MT7986_FW_Bin_Replacement_AN

Shuai Feng

Version History

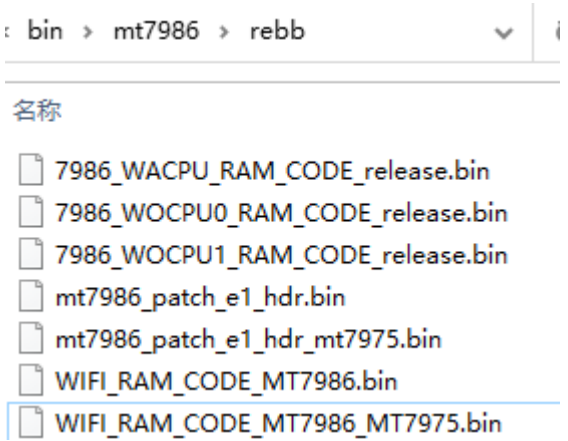
Version	Date	Author (Optional)	Description
0.1	2021-09-26	Shuai feng	First version

MT7986_FW_Bin_Replacement_AN

- FW Bin Path
- WiFi FW Bin Replace
- WiFi FW.h mode Replace
- WO FW Bin Replace
- WO FW.h mode Replace

FW Bin Path

- **Untar MT7986 WiFi Driver:**
  tar –xvf mt7986_xxxx.tar.xz
- **MT7986 Fw Bin include wifi fw and wo fw，Bin files path:**
  bin/mt7986/rebb/
- **Below files should be include in this folder**



MT7986_FW_Bin_Replacement_AN

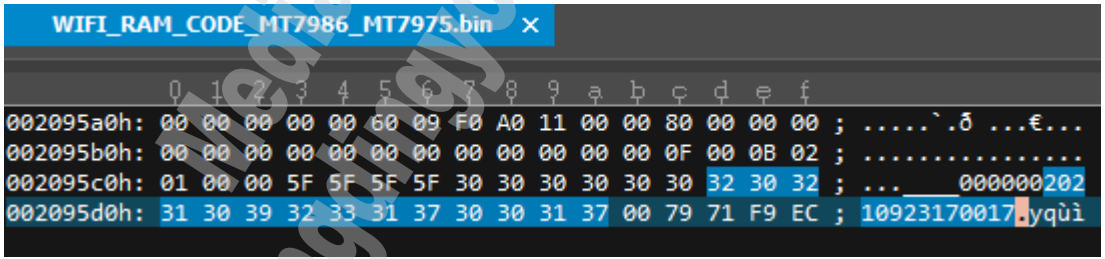
- FW Bin Path
- **WiFi FW Bin Replace**
- WiFi FW.h mode Replace
- WO FW Bin Replace
- WO FW.h mode Replace

WiFi FW Bin Replace(for build flow)

1. Replace the target bin ， Path：“build_dir/xxx/bin/mt7986/rebb/”

2. Build image ， make V=s

3. Check the time stamp , “build_tar/xxx/root-mediatek/lib/firware/”
   They should be updated.



WiFi FW Bin Replace(for test update)

1. In dut console: cd /lib/firmware/ ,

Below files should be include in this folder

```
root@OpenWrt:/lib/firmware# ls
7986_WACPU_RAM_CODE_release.bin
7986_WOCPU0_RAM_CODE_release.bin
7986_WOCPU1_RAM_CODE_release.bin
MT7986_ePAeLNA_EEPROM_AX6000.bin
MT7986_iPAiLNA_EEPROM_AX6000.bin
WIFI_RAM_CODE_MT7986.bin
WIFI_RAM_CODE_MT7986_MT7975.bin
WIFI_RAM_CODE_MT7986_TESTMODE.bin
WIFI_RAM_CODE_MT7986_TESTMODE_MT7975.bin
e2p
mt7986_patch_e1_hdr.bin
mt7986_patch_e1_hdr_mt7975.bin
mt7986_patch_e1_hdr_testmode.bin
mt7986_patch_e1_hdr_testmode_mt7975.bin
```

2、 Replace the target bin in this folder（ tftp ）

3、”wifi reload” or interface down/up ，

show driverinfo check time stamp

CPU0 for WIFI_RAM_CODE_xxx.bin

CPU1 for 7986_WACPU_RAM_CODE_release.bin

```
# iwpriv ra0 show driverinfo
Driver version: 7.5.0.0
FW ver: 0x8a00, HW ver: 0x2060000, CHIP ID: 0x7986
CPU 0 patch info
 Built date: 20210923165914a
 Platform: ALPS
 HW/SW version: 0x8a108a10
 Patch version: 0xffffffff
CPU 0 fw info
 Chip ID: 0x0f
 Eco version: 0x00
 Region number: 0x0b
 Format version: 0x02
 Format flag: 0x01
 Ram version: ____000000
 Built date: 20210923170017
 Common crc: 0xecf97179
CPU 1 fw info
 Chip ID: 0x00
 Eco version: 0x00
 Region number: 0x03
 Format version: 0x02
 Format flag: 0x01
 Ram version: DEV_000000
 Built date: 20210923170048
 Common crc: 0xbc358fe5
```

