Rockchip

Linux Network Config Documentation

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前言

概述

本文档主要介绍基于 Rockchip 平台的 WIFI、BT 的内核配置、相关功能的开发等等；

产品版本

芯片名称	内核版本
RK3308/3326/3288/3399/1808/1108	4.4

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	版本	作者	修改说明
2019/06/16	1.0	CTF/XY	正式版本

目录

1 WIFI/BT 配置

1.1 kernel 配置

请参考 /docs/Linux reference documents 目录下的 Rockchip Linux WIFI BT 开发指南 V6.0.pdf 文档，第一章节'WIFI/BT 配置'

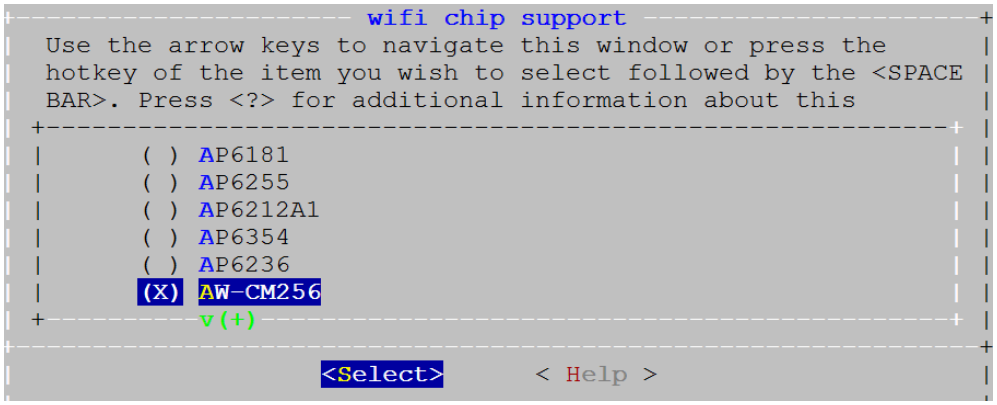
1.2 buildroot 配置

根目录下执行：make menuconfig

1、WIFI 配置：

rkwifibt 配置，根据实际使用 WiFi 选择对应配置，且必须跟 kernel 配置一致

```
Symbol: BR2_PACKAGE_RKWIFIBT [=y]
Type  : boolean
Prompt: rkwifibt
  Location:
    -> Target packages
(1)   -> rockchip BSP packages (BR2_PACKAGE_ROCKCHIP [=y])
  Defined at package/rockchip/rkwifibt/Config.in:1
  Depends on: BR2_PACKAGE_ROCKCHIP [=y]
```



2、蓝牙配置

realtek 模组建议使用 bluez 协议，正基/海华模组建议使用 bsa 协议。以下配置，根据模组类型三选一：

1)、realtek 模组选择：bluez-utils 5.x，使用 bluez 需要同时开启：bluez-alsa readline

```
Symbol: BR2_PACKAGE_BLUEZ5_UTILS [=y]
Type  : boolean
Prompt: bluez-utils 5.x
  Location:
    -> Target packages
(2)   -> Networking applications
  Defined at package/bluez5_utils/Config.in:1
  Depends on: BR2_USE_WCHAR [=y] && BR2_TOOLCHAIN_HAS_THREADS [=y] && BR2_U
  Selects: BR2_PACKAGE_DBUS [=y] && BR2_PACKAGE_LIBGLIB2 [=y]
  Selected by: BR2_PACKAGE_BLUEZ_ALSA [=y] && !BR2_STATIC_LIBS [=n] && !BR2
```

```
    [*] alsa-utils  --->
    [*] alsa-plugins  ----
    [ ] atest
    [ ] aumix
    [ ] bellagio
    [*] bluez-alsa
    [*]   hcitop
    [ ] dvblast
    [ ] dvdauthor
    [ ] dvdrw-tools
    [ ] espeak
    -*- faad2
```

```
Symbol: BR2_PACKAGE_BLUEZ_ALSA [=y]
Type  : boolean
Prompt: bluez-alsa
  Location:
    -> Target packages
(9)   -> Audio and video applications
  Defined at package/rockchip/bluez-alsa/Config.in:1
  Depends on: !BR2_STATIC_LIBS [=n] && !BR2_PACKAGE_BLUEZ_UTILS [=n] && BR2
  Selects: BR2_PACKAGE_ALSA_LIB [=y] && BR2_PACKAGE_BLUEZ5_UTILS [=y] && BR
```

```
    [*] alsa-utils  --->
    [*] alsa-plugins  ----
    [ ] atest
    [ ] aumix
    [ ] bellagio
    [*] bluez-alsa
    [*]   hcitop
    [ ] dvblast
    [ ] dvdauthor
    [ ] dvdrw-tools
    [ ] espeak
    -*- faad2
```

```
Symbol: BR2_PACKAGE_READLINE [=y]
Type  : boolean
Prompt: readline
  Location:
    -> Target packages
      -> Libraries
(7)     -> Text and terminal handling
  Defined at package/readline/Config.in:1
  Selects: BR2_PACKAGE_NCURSES [=y]
  Selected by: BR2_PACKAGE_BLE_WIFICONFIG [=n] && BR2_PACKAGE_ROCKCHIP [=y]
```

