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Rockchip_AB_System_OTA_from_Android9.0_to_Android10.0_Introduction

（第二系统产品部）

(Technical Department, R & D Dept. II）

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目 录 Contents

1 概述 OVERVIEW 1
2 ANDROID 9.0 AB 系统所需补丁说明 PATCH REQUIRED FOR ANDROID9.0 AB SYSTEM 1
3 ANDROID 10.0 AB 系统所需补丁说明 PATCH REQUIRED FOR ANDROID10.0 AB SYSTEM 2
3.1 ANDROID 系统配置 ANDROID SYSTEM CONFIGURATION 2
3.1.1 build 配置 build configuration 3
3.1.2 device/rockchip/common 配置 device/rockchip/common configuration 3
3.1.3 device/rockchip/rkxxxx 配置 device/rockchip/rkxxxx configuration 3
3.2 U-BOOT 配置 U-BOOT CONFIGURATION 6
4 使用说明 USAGE 6

1 概述 Overview

本文档描述了如何从 Rockchip Android 9.0 A/B 系统通过 OTA 的方式升级到 Android 10.0 A/B 系统。

This document describes how to upgrade from Rockchip Android9.0 A/B system to Android10.0 A/B system through OTA.

在 Rockchip Android 10.0 平台上，通过对应 lunch 项来实现对应 9.0 系统升级到 10.0 系统。如 rk3326 10.0 平台上 lunch 项 rk3326_pie 就实现了 Android 9.0 的 rk3326_pie 通过 OTA 升级到 rk3326 10.0 系统。

On Rockchip Android10.0 platform, the corresponding lunch option can implement upgrading the system from Android9.0 to Android10.0. For example, on rk3326 10.0 platform, lunch option rk3326_pie can implement rk3326 upgrading from Android9.0 to 10.0 system through OTA.

2 Android 9.0 AB 系统所需补丁说明 Patch required for Android9.0 AB system

在 Andriod 9.0 AB 系统上需增加如下补丁，并确保升级 10.0 之前，设备中的 9.0 固件包含该补丁。

The following patch needs to be added on Android9.0 AB system. Please confirm Android9.0 image in the device includes this patch before upgrading to Android10.0.

1.关闭 libvintf 升级包兼容性检查

Disable the compatibility check for libvintf upgrading package

system/libvintf：

```
diff --git a/VintfObject.cpp b/VintfObject.cpp
index 604f7cb..afea999 100644
--- a/VintfObject.cpp
+++ b/VintfObject.cpp
@@ -528,7 +528,7 @@ int32_t checkCompatibility(const std::vector<std::string>& xmls, bool mount,
             }
             return INCOMPATIBLE;
         }
-
+#if 0
         if ((disabledChecks & DISABLE_RUNTIME_INFO) == 0) {
             if (!updated.runtimeInfo->checkCompatibility(*updated.fwk.matrix, error, disabledChecks)) {
                 if (error) {
@@ -538,6 +538,7 @@ int32_t checkCompatibility(const std::vector<std::string>& xmls, bool mount,
                 return INCOMPATIBLE;
```

```
            }
        }
+#endif

        return COMPATIBLE;
        }
```

3 Android 10.0 AB 系统所需补丁说明 Patch required for Android10.0 AB system

在 Rockchip Android 10.0 系统上，需要按本节描述的步骤进行顺序配置。并且本节的所有配置**仅针对需要将 9.0 AB 系统升级到 10.0 AB 系统的 10.0 项目代码工程，正常的 10.0 代码工程不能添加本节描述的补丁。**

On Rockchip Android10.0 system, it requires to configure step by step according to the description of this chapter. And all the configurations in this chapter are only applicable for the 10.0 project which is going to upgrade AB system from 9.0 to 10.0. The patch described in this chapter cannot be added to the normal 10.0 project.

10.0 平台所需的配置包括两大方面，分别是 Android 系统配置和 U-Boot 配置。

The configurations required for the 10.0 platform include two aspects, which are Android system configuration and U-Boot configuration.

