the button below to fill out the form, your cooperation is highly appreciated.



[Products](#) | [Solutions](#) | [Contact](#)

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After you click on the "Fill out the Information Form" link, the registration information is as follows:

Customer Information Form

Company Information

| | | | | | | | | | |
|---|----------------------|-----|-----------------------------------|--|---|--|---|---|---|
| Full Company Name | <input type="text"/> | * | Address | <input type="text" value="Country"/> | <input type="text" value="Province/State"/> | <input type="text" value="City/Town"/> | <input type="text" value="Full Address"/> | * | |
| Company Website | <input type="text"/> | * | Date of Establishment | <input type="text"/> | | * | | | |
| Registered Capital | <input type="text"/> | * | Company Type | <input type="text" value=""/> | | | | | * |
| Cooperating ODM/OEM | <input type="text"/> | * | Main Products | <input type="text"/> | | | | | * |
| Company's Organizational Chart | <input type="text"/> | | Organizational Chart(PDF) | <input type="button" value="upload"/> | | | | | |
| <small>Only one PDF file can be uploaded, no more than 2M</small> | | | | | | | | | |
| Brand | <input type="text"/> | * | Redmine | <input type="text" value="The tech support platform account ID only consists of letters, digits and _"/> | | | | | * |
| Annual Turnover | | | Number of Employees | | | | | | |
| Year N-2 | <input type="text"/> | K * | Number of Employees | | <input type="text"/> | | | | * |
| Year N-1 | <input type="text"/> | K * | Number of Hardware Engineers | | <input type="text"/> | | | | * |
| This Year (Expect) | <input type="text"/> | K * | Number of Software Engineers | | <input type="text"/> | | | | * |
| | | | Number of Factory Workers(if any) | | <input type="text"/> | | | | |

Company Overview

Project Information

Please let us know more about the project, including the quantity, schedule, your customer, the product life cycle, etc.

Contact Information

Contact No. 1

Contact Name * position ☒ CEO ☐ General Manager

position * Office Tel *

E-mail * Remark

Contact No. 2

Contact Name * position Commercial Representative

position * Office Tel *

E-mail * Remark

Contact No. 3

Contact Name * position R&D Team Leader

position * Office Tel *

E-mail * Remark

Contact No. 4

Contact Name

*

position

Engineer

position

*

Office Tel

*

E-mail

*

Remark

Contact No. 5 (E-mail will be the one to receive Rockchip SDK download information, and Rockchip technical news letter as well as notification.)

Contact Name

*

position

Technical Data Receiver

position

*

Office Tel

*

E-mail

*

Remark

Add Contact

Submit

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1.1.3 Provide Data Receiving Window

The data window is the data manager of your company, responsible for connecting with RockChip, receiving software and hardware data pushed by RockChip, and publishing platform related information. As a rule, A company can only have one account, which requires he or she to interact, share, and backup internally. If this window changes, please make sure to notify the corresponding Rockchip business to update via email to avoid missing important notification emails.

Note: We suggest that the email of this data receiving window be set as the developer's public email of your company (such as xxrd@xx.com), so as not to miss (forget internal sharing) such information and cause loss in the project development process.

1.1.4 Provide SDK Application Form

You can apply for one SDK version or multiple SDK versions at a time. Since there are many Rockchip chip models and SDK versions, please refer to the list (SDK version table or SDK supported version list and instructions on the Redmine: <https://redmine.rock-chips.com/projects/fae/documents>) and provide the SDK version number you need; Then use your work email to send to the corresponding business person of Rockchip, who needs the information to complete the internal application process, and fill in the following requirements :

| Rockchip SDK Spplication Form↵ | |
|--------------------------------|---|
| NO. ↵ | Version of the SDK that you want to activate↵ |
| 1↵ | ↵ |
| 2↵ | ↵ |
| 3↵ | ↵ |
| 4↵ | ↵ |
| 5↵ | ↵ |
| 6↵ | ↵ |
| 7↵ | ↵ |

1.1.5 Generate a Public Key

Run the following command in your directory on Ubuntu OS:

```
xx@ubuntu:~$ cd ~
xx@ubuntu:~$ ssh-keygen -t rsa -C [user@rock-chips.com](mailto:user@rock-chips.com)
```

Note: To generate a public key, you only need to run the above command, without entering a password. user@rock-chips.com is your company's work email address, instead of personal email.

After you run the command, the corresponding key file is generated in the following directory:

```
xx@ubuntu:~$ ls -l .ssh/
total 12
-rw----- 1 rockchip rockchip 1675 Oct 31 2018 id_rsa
-rw-r--r-- 1 rockchip rockchip 403 Oct 31 2018 id_rsa.pub
```

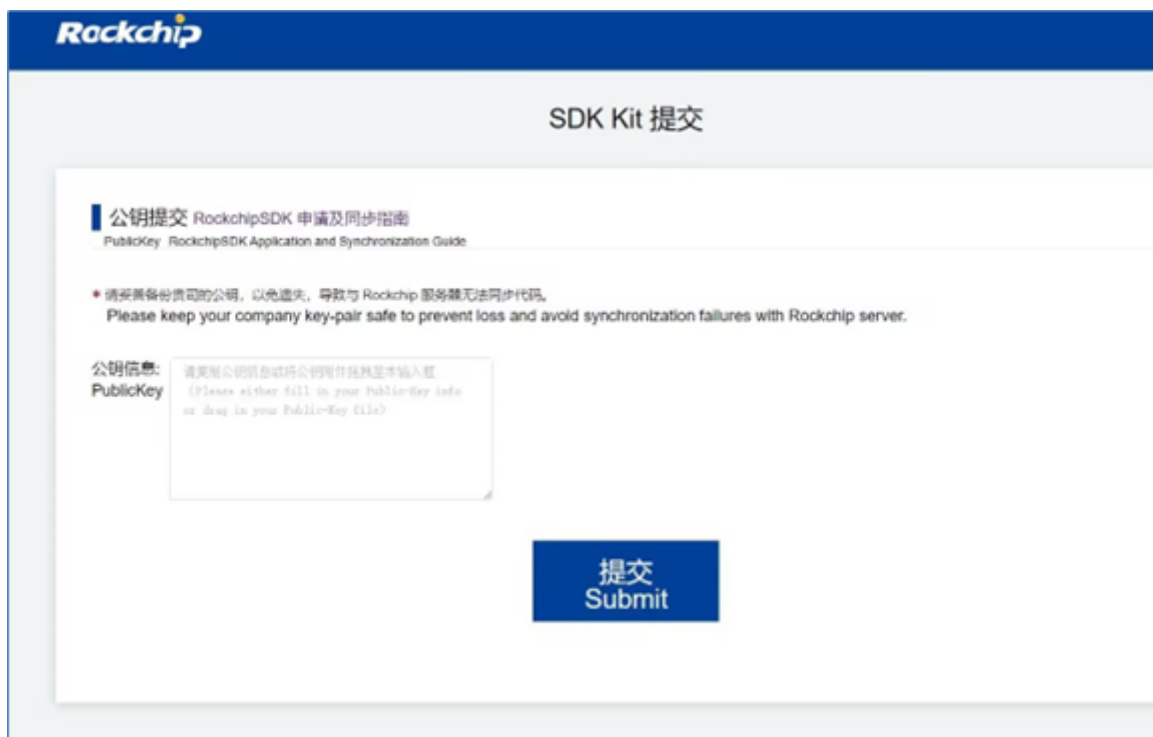
Please keep the generated private key file id_rsa and password properly. After your company receives the email notification of RockChip-SDK Public Key Submission, please submit the id_rsa.pub public key according to the email instructions.