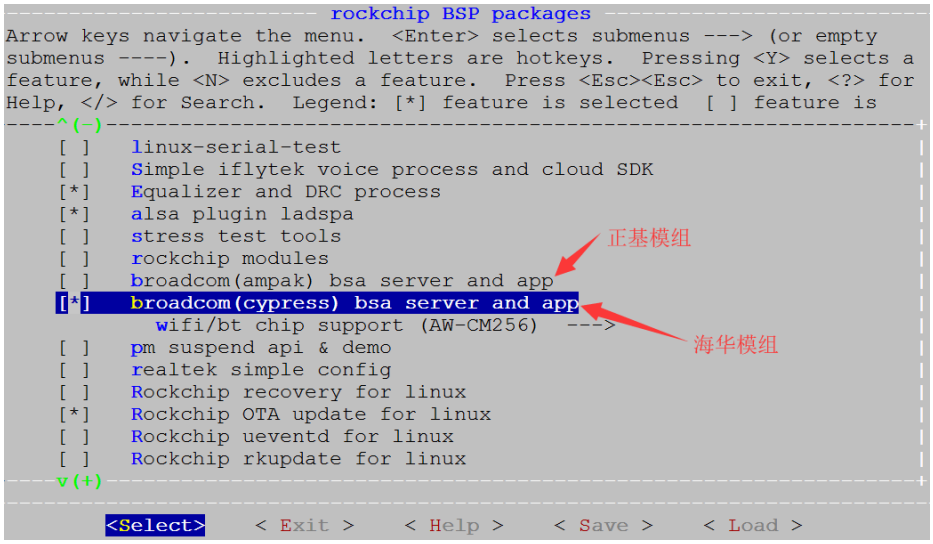
```
    -*-   UTF-8/16/32 support in pcre
    -*-   Unicode properties support in pcre
    [ ] pcre2
    -*- popt
    -*- readline
    [ ] slang
    [ ] tclap
    [ ] ustr
```

2)、正基模组选择：broadcom(ampak) bsa server and app

进入 wifi/bt chip support(XXX)---> 选择实际的芯片型号，必须跟 rkwifibt 配置一致

3)、海华模组选择：broadcom(cypress) bsa server and app

进入 wifi/bt chip support(XXX)---> 选择实际的芯片型号，必须跟 rkwifibt 配置一致



3、退出配置框，make savedefconfig 保存配置

1.3 编译说明

1、 编译 rkwifibt，根目录下执行：

make rkwifibt-dirclean && make rkwifibt-rebuild

2、编译蓝牙模块，以下编译选项，根据模组类型三选一

1)、realtek 模组编译：

make bluez5_utils-rebuild

make bluez-alsa-rebuild

2)、正基模组编译：

make broadcom_bsa-rebuild

3)、海华模组编译：

make cypress_bsa-rebuild

3、 编译 deviceio，根目录下执行：

make deviceio-dirclean && make deviceio-rebuild

4、 打包固件，根目录下执行：

./mkfirmware.sh（也可以./build.sh，全局编译，会自动打包固件）

2 命令行配网

1、首先确保 WiFi 的服务进程启动，串口输入：ps | grep wpa_supplicant

```
# ps | grep wpa_supplicant
  532 root      3380 S    wpa_supplicant -B -i wlan0 -c /data/cfg/wpa_supplica
  618 root      1836 R    grep wpa_supplicant
```

2、如果没启动，请手动启动：

wpa_supplicant -B -i wlan0 -c /data/cfg/wpa_supplicant.conf &

3、修改 /data/cfg/wpa_supplicant.conf 文件，添加配置项

```
network={
    ssid="WiFi-AP"          // WiFi 名字
    psk="12345678"          // WiFi 密码
    key_mgmt=WPA-PSK        // 选填加密方式，不填的话可以自动识别
    #key_mgmt=NONE          // 不加密
}
```

4、重新读取上述配置： wpa_cli reconfigure

5、重新连接：wpa_cli reconnect

3 手机配网

3.1 ble 配网

1、 简介

ble 配网同时支持 bluez ble 配网和 bsa ble 配网，配置参照本文档的第一章节‘WIFI/BT 配置’。并且 ble 配网已集成到 deviceio，接口位于 RkBle.h。

2、 接口说明

请参考/docs/Develop reference documents/DeviceIo 目录下 Rockchip_Developer_Guide_Rk3308_DeviceIo_Bluetooth_CN.pdf 文档，第二章节‘BLE 接口介绍（RkBle.h）’。

