OpenWRT 4100 Build SOP (Binary)

ICB/SW2/SS2

Outline

- OpenWrt 4100, Wi-Fi Driver 5032

  - Prepare OpenWrt and Wi-Fi Driver

  - Prepare toolchain (opt.)

  - Build U-Boot

  - Build kernel image with Wi-Fi

Prepare OpenWrt and Wi-Fi Driver

- Prepare OpenWrt and Wi-Fi Driver

```
$ ls
mtk-openwrt-4.1.0.0-20190318-83a1c995.tar
mtk-openwrt-4.1.0.0-WiFi-Package_Bin-20190315.tar.xz
```

- Untar SDK & Wi-Fi driver, and import Wi-Fi driver into SDK

```
tar Jxvf mtk-openwrt-4.1.0.0-20190318-83a1c995.tar
tar Jxvf mtk-openwrt-4.1.0.0-WiFi-Package_Bin-20190315.tar.xz
cp -rf lede/package/* mtk-openwrt-4.0.2.0/package/
cp -rf source/* mtk-openwrt-4.0.2.0/dl/
```

Prepare Toolchain

- Untar toolchain to /opt

```
cd bootloader/toolchain
tar jxvf buildroot-gcc492_arm.tar.bz2 -C /opt
```

Build U-Boot

- ## Enter menuconfig

```
cd bootloader/Uboot-arm
make menuconfig
```

```
(MT7622) Chip ID
(ASIC) Chip Type
(SNAND) Flash Type                          => Change to NAND if you use Parallel NAND
[ ] Customize Dram Size (NEW)               => Change size here
(GMAC1) Use GE1 or GE2
(GE_SGMII_FORCE_2500) GE1 connected to
(None) Default Behavior when Kernel Boot up Fail
```

- ## Build U-Boot, and download u-boot-mtk.bin into flash

```
make
```

OpenWrt 4100 – 7622+15

- Modify package Makefile of mt_wifi

```
cd mtk-openwrt-4.1.0.0/
vim package/mtk/drivers/mt_wifi/Makefile
PKG_SOURCE:=MT7622_7615_SoftAP_v5.0.3.2_17722b_20190308.tar.xz
```

- Copy .config file

```
cp autobuild/mt7622-AP-RFB1/.config .config
```

SDK Configuration

- Configure SDK

```
make menuconfig
```

SDK Configuration

- Select *Libraries*
  - Enable libmapd

SDK Configuration

- Select *MTK Properties > Applications*

  - Enable 1905daemon
  - Enable mapd
  - Enable wapp
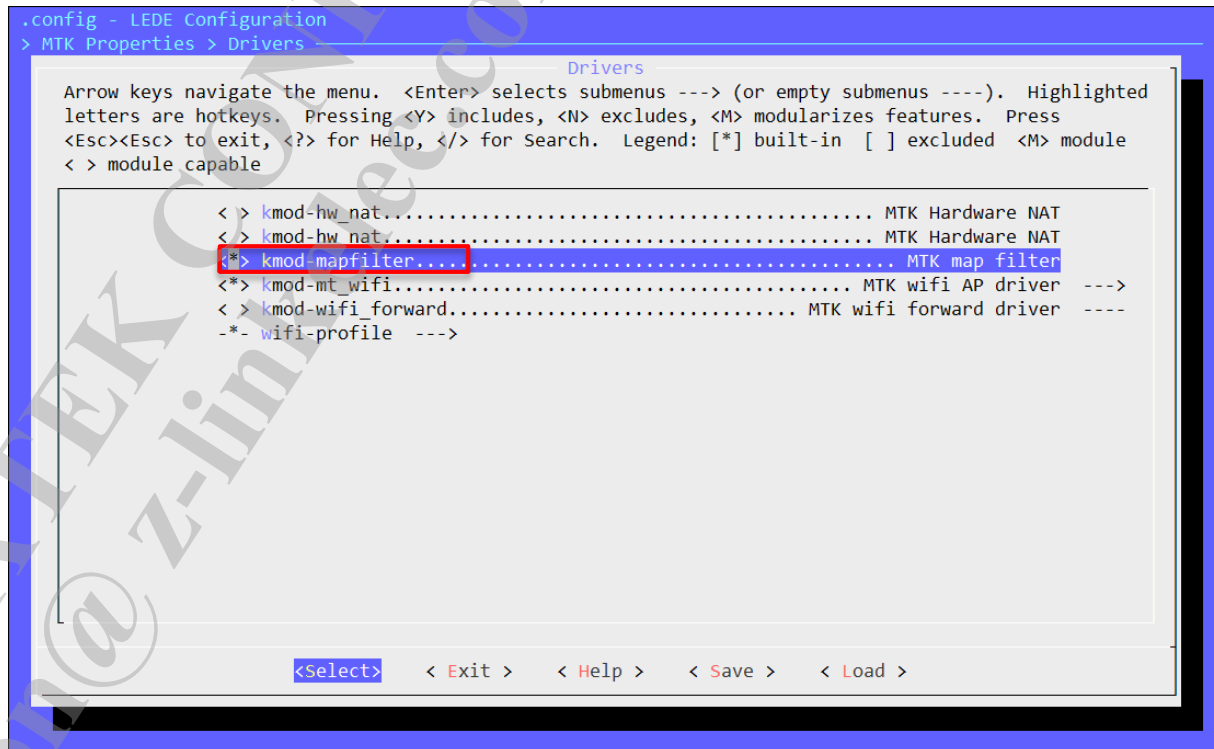
SDK Configuration