1.1.6 Provide Public Key

When the business leader of RockChip completes the internal process, he will push the email "Rockchip-SDK Public key Submission". This operation will determine whether your company's public key has been included in the system. If so, you don't have to provide it again, and it won't push the email. If you do not have a public key in Rockchip system, you will be notified by email as follows:

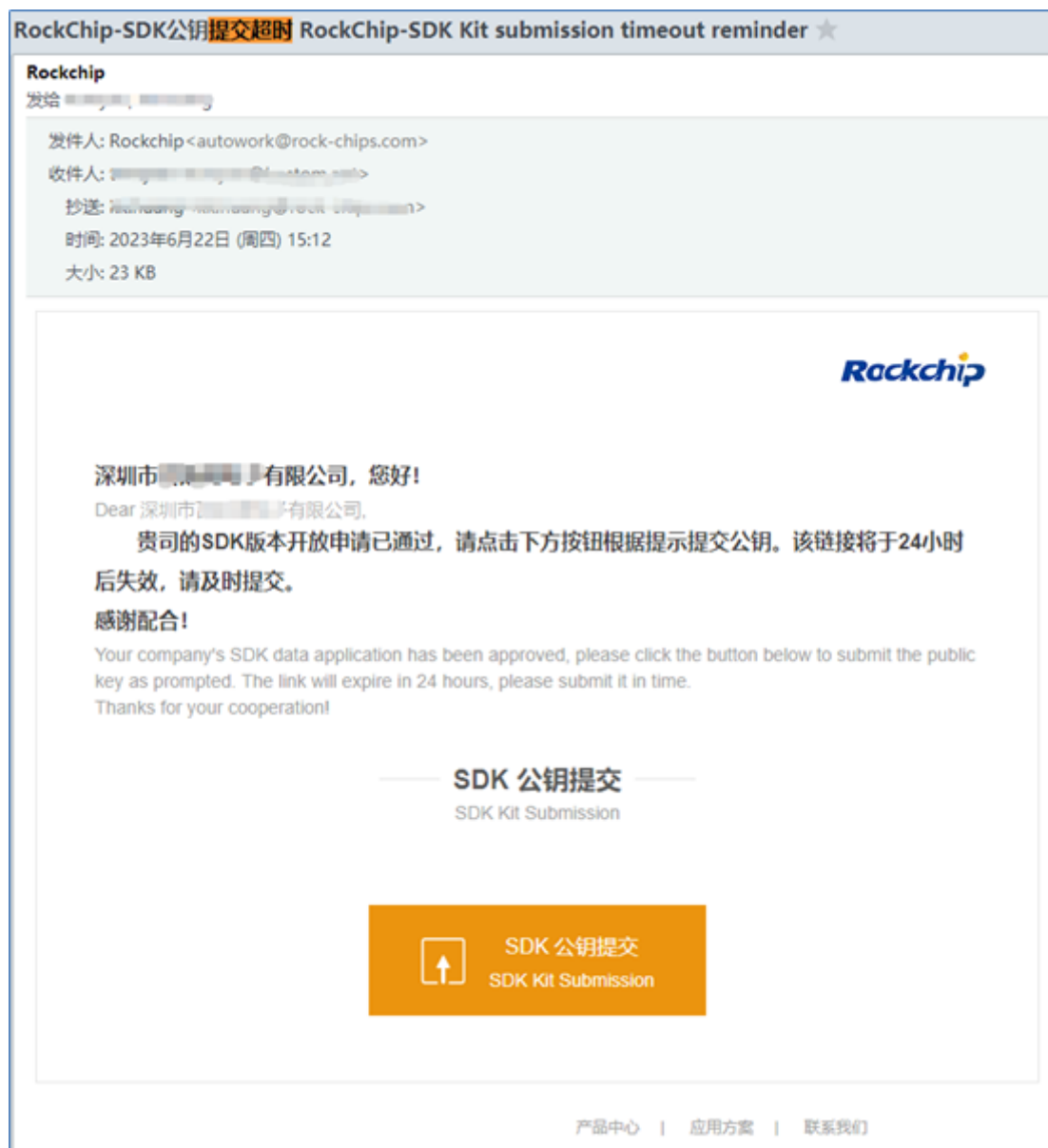


When you click "SDK Kit Submission", the following page will pop up:



Please copy and submit the contents of your company's public key (*.pub) directly, refer to chapter 1.1.5 [Generate a Public Key](#) for details.

The link for submitting a public key is valid for 7 days. When it is timeout, your company will receive an email notification "RockChip-SDK Kit Submission Timeout". It is valid for another 24 hours, after which you need to reapply and activate:




1.2 How to Get Access to the SDK

As the SDK version is constantly updated, the corresponding functions are becoming more and more abundant and the completeness is getting higher and higher. the total code size of the SDK also increases simultaneously. The base package we provide is only the code of primary functions, development tools, development documents and version records of each repository. Some SDK versions have exceeded 100GB. Due to network speed, your download (synchronization) time is unpredictable; At the same time, we also provide the SDK base package, which you can copy and then synchronize, in this way, you will save the time of downloading the entire project code. There are two ways to do this: SDK base package and synchronizing (sync) the code directly with the server to download the code, and then synchronizing (sync) the code after you get the SDK base package.

Emphasis: The base package is not a complete SDK code, must be synchronized with the RockChip server (sync), in order to obtain the corresponding version of the complete code, but also to ensure the overall stability and reliability of the system.

When RockChip's internal process continues to the next step, you will then receive an email notification "RockChip-SDK has been activated" pushed by the system:

发件人 Rockchip <autowork@rock-chips.com>
发送日期 2023年6月8日 10:17
收件人 
主题 RockChip-SDK已开通 RockChip-SDK Ready



接收资料窗口的您

 您好!

Dear 213123,

贵公司申请的SDK版本repo权限已开放,请根据邮件提示进行SDK代码下载。

感谢您的配合!

The SDK repo permission applied by your company has been opened, please download the SDK code according to the email prompt.

Thank you for your cooperation.

本次申请开通SDK Kit列表信息

申请开放的SDK

You can choose one of the following ways to get the SDK.



Gerrit 账号

Gerrit account

 您的gerrit账号

请按附件文档《Rockchip新服务器账号使用手册》获取瑞芯微服务器盗权密码(如果您已经获取过可以跳过这步)。

Please refer to "RockChip New Server Account Password User Manual" to obtain the key to rockchip server (skip this step if you have already obtained it).

SDK代码下载有以下两种方式

There are two options to download SDK code

方式一: repo服务器同步

Method one: Repo server synchronization

请下载附件文档,并根据文档说明完成代码服务器同步操作。

Please download the attached document and complete the code server synchronization according to the document instructions.

方式二: 基础包+repo更新

Method two: Base-package and Repo update

请先下载基础包,然后参考附件文档同步repo服务器更新代码。基础包下载方式有如下三种,您可任选一种:

Please download the base-package first, and then refer to the attached document to synchronize the repo server and update code. There are three ways to download the base-package.

• 选择一, FTP下载(需安装FileZilla工具) •

Ways 1: FTP(Need to install FileZilla tool)

| FTP地址 FTP address | 连接方式 Connection type | 端口号 Port number | FTP账号 FTP account | FTP密码 FTP password |
|----------------------|-------------------------|--------------------|--|---|
| ftp://10.10.10.89 | Ftp | 998 |  |  |

• 选择二, 现场下载 •

Ways 2: On site

不同用户, 可能有区别



现场下载预约

Reservation

• 选择三, 邮寄硬盘下载 •

Ways 3: Post hard disk

请提前邮件沟通资料拷贝事宜, 确认OK后请邮寄USB3.0的移动硬盘, 硬盘寄出后请邮件提供快递单号及回寄信息, 联系方式如下:

Please email us in advance. After confirming, please mail the USB3.0 mobile hard disk. And please provide the courier number and return information by mail. The contact information is as follows:

收件人: 曾雅敏

Attn: Daisy Zeng

邮箱: daisy.zeng@rock-chips.com

Email: daisy.zeng@rock-chips.com

电话: 0755-86690899-339

Mobile: 0755-86690899-339

地址: 深圳市南山区科技中一路万利达大厦21层

Address: 21st Floor, Wanlida Technology Building, Technology Middle One Road, Nanshan District, Shenzhen