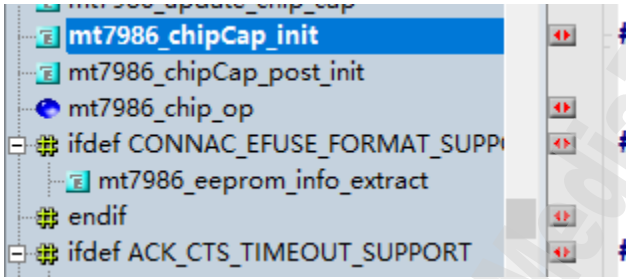
MT7986_FW_Bin_Replacement_AN

- FW Bin Path
- WiFi FW Bin Replace
- **WiFi FW.h mode Replace**
- WO FW Bin Replace
- WO FW.h mode Replace

WiFi FW.h mode Replace 1/2

MT7986 code default load fw from bin，if you need load fw from header file(.h)，you can disable menuconfig： load wifi fw with bin file

```
PA LNA Type of 1st Card (1PA1LNA)  --->
[*] load wifi fw with bin file
(AX6000) Panther SKU Type : AX6000 or AX7800 or S
```




```
#ifdef CONFIG_MT7986_FW_BIN_LOAD
    chip_cap->load_patch_method = BIT(BIN_METHOD);
    chip_cap->load_fw_method = BIT(BIN_METHOD);
#else /* CONFIG_MT7986_FW_BIN_LOAD */
    chip_cap->load_patch_method = BIT(HEADER_METHOD);
    chip_cap->load_fw_method = BIT(HEADER_METHOD);
#endif /* !CONFIG_MT7986_FW_BIN_LOAD */
```

WiFi FW.h mode Replace 2/2

1. Replace the target bin under “build_dir/xxx/bin/mt7986/rebb/”
2. cd “build_dir/xxx/mt_wifi/embedded/”
3. Excute “make build_tools CHIPSET=mt7986 ADIE=mt7975 SKU=ax6000”, it will transfer FW bin into header files.
4. Check the time stamp of the header files under “mt_wifi/embedded/include/mcu/” They should be updated.
5. Build image.

mt7986_firmware.h

```
    0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x0f, 0x00, 0x0b, 0x02,
    0x01, 0x00, 0x00, 0x5f, 0x5f, 0x5f, 0x5f, 0x30, 0x30, 0x30, 0x30, 0x30, 0x30, 0x32, 0x30, 0x32,
    0x31, 0x30, 0x39, 0x32, 0x33, 0x31, 0x37, 0x30, 0x30, 0x31, 0x37, 0x00, 0x79, 0x71, 0xf9, 0xec,
};
```

WiFi Fw.h mode change cmd

1、iwpriv ra0 set load_fw_method=1 //1 from bin, 0 from header

2、wifi reload

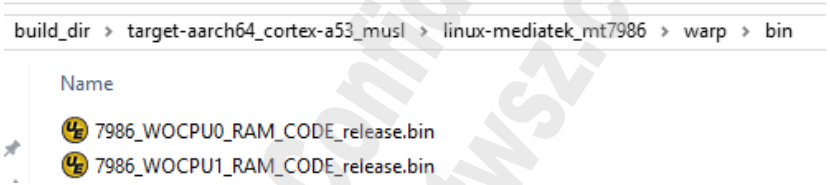
```
INT SetLoadFwMethod(
    IN  PRTMP_ADAPTER pAd,
    IN  RTMP_STRING * arg)
{
    RTMP_CHIP_CAP *pChipCap = hc_get_chip_cap(pAd->hdev_ctrl);
    UINT Enable;/* enable load from bin */

    Enable = os_str_tol(arg, 0, 10);
    if (!Enable) {
        pChipCap->load_fw_method = BIT(HEADER_METHOD);
        MTWF_LOG(DBG_CAT_ALL, DBG_SUBCAT_ALL, DBG_LVL_OFF,
            ("Load from header\n"));
    } else {
        pChipCap->load_fw_method = BIT(BIN_METHOD);
        MTWF_LOG(DBG_CAT_ALL, DBG_SUBCAT_ALL, DBG_LVL_OFF,
            ("Load from bin\n"));
    }
    return TRUE;
}
```

MT7986_FW_Bin_Replacement_AN

- FW Bin Path
- WiFi FW Bin Replace
- WiFi FW.h mode Replace
- **WO FW Bin Replace**
- WO FW.h mode Replace

