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REALTEK_WIFI 驱动移植说明

REALTEK_WIFI_Driver_Porting_Introduction

(第二系统产品部)

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1 目的 Purpose

方便客户将 Realtek wifi 驱动移植到 ROCKCHIP 平台。

Help customers port Realtek wifi driver to Rockchip platform conveniently.

2 驱动修改说明 Driver modification introduction

本文以添加 rtl8723cs 为例。

This document takes rtl8723cs as example.

2.1 将驱动添加到内核 Add the driver to kernel

ROCKCHIP 统一 wifi 路径为: drivers/net/wireless/rockchip_wlan/

Rockchip unified wifi path is: drivers/net/wireless/rockchip_wlan/

1. 修改: drivers/net/wireless/rockchip_wlan/Makefile

Modify: drivers/net/wireless/rockchip_wlan/Makefile

添加: obj-\$(CONFIG_RTL8723CS) += rtl8723cs/

Add: obj-\$(CONFIG_RTL8723CS) += rtl8723cs/

2. 修改: drivers/net/wireless/rockchip_wlan/Kconfig

Modify: drivers/net/wireless/rockchip_wlan/Kconfig

添加: source "drivers/net/wireless/rockchip_wlan/rtl8723cs/Kconfig"

Add: source "drivers/net/wireless/rockchip_wlan/rtl8723cs/Kconfig"

3. 修改驱动包名为 rtl8723cs 存放到 drivers/net/wireless/rockchip_wlan/rtl8723cs

Modify the driver package name to rtl8723cs and put in drivers/net/wireless/rockchip_wlan/rtl8723cs

2.2 修改驱动 Makefile Modify the driver Makefile

1. Realtek 发布的 wifi 驱动默认是平台是 PC 需要修改成 ROCKCHIP

The default platform of wifi driver released by Realtek is PC. Need to modify to ROCKCHIP.

CONFIG_PLATFORM_I386_PC = y 修改为 CONFIG_PLATFORM_I386_PC = n

Modify CONFIG_PLATFORM_I386_PC = y to CONFIG_PLATFORM_I386_PC = n

CONFIG_PLATFORM_ARM_RK3188 = n 修改为 CONFIG_PLATFORM_ARM_RK3188 = y

Modify CONFIG_PLATFORM_ARM_RK3188 = n to CONFIG_PLATFORM_ARM_RK3188 = y

2. Rockchip 平台 wifi 驱动是以 ko 形式存在, 因此需要将驱动 module 名修改为 8723cs

The format of Rockchip platform wifi driver is ko, so need to modify the driver module name to 8723cs

```
ifeq ($(CONFIG_PLATFORM_ARM_RK3188), y)
```

```
EXTRA_CFLAGS+= -DCONFIG_LITTLE_ENDIAN -DCONFIG_PLATFORM_ANDROID
-DCONFIG_PLATFORM_ROCKCHIPS
```

```
.....
```

```
#EXTRA_CFLAGS += -DRTW_ENABLE_WIFI_CONTROL_FUNC //注意这个要注释掉 Need to comment this out
```

```
.....
```

```
MODULE_NAME := 8723cs
```

```
Endif
```

3. 增加 WIFI_HAL 支持

Add WIFI_HAL support

CONFIG_RTW_WIFI_HAL = n 修改为 CONFIG_RTW_WIFI_HAL = y

Modify CONFIG_RTW_WIFI_HAL = n to CONFIG_RTW_WIFI_HAL = y

(此项 Android8.0 及以上 Android 必选) (Mandatory for Android8.0 and higher versions)

2.3 修改驱动入口函数 Modify the driver entry function

Realtek 的驱动都有统一的入口函数，如：

All Realtek drivers have the unified entry function, such as:

USB WIFI 驱动入口在 os_dep/linux/usb_intf.c 的 rtw_drv_entry 函数中

USB WIFI driver entry is in the function rtw_drv_entry in os_dep/linux/usb_intf.c

SDIO WIFI 驱动入口在 os_dep/linux/sdio_intf.c 的 rtw_drv_entry 函数中

SDIO WIFI driver entry is in the function rtw_drv_entry in os_dep/linux/sdio_intf.c

PCIE WIFI 驱动入口在 os_dep/linux/pci_intf.c 的 rtw_drv_entry 函数中

PCIE WIFI driver entry is in the function rtw_drv_entry in os_dep/linux/pci_intf.c

1. 将 static int __init rtw_drv_entry(void)修改为 static int rtw_drv_entry(void)

Modify static int __init rtw_drv_entry(void) to static int rtw_drv_entry(void)

2. 将 static void __exit rtw_drv_halt(void)修改为 static void rtw_drv_halt(void)

Modify static void __exit rtw_drv_halt(void) to static void rtw_drv_halt(void)

3. 注释掉 module_init(rtw_drv_entry);和 module_exit(rtw_drv_halt);

Comment out module_init(rtw_drv_entry); and module_exit(rtw_drv_halt);

4. 增加 ROCKCHIP 驱动入口修改

Add ROCKCHIP driver entry modification

修改前:

Before modify:

```
static int __init rtw_drv_entry(void)
static void __exit rtw_drv_halt(void)

module_init(rtw_drv_entry);
module_exit(rtw_drv_halt);
```

修改后:

After modify:

```

static int rtw_drv_entry(void)
static void rtw_drv_halt(void)
#include <linux/rfkill-wlan.h>
extern int get_wifi_chip_type(void);
extern int rockchip_wifi_power(int on);
extern int rockchip_wifi_set_carddetect(int val);

int rockchip_wifi_init_module_rtkwifi(void)
{
#ifdef CONFIG_WIFI_LOAD_DRIVER_WHEN_KERNEL_BOOTUP
    int type = get_wifi_chip_type();
    if (type < WIFI_AP6XXX_SERIES || type == WIFI_ESP8089) return 0;
#endif
    printk("\n");
    printk("=====\n");
    printk("==== Launching Wi-Fi driver! (Powered by Rockchip) ====\n");
    printk("=====\n");
    printk("Realtek 8723CS SDIO WiFi driver (Powered by Rockchip,Ver %s) init.\n", DRIVERVERSION);

    rockchip_wifi_power(1);
    rockchip_wifi_set_carddetect(1);

    return rtw_drv_entry();
}

void rockchip_wifi_exit_module_rtkwifi(void)
{
#ifdef CONFIG_WIFI_LOAD_DRIVER_WHEN_KERNEL_BOOTUP
    int type = get_wifi_chip_type();
    if (type < WIFI_AP6XXX_SERIES || type == WIFI_ESP8089) return;
#endif
    printk("\n");
    printk("=====\n");
    printk("==== Dislaunching Wi-Fi driver! (Powered by Rockchip) ====\n");
    printk("=====\n");
    printk("Realtek 8723CS SDIO WiFi driver (Powered by Rockchip,Ver %s) init.\n", DRIVERVERSION);

    rtw_drv_halt();

    rockchip_wifi_set_carddetect(0);
    rockchip_wifi_power(0);
}
#ifdef CONFIG_WIFI_BUILD_MODULE
module_init(rockchip_wifi_init_module_rtkwifi);
module_exit(rockchip_wifi_exit_module_rtkwifi);
#else
#ifdef CONFIG_WIFI_LOAD_DRIVER_WHEN_KERNEL_BOOTUP
late_initcall(rockchip_wifi_init_module_rtkwifi);
module_exit(rockchip_wifi_exit_module_rtkwifi);
#else
EXPORT_SYMBOL(rockchip_wifi_init_module_rtkwifi);
EXPORT_SYMBOL(rockchip_wifi_exit_module_rtkwifi);
#endif
#endif
//module_init(rtw_drv_entry);
//module_exit(rtw_drv_halt);

```


2.4 增加 ROCKCHIP MAC 地址支持 Add ROCKCHIP MAC address support

(此项可选, 根据项目需求选择是否更改) (this is optional, select whether to modify or not according to project requirement)

修改文件: rtl8723cs/core/rtw_ieee80211.c

Modify the file: rtl8723cs/core/rtw_ieee80211.c

1. 增加#include <linux/rfkill-wlan.h>

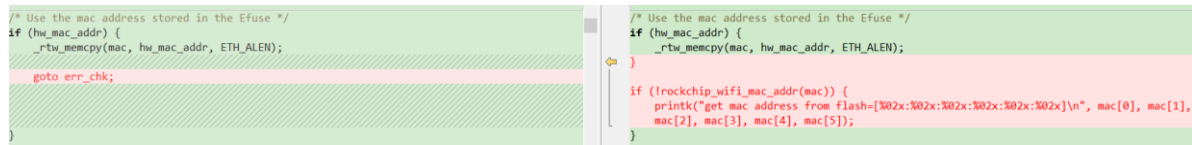
Add #include <linux/rfkill-wlan.h>

2. 修改函数 void rtw_macaddr_cfg(u8 *out, const u8 *hw_mac_addr)

Modify the function void rtw_macaddr_cfg(u8 *out, const u8 *hw_mac_addr)

增加 rockchip_wifi_mac_addr(mac)的支持如下:

Add support of rockchip_wifi_mac_addr(mac) as below:



```

/* Use the mac address stored in the Efuse */
if (hw_mac_addr) {
    _rtw_memcpy(mac, hw_mac_addr, ETH_ALEN);
    goto err_chk;
}

/* Use the mac address stored in the Efuse */
if (hw_mac_addr) {
    _rtw_memcpy(mac, hw_mac_addr, ETH_ALEN);
}
if (!rockchip_wifi_mac_addr(mac)) {
    printk("get mac address from flash=[%02x:%02x:%02x:%02x:%02x]\n", mac[0], mac[1],
        mac[2], mac[3], mac[4], mac[5]);
}

```

2.5 增加 WOWLAN 的支持 Add WOWLAN support

(此项可选, 根据项目需求选择是否更改) (this is optional, select whether to modify or not according to project requirement)

1. 修改驱动 Makefile

Modify the driver Makefile

CONFIG_WOWLAN = n 修改为 CONFIG_WOWLAN = y

Modify CONFIG_WOWLAN = n to CONFIG_WOWLAN = y

CONFIG_GPIO_WAKEUP = n 修改为 CONFIG_GPIO_WAKEUP = y

Modify CONFIG_GPIO_WAKEUP = n to CONFIG_GPIO_WAKEUP = y

2. 修改 platform/platform_ops.c 文件

Modify the file platform/platform_ops.c

增加 rockchip_wifi_get_oob_irq();支持如下:

Add the support of rockchip_wifi_get_oob_irq(); as below:

```
int platform_wifi_power_on(void)
{
    int ret = 0;

    return ret;
}

#include <linux/rfkill-wlan.h>
extern unsigned int oob_irq;
int platform_wifi_power_on(void)
{
    int ret = 0;

    oob_irq = rockchip_wifi_get_oob_irq();
    return ret;
}
```