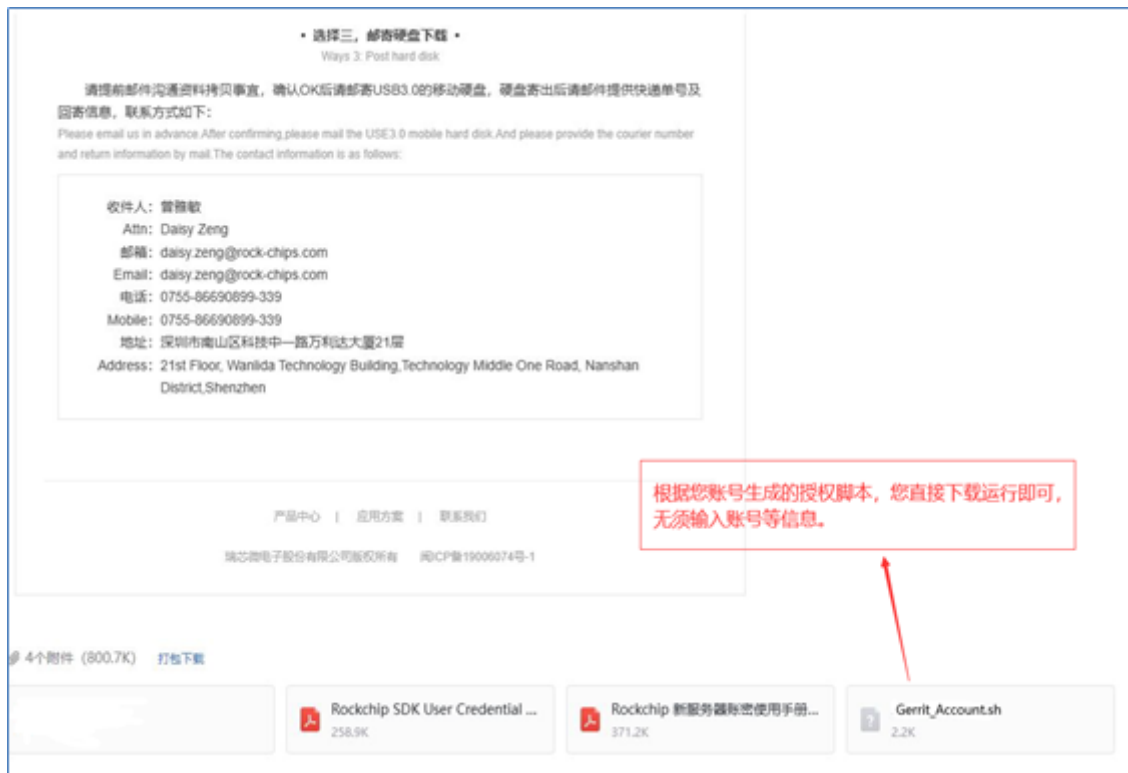
To maintain the security of the code server, we added authorization secondary validation.

1.2.1 Authentication and Authorization Mode 1

The script sent by RockChip email automatically creates a user name and password as follows:

a. Obtain the script

When RockChip-SDK is authorized, the system automatically creates the SDK and sends it to the email address of the data owner. Please keep it properly. Attached to the email is a script file named after your company's Gerrit account. For example, Gerrit_Account.sh corresponds to the name of your key.。



b. Run the script

```
xx@ubuntu:~$ sh Gerrit_Account (the script file named after your Gerrit account).sh
```

Run the script in the current directory without any input. After verifying the key and account, you can obtain the download authorization.

1.2.2 Authentication and Authorization Mode 2

To be compatible with method 1 (1.2.1), you can also manually enter the user and password as follows:

a. Obtain the script

```
xx@ubuntu:~$ git clone https://gerrit.rock-chips.com:8443/repo-release/tools/script
```

b. Run the script

```
xx@ubuntu:~$ sh Generate-Credential.sh
```

Switch to the script directory and run the script, enter your Gerrit account, email address, and private key file name. After verifying the key and account, you can obtain the download authorization.

```
└─ script
└─ Generate-Credential.sh
└─ README.md
```

Note: After you receive the account, ensure that you use the private key corresponding to the public key submitted before to run the script (the permission of the private key file is 600, and the name of the private key file is id_rsa). After binding to the local device, data can be downloaded normally. **New devices require rebinding, the previous device download authorization will be invalid automatically.**

1.2.3 Methods to Provide Base Packages

Here is only a base package, Rockchip has three download methods for you to choose:

a. FTP download

As shown above, the FTP download method is provided, including the information belonging to your company: FTP address, connection method, port number, FTP account and FTP password. Because the FTP download speed is not fixed and if you apply for the Android SDK which is so large, you are advised to use the following two other download methods.

b. Download on-site

The on-site reservation link is valid for 7 days, after which a new application is required. Rockchip provides three offices (Fuzhou, Shenzhen and Shanghai) to copy SDK materials on-site, you can book the offices that is convenient for you. Click on "Live download reservation", the following picture will pop up:

SDK现场下载预约 Reservation

预约信息
customer info

公司名称(Company Name): 福州xxx公司

申请开通的SDK(SDK Apply for): 3399Pro SDK 1808 SDK 3399Pro SDK 3399Pro SDK 3399Pro SDK

联系人(Contact Name) *

请填写联系人 (required)

联系电话(Contact Number) *

请填写联系电话 (required)

email(Contact Email) *

请填写Email (required)

下载地址(Location)

选择下载地点 (required)

▼

 *

请选择地区 (required)

到访日期(Date)

请选择到访日期 (required)

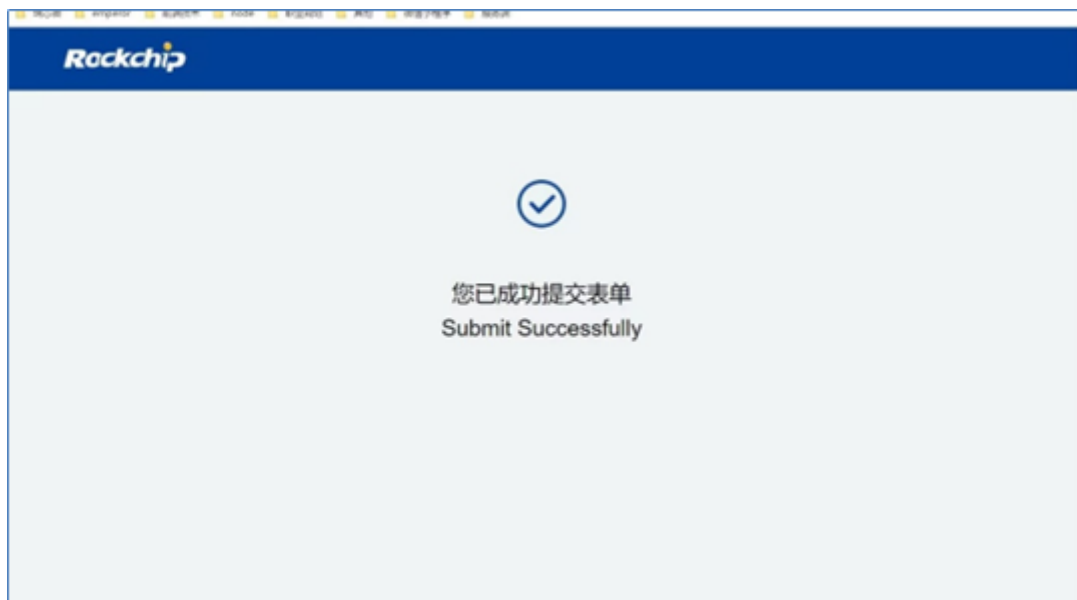
...

 *

请选择到访日期 (required)

提交
Submit

Please fill in the name, telephone number, email address, Rockchip offices (Fuzhou, Shenzhen and Shanghai) and the specific time of your visit according to the prompt above. The successful submission as shown below:



After you successfully make an appointment as shown above, the contact person will receive the email notification "Rockchip-SDK version live download appointment information" pushed by RockChip system, As follows:

Rockchip

发给 lrt, daisy.zeng

发件人: Rockchip <autowork@rock-chips.com>

收件人: wang@rock-chips.com

抄送: daisy.zeng@rock-chips.com

时间: 2023年 5月 26日 (周五) 21:54

大小: 24 KB



宋瑞美, 您好!

尊敬的女士:

您已预约SDK基础包现场下载, 请提前和相关人员邮件沟通资料拷贝事宜, 确认OK后请携带USB3.0的移动硬盘至现场拷贝。

感谢配合!

You have made an appointment to download the SDK base-package on-site. Please communicate with the relevant personnel in advance about copying the data by email. After confirming OK, please bring the USB3.0 hard disk to designated place.

Thanks for your cooperation.

预约信息

Reservation information

| | |
|---|---------------------|
| 申请下载的SDK版本号 Which SDK versions do you want | Rockchip_2023.05.27 |
| 到访时间 Arrival time | 2023-05-27 08:30:00 |
| 联系人 Attn | 宋瑞美 |
| 电话 Tel | 13800000000 |



When you receive the above email notification, please bring a large-capacity portable hard disk or other storage device according to your reservation time.(requiring USB3.0 interface, in order to be compatible with Rockchip host. If you need several different versions of the SDK, this portable storage device has at least 512GB of space, to avoid running out of space.) If there are any changes to your schedule, please inform the corresponding person in charge in the first time, so as not to affect the cooperation between the two parties and the follow-up work of your company.

c. Disk download

Please follow the "Mail hardware method" shown above to send your large capacity portable hard disk or other storage device (requires USB3.0 interface, in order to be compatible with RockChip host. If you need several different SDK versions, leave at least 512GB of space on the portable storage device to avoid running out of space.) After we receive the device, we will send back by SF Express within one working day.

