

新硬件适配

- 1、在对应硬件的硬件型号目录下添加新硬件的 dts 文件
- 2、往内核写入 dts 信息
- 3、添加新硬件的设备信息
- 4、完备 sysupgrade 的升级检查信息
- 5、设备 board name
- 6、无线校准方面的修改（有无线的才修改）
- 7、添加系统网口设置
- 8、添加系统灯的设置

注意：此文以 AC4019 的适配为例

- 1、dts 文件路径：target/linux/ipq806x/files-4.9/arch/arm/boot/dts/qcom-ipq4019-ac4019.dts

我是直接复制的前人写过的一个 dts，然后根据具体的硬件信息（GPIO，无线 2G 5G 等）修改相应的地方；dts 的内容到底应该怎么写，我还没有搞清楚的；仅仅局限于复制别人的，然后修改；

- 2、修改 target/linux/ipq806x/files-4.9/arch/arm/boot/dts/Makefile 文件，添加 qcom-ipq4019-ac4019.dtb，这样才会将 qcom-ipq4019-ac4019.dts 的信息写入内核；

```
diff --git a/target/linux/ipq806x/patches-4.9/0070-add-ac4019-dtb.patch b/target/linux/
index a8d6169..7a7da6d 100644
--- a/target/linux/ipq806x/patches-4.9/0070-add-ac4019-dtb.patch
+++ b/target/linux/ipq806x/patches-4.9/0070-add-ac4019-dtb.patch
@@ -1,11 +1,12 @@
diff -uNr a/arch/arm/boot/dts/Makefile b/arch/arm/boot/dts/Makefile
--- a/arch/arm/boot/dts/Makefile      2018-01-23 14:35:01.767854359 +0000
+++ b/arch/arm/boot/dts/Makefile      2018-01-23 14:37:14.517420922 +0000
-@@ -618,6 +618,7 @@
+--- a/arch/arm/boot/dts/Makefile      2018-01-26 11:29:19.876762482 +0800
++++ b/arch/arm/boot/dts/Makefile      2018-01-26 11:31:05.044659696 +0800
+@@ -618,6 +618,8 @@
+       qcom-apq8084-mtp.dtb \
+       qcom-ipq4019-ap.dk01.1-cl.dtb \
+       qcom-ipq4019-ap.dk04.1-cl.dtb \
+       qcom-ipq4019-ac4019-010.dtb \
++       qcom-ipq4019-ac4019-020.dtb \
+       qcom-ipq4019-fritz4040.dtb \
+       qcom-ipq4019-nbg6617.dtb \
+       qcom-ipq4019-rt-ac58u.dtb \
+
(END)
```

- 3、修改 target/linux/ipq806x/image/Makefile，添加 Device 信息；

```
diff --git a/target/linux/ipq806x/image/Makefile b/target/linux/ipq806x/image/Makefile
index f7f495c..7911815 100644
--- a/target/linux/ipq806x/image/Makefile
+++ b/target/linux/ipq806x/image/Makefile
@@ -311,6 +311,24 @@
@@ -311,6 +311,24 @@
define Device/ac4019-010
    DEVICE_PACKAGES := kmod-usb-phy-qcom-ipq4019 kmod-ath10k ath10k-firmware-qca4019
endef
TARGET_DEVICES += ac4019-010
+
+define Device/ac4019-020
+    $(call Device/FitImage)
+    DEVICE_DTS := qcom-ipq4019-ac4019-020
+    KERNEL_LOADADDR := 0x80208000
+    KERNEL_INSTALL := 1
+    KERNEL_SIZE := 4096k
+    BLOCKSIZE := 64k
+    PAGESIZE := 2048
+    BOARD_NAME := ac4019-020
+    DEVICE_TITLE := QCA AC4019-020
+    IMAGES = sysupgrade.bin
+    FILESYSTEMS = squashfs
+    IMAGE/sysupgrade.bin := append-kernel | pad-to $$$$$(KERNEL_SIZE) | append-rootfs | pad-rootfs | append-metadata
+    DEVICE_PACKAGES := kmod-usb-phy-qcom-ipq4019 kmod-ath10k ath10k-firmware-qca4019
+endef
+TARGET_DEVICES += ac4019-020
```