3、示例程序

示例程序的路径为：external/deviceio/test/rk_ble_app.c

4、APP

app 路径：/external/app/RockHome.apk

app 源码路径：/external/app/src/RockHome

该 app 仅作为手机端开发 demo，我们适配了 Hornor 8，Remi6, 小米 6，一加 6，OPPO A5 型号、iphone6s(plus)、三星 S6、VIVO X9 等手机。其他型号的手机没有测试，app 兼容性可能存在风险。

5、配网步骤

该配网步骤以 bsa ble 配网为例进行说明，所有板端 log 均为 bsa 的配网 log。bluez 操作步骤相同，板端 log 不同。

1)、首先确保 WiFi 的服务进程启动，串口输入： ps | grep wpa_supplicant

```
# ps | grep wpa_supplicant
  532 root      3380 S    wpa_supplicant -B -i wlan0 -c /data/cfg/wpa_supplica
  618 root      1836 R    grep wpa_supplicant
```

2)、如果没启动，请手动启动：

wpa_supplicant -B -i wlan0 -c /data/cfg/wpa_supplicant.conf &

3)、板端命令行执行：deviceio_test wificonfig，输入 1 回车， 启动 ble 配网

```
# deviceio_test wificonfig
version:V1.2.1
#### Please Input Your Test Command Index ####
01.  ble_wifi_config_start
02.  ble_wifi_config_stop
03.  airkiss_wifi_config_start
04.  airkiss_wifi_config_stop
05.  softap_wifi_config_start
06.  softap_wifi_config_stop
07.  voiceprint_wifi_config_start
08.  voiceprint_wifi_config_stop
Which would you like: 1
===== rk_ble_wifi_init =====
hcd_file = /system/etc/firmware/BCM4345C0.hcd
killall: bsa_server: no process killed
bsa_server died.
[   24.786822] [BT_RFKILL]: ENABLE UART_RTS
[   24.889285] [BT_RFKILL]: DISABLE UART_RTS
[   24.889432] [BT_RFKILL]: bt turn on power
start broadcom bluetooth server bsa_sever
|----- bluetooth bsa server is open ------|
[   25.072066] dw-apb-uart ff0e0000.serial: got rx and tx dma channels
DEBUG: check_bsa_server: wait bsa_server open.
DEBUG: check_bsa_server: bsa_server has been opened.
```

4)、设置的 ble 广播设备名必须以 RockChip 为前缀，否则 apk 无法检索到设备

```
DEBUG: app_ble_rk_server_open: app_ble_rk_server_open
[RK] ble status: RK_BLE_STATE_IDLE
INFO: app_ble_start: app_ble_start
BSA_trace 1029@ 01/01 09h:56m:09s:326ms: BSA_BleEnableInit
BSA_trace 1030@ 01/01 09h:56m:09s:326ms: BSA_BleEnable
DEBUG: app_ble_rk_server_set_device_name: app_ble_device_name: RockChipBle
INFO: app_ble_rk_server_gatt_server_init: wifi_introducer_gatt_server_init
BSA_trace 1031@ 01/01 09h:56m:09s:328ms: BSA_BleSeAppRegisterInit
BSA_trace 1032@ 01/01 09h:56m:09s:329ms: BSA_BleSeAppRegister
INFO: app_ble_rk_server_register: server_if:4
```