1.2.4 Download Mode Synchronized by the Server

In the "SDK has been opened notification Email" there is the corresponding SDK release instructions, including the synchronous download code method and download (repo) address. Take the following "Rockchip_Android13_SDK_Developer_Guide_EN.pdf" as an example:

Code download

Download address

```
repo init --repo-url https://gerrit.rock-chips.com:8443/repo-release/tools/repo  
-u https://gerrit.rock-chips.com:8443/Android_T/manifests.git -m Android13.xml
```

If you request Express permission, then the download address is as follows:

```
repo init --repo-url https://gerrit.rock-chips.com:8443/repo-release/tools/repo  
-u https://gerrit.rock-chips.com:8443/Android_T/manifests.git -m  
Android13_Express.xml
```

1.3 Update SDK Instructions and Methods

The SDK copied from Rockchip (or downloaded from FTP) is only a base package, and the complete version of this SDK must be obtained through network sync update on this base package. The method and steps of this synchronization are as follows:

1.3.1 Check File Integrity

There may be errors in the large files that you download through FTP or copy on-site, or mail disk copies during the copying process. After you have copied the files to your development environment, verify the integrity of the files by using the following methods. Here, take "rk3399_android7.1_Industry_v1.0.tar.gz" as an example, like other SDKs, the paired md5 value is also saved in a separate file and provided with your *.tar package.

```
xx@ubuntu:~$ md5sum rk3399_android7.1_Industry_v1.0.tar.gz  
57b4443df5decc0193b7930b5f93f8c1 rk3399_android7.1_Industry_v1.0.tar.gz
```

Compared the md5 value "57b4443df5decc0193b7930b5f93f8c1" output after verification through the command md5sum with the md5 value provided by Rockchip, If the value is exactly the same as that provided by Rockchip, it means that the compressed file is complete; otherwise, the compressed file is damaged and needs to be copy or download again.

1.3.2 Backup Public Key

Please properly back up your company's public key to avoid loss and failure to synchronize code with the Rockchip server.

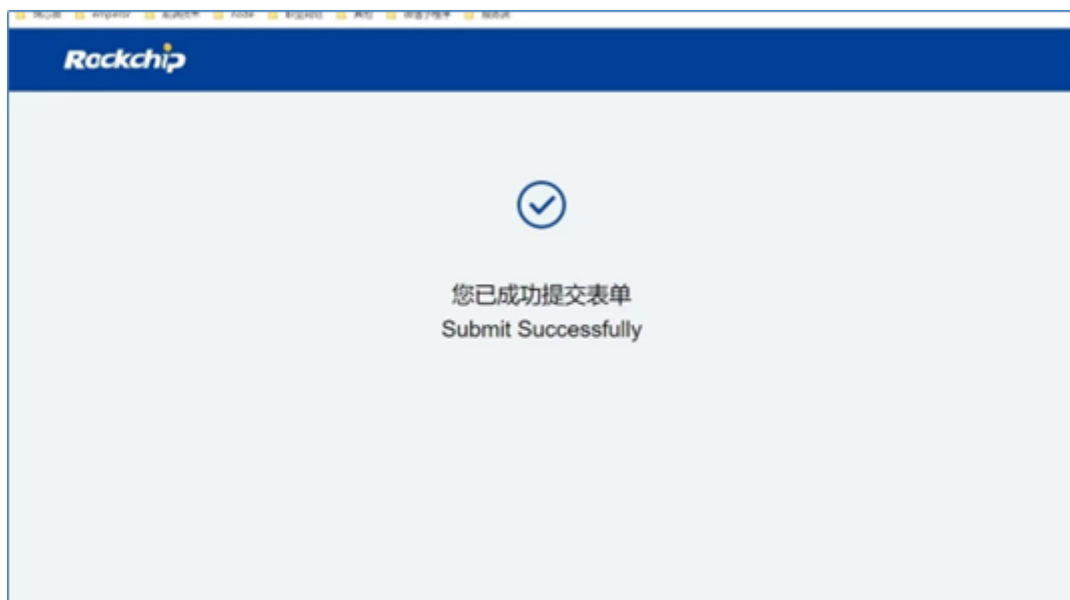
```
xx@ubuntu:~$ tar zcvf id_ras_backup.tag.gz ~/.ssh
```

1.3.3 Change the Public Key

Due to various reasons, you need to change your company's public key, please send an email to the corresponding business of RockChip. After their internal application is approved, The system will send you an email with a public key submission link. As follows:



This link is valid for 7 days, after which you need to reapply. When you receive this notice, you need to submit your new public key as soon as possible. The redirection page for successful submission is as follows:



The public key update process takes effect after it is archived by Rockchip, you will receive an email pushed by the system titled 'RockChip Public Key Update Successfully', indicating that this public key has taken effect, As follows:



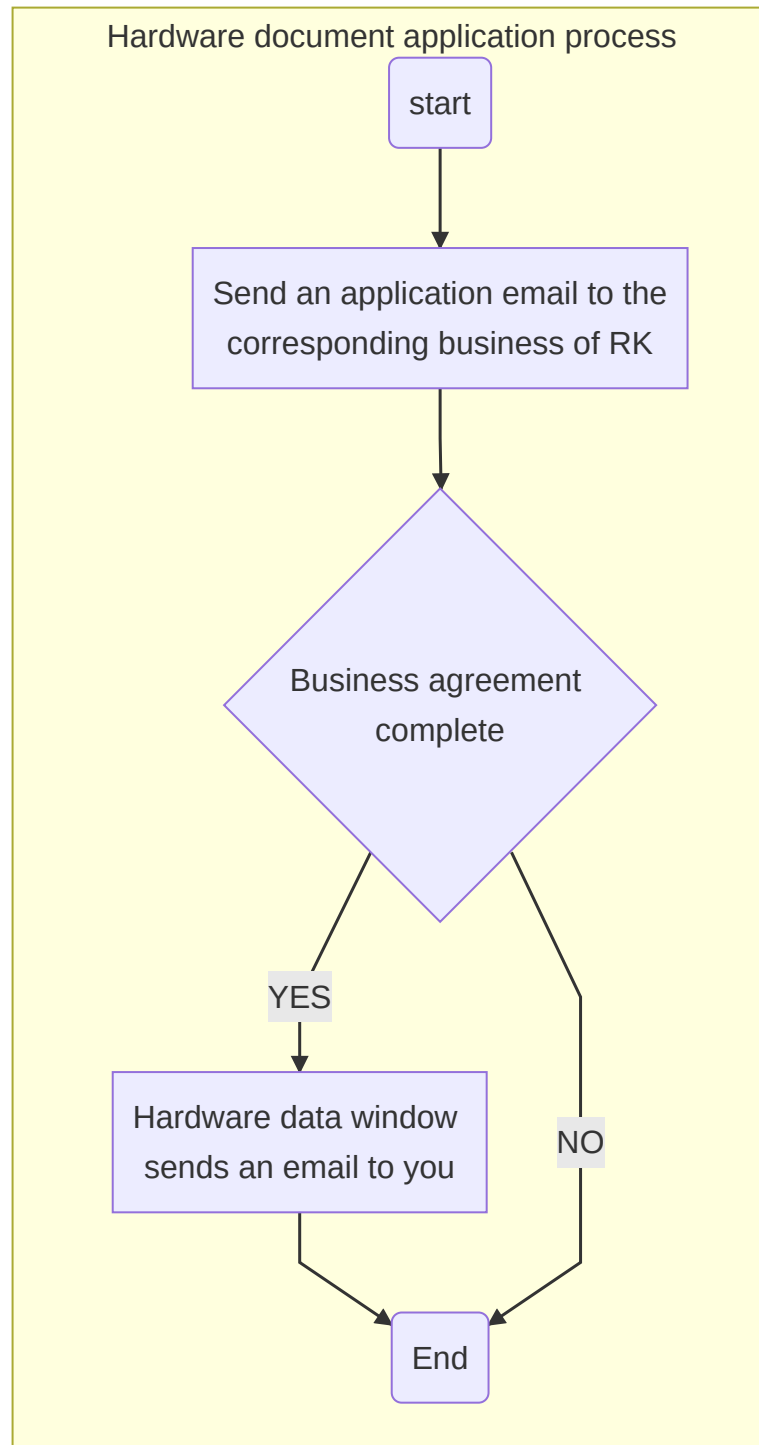
1.3.4 Update the SDK

RockChip's SDK is officially released after passing internal test acceptance standards. Due to the stability and maturity of SDK, it is gradually improved by multiple iterations and updates. You need to keep up to date with the RockChip server and keep your code up to date, reflecting the new features of the platform and the robustness of the system. For the corresponding SDK version, refer to the corresponding SDK release notes (for example, RK3399_ANDROID7.1-TABLET-SDK_V1.00 Release Notes.pdf).