3.1 Android 系统配置 Android system configuration

Android 系统配置包括 build 配置、device/rockchip/common 配置和 device/rockchip/rkxxx 具体芯片的配置（如 device/rockchip/rk3326）。该部分的配置补丁和相关参考可从如下的百度网盘链接提取：

Android system configuration includes build configuration, device/rockchip/common configuration and device/rockchip/rkxxx the specific chip configuration (such as device/rockchip/rk3326). This part of configuration patch and relative reference are available through the following baidu cloud link:

链接：https://pan.baidu.com/s/1CUoIaJ3EuNBe3TSWYyshhg

Link: https://pan.baidu.com/s/1CUoIaJ3EuNBe3TSWYyshhg

提取码：qsip

Code: qsip

补丁包 Rockchip_AB_9.0_to_10.0_patches_JDY.rar 的结构如下图 1 所表示：

The structure of the patch package Rockchip_AB_9.0_to_10.0_patches_JDY.rar is shown as below picture 1:

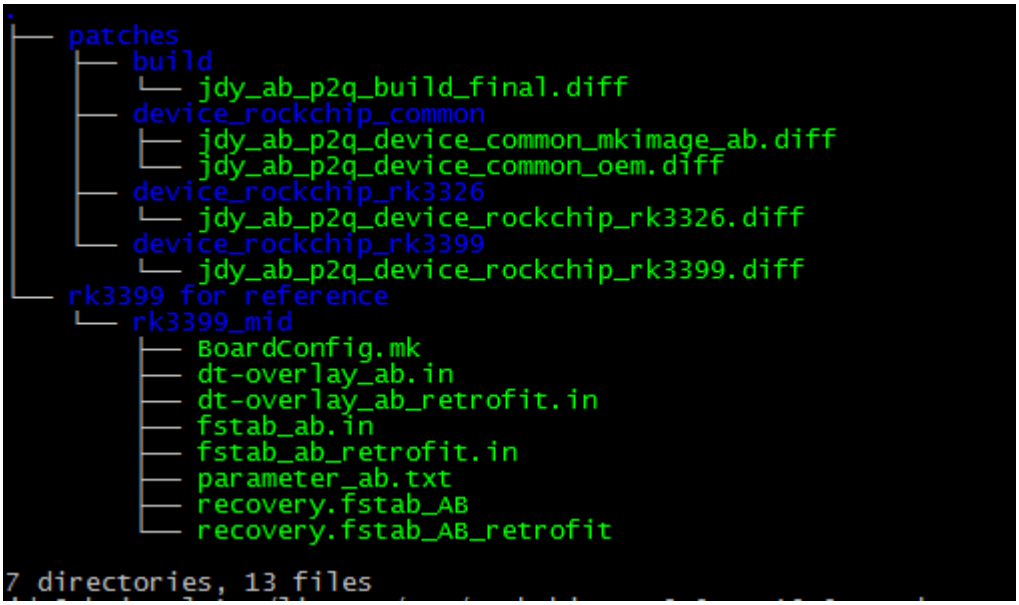

图 1 补丁包 Rockchip_AB_9.0_to_10.0_patches_JDY.rar 的结构

Picture 1 The structure of the patch package Rockchip_AB_9.0_to_10.0_patches_JDY.rar

3.1.1 build 配置 build configuration

打补丁 Rockchip_AB_9.0_to_10.0_patches_JDY/patches/build/jdy_ab_p2q_build_final.diff。如果补丁冲突，请手动按照补丁修改。

Apply the patch Rockchip_AB_9.0_to_10.0_patches_JDY/patches/build/jdy_ab_p2q_build_final.diff. If there is conflict, please manually modify the patch.

3.1.2 device/rockchip/common 配置 device/rockchip/common configuration

打 Rockchip_AB_9.0_to_10.0_patches_JDY/patches/device_rockchip_common/下的两个补丁：

Apply the two patches under Rockchip_AB_9.0_to_10.0_patches_JDY/patches/device_rockchip_common/:

(1) jdy_ab_p2q_device_common_oem.diff

(2) jdy_ab_p2q_device_common_mkimage_ab.diff

如果补丁冲突，请手动按照补丁修改。

If there is conflict, please manually modify the patch.