- Select *MTK Properties > Drivers*
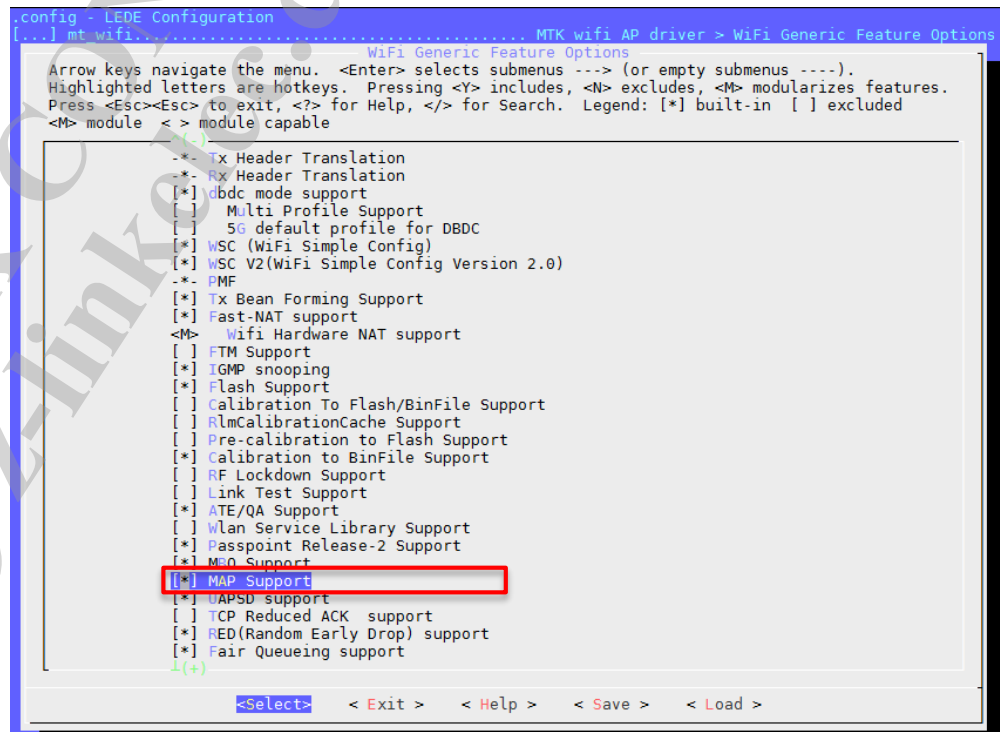 - Enable mapfilter