For the synchronization method and troubleshooting of SDK, see Chapter 5 at the end of the document.

1.4 Process and Method of Obtaining Hardware Data

At present, Rockchip hardware data and SDK KIT are sent separately, and the hardware data application process is as follows:



Rockchip hardware data is divided by chip platform, you can apply for one or more platform resources at a time. This data mainly includes platform hardware reference design: power supply scheme, DDR template, hardware design guide and design reference for the main features. You need to pay attention to the following points when designing product hardware:

- a. Power management must make reference to the scheme in the design;
- b. The DDR template must be copied directly from the corresponding template in the reference design and cannot be modified;

- c. Must use the key material list provided by Rockchip (such as: DDR, eMMC, Flash, WiFi/BT, Camera);
- d. It is necessary to maintain the update frequency, and Rockchip hardware data is constantly being optimized.

If you do not wish to follow any of the above, please check with the corresponding business leader of Rockchip at the time of hardware design. Otherwise, Rockchip technology cannot provide guaranteed technical services, which will seriously affect the progress of your project.

You can also query RockChip hardware information updates from: <https://redmine.rock-chips.com/projects/fae/documents> (hardware reference design version list). If the data you get is lower than this version, please contact the Rockchip data window to release the corresponding data in order to improve the development efficiency of the overall project.

2. SDK Version

This chapter mainly introduces the SDK versions of RockChip, including the Rockchip official release of three ways, one is in the Rockchip server, which requires SDK application process; The other is the open source Github server, from which you can download directly and does not require the SDK application process; The last one is also an open source community, ToyBrick, where we provide download of some SDK versions of some platforms, which does not require the SDK application process too.

2.1 Official SDK Version

The following are the Android OS SDK versions and Linux OS SDK versions of official chips released by Rockchip, as well as each version supported product type and current technical support recommendation index:

Note:

- a. For all the SDK version, click here (**List and description of SDK supported versions**) : <https://redmine.rock-chips.com/projects/fae/documents>
- b. Recommendation index is the maintenance popularity of Rockchip's main SDK version. When your project is determined, please refer to this parameter to select the corresponding SDK version;
- c. Android SDK versions of the two industry products are currently under long-term maintenance:
 - RK3399_ANDROID7.1 - Industry - SDK_V1.0
 - RK3288_ANDROID7.1 _tablet - SDK_V1.00 _20170629
- d. Android13 express comes with GMS package. For users who have been certified by Google and have MADA qualification, please apply for express version. The Android13 doesn't come with the GMS package.
- e. For details of S, M, J, K and other chip suffix letters, please see the corresponding chip instructions:
 - S--> Indicates the small-size package version model;*
 - M--> Indicates the model that conforms to the vehicle regulation version;*
 - J--> indicates the model that conforms to the industry regulation version;*
 - K--> Indicates the model that conforms to the wide temperature version.*

| Chip platform | SDK version number | Recommendation index |
|---------------|---|----------------------|
| RK3588(S/M/J) | ROCKCHIP_ANDROID13.0_SDK_RELEASE(express version) | ***** |
| | RK3588_ANDROID12.0_SDK_RELEASE | ** |
| | RK3588_LINUX_EDGE_SDK_RELEASE | ***** |
| | RK3588_LINUX_SDK_RELEASE | ***** |
| | RK3588_IPC_SDK_RELEASE | ***** |
| | RK3588_LINUX_NVR_SDK_Release_V1.0.0_20220304 | ***** |
| RK3568(6/M/J) | ROCKCHIP_ANDROID13.0_SDK_RELEASE(express version) | ***** |
| | RK3568(6)_ANDROID12.0_SDK_RELEASE | ** |
| | RK3568(6)_ANDROID11.0_SDK_RELEASE_V1.0.0_20210106 | * |
| | RK3566_ANDROID11.0_EBOOK_SDK_RELEASE_V1.0.0_20210126 | *** |
| | RK356X_LINUX5.10_SDK_RELEASE | |
| | RK356X_AMP_SDK_RELEASE | ***** |
| | RK356X_STANDALONE_SDK_RELEASE_V1.0.0_20210713 | |
| | RK356X_NVR_Linux_SDK_V1.4.0_20220611 | |
| RK3399(K) | ROCKCHIP_ANDROID13.0_SDK_RELEASE(express version) | ***** |
| | RK3399_ANDROID12.0_SDK_RELEASE | ** |
| | RK3399_ANDROID11.0_SDK_RELEASE_V1.0.0_20210106 | ** |
| | Rockchip_Android10.0_SDK_Release_20191211 | * |
| | RK3399_Android9.0_SDK_V1.0_20190104 | * |
| | RK3399_Android8.1_SDK_V1.00_20180517 | * |
| | RK3399_ANDROID7.1-Industry-SDK_V1.0 | * |
| | RK3399_ANDROID7.1-BOX-SDK_V1.00_20170414(stop updating) | * |
| | RK3399_ANDROID7.1-TABLET-SDK_V1.00(stop updating) | * |
| | RK3399_ANDROID6.0-VR-TABLET-SDK_V1.00(stop updating) | * |
| | RK3399_ANDROID6.0-BOX-SDK_V1.00_20160809(stop updating) | * |
| | RK3399_LINUX5.10_SDK_RELEASE | |
| | | |
| RK3399PRO | Rk3399Pro_Android9.0_SDK_V1.00_20190806 | ***** |
| | RK3399PRO_LINUX_SDK_V1.4_20201203 | |
| RK1808 | RK1808_Linux_V1.0.0_20181227 | *** |
| RK3288(W) | ROCKCHIP_ANDROID13.0_SDK_RELEASE(express version) | ***** |
| | RK3288W_ANDROID12.0_SDK_RELEASE | ** |
| | RK3288(W_Version)_ANDROID11.0_SDK_RELEASE | * |
| | RK3288_ANDROID10.0_SDK_Release | * |
| | RK3288(W-Version)_Android9.0_SDK_V1.0_20190410 | * |
| | RK3288W_ANDROID8.1_SDK_V1.0_20180508 | * |
| | RK3288_ANDROID7.1_TABLET-SDK_V1.00_20170629 | * |

| Chip platform | SDK version number | Recommendation index |
|-----------------------------------|--|----------------------|
| | RK3288_UAV-SDK_V1.00_20160330(stop updating) | * |
| | RK3288_ANDROID6.0-MID-SDK_V1.00_20160301(stop updating) | * |
| | RK3288_ANDROID5.1-RBOX-SDK_V1.00_20150722(stop updating) | * |
| | RK3288_ANDROID5.1-SDK_V1.00_20150515(stop updating) | * |
| | RK3288_R-BOX_ANDROID4.4.2-SDK_V1.0.0(stop updating) | * |
| | RK3288_LINUX_SDK_V2.3_20201203 | |
| RK3368(H) | RK3368_ANDROID10.0_SDK_Release | **** |
| | RK3368_ANDROID9.0_SDK_V1.0_20190411 | ** |
| | RK3368_ANDROID9.0_BOX_SDK_V1.00_20190828 | ** |
| | RK3368H&RK3368_ANDROID8.1-MID-SDK_V1.00_20180123 | * |
| | RK3368H&RK3368_Android7.1_SDK_20170401 | * |
| | RK3368_ANDROID7.1-BOX-SDK_V1.00_20170825 | * |
| | RK3368_ANDROID6.0-MID-SDK_V1.00_20160122(stop updating) | * |
| | RK3368_ANDROID5.1-SDK_V1.00_20150415(stop updating) | * |
| RK3188 | RK3188_ANDROID5.1-MID-SDK_V1.00_20150730(stop updating) | * |
| | RK3188&RK3066_R-BOX_ANDROID4.4.2-SDK_V1.0.0_140318 | * |
| RK3229 | RK3229_ANDROID10.0_BOX_SDK_V1.0_20200109 | **** |
| | RK3229_ANDROID9.0_BOX_SDK_V1.0_2019012 | * |
| | RK3229_ANDROID8.1-BOX-SDK_V1.0_20180423 | * |
| | RK3229_ANDROID7.1_BOX-SDK_V1.00_20170831 | * |
| | RK3229_ANDROID6.0-RBOX-SDK_V1.00_20160831 | * |
| | RK3229_ANDROID5.1-RBOX-SDK_V1.00_20160318(stop updating) | * |
| | RK3229_ANDROID4.4-SDK_V1.00_20151214(stop updating) | * |
| | rk3229_wireless_dongle_v1.00_20161130 | *** |
| RK3528(J/A) | RK3528_ANDROID9.0-Box_ALPHA_V0.0.1_20221202 | ***** |
| RK3562 | ROCKCHIP_ANDROID13.0_SDK_RELEASE (express version) | ***** |
| | RK3562_LINUX_SDK_ALPHA | *** |
| RK3328 | RK3328_ANDROID12.0_SDK_RELEASE | **** |
| | RK3328_ANDROID11.0_BOX_SDK_V1.0.1_20201030 | *** |
| | RK3328_ANDROID10.0-BOX_V1.0_20191125 | * |
| | RK3328_ANDROID9.0-BOX-SDK_V1.0_20181206 | * |
| | RK3328_ANDROID8.1-BOX-SDK_V1.0_20180319 | * |
| | RK3328_ANDROID7.1_BOX-SDK_v1.00_20170223 | * |
| | rk3328_linux_v1.00_20170419 | |
| RK3326 (PX30) (RK3358(M/J)) | ROCKCHIP_ANDROID13.0_SDK_RELEASE (express version) | **** |