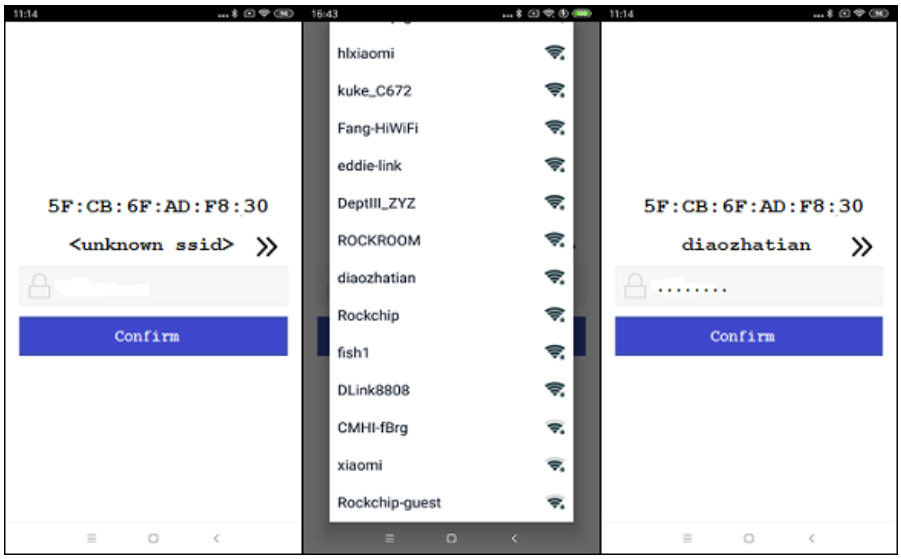
5)、手机端打开 apk

点击 CONTINUE -> START SCAN，扫描以 RockChip 为前缀命名的 ble 设备

6)、点击想要连接的 ble 设备，开始连接设备，设备连接成功，板端 log 如下

```
INFO: app_ble_rk_server_profile_cback: BSA_BLE_SE_OPEN_EVT status:0
INFO: app_ble_rk_server_profile_cback: app_ble_rk_server_conn_up conn_id:0x4
INFO: app_ble_rk_server_profile_cback: app_ble_rk_server_conn_up connected to [40:BD
:ED:F8:9A:1D]
DEBUG: app_dm_set_ble_visibility: Set BLE Visibility Discoverable:0 Connectable:0
BSA_trace 1049@ 01/01 09h:57m:56s:262ms: BSA_DmSetConfigInit
BSA_trace 1050@ 01/01 09h:57m:56s:263ms: BSA_DmSetConfig
[RK] ble status: RK_BLE_STATE_CONNECT
INFO: app_ble_rk_server_profile_cback: Stopping Advertisements
BSA_trace 1051@ 01/01 09h:57m:56s:267ms: bsa_sec_event_hdlr event:0
DEBUG: app_mgr_security_callback: event:0
DEBUG: app_mgr_security_callback: BSA_SEC_LINK_UP_EVT bd_addr: 40:bd:ed:f8:9a:1d
DEBUG: app_mgr_security_callback: ClassOfDevice:00:00:00 => Misc device
DEBUG: app_mgr_security_callback: LinkType: 2
DEBUG: bt_mgr_notify_callback: BT_LINK_UP_EVT
```

7)、设备连接成功，apk 进入配网界面，点击 >> 按钮 获取 wifi list，选择想要连接的 wifi，输入密码，点击 Confirm 开始配网



8）、板端接收到 ssid 和 psk 后，开始连接网络

```
[RK] ble_data.cmd: wifisetup, ble_data.start: 1, ble_data.end: 4
01-01 09:59:30.161   954   995 D [RK] wifi ssid is diaozhatian
01-01 09:59:30.162   954   995 D [RK] wifi psk is 7788123456
[RK] rk_config_wifi_thread
[RK] controlWifi connect ...
[RKWIFI] exec1: wpa_cli -iwlan0 disable_network all
[ 7170.184932] CFG80211-ERROR) wl_cfg80211_disconnect : Reason 3
[ 7170.191679] CFG80211-ERROR) wl_is_linkdown : Link down Reason : WLC_E_LINK
[ 7170.191800] link down if wlan0 may call cfg80211_disconnected. event : 16, reason
=2 from 64:09:80:0a:13:b0
[ 7170.216075] CFG80211-ERROR) wl_is_linkdown : Link down Reason : WLC_E_DEAUTH
[ 7170.219478] CFG80211-ERROR) wl_is_linkdown : Link down Reason : WLC_E_DEAUTH
[RKWIFI] exec1: wpa_cli -iwlan0 add_network
format_wifiinfo ssid: 6469616f7a68617469616e
[RKWIFI] exec1: wpa_cli -iwlan0 set_network 2 ssid 6469616f7a68617469616e
format_wifiinfo password: \7\7\8\8\1\2\3\4\5\6
[RKWIFI] exec1: wpa_cli -iwlan0 set_network 2 psk \"\7\7\8\8\1\2\3\4\5\6\"
01-01 09:59:31.301   954  3769 I RK_wifi_connect ssid:"diaozhatian" strlen(ssid):11;
 ori:"diaozhatian" strlen(ori):11; psk:"7788123456"
```

9）、连接成功，板端发送通知给手机 apk

```
wifi is connected.
OK
OK
[RK] rk_blewifi_state_callback state: 4
DEBUG: app_ble_rk_server_send_message: conn id : 0x4
INFO: app_ble_rk_server_send_message: Sending Notification
INFO: app_ble_rk_server_send_notification: app_ble_rk_server_send_notification
BSA_trace 1220@ 01/01 09h:59m:41s:219ms: BSA_BleSeSendIndInit
DEBUG: app_ble_rk_server_send_notification: uuid: 00009999-0000-1000-8000-00805F9B34
FB
DEBUG: app_ble_rk_server_send_notification: uuid_string: 0000180A-0000-1000-8000-008
05F9B34FB
DEBUG: app_ble_rk_server_send_notification: uuid_string: 00009999-0000-1000-8000-008
05F9B34FB
DEBUG: app_ble_rk_server_send_notification: attr_index_notify: 1
BSA_trace 1221@ 01/01 09h:59m:41s:222ms: send notification:
BSA_trace 1222@ 01/01 09h:59m:41s:223ms:     0000: 01
```

