# Rockchip Debian ISO安装指南

文档标识: RK-KF-YF-936

发布版本: V1.0.0

日期: 2022-05-18

文件密级:□绝密 □秘密 □内部资料 ■公开

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### 前言

### 概述

此文将介绍UEFI启动Grub安装Debian ISO的过程,文中使用到的ISO基于官方debian替换kernel,仅用于演示系统安装。

### 读者对象

本文档(本指南)主要适用于以下工程师:

技术支持工程师

软件开发工程师

### 修订记录

日期	作者	版本	修改说明
2021-05-18	Chris Zhong	V1.0.0	初始版本

### Rockchip Debian ISO安装指南

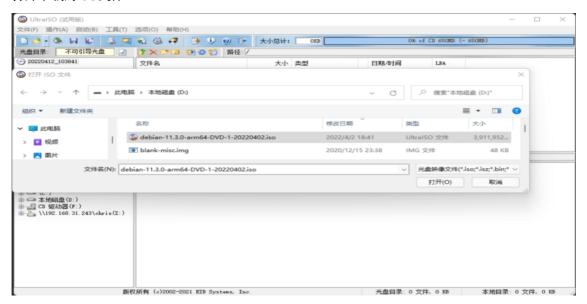
- 1. 启动盘制作
- 2. 烧录UEFI
- 3. 系统安装
- 4. 启动参数修改

# 1. 启动盘制作

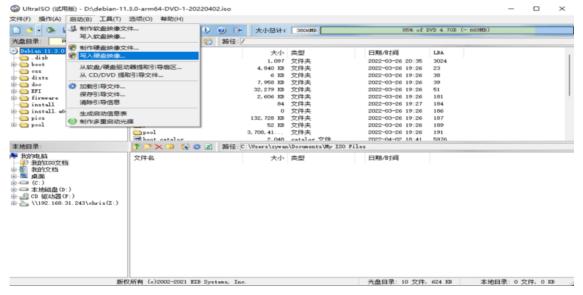
下载RK3588 Debian ISO文件:

使用U盘启动盘制作工具制作一个安装盘,这里以UltraISO为例展示系统盘制作的过程:

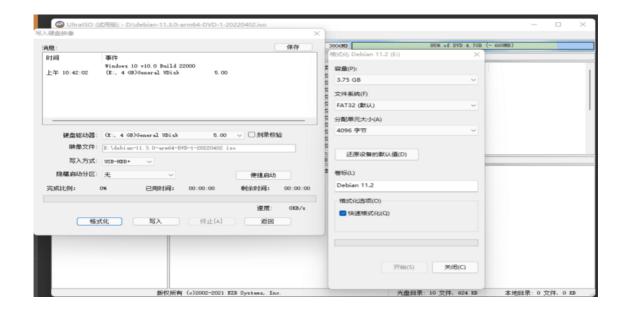
• 打开下载的ISO文件:



• 选择"启动"->"写入启动硬盘映像"



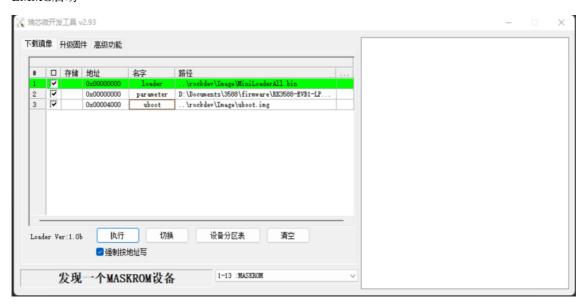
• 格式化,写入



# 2. 烧录UEFI

EMMC启动板子和SPI Nor Flash启动板子的烧录有所不同:

• EMMC启动



EMMC启动的板子需要有一个parameter文件,因此至少需要烧录3个文件:

```
u-boot/rk3588_spl_loader_v1.07.111.bin
parameter.txt
uefi/uboot_uefi.img
```

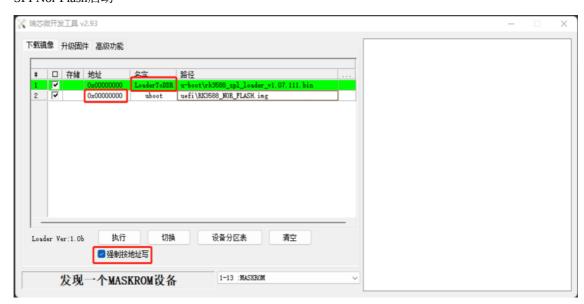
其中uboot\_uefi.img的地址由parameter.txt文件中uboot分区起始决定。