| Chip platform | SDK version number | Recommendation index |
|------------------|--|----------------------|
| | RK3326&PX30_ANDROID12.0_SDK_RELEASE | *** |
| | RK3326&PX30_ANDROID11.0_SDK_RELEASE | * |
| | Rockchip_Android10.0_SDK_Release_20191211 | * |
| | RK3326_Android_Pie_release_2080925 | * |
| | RK3326&PX30_ANDROID8.1-TABLET-SDK_V1.0.0_20180505 | * |
| | PX30_LINUX5.10_SDK_RELEASE | |
| | RK3326_LINUX5.10_SDK_RELEASE | |
| | PX30_LINUX5.10_SDK_RELEASE | |
| | RK3358_LINUX5.10_SDK_RELEASE | **** |
| RK3308(J) | RK3308_LINUX5.10_SDK_RELEASE | ***** |
| | RK3308_LINUX_SDK_V1.00_20180510 | * |
| PX5 | PX5_Android_8.0_release_20180726 | ** |
| | PX5_Android6.0-SDK_V0.1(stop updating) | * |
| RKPX3 | RKPX3_ANDROID7.1-SDK_V0.1_20170303 | * |
| PX3SE | PX3SE_LINUX_SDK_V0.2 | *** |
| | PX3SE_ANDROID7.1_SDK_V1.00_20170719 | *** |
| RK3128(H) | RK3128H_ANDROID8.1-BOX-SDK_V1.0_20180601 | ***** |
| | RK3128H_ANDROID4.4.4_BOX_SDK_V1.00_20180313 | * |
| | RK3128_ANDROID7.1-BOX-SDK_V1.00_20170823 | |
| | RK3128_ANDROID4.4.4-RBOX-SDK_CMCC_V1.0_20150317 | * |
| | RK3128_ANDROID4.4.4-RBOX_SDK_V1.0_20141010(stop updating)) | * |
| | RK3128_ANDROID4.4.4_RBOX_ALIYUNOS_V1.8.0(stop updating) | * |
| | RK312X_LINUX_SDK_V1.0.0_20190719 | *** |
| RK3126(C) | Rockchip_Android10.0_SDK_Release_20191211 | **** |
| | RK3126C_ANDROID9.0_SDK_V1.0_20190103 | *** |
| | RK3126C_ANDROID8.1-SDK_V1.00_20180105 | * |
| | RK312X_ANDROID7.1-TABLET-SDK_V1.00_20170519 | * |
| | RK312X_ANDROID6.0-SDK_V1.00_20151230(stop updating) | * |
| | RK312X_ANDROID5.1-SDK_V1.00_20150423(stop updating) | * |
| | RK312X_ANDROID4.4.4-SDK_V1.0_20140922(stop updating) | * |
| | RK312X_LINUX5.10_SDK_RELEASE | |
| RK3036 | rk3036_wireless_dongle_v1.00_20161130 | |
| | K3036_LINUX5.10_SDK_RELEASE | |
| RK3066 RK3188 | RK3188&RK3066_R-BOX_ANDROID4.4.2-SDK_V1.0.0_140318 | ** |
| RK3066 | RK3066_ANDROID4.4.2-SDK_V1.00_2014.02.12 | ** |

| Chip platform | SDK version number | Recommendation index |
|-------------------|--|----------------------|
| RV1106(3) | RV1106_RV1103_IPC_LINUX_SDK | **** |
| | RV1106_RV1103_Linux_Battery_IPC_Doorbell-电池IPC和门铃 | **** |
| | RV1106_RV1103_SMART_DOOR_LINUX_SDK | |
| | RV1106_RV1103_SMART_USB_CAMERA_LINUX_SDK_BETA_V0.1.0_2022050 | *** |
| | RV1103_SCANNER_LINUX_SDK_V0.0.1_20220915 | |
| | RV1106_RV1103_Linux_CVR_SDK-CVR | |
| RV1126(09/K) | RV1126_RV1109_LINUX_SDK_V2.1.0_20210512 | **** |
| | UVC_rv1126_rv1109_linux_ai_camera_v1.6.2_20201204 | * |
| | RV1126_RV1109_LINUX_AI_CAMERA_SDK | *** |
| RV(K)1108 | RV1108_LINUX_SDK_V2.1_20190329 | *** |
| | RV1108_CVR_V1.4_20180604 | * |
| | RV110X_LINUX_IPC_SDK_V1.2_20170607 | * |
| RKNanoD | RKNANOD_WIRELESS_AUDIO_SDK_V1.6_20161114 | *** |
| | RKNanoD_Wireless_Audio_SDK_V1.2 | * |
| | RKNanoD_MP3_SDK_V1.1_20160516 | * |
| RK2928 | RK2928_wireless_hdmi_dongle-SDK_V2.0.0 | **** |
| RK292X | RK292X_ANDROID4.4.2-SDK_V1.00_20140302(stop updating) | * |
| RK3168 | RK3168_ANDROID4.4.2-SDK_V1.10_20140103(stop updating) | * |
| RK3026 RK3028A | RK3026/3028A_KitKat_ANDROID4.4.2-SDK_V1.00_20131217 (stop updating) | * |
| SOFIA3GR | SOFIA3GR_Android6.0-SDK_20160428 | * |
| | SOFIA3GR_ANDROID5.1-SDK_20150409 | * |
| XMM6321 | XMM6321_Phone_Android4.4-SDK(stop updating) | * |
| | XMM6321_Watch_Android4.4-SDK_20151015(stop updating) | * |
| RK2206 | RK2206_FreeRTOS_SDK_Release_V1.0.0_20200115 | * |
| RK2106 | RK2106_FreeRTOS_BETA_V0.1_20181229 | * |
| RK625 | RK625_RT-Thread_SDK_Release_V1.0.0_20210531 | * |
| RK628 | RK628(the third party) | * |

2.2 Open Source File

Comprehensive information about our open-source chips, including datasheets, technical reference manuals (TRMs), hardware design references and more, are available from the following link: https://opensource.rock-chips.com/wiki_Main_Page and now there are RK3399PRO, RK3399, RK3288, RK1808, RK3328 and PX30 platforms.

2.3 Open Source Community

RockChip officially launched the AI development ToyBrick open source community, the platform aims to provide an efficient, convenient and stable development environment, so that developers can quickly start AI application development, accelerate the development process of AI industry products, and improve the industry application ecology. Here are the contents of RK3399PRO, RK1808, RK3568 and other platforms, including the corresponding open source board purchase method, SDK (Android OS and Linux OS) download, hardware data, software development documents and tools, etc. For details, see the official link address: <http://t.rock-chips.com/forum.php>.

Problems about **ToyBrick** open source development boards are need to submit to the open source community (<http://t.rock-chips.com/forum.php>) to solve, not in RockChip Bug system (<https://redmine.rock-chips.com/>). If you have a special situation, please contact the corresponding business window coordination at RockChip.

2.4 Patch Release

Rockchip officially launched platform patch release link: https://redmine.rock-chips.com/projects/rockchip_patch/issues. Whether to add the corresponding patch is decided based on the specific situation of the patch and your project.

3. Documentation and Tools

The documents and tools that Rockchip official provides to customers are released to you together with the corresponding SDK. Now there are mainly two sets of SDK versions for Android OS and Linux OS, and the paths of documents and tools stored respectively are a little different.