注意该步骤完成后，需要将打补丁后的 mkimage_ab.sh 拷贝到 SDK 根目录下使用。

After this step, need to copy mkimage_ab.sh patched to the root directory of SDK for usage.

3.1.3 device/rockchip/rkxxxx 配置 device/rockchip/rkxxxx configuration

对于 rk3326 (lunch rk3326_pie)来说，首先 repo sync 到最新代码，然后直接打如下补丁即可：

For rk3326 (lunch rk3326_pie), firstly repo sync to the latest code, and then directly apply the following patch:

Rockchip_AB_9.0_to_10.0_patches_JDY/patches/device_rockchip_rk3326/jdy_ab_p2q_device_roc

kchip_rk3326.diff

对于 rk3399 (lunch rk3399_mid) 来说，首先 repo sync 到最新代码，然后直接打如下补丁即可：

For rk3399 (lunch rk3399_mid), firstly repo sync to the latest code, and then directly apply the following patch:

Rockchip_AB_9.0_to_10.0_patches_JDY/patches/device_rockchip_rk3399/jdy_ab_p2q_device_rockchip_rk3399.diff

对于其他芯片和项目来说，请按如下步骤顺序配置和确认（以 rk3399 为例，修改位于 device/rockchip/rk3399 和 device/rockchip/rk3399/rk3399_mid）。

For other chipsets and projects, please follow the steps to configure and confirm as below (take rk3399 as example, the modification is in device/rockchip/rk3399 and device/rockchip/rk3399/rk3399_mid)

1.将 9.0 对应的 parameter_ab.txt 文件拷贝到 10.0 中，同时将 parameter_ab.txt 中的 FIRMWARE_VER 由 9.0 改为 10.0。

Copy the parameter_ab.txt file of 9.0 to 10.0, and change FIRMWARE_VER in parameter_ab.txt from 9.0 to 10.0.

2.新增如下 6 个文件：

Add the following 6 files:

(1) dt-overlay_ab.in

(2) dt-overlay_ab_retrofit.in

(3) fstab_ab.in

(4) fstab_ab_retrofit.in

(5) recovery.fstab_AB

(6) recovery.fstab_AB_retrofit

以上 6 个文件请参考“Rockchip_AB_9.0_to_10.0_patches_JDY/rk3399 for reference/rk3399_mid”里的对应文件，基本上可以直接使用。

Please refer to the corresponding files in “Rockchip_AB_9.0_to_10.0_patches_JDY/rk3399 for reference/rk3399_mid” for the above 6 files, which basically can be used directly.

3. device\rockchip\rkxxx 下根据已有的 manifest.xml，新建 manifest_ab.xml 文件。manifest_ab.xml 文件只需在原有 manifest.xml 文件上新增如下配置即可：

Create manifest_ab.xml file according to the existing manifest.xml in device\rockchip\rkxxx. manifest_ab.xml file only requires to add the following configuration based on the original manifest.xml:

```
<hal format="hidl">
        <name>android.hardware.boot</name>
        <transport>hwbinder</transport>
        <version>1.0</version>
        <interface>
            <name>IBootControl</name>
            <instance>default</instance>
        </interface>
```

</hal>

4. device\rockchip\rkxxx 下的 BoardConfig 中导入 AB 相关配置。同时配置 DEVICE_MANIFEST_FILE，使其指向新建的 manifest_ab.xml 文件。

Load AB related configurations into BoardConfig in device\rockchip\rkxxx. And configure DEVICE_MANIFEST_FILE to make it point to the newly created manifest_ab.xml file.