以下parameter.txt定义的UEFI固件烧录地址是0x4000, size不超过0x2000, 单位是512 Byte。

FIRMWARE\_VER: 1.0 MACHINE\_MODEL: RK3588 MACHINE\_ID: 007 MANUFACTURER: RK3588 MAGIC: 0x5041524B ATAG: 0x00200800 MACHINE: 0xfffffff CHECK\_MASK: 0x80 PWR\_HLD: 0,0,A,0,1 TYPE: GPT CMDLINE: mtdparts=rk29xxnand:0x00002000@0x00004000(uboot),0x00002000@0x00006000(misc), 0x00020000@0x00008000(boot),0x00040000@0x00028000(recovery),0x00010000@0x0006 8000(backup),0x01c00000@0x00078000(rootfs),0x00040000@0x01c78000(oem),-@0x01d18000(userdata:grow) uuid:rootfs=614e0000-0000-4b53-8000-1d28000054a9 uuid:boot=7A3F0000-0000-446A-8000-702F00006273

### 这个parameter.txt中,实际只用到了uboot分区,其他分区都可以删除。

• SPI Nor Flash启动



SPI Nor Flash 烧录和EMMC不同,不需要parameter文件,只需:

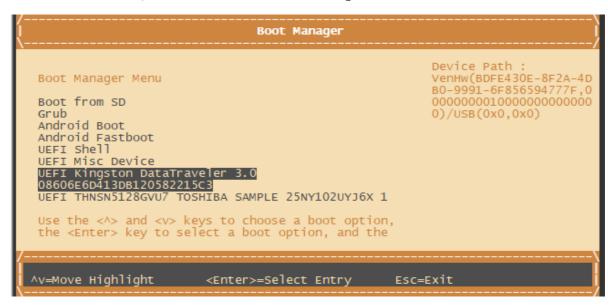
```
boot/rk3588_spl_loader_v1.07.111.bin
uefi/RK3588_NOR_FLASH.img
```

注意上图中红色框部分。

# 3. 系统安装

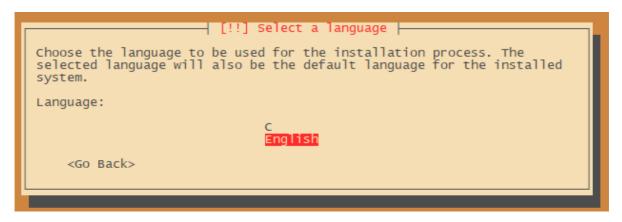
将制作好的安装U盘插入到EVB板子的USB2.0 HOST口, 开机, 串口上可以看到安装界面:

如果没有看到这个界面,请检查串口UEFI界面: Boot Manager是否能识别到U盘:



如U盘识别无误,点击安装界面的第一个选项: Install,进入到系统安装。

第一个界面是语言选择:



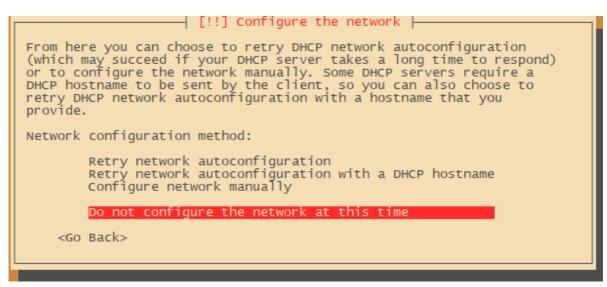
一路确定, 会提示选择网络, 提示连不上网络:

# Your system has multiple network interfaces. Choose the one to use as the primary network interface during the installation. If possible, the first connected network interface found has been selected. Primary network interface: enP3p49s0: Realtek Semiconductor Co., Ltd. RTL8111/8168/8411 PCI eth0: Ethernet wlan0: Wireless ethernet (802.11x) <Go Back>

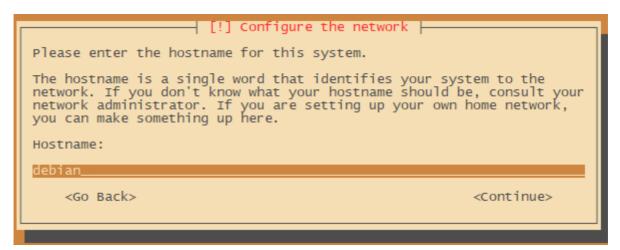
### 继续:

# [!!] Configure the network Network autoconfiguration failed Your network is probably not using the DHCP protocol. Alternatively, the DHCP server may be slow or some network hardware is not working properly. Continue>

### 选择不配置网络:



### 新建账号密码,选择时区等等:





进入到磁盘分区界面,如果是SPI Nor + SSD的启动方式,可以选择安装到整个磁盘:

```
The installer can guide you through partitioning a disk (using different standard schemes) or, if you prefer, you can do it manually. With guided partitioning you will still have a chance later to review and customise the results.

If you choose guided partitioning for an entire disk, you will next be asked which disk should be used.

Partitioning method:

Guided - use the largest continuous free space Guided - use entire disk Guided - use entire disk and set up encrypted LVM Manual

<GO Back>
```

而如果是EMMC启动,因为EMMC中还需要存储Loader和UEFI,所以需要选择手动修改分区,保留Uboot, Trust分区,其他分区删除:

```
____ [!!] Partition disks —
This is an overview of your currently configured partitions and mount points. Select a partition to modify its settings (file system, mount point, etc.), a free space to create partitions, or a device to initialize its partition table.
      Configure encrypted volumes Configure iSCSI volumes
                                                                                                                     0
      MMC/SD card #1 (mmcblk0) - 31.3 GB MMC BJTD4R
                                            4.2 MB
                                                                    FREE SPACE
                 #1
                                            4.2 MB
                                                                                          uboot
                 #2
                                            4.2 MB
                                                                                          trust
                                          37.9 MB
29.7 GB
                                                          B K ESP
                 #4
                                                                     ext4
       <Go Back>
```

```
You are editing partition #3 of MMC/SD card #1 (mmcblk0). This partition is formatted with the FAT16 file system.

Partition settings:

Name:
Use as:

Bootable flag: on

Resize the partition (currently 537.9 MB)
Erase data on this partition
Delete the partition
Done setting up the partition

<Go Back>
```

```
🗕 [!!] Partition disks 📙
This is an overview of your currently configured partitions and mount points. Select a partition to modify its settings (file system, mount point, etc.), a free space to create partitions, or a device to initialize its partition table.
       Configure encrypted volumes
Configure iSCSI volumes
                                                                                                                              Ö
       MMC/SD card #1 (mmcblk0) - 31.3 GB MMC BJTD4R
                                                4.2 MB
                                                                        FREE SPACE
                                               4.2 MB
4.2 MB
                   #1
                                                                                                  uboot
                                                                                                                              000
000
000
000
000
000
000
                   #2
                                                                                                  trust
                                            537.9 MB
                                                                          FREE SPACE
                   #4
                                              29.7 GB
                                                                          ext4
        <Go Back>
```

```
[!!] Partition disks

You are editing partition #4 of MMC/SD card #1 (mmcblk0). This partition is formatted with the Ext4 journaling file system.

Partition settings:

Name:
Use as:
Bootable flag: off
Resize the partition (currently 29.7 GB)
Erase data on this partition
Delete the partition
Done setting up the partition

<Go Back>
```

这几个分区删除后,磁盘会显示可用容量,选中它回车

```
[!!] Partition disks
This is an overview of your currently configured partitions and mount points. Select a partition to modify its settings (file system, mount point, etc.), a free space to create partitions, or a device to initialize its partition table.
          Guided partitioning
          Configure encrypted volumes
Configure iSCSI volumes
                                                                                                               0
          MMC/SD card #1 (mmcblk0) - 31.3 GB MMC BJTD4R
                                             4.2 MB
4.2 MB
                                                                    FREE SPACE
                     #1
                                                                                         uboot
                                             4.2 MB
                     #2
                                                                                         trust
                                             31.3 GB
                                                                    FREE SPACE
       <Go Back>
```

### 选择自动创建分区:



### 所有文件都在一个分区中:

```
[!] Partition disks

Selected for partitioning:

MMC/SD card #1 (mmcblk0) - MMC BJTD4R: 31.3 GB (31.3 GB)

The disk can be partitioned using one of several different schemes.

If you are unsure, choose the first one.

Partitioning scheme:

All files in one partition (recommended for new users)

Separate /home partition

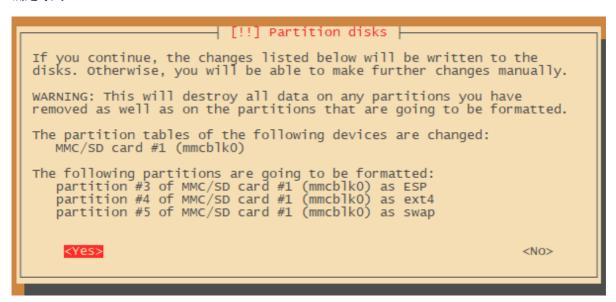
Separate /home, /var, and /tmp partitions

<Go Back>
```