10）、apk 端收到配网成功的通知后，断开 ble 连接，返回设备搜索界面，板端 log 如下

```
DEBUG: app_ble_rk_server_profile_cback: event = 23
INFO: app_ble_rk_server_profile_cback: BSA_BLE_SE_CLOSE_EVT status:19
INFO: app_ble_rk_server_profile_cback: conn_id:0x4
INFO: app_ble_rk_server_profile_cback: app_ble_rk_server_connection_down  conn_id:4
reason:19
DEBUG: app_dm_set_ble_adv_param: BDA:00:00:00:00:00:00
DEBUG: app_dm_set_ble_adv_param: adv_int_min:2056 adv_int_max:2056 inst_id:0
BSA_trace 224@ 01/01 08h:17m:48s:918ms: BSA_DmSetConfigInit
BSA_trace 225@ 01/01 08h:17m:48s:919ms: BSA_DmSetConfig
DEBUG: app_dm_set_ble_visibility: Set BLE Visibility Discoverable:1 Connectable:1
BSA_trace 226@ 01/01 08h:17m:48s:923ms: BSA_DmSetConfigInit
BSA_trace 227@ 01/01 08h:17m:48s:923ms: BSA_DmSetConfig
[RK] ble status: RK_BLE_STATE_DISCONNECT
BSA_trace 228@ 01/01 08h:17m:48s:928ms: bsa_sec_event_hdlr event:1
DEBUG: app_mgr_security_callback: event:1
DEBUG: app_mgr_security_callback: BSA_SEC_LINK_DOWN_EVT bd_addr: 51:59:51:a1:1d:03
DEBUG: app_mgr_security_callback: Reason: 19
DEBUG: app_mgr_security_callback: LinkType: 2
DEBUG: bt_mgr_notify_callback: BT_LINK_DOWN_EVT
```

11）、再次启动配网，需要先输入 2，关闭 ble 配网；再输入 1 重新启动 ble，重复上述配网流程。

3.2 airkiss 配网

1、 简介

目前 airkiss 配网只支持 rtl8723ds，请参照本文档第一章节 ’ WIFI/BT 配置‘进行相应配置；ap 模组请参考 external/wifiAutoSetup 目录下的说明。

airkiss 兼容性很差，不建议作为唯一的配网方式使用，需要增加其他的配套配网方案，原因请参考《/docs/Develop reference documents/WIFIBT/RK 平台 RTL8723DS AIRKISS 配网说明.pdf》。

目前 airkiss 配网已集成到 deviceio 中，接口位于 Rk_wifi.h。

2、kernel 修改

修改 /drivers/net/wireless/rockchip_wlan/rtl8723ds/Makefile 文件

```
-CONFIG_WIFI_MONITOR = n
+CONFIG_WIFI_MONITOR = y
```

3、 接口说明

启动 airkiss 配网，成功返回 0，失败返回-1

```
int RK_wifi_airkiss_start(char *ssid, char *password)
```

ssid：手机端发送的 wifi 名称

password：手机端发送的 wifi 密码

关闭 airkiss 配网

```
void RK_wifi_airkiss_stop()
```

4、 示例程序

示例程序的路径为：external/deviceio/test/rk_wifi_test.c

该测试用例调用 RK_wifi_airkiss_start()启动 airkiss，获取 ssid 和 password 并启动 wifi 配网。主要接口：void rk_wifi_airkiss_start(void *data)，DeviceIOTest.cpp 中调用。

```
void rk_wifi_airkiss_start(void *data)
{
    int err = 0;
    struct wifi_info info;
    pthread_t tid = 0;

    memset(&info, 0, sizeof(struct wifi_info));

    printf("===== %s =====\n", __func__);

    if(RK_wifi_airkiss_start(info.ssid, info.psk) < 0)
        return;

    err = pthread_create(&tid, NULL, rk_wifi_config_thread, &info);
    if (err) {
        printf("Error - pthread_create() return code: %d\n", err);
        return;
    }

    while (!wifi_state)
        sleep(1);
} « end rk_wifi_airkiss_start »
```

5、 微信配网方式

可以使用手机 app 或者 扫描微信二维码的方式配置网络

1)、手机 app 下载地址：https://iot.weixin.qq.com/wiki/document-download.html ，进入下载中心 -> WiFi 设备 -> airkiss 调试工具，下载 AirKissDebugger.apk

2)、微信扫描如下二维码，二维码配网时，手机必须先连接 wifi，否则会提示：未能搜索设备，请开启手机 wifi 后重试

微信扫描二维码配置网络

6、操作示例

1)、手机端操作以 app 为例进行说明，打开 AirKissDebugger.apk，输入 ssid 和 password，AESKey 为空、不输入。点击发送按钮，配网成功会弹窗提示“AirKissDebugger：Bingo”

2)、板端命令行执行：deviceio_test wificonfig，输入 3 回车，启动 airkiss 配网

```
# deviceio_test wificonfig
version:V1.2.1
#### Please Input Your Test Command Index ####
01.  ble_wifi_config_start
02.  ble_wifi_config_stop
03.  airkiss_wifi_config_start
04.  airkiss_wifi_config_stop
05.  softap_wifi_config_start
06.  softap_wifi_config_stop
07.  voiceprint_wifi_config_start
08.  voiceprint_wifi_config_stop
Which would you like: 3
===== rk_wifi_airkiss_start =====
```