以 rk3399 为例。

Take rk3399 as example.

device/rockchip/rk3399/rk3399_mid/BoardConfig.mk：

```
 CAMERA_SUPPORT_AUTOFOCUS:= false

-ifeq ($(strip $(BOARD_USES_AB_IMAGE)), true)
-TARGET_RECOVERY_FSTAB := device/rockchip/rk3399/rk3399_mid/fstab.rk30board_AB
-endif
+# AB image definition
+BOARD_USES_AB_IMAGE := false

-# Android Q use odm instead of oem, but for upgrading to Q, partation list cant be changed, odm will mo
-BOARD_ODMIMAGE_PARTITION_SIZE := $(shell python device/rockchip/common/get_partition_size.py device/roc
+ifneq ($(strip $(BOARD_USES_AB_IMAGE)), true)
+    # Android Q use odm instead of oem, but for upgrading to Q, partation list cant be changed, odm wil
+    BOARD_ODMIMAGE_PARTITION_SIZE := $(shell python device/rockchip/common/get_partition_size.py device
+endif

 # No need to place dtb into boot.img for the device upgrading to Q.
 BOARD_INCLUDE_DTB_IN_BOOTIMG :=
 BOARD_PREBUILT_DTBIMAGE_DIR :=

-#Need to build system as root for the device upgrading to Q.
-BOARD_BUILD_SYSTEM_ROOT_IMAGE := true
+ifneq ($(strip $(BOARD_USES_AB_LEGACY_RETROFIT)), true)
+    #Need to build system as root for the device upgrading to Q.
+    BOARD_BUILD_SYSTEM_ROOT_IMAGE := true
+endif
+
+ifeq ($(strip $(BOARD_USES_AB_IMAGE)), true)
+    ifeq ($(strip $(BOARD_USES_AB_LEGACY_RETROFIT)), true)
+        PRODUCT_FSTAB_TEMPLATE := device/rockchip/rk3399/rk3399_mid/fstab_ab_retrofit.in
+        PRODUCT_DTBO_TEMPLATE := device/rockchip/rk3399/rk3399_mid/dt-overlay_ab_retrofit.in
+    else
+        PRODUCT_FSTAB_TEMPLATE := device/rockchip/rk3399/rk3399_mid/fstab_ab.in
+        PRODUCT_DTBO_TEMPLATE := device/rockchip/rk3399/rk3399_mid/dt-overlay_ab.in
+    endif
+    include device/rockchip/common/BoardConfig_AB.mk
+    ifeq ($(strip $(BOARD_USES_AB_LEGACY_RETROFIT)), true)
+        TARGET_RECOVERY_FSTAB := device/rockchip/rk3399/rk3399_mid/recovery.fstab_AB_retrofit
+    else
+        TARGET_RECOVERY_FSTAB := device/rockchip/rk3399/rk3399_mid/recovery.fstab_AB
+    endif
+endif
```

图 2 rk3399/rk3399_mid/BoardConfig.mk

Picture 2 rk3399/rk3399_mid/BoardConfig.mk

device\rockchip\rk3399：

BoardConfig.mk:

```
ifeq ($(strip $(BOARD_USES_AB_IMAGE)), true)
DEVICE_MANIFEST_FILE := device/rockchip/$(TARGET_BOARD_PLATFORM)/manifest_ab.xml
endif
```

图 3 rk3399/BoardConfig.mk

Picture 3 rk3399/BoardConfig.mk

device/rockchip/rk3399/rk3399_mid/rk3399_mid.mk

+# For upgrading device with retrofit

+BOARD_USES_AB_LEGACY_RETROFIT := true

+

+ifeq ($(strip $(BOARD_USES_AB_LEGACY_RETROFIT)), true)

+ include device/rockchip/common/BoardConfig_AB_retrofit.mk

+endif

+

注意：

Note:

（1）如上配置基于 rk3399/rk3399_mid，须根据实际芯片和项目修改对应的 device\rockchip\rkxxx 下的对应文件。

The above configurations are based on rk3399/rk3399_mid. Need to modify the corresponding file in device\rockchip\rkxxx according to the actual chipset and project.