SDK Configuration

- Select *MTK Properties > Drivers > kmod-mt_wifi > WiFi Operation Modes*
  - **Enable** Concurrent WPS Support
  - **Enable** Air Monitor

```
^(-)
[ ] CFG80211
[ ] MBSS AS WDS AP Support
[ ] Dscp Qos Mapping Support
[ ] Dscp Priority Mapping Support
[ ] Minimum PHY rate support
[ ] Fast UP rate support
[*] Concurrent WPS Support
[*] User specific tx rate of mcast pkt
[*] MediaAir(VOW) support
[*] Band Steering
[ ] LED Control Support
[*] WLAN hook Support
[ ] Radius Accounting Support
[*] GreenAP Support
[ ] TxRx Stats Support
[ ] Vendor11 Feature Enable
[*] Pcie Aspm Dynamic Control Support
[ ] Coex Support
[ ] Whole Home Coverage - Easy Setup
[ ] Whole Home Coverage - Event Notifier
[*] Air Monitor
-*- 802.11v WNM Support
-*- 802.11u Interworking
[ ] NET TX Queue Support
[*] WPA3 Support
[*] Enhanced Open Support
[ ] Single SKU Support
```

SDK Configuration

- Select *MTK Properties > Drivers > kmod-mt_wifi > WiFi Generic Feature Options*
  - Enable MAP Support

OpenWrt 4100 – 7622+15

- **Default .config file**

  make defconfig

- **Build the source code**

  make V=s

OpenWrt 4100 – 7622+15

- Location of image

cd mtk-openwrt-4.1.0.0/bin/targets/mediatek/mt7622-glibc

```
[mtk16968@mtkslt208 mt7622-glibc]$ls
config.seed                        lede-mediatek-mt7622-MTK-AC2600-RFB1-squashfs-sysupgrade.bin   mt7622-ac4300rfb1.dtb
kernel-debug.tar.bz2               lede-mediatek-mt7622-MTK-AC4300-RFB1-squashfs-sysupgrade.bin   packages
lede-mediatek-mt7622.manifest      mt7622-ac2600rfb1.dtb                                          sha256sums
```

Check

- ## Location

  cd mtk-openwrt-4.1.0.0/staging_dir/target-aarch64_cortex-a53+neon-vfpv4_glibc-2.24/root-mediatek/usr/lib

  cd mtk-openwrt-4.1.0.0/staging_dir/target-aarch64_cortex-a53+neon-vfpv4_glibc-2.24/root-mediatek/usr/bin

Check

- Location

  cd mtk-openwrt-4.1.0.0/staging_dir/target-aarch64_cortex-a53+neon-vfpv4_glibc-2.24/root-mediatek/lib/modules/4.4.146/

```
[mtk16968@mtkslt208 4.4.146]$ls
ahci_mtk.ko            iptable_filter.ko      mt_whnat.ko              ohci-platform.ko       xhci-hcd.ko
arc4.ko                iptable_mangle.ko      mt_wifi.ko               ppp_async.ko           xhci-mtk.ko
authenc.ko             iptable_nat.ko         nf_conntrack_ipv4.ko     ppp_generic.ko         xhci-pci.ko
crc-ccitt.ko           ip_tables.ko           nf_conntrack_ipv6.ko     ppp_mppe.ko            xhci-plat-hcd.ko
cryptodev.ko           ipt_MASQUERADE.ko      nf_defrag_ipv4.ko        pppoe.ko               xt_comment.ko
ecb.ko                 ipt_REJECT.ko          nf_defrag_ipv6.ko        pppox.ko               xt_conntrack.ko
ehci-hcd.ko            l2tp_core.ko           nf_log_common.ko         pptp.ko                xt_limit.ko
ehci-platform.ko       l2tp_netlink.ko        nf_log_ipv4.ko           sdhci.ko               xt_LOG.ko
gpio-button-hotplug.ko l2tp_ppp.ko            nf_log_ipv6.ko           sdhci-pltfm.ko         xt_mac.ko
gre.ko                 libahci.ko             nf_nat_ipv4.ko           sha1_generic.ko        xt_mark.ko
ip6table_filter.ko     libahci_platform.ko    nf_nat.ko                slhc.ko                xt_multiport.ko
ip6table_mangle.ko     libata.ko              nf_nat_masquerade_ipv4.ko udp_tunnel.ko         xt_nat.ko
ip6_tables.ko          mapfilter.ko           nf_nat_redirect.ko       usb-common.ko          xt_REDIRECT.ko
ip6t_REJECT.ko         mmc_block.ko           nf_reject_ipv4.ko        usbcore.ko             xt_state.ko
ip6_udp_tunnel.ko      mmc_core.ko            nf_reject_ipv6.ko        usb-storage.ko         xt_time.ko
ip_gre.ko              mtk-sd.ko              ohci-hcd.ko              wifi_forward.ko
```

everyday genius