3.1 Android SDK

The following is the directory for storing the Android OS SDK documents and tools:

- *The path to save the documents is: RKDocs folder in the root directory of SDK.*
- *Tools are stored in the RKTools folder in the root directory of the SDK.*

3.2 Linux SDK

The following is the path for storing the Linux OS SDK documents and tools:

- *The documents are stored in the docs folder under the SDK root directory.*
- *The tools are stored in the Tools folder in the root directory of the SDK.*

Note :

Our documents and tools are updated synchronously to the corresponding SDK version along with the code update. Here, different SDK versions of tools and documents are inconsistent. Therefore, you must use the corresponding SDK tools in the development process, if the version of the code and the tool is not one-to-one, there may be firmware download failure or system startup failure and other abnormal issues.

4. Complaints and Suggestions

If your company has trouble with the process or communication, please send an email to the Rockchip technical window (and copy the corresponding business interface person of Rockchip) or phone for confirmation.

| Name | Email | Tel. |
|--------|--|---------------|
| FAE | fae@rock-chips.com | 0755-86690899 |
| sw.fae | sw.fae@rock-chips.com | 0755-86690899 |
| hw.fae | hw.fae@rock-chips.com | 0755-86690899 |

Note:

If you need Rockchip platform software materials, such as software documentation, platform tools, patch or source code, please send email to sw.fae@rock-chips.com and copy to the corresponding business person of Rockchip.

If you need chip datasheet, hardware reference design, EVB board schematic diagram, PCB diagram and other hardware materials of Rockchip platform, please send email to hw.fae@rock-chips.com to obtain, and copy the corresponding Rockchip business person.

5. Q&A

Here is a brief list of the problems you may encounter when applying for or using the Rockchip SDK.

5.1 SDK Management

Please keep and manage the Rockchip SDK properly. Rockchip will not provide repeated information. If any data is lost, you need to apply to the business window corresponding to Rockchip.

5.2 SDK Code Update

5.2.1 SDK Synchronization

Each base package has to apply for code synchronization rights separately, otherwise the Repo cannot be synchronized to the Rockchip server to update the code. For synchronization methods, refer to the corresponding SDK release notes (provided with the base package to customers).

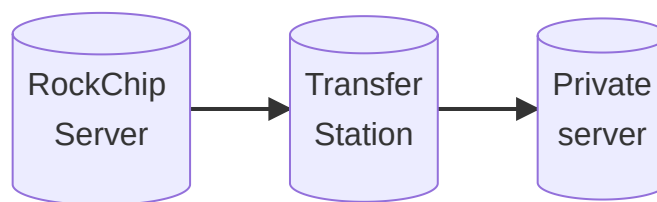
5.2.2 SDK Applications for Multiple Platforms

Rockchip SDK versions for different chip platforms need to be applied to the corresponding business side separately. When your company has obtained the SDK of RK3288, and now the new project needs the SDK of RK3399, you need to contact the corresponding business side of Rockchip, and the business side will assist you in applying. The technical department can only open the information to your company after the approval of the process.

5.3 Version Controller

Rockchip released SDK code management in Google's way repo, do not recommend you delete the SDK repo and git version records. This will result in additional work for subsequent SDK updates and Rockchip technical support.

Due to some historical reasons, to delete the SDK version record, create a separate git or svn version controller internal management development, you can refer to the following methods.



Two sets of codes need to be maintained: one for transfer station and the other for development. The function of this transfer station is to synchronize the code with the Rockchip server, and move the difference part of the code to the server; This is also a reference to check the code version against Rockchip. The role of the server can be personalized according to usage habits. There are two advantages:

- Rockchip, the original manufacturer is cooperating to deal with the problem, and can confirm the specific version information of the code clearly;
- Solve the problem that the server you may be developing cannot connect to the external network (unable to synchronize the code with the Rockchip server), and move the updated content of the Rockchip server.

5.4 SDK Synchronization Exception Processing

5.4.1 SDK Sync Confirmation

Before synchronizing the code, you need to make the following confirmation:

- Ensure that the `~/.ssh/` directory contains the key files of `id_rsa` (private key), `id_rsa.pub` (public key), and the `known_hosts` file is automatically generated when `ssh` is used. Run the following command to view the file:

```
xx@ubuntu:~$ ls -l ~/.ssh/
-rw----- 1 xx xx 1675 Apr 9 08:40 id_rsa
-rw-r--r-- 1 xx xx 400 Apr 9 08:40 id_rsa.pub
-rw-r--r-- 1 xx xx 2220 Apr 9 08:40 known_hosts
```

- Ensure that multiple keys cannot be stored in the `~/.ssh/` directory. If multiple keys need to be managed, use the `key-chain` to manage keys according to the SDK release instructions.

c. Ensure that the permission of file `id_rsa` must be 600 (-rw-----). If it is not, run the following command to change the permission:

```
xx@ubuntu:~$ chmod 600 ~/.ssh/id_rsa
```

d. Run the following command to check whether the network ping succeeds without packet loss:

```
xx@ubuntu:~$ ping gerit.rock-chips.com
PING gerit.rockchip.com.cn (58.22.7.114) 56(84) bytes of data.
64 bytes from 58.22.7.114 (58.22.7.114): icmp_seq=1 ttl=243 time=55.1 ms
64 bytes from 58.22.7.114 (58.22.7.114): icmp_seq=2 ttl=243 time=53.3 ms
64 bytes from 58.22.7.114 (58.22.7.114): icmp_seq=3 ttl=243 time=51.9 ms
--- gerit.rockchip.com.cn ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 51.916/53.465/55.171/1.346 ms
```

e. Check whether the key matches: To check whether `id_rsa.pub` and `id_rsa` match, use the following method:

```
xx@ubuntu:~$ ssh-keygen -y -f id_rsa > id_rsa.pub.tobecompared
```

Then compare `id_rsa.pub.tobecompared` to `id_rsa.pub` to see if the content are the same (except for the mailbox behind). If they are different, the public key and private key are not the same key. You need to synchronize the code using the key corresponding to the public key provided to RK when applying for SDK permissions.

f. Check whether the ssh command is connected: Obtain the SDK download address from the SDK release document.

If the command contains "repo init --repo-url <https://gerit.rock-chips.com>", run the following ssh command:

```
xx@ubuntu:~$ ssh -vT 用户名@gerit.rock-chips.com -p 8222
```

The following test command:

```
xx@ubuntu:~$ ssh -vT xxx@gerit.rock-chips.com -p 8222
OpenSSH_7.4p1, OpenSSL 1.0.2k-fips 26 Jan 2017
debug1: Reading configuration data /home/gerit/.ssh/config
debug1: /home/gerit/.ssh/config line 11: Applying options for gerit.rock-chips.com
debug1: Reading configuration data /etc/ssh/ssh_config
debug1: /etc/ssh/ssh_config line 58: Applying options for *
debug1: Connecting to gerit.rock-chips.com [***] port 8222.
debug1: Connection established.
debug1: key_load_public: No such file or directory
debug1: identity file /home/gerit/.ssh/id_rsa type -1
debug1: key_load_public: No such file or directory
debug1: identity file /home/gerit/.ssh/id_rsa-cert type -1
```



```
debug1: Enabling compatibility mode for protocol 2.0
debug1: Local version string SSH-2.0-openssh_7.4
debug1: Remote protocol version 2.0, remote software version
GerritCodeReview_3.3.3(APACHE-SSHD-2.4.0)
debug1: no match: GerritcodeReview_3.3.3 (APACHE-SSHD-2.4.0)
debug1: Authenticating to gerrit.rock-chips.com:8222 as 'xxx'
debug1: SSH2_MSG_KEXINIT sent
debug1: SSH2_MSG_KEXINIT received
debug1: kex: algorithm: ecdh-sha2-nistp256
debug1: kex: host key algorithm: ecdsa-sha2-nistp256 debug1: kex: server->client
cipher: aes128-ctr MAC: hmac-sha2-256-etm@openssh.com compression: none
debug1: kex: client->server cipher: aes128-ctr MAC: hmac-sha2-256-etm@openssh.com
compression: none
debug1: kex: ecdh-sha2-nistp256 need=32 dh_need=32
debug1: kex: ecdh-sha2-nistp256 need=32 dh_need=32
debug1 sending SSH2_MSG_KEX_ECDH_INIT
debug1: expecting SSH2_MSG_KEX_ECDH_REPLY
debug1: Server host key: ecdsa-sha2-nistp256
SHA256:8u0SKaXfKdC85Ne/WdXu7eg+Z/wTtaNyvAKl1Z0h10
debug1: Host '[gerrit.rock-chips.com]:8222' is known and matches the ECDSA host
key.
debug1: Found key in /home/gerrit/.ssh/known_hosts:18
debug1: rekey after 4294967296 blocks
debug1: SSH2_MSG_NEWKEYS sent
debug1: expecting SSH2_MSG_NEWKEYS
debug1: SSH2_MSG_NEWKEYS received
debug1: rekey after 4294967296 blocks
debug1: SSH2_MSG_SERVICE_ACCEPT received
debug1: Authentications that can continue: publickey
debug1: Next authentication method: publickey
debug1: Trying private key:/home/gerrit.ssh/id_rsa
debug1: Authentication **succeeded** (publickey).
Authenticated to gerrit.rock-chips.com_([xxxx]:8222).debug1: channel e: new
[client-session]
debug1: Entering interactive session.
debug1: pledge: network debug1: Sending environment.
debug1: Sending env LANG = en_us.UTF-8
```