（2）须将如上图 2 中的 BOARD_USES_AB_IMAGE 设置为 true，对应的参考 **BoardConfig.mk** 见“Rockchip_AB_9.0_to_10.0_patches_JDY\rk3399 for reference\rk3399_mid\BoardConfig.mk”。

Need to set BOARD_USES_AB_IMAGE as true in picture 2. Refer to “Rockchip_AB_9.0_to_10.0_patches_JDY\rk3399 for reference\rk3399_mid\BoardConfig.mk” for the corresponding reference **BoardConfig.mk.**

（3）须将如上图 2 补丁中的 rk3399/rk3399_mid 改为实际芯片和实际项目。

Need to modify rk3399/rk3399_mid in the patch in picture 2 to the actual chipset and project.

3.2 U-boot 配置 U-boot configuration

在 uboot 中，针对具体芯片的配置文件，添加 CONFIG_ANDROID_AB=y 配置项，参考配置如下图 4 所示：

In uboot, add CONFIG_ANDROID_AB=y configuration item for the configuration file of the specific chipset. The reference configuration is shown as picture 4:

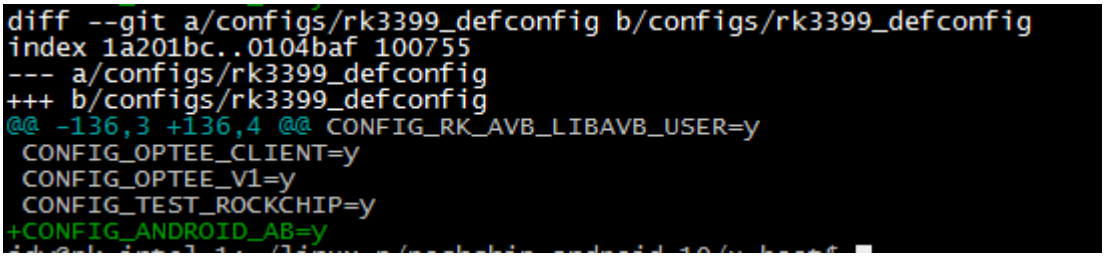

图 4.U-boot 配置

Picture 4 U-boot configuration

4 使用说明 Usage

严格按照“3 Android 10.0 AB 系统所需补丁说明”的说明完成修改后，在 Rockchip Android 10.0 平台上，按如下方式操作产生对应的 OTA 升级包（rkxxxx-ota-**retrofit**-xx.zip），然后将该升级包放置在 Rockchip Android 9.0 设备上，进行正常的 AB 升级即可。

Strictly follow the instruction of “3 Patch required for Android 10.0 AB system” to finish the modification. On Rockchip Android10.0 platform, generate the corresponding OTA upgrading package

（rkxxxx-ota-**retrofit**-xx.zip） according to the following operation, and then use the upgrading package to do the normal AB upgrading on Rockchip Android9.0 device.

1. 选择 9.0 系统升级到 10.0 系统的对应 lunch 项，如 rk3399_mid

   Select the corresponding lunch option for upgrading the system from 9.0 to 10.0, such as rk3399_mid

2. 正常编译系统（编译 uboot、kernel 并且 lunch 后执行如下命令编译）：

   Normally compile the system (compile uboot, kernel and execute the following command to compile after lunch):

   make clean && make –j32 && make otapackage -j32 && ./mkimage_ab.sh ota

   注意：

   Note:

   (1) 必须 make clean

   Must make clean

   (2)mkimage_ab.sh 从 device/rockchip/common 下拷贝出来（须按照“3 Android 10.0 AB 系统所需补丁说明”操作后，再拷贝出来）

   Copy mkimage_ab.sh from device/rockchip/common (need to operate according to “3 Patch required for Android 10.0 AB system” before copying)

   (3) 用 AndroidTool 以 AB 固件的方式烧写该步骤编译出来的 rockdev/下的对应固件，确保编译出来的固件烧写后可以正常工作。注意 system_a/system_b, vendor_a/vendor_b, oem_