4、修改 target/linux/ipq806x/base-files/lib/upgrade/platform.sh, 在 platform_do_upgrade 函数里面添加 AC4019 的信息;

```
diff -git a/target/linux/ipq806x/base-files/lib/upgrade/platform.sh b/target/linux/ipq806x/base-files/lib/upgrade/platform.sh
index 0b0a0e1..b41870e 100644
--- a/target/linux/ipq806x/base-files/lib/upgrade/platform.sh
+++ b/target/linux/ipq806x/base-files/lib/upgrade/platform.sh
@@ -36,7 +36,6 @@ platform_do_upgrade() {
     nbg6817 |\
     r7500 |\
     r7500v2 |\
-    ac4019-010 |\
     r7800)
         nand_do_upgrade "$ARGV"
         ;;
@@ -58,6 +57,8 @@ platform_do_upgrade() {
     MTD_CONFIG_ARGS="-s 0x200000"
     default_do_upgrade "$ARGV"
     ;;
+    ac4019-010 |\
+    ac4019-020 |\
+    *)
         default_do_upgrade "$ARGV"
         ;;
```

5、修改 target/linux/ipq806x/base-files/lib/ipq806x.sh, 在 ipq806x_board_detect 添加 AC4019 的 board name;

```
diff -git a/target/linux/ipq806x/base-files/lib/ipq806x.sh b/target/linux/ipq806x/base-files/lib/ipq806x.sh
index e2b7bbf..edd44c3 100644
--- a/target/linux/ipq806x/base-files/lib/ipq806x.sh
+++ b/target/linux/ipq806x/base-files/lib/ipq806x.sh
@@ -56,6 +56,9 @@ ipq806x_board_detect() {
     *"AC4019-010")
         name="ac4019-010"
         ;;
+    *"AC4019-020")
+        name="ac4019-020"
+        ;;
     esac

    [ -z "$name" ] && name="unknown"
```

6、target/linux/ipq806x/base-files/etc/hotplug.d/firmware/11-ath10k-caldata 添加 AC4019 的无线相关, 可以模仿其他型号的硬件填写;

```
diff -git a/target/linux/ipq806x/base-files/etc/hotplug.d/firmware/11-ath10k-caldata b/target/linux/ipq806x/base-files
index fb121d0..46cf47f 100644
--- a/target/linux/ipq806x/base-files/etc/hotplug.d/firmware/11-ath10k-caldata
+++ b/target/linux/ipq806x/base-files/etc/hotplug.d/firmware/11-ath10k-caldata
@@ -74,6 +74,9 @@ case "$FIRMWARE" in
    ac4019-010)
        ath10kcal_extract "0:ART" 4096 12064
        ;;
+    ac4019-020)
+        ath10kcal_extract "0:ART" 4096 12064
+        ;;
    ap-dk04.l-c1)
        ath10kcal_extract "0:ART" 4096 12064
        ;;
@@ -93,6 +96,9 @@ case "$FIRMWARE" in
    ac4019-010)
        ath10kcal_extract "0:ART" 20480 12064
        ;;
+    ac4019-020)
+        ath10kcal_extract "0:ART" 20480 12064
+        ;;
    ap-dk04.l-c1)
        ath10kcal_extract "0:ART" 20480 12064
```

7、target/linux/ipq806x/base-files/etc/board.d/02_network 添加 AC4019 的网口设置, 交换片, 网口 lan wan 的指定位置;

```
diff -git a/target/linux/ipq806x/base-files/etc/board.d/02_network b/target/linux/ipq806x/base-files/etc/board.d/02_network
index f3ec1e9..020476a 100755
--- a/target/linux/ipq806x/base-files/etc/board.d/02_network
+++ b/target/linux/ipq806x/base-files/etc/board.d/02_network
@@ -70,6 +70,10 @@ ac4019-010)
    ucidef_add_switch "switch0" \
        "0t@eth0" "3:lan" "4:lan" "5:wan"
    ;;
+ac4019-020)
+    ucidef_add_switch "switch0" \
+        "0t@eth0" "1:lan" "2:lan" "3:lan" "4:lan" "5:wan"
+    ;;
+*)
    echo "Unsupported hardware. Network interfaces not initialized"
```

8、target/linux/ipq806x/base-files/etc/board.d/01_leds 添加 led 灯状态的配置（根据需要来，有灯才控制）

led 灯状态配置最终保存在设备/etc/config/system 文件里面