****welcome to Gerrit code Review****

Hi xxx, you have **successfully connected** over SSH.
Unfortunately, interactive shells are disabled.
To clone a hosted Git repository, use:

```
git clone ssh: / /xxx@gerrit.rock-chips.com:29418/REPOSITORY_NAME.git
```

```
debug1: channel 0: free: client-session, nchannels 1
Connection to gerrit.rock-chips.com closed by remote host.
Transferred: sent 2484, received 1904 bytes, in 50.0 seconds
Bytes per second: sent 49.6, received 38.0
debug1: Exit status_-l
xx@ubuntu:~$.
```

When you run the ssh command, if “Are you sure you want to continue connecting (yes/no)?” appears, please enter "yes" and press enter. After the test command is executed, if **successfully connected** is displayed, ssh is connected. If not, there may be a problem with the PC (or server) environment, you can change the PC (or server) to verify it. Notice: when a VM uses a bridged network, ssh may fail.

g. Confirm the ssh/config configuration

```
xx@ubuntu:~$ cat ~/.ssh/config
Host gerrit.rock-chips.com
  HostName gerrit.rock-chips.com
  User **User Name**
  Port 8222
  IdentityFile ~/.ssh/id_rsa
  PreferredAuthentications publickey
  StrictHostKeyChecking no
  UserKnownHostsFile ~/.ssh/known_hosts
  PubKeyAcceptedKeyTypes +ssh-rsa
```

If there is no config file in your .ssh/ directory, you need to manually create a config file and copy the above contents, paying attention to the user name, related variables, and permissions. The permission must be 644.

```
xx@ubuntu:~$ ls -l ~/.ssh/config
-rw-r--r-- 1 xx xx 220 Nov 28 18:43 config
```

After confirming the above steps, synchronize the code again according to the operation method in the SDK release instructions.

5.4.2 SDK Synchronization Error and Solution

We followed up customer feedback and summarized the following common errors and solutions:

a. url problem: contains log information as follows:

```
ssh: connect to host 10.10.10.211 port 22: Connection timed out
ssh: connect to host 10.10.10.211 port 22: Connection timed out
fatal: Could not read from remote repository.
Please make sure you have the correct access rights
and the repository exists.
```

Solution: changes .repo/manifests/.git/config files, as follows:

```
xx@ubuntu:~$ vi .repo/manifests/.git/config
url = https://gerrit.rock-chips.com:8443/linux/rk/platform/manifests
```

Modify the.repo/repo/.git/config file as follows:

```
xx @ubuntu:~$ vi.repo/repo/.git/config
url = https://gerrit.rock-chips.com:8443/repo-release/tools/repo
```

b. When the key is generated, the password is set to contains the following log information:

```
Enter passphrase for key '/home/junyikeji/.ssh/id_rsa':
```

Solution: Use key-chain management according to the release instructions or reset the private key password to empty:

```
xx@ubuntu:~$ ssh-keygen -f ~/.ssh/id_rsa -p
```

c. SDK permission problem: contains the following log information:

```
FATAL: R any phoenix/rk3368/box/6.0/rk/platform/manifest shenk DENIED
by fallthru
```

Solution: Apply for the SDK permission.

d. git configuration error: contains the following log information:

```
Please tell me who you are.
git config --global user.email "you@example.com"
git config --global user.name "Your Name"
to set your account's default identity.
```

Solution: Create file vi ~/.gitconfig with the following contents:

```
xx@ubuntu:~$ vi ~/.gitconfig
[color]
•      ui = true
[user]
•      name = xxx(fill in your name)
•      email = yyy (fill in your email)
```

e. During synchronization, a git repository error message is generated, which contains the following log information:

```

From ssh://www.rockchip.com.cn/repo/android/RKTools
[new branch] android-5.1 -> rk/android-5.1
[new branch] remotes/rk/rk3288/mid/android-5.1 ->
rk/remotes/rk/rk3288/mid/android-5.1
[new branch] rk3036/wireless_dongle/5.1/develop ->
rk/rk3036/wireless_dongle/5.1/develop
error: 'refs/remotes/rk/rk312x' exists; cannot create
'refs/remotes/rk/rk312x/mid/android-5.1'
! [new branch] rk312x/mid/android-5.1 -> rk/rk312x/mid/android-5.1 (unable to
update local ref)
error: unable to resolve reference refs/remotes/rk/rk322x/box/android-5.1: Not a
directory
! [new branch] rk322x/box/android-5.1 -> rk/rk322x/box/android-5.1 (unable to
update local ref)
error: 'refs/remotes/rk/rk3288' exists; cannot create
'refs/remotes/rk/rk3288/mid/android-5.1'

```

Solution: Delete the corresponding sub-repository directory, for example, the RKTools directory in the above figure, and then synchronize the directory.

```

xx@ubuntu:~$ rm -rf RKTools
xx@ubuntu:~$ .repo/repo/repo sync

```

f. Language settings error message: Contains the following log information:

```

projects: 50% (235/469) perl: warning: Setting locale failed.
perl: warning: Please check that your locale settings:
LANGUAGE = (unset),
LC_ALL = (unset),
LC_PAPER = "zh_CN.UTF-8",
LC_ADDRESS = "zh_CN.UTF-8",
LC_MONETARY = "zh_CN.UTF-8",
LC_NUMERIC = "zh_CN.UTF-8",
LC_TELEPHONE = "zh_CN.UTF-8",
LC_IDENTIFICATION = "zh_CN.UTF-8",
LC_MEASUREMENT = "zh_CN.UTF-8",
LC_TIME = "zh_CN.UTF-8",
LC_NAME = "zh_CN.UTF-8",
LANG = "en_US.UTF-8"
are supported and installed on your system.
perl: warning: Falling back to the standard locale ("C").

```

Solution: ~/.bashrc added to the end of the file

```

xx@ubuntu:~$ vi ~/.bashrc
export LC_ALL=C

```

Save and execute:

```
xx@ubuntu:~$ source ~/.bashrc
```

g. GitError error message: Contains log information, as follows

```
GitError: --force-sync not enabled; cannot overwrite a local work tree. If you're comfortable with the possibility of losing the work tree's git metadata, use `repo sync --force-sync frameworks/native` to proceed.
```

Solution: Add the suffix -c --force-sync

```
xx@ubuntu:~$ .repo/repo/repo sync -c --force-sync
```

h. Fetch errors displays an error message containing log information as follows:

```
Fetching projects: 99% (477/481) Fetching projectplatform/external/libusb-compat
Fetching project platform/external/libseccomp-helper
error: Cannot fetch android/rk/u-boot
```

Solution: Sync again.

```
xx@ubuntu:~$ rm -rf .repo/projects/u-boot.git
xx@ubuntu:~$ .repo/repo/repo sync -c --force-sync
```

i. Error message when using sudo: No permission

```
xx@ubuntu:~$ sudo .repo/repo/repo sync -c
git@www.rockchip.com.cn: Permission denied (publickey).
manifests:
git@www.rockchip.com.cn: Permission denied (publickey).
fatal: could not read from remote repository.
Please make sure you have the correct access rights
and the repository exists.
Caborted by user
```

Solution: Remove sudo and synchronize again.

```
xx@ubuntu:~$ .repo/repo/repo sync -c
```

If you encounter any problem other than the above when synchronizing code, please submit the problem to RK official Bug system (<https://redmine.rock-chips.com/>), Rockchip will cooperate with you to solve it. If it is your network reason, and it should be resolved by yourself.