3)、airkiss 启动成功

```
scan_ap_cnt: 42
use channel: 1 2 3 4 5 6 7 8 9 10 11 13
Start airkiss!
Airkiss init succeed!
```

4)、成功接收 ssid 和 password，并开始配网

```
AirKiss complete: ssid "diaozhatian", pwd "7788123456", random 0xa5
AIRKISS_STATUS_COMPLETE
airkiss_get_result() ok!
ssid = "diaozhatian", pwd = "7788123456", ssid_length = 11, "pwd_le
 = 0xa5
killall: wpa_supplicant: no process killed
```

5)、配网成功

```
wpa_cli -iwlan0 status | grep wpa_state: wpa_state=COMPLETED

wpa_cli -iwlan0 status | grep ip_address: ip_address=192.168.31.164

Congratulation: wifi connected.
Selected interface 'wlan0'
OK
Selected interface 'wlan0'
OK
```

6)、再次启动配网，需要先输入 4，关闭 airkiss 配网；再输入 3 重新启动 airkiss，重复上述配网流程

3.3 Softap 配网

1、简介

首先，用 SDK 板的 WiFi 创建一个 AP 热点，在手机端连接该 AP 热点；其次，通过手机端 apk 获取 SDK 板的当前扫描到的热点列表，在手机端填入要连接 AP 的密码，apk 会把 AP 的 ssid 和密码发到 SDK 板端；最后，SDK 板端会根据收到的信息连 WiFi。

Softap 配网已集成到 deviceio 中，接口位于 Rk_softap.h。

2、APP

app 路径：/external/app/RockHome.apk

app 源码路径： /external/app/src/RockHome

3、buildroot 配置

```
Type  : boolean
Prompt: softap mode to setup wifi
  Location:
    -> Target packages
(1)   -> rockchip BSP packages (BR2_PACKAGE_ROCKCHIP [=y])
  Defined at package/rockchip/softap/Config.in:1
  Depends on: BR2_PACKAGE_ROCKCHIP [=y]
  Selected by: BR2_PACKAGE_SOFTAPSERVER [=y] && BR2_PACKAGE_ROCKCHIP [=y]


Symbol: BR2_PACKAGE_SOFTAPSERVER [=y]
Type  : boolean
Prompt: socket server based on softap
  Location:
    -> Target packages
(2)   -> rockchip BSP packages (BR2_PACKAGE_ROCKCHIP [=y])
  Defined at package/rockchip/softapServer/Config.in:1
  Depends on: BR2_PACKAGE_ROCKCHIP [=y]
  Selects: BR2_PACKAGE_SOFTAP [=y]
```

```
Symbol: BR2_PACKAGE_IW [=y]
Type  : boolean
Prompt: iw
  Location:
    -> Target packages
(2)   -> Networking applications
  Defined at package/iw/Config.in:1
  Depends on: BR2_TOOLCHAIN_HAS_THREADS [=y]
  Selects: BR2_PACKAGE_LIBNL [=y]
```

4、接口说明

1)、启动 softap 配网：

RK_softap_start(char* name, RK_SOFTAP_SERVER_TYPE server_type)

name：wifi 热点的名字，前缀必须为 Rockchip-SoftAp

server_type：网络协议类型，目前只支持 TCP 协议

2)、结束 softap 配网

int RK_softap_stop(void)

3)、注册状态回调

RK_softap_register_callback(RK_SOFTAP_STATE_CALLBACK cb)

正在连接网络：RK_SOFTAP_STATE_CONNECTTING

网络连接成功：RK_SOFTAP_STATE_SUCCESS

网络连接失败：RK_SOFTAP_STATE_FAIL

5、示例程序

示例程序的路径为：external/deviceio/test/rk_wifi_test.c

主要接口：

void rk_wifi_softap_start(void *data)

rk_wifi_softap_stop(void *data)

在 DeviceIOTest.cpp 中调用。

6、 配网步骤

1)、首先确保 WiFi 的服务进程启动，串口输入： ps | grep wpa_supplicant,如果没启动，请手动启动：wpa_supplicant -B -i wlan0 -c /data/cfg/wpa_supplicant.conf &