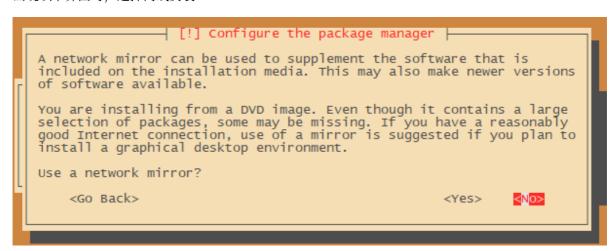
结束:

```
🗕 [!!] Partition disks 📙
This is an overview of your currently configured partitions and mount points. Select a partition to modify its settings (file system, mount point, etc.), a free space to create partitions, or a device to initialize its partition table.
                #3
                                      537.9 MB B F ESP
                #4
                                       29.7 GB
                                       1.0 GB
1.0 MB
                                                          F ext4
                #5
                                                          F swap
                                                                                               swap
                                                               FREE SPACE
      SCSI2 (0,0,0) (sda) - 31.0 GB Kingston DataTraveler 3.0 > #4 primary 31.0 GB B fat32
      Undo changes to partitions
      Finish partitioning and write changes to disk
       <Go Back>
```

### 确定写入:



### 出现以下界面时, 选择离线安装:



```
[!] Configuring popularity-contest

The system may anonymously supply the distribution developers with statistics about the most used packages on this system. This information influences decisions such as which packages should go on the first distribution CD.

If you choose to participate, the automatic submission script will run once every week, sending statistics to the distribution developers. The collected statistics can be viewed on https://popcon.debian.org/.

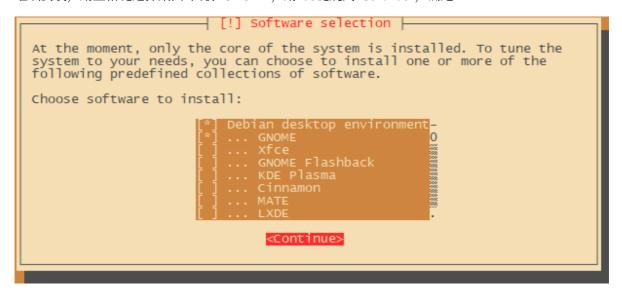
This choice can be later modified by running "dpkg-reconfigure popularity-contest".

Participate in the package usage survey?

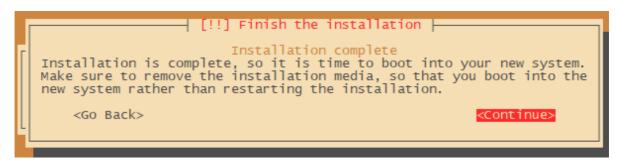
<Yes>

No>
```

继续安装,用空格键选择桌面环境、GNOME,用Tab键跳到"Continue",确定:



### 安装完成:



拔除U盘,重启。

# 4. 启动参数修改

目前启动参数还无法保存,因此还需要手动修改启动文件。拔除U盘后,重启,系统可能会停留在UEFI UI界面,选择Boot Manager->UEFI Shell

```
Boot Manager Menu

Boot Manager Menu

Boot from SD

Grub

Android Boot

Android Fastboot

UEFI Shell

UEFI Misc Device

Use the <^> and <v> keys to choose a boot option, the <Enter> key to select a boot option, and the <Esc> key to exit the Boot Manager Menu.

Av=Move Highlight 

CENTER Device

Device Path:

MemoryMapped(0xB,0x3F6
2D000,0x3FB0127F)/FvFi
1e(7c04A583-9E3E-4FIC-AD65-E05268D0B4D1)

Ad65-E05268D0B4D1)

AD65-E05268D0B4D1)

AD65-E05268D0B4D1)
```

### 输入:

```
fs0:

cd efi

mkdir boot

cp debian/grubaa64.efi boot/

exit
```

重启后,可以看到GRUB界面,倒数5秒后自动启动Debian

### GNU GRUB version 2.04-20

\*Debian GNU/Linux Advanced options for Debian GNU/Linux System setup

Use the ^ and v keys to select which entry is highlighted. Press enter to boot the selected OS, `e' to edit the commands before booting or `c' for a command-line. ESC to return previous

menu.

The highlighted entry will be executed automatically in 5s.