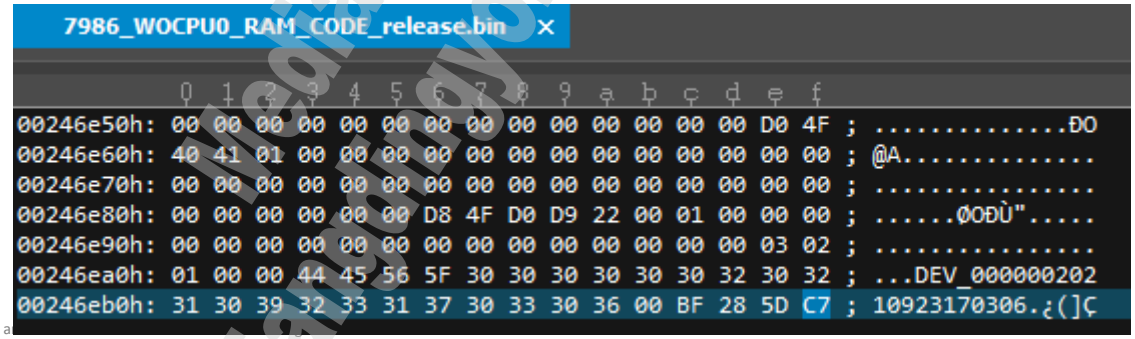
WO FW Bin Replace(for build flow)

1. Replace the target bin ， Path：“build_dir/xxx/linux-mediatek_mt7986/warp/bin



2. Build image ， make V=s

3. Check the time stamp , “build_tar/xxx/root-mediatek/lib/firware/”
   They should be updated.



WO FW Bin Replace(for test update)

1. In dut console: cd /lib/firmware/ ,

Below files should be include in this folder

```
root@OpenWrt:/lib/firmware# ls
7986_WACPU_RAM_CODE_release.bin
7986_WOCPU0_RAM_CODE_release.bin
7986_WOCPU1_RAM_CODE_release.bin
MT7986_ePAeLNA_EEPROM_AX6000.bin
MT7986_iPAiLNA_EEPROM_AX6000.bin
WIFI_RAM_CODE_MT7986.bin
WIFI_RAM_CODE_MT7986_MT7975.bin
WIFI_RAM_CODE_MT7986_TESTMODE.bin
WIFI_RAM_CODE_MT7986_TESTMODE_MT7975.bin
e2p
mt7986_patch_e1_hdr.bin
mt7986_patch_e1_hdr_mt7975.bin
mt7986_patch_e1_hdr_testmode.bin
mt7986_patch_e1_hdr_testmode_mt7975.bin
```

2、 Replace the target bin in this folder（ tftp ）

3、 ”wifi reload” or interface down/up ，

“cat /proc/warp_ctrl/warp0/wo” check time stamp

WARP0 for WOCPU0xxx.bin

```
root@OpenWrt:/# cat /proc/warp_ctrl/warp0/wo
########## WO Firmware ##########
Chip ID: 0x0000
ECO version:0
Version: DEV_000000
Build date: 20210923170306
################################
```

MT7986_FW_Bin_Replacement_AN

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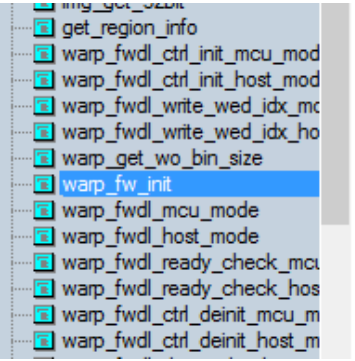
- WiFi FW.h mode Replace
- WO FW Bin Replace
- **WO FW.h mode Replace**

WO FW.h mode Replace 1/2

If /lib/firmware no WOCPUbin，code will load WO0_firmware.h.**




```
00194:      warp_dbg(WARP_DBG_INF,
00195:               "loading %s from /lib/firmware/!\n", bin_name);
00196:
00197:      /*  surpress warning message */
00198:      if (request_firmware_direct(&fw_entry, bin_name, &pdev->dev) != 0) {
00199:          warp_dbg(WARP_DBG_OFF,
00200:                   "%s:fw not available(/lib/firmware/%s), loading embedded version!\n", __func__, bin_name);
00201:
00202:          ctrl->bin_size = warp_get_wo_bin_size(warp);
00203:          ctrl->bin_mode = WO_FW_HEADER;
00204:      } else {
00205:          ctrl->bin_size = fw_entry->size;
00206:          ctrl->bin_mode = WO_FW_BIN;
00207:      }
```

WO FW.h mode Replace 2/2

1. Replace the target bin under “build_dir/xxx/linux-mediatek_mt7986/warp/bin/”
2. cd “build_dir/xxx/linux-mediatek_mt7986/warp/”
3. Excute “make build_tools CHIPSET=mt7986”, it will transfer FW bin into header files.
4. Check the time stamp of the header files under “warp/mcu”
   They should be updated.
5. Build image.

WO0_firmware.h

```
    0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x03, 0x02,
    0x01, 0x00, 0x00, 0x44, 0x45, 0x56, 0x5f, 0x30, 0x30, 0x30, 0x30, 0x30, 0x30, 0x32, 0x30, 0x32,
    0x31, 0x30, 0x39, 0x32, 0x33, 0x31, 0x37, 0x30, 0x33, 0x30, 0x36, 0x00, 0xbf, 0x28, 0x5d, 0xc7,
};
```