2） 、板端命令行执行 deviceio_test wificonfig，输入 5 回车，启动 softap 配网

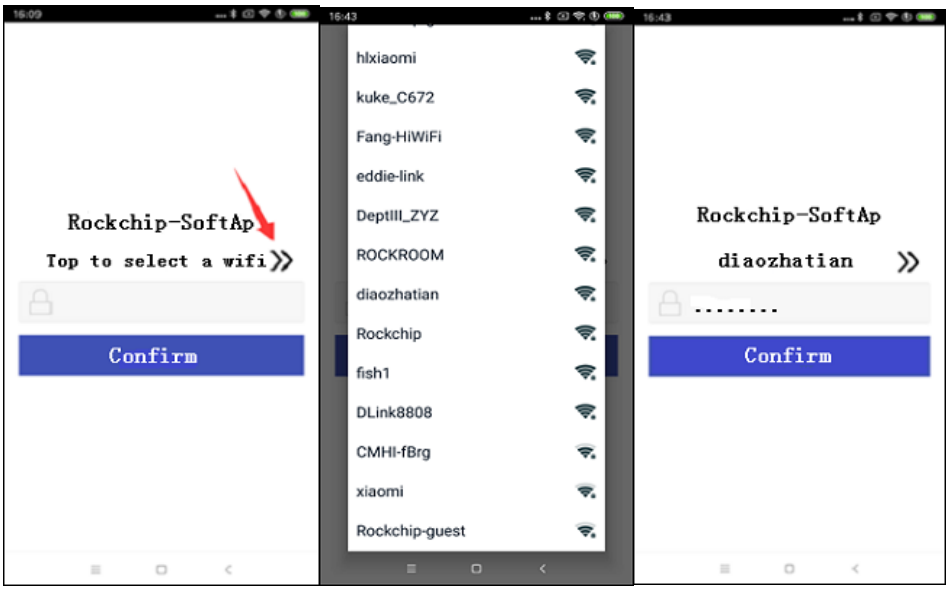
```
# deviceio_test wificonfig
version:V1.2.1
#### Please Input Your Test Command Index ####
01.  ble_wifi_config_start
02.  ble_wifi_config_stop
03.  airkiss_wifi_config_start
04.  airkiss_wifi_config_stop
05.  softap_wifi_config_start
06.  softap_wifi_config_stop
07.  voiceprint_wifi_config_start
08.  voiceprint_wifi_config_stop
Which would you like: 5
[ 4794.018629] Current WiFi chip is AP6255.
Hostapd 143: wifi type: AP6255
Hostapd 19: cmdline = killall dnsmasq
Hostapd 19: cmdline = killall hostapd
killall: hostapd: no process killed
Hostapd 19: cmdline = ifconfig wlan1 down
ifconfig: SIOCGIFFLAGS: No such device
Hostapd 19: cmdline = rm -rf /userdata/bin/wlan1
Hostapd 19: cmdline = iw dev wlan1 del
command failed: No such device (-19)
Hostapd 19: cmdline = ifconfig wlan0 up
Hostapd 19: cmdline = iw phy0 interface add wlan1 type managed
[ 4794.189854] CFG80211-ERROR) wl_cfg80211_event : ignore event 54, not interested
[ 4794.191298] Register interface [wlan1]  MAC: 82:c5:f2:2e:e7:65
[ 4794.191298]
```

3)、打开 RockHome.apk，左侧滑选择第三个选项，进入 softap 配网方式，点击 SEARCH DEVICES，扫描以 Rockchip-SoftAp 为前缀命名的 softap 设备

4） 、点击想要连接的 softap 设备，开始连接设备，设备连接成功，板端 log 如下

```
wlan1: STA 94:87:e0:34:e6:fd IEEE 802.11: associated
wlan1: AP-STA-CONNECTED 94:87:e0:34:e6:fd
[ 5955.601561] CFG80211-ERROR) wl_cfg80211_change_station : WLC_SCB_AUTHORIZE sta_fl
ags_mask not set
```

5)、设备连接成功，apk 进入配网界面，点击 >> 获取 wifi list，选择想要连接的 wifi，输入密码，点击 Confirm 开始配网



6）、板子收到 ssid 和 psk，开始连接网络

```
TcpServer recv buf:
POST /provision/wifiSetup HTTP/1.1
Content-Type: application/json
User-Agent: Dalvik/2.1.0 (Linux; U; Android 8.1.0; MI 6X MIUI/V10.2.2.0.ODCCNXM)
Host: 10.201.126.1:8443
Connection: Keep-Alive
Accept-Encoding: gzip
Content-Length: 41

{"ssid":"diaozhatian","pwd":"7788123456"}
do connect ssid:"diaozhatian", psk:"7788123456", isConnecting:0
RK_SOFTAP_STATE_CONNECTTING
```

7)、网络连接成功

```
GET /provision/wifiState HTTP/1.1
Content-Type: application/json
User-Agent: Dalvik/2.1.0 (Linux; U; Android 8.1.0; MI 6X MIUI/V10.2.2.0.ODCCNXM)
Host: 10.201.126.1:8443
Connection: Keep-Alive
Accept-Encoding: gzip


[   64.288035] CFG80211-ERROR) wl_cfg80211_connect : Connecting with64:09:80:0a:13:b
0 ssid "diaozhatian", len (11) channel=4

[   64.613264] wl_bss_connect_done succeeded with 64:09:80:0a:13:b0
[   64.618258] CFG80211-ERROR) wl_cfg80211_determine_vsdb_mode : Same Channel concur
rency is enabled
[   64.696452] wl_bss_connect_done succeeded with 64:09:80:0a:13:b0
```

8）、配网成功后，板端 disableWifiAp，手机 apk 返回设备搜索界面，板端 log 如下

```
POST /provision/connectResult HTTP/1.1
Content-Type: application/json
User-Agent: Dalvik/2.1.0 (Linux; U; Android 8.1.0; MI 6X MIUI/V10.2.2.0.ODCCNXM)
Host: 10.201.126.1:8443
Connection: Keep-Alive
Accept-Encoding: gzip
Content-Length: 14

{"result":"1"}
RK_SOFTAP_STATE_SUCCESS
Hostapd 19: cmdline = killall hostapd
wlan1: interface state ENABLED->DISABLED
wlan1: AP-STA-DISCONNECTED 94:87:e0:34:e6:fd
[   67.201146] CFG80211-ERROR) wl_cfg80211_del_station : Disconnect STA : ff:ff:ff:f
f:ff:ff scb_val.val 3
[   67.201644] Current WiFi Hostapd 19: cmdline = killall dnschip is AP6255.
masq
[   67.205086] CFG80211-ERROR) wl_notify_connect_status_ap : event WLC_E_DEAUTH(5) s
tatus 0 reason 3
Hostapd 19: cmdline = ifconfig wlan1 down
wlan1: AP-DISABLED
nl80211: deinit ifname=wlan1 disabled_11b_rates=0
```

9)、想要再次启动 softap 配网，需要先输入 6，回车反初始化 softap，再输入 5 重新初始化 softap，重复上述配网步骤

3.4 softap web ui 配网

1、简介

softap web ui 配网原理和上面的 softap 配网一样，只是手机端无需安装任何 apk，直接连上热点，然后在浏览器里面进行进行配网。

2、 代码目录

external/rk_webui/ (包含源码、启动脚本)

buildroot/package/boa/

buildroot/package/rockchip/rk_webui/ （包含编译脚本）

3、Buildroot 配置

首先 buildroot 选择 BR2_PACKAGE_RK_WEBUI = y，然后保存配置重新编译 make rk_webui，重新生新固件.

```
There is no help available for this option.
Symbol: BR2_PACKAGE_RK_WEBUI [=y]
Type  : boolean
Prompt: Rockchip web ui
  Location:
    -> Target packages
      -> rockchip BSP packages (BR2_PACKAGE_ROCKCHIP [=y])
  Defined at package/rockchip/rk_webui/Config.in:1
  Depends on: BR2_PACKAGE_ROCKCHIP [=y]
```

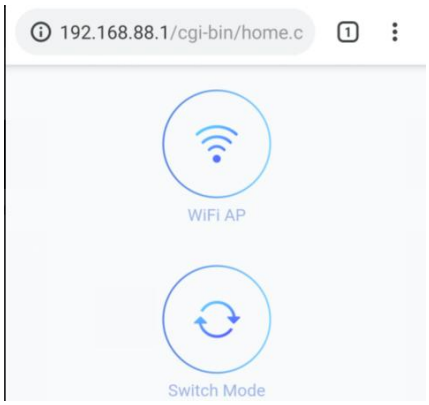
4、配网

1）、正常启动后执行 ps 看下，确保有如下 4 个进程启动

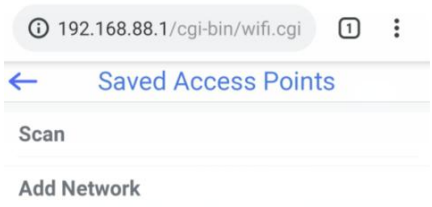
```
 394 root      3380 S    wpa_supplicant -B -i wlan0 -c /data/cfg/wpa_supplica
 420 root      2004 S    dnsmasq -C /userdata/bin/dnsmasq.conf --interface=p2
 422 root      3728 S    hostapd /userdata/bin/hostapd.conf
 427 root      1532 S    boa
```

2）、打开手机设置界面搜索 Rockchip_WebUI_前缀的 ap，比如 Rockchip_WebUI_9604(后面的 4 位数字表示本机 WiFi 的 MAC 地址的后 4 位，方便区分)，点击连接：

3）、打开手机浏览器，输入：192.168.88.1（浏览器会自动跳转到/cgi-bin/home.c），然后回车出现如下界面：



4）、点击 WiFi AP:



5）、点击 Scan 扫描：

6）、点击要连接的 WiFi，然后输入密码并点击 Connect（注意：由于 WiFi 芯片的硬件限制：当连接目前 WiFi 比如 TP-LINK_HKH 和 本身热点 Rockchip_WebUI_XXXX 不在同一个信道，会导致手机和热点断开，请重新连接热点获取配网状态）

7）、手机重新连接热点，点击刷新，可以看到已经连接 Connected（且支持忘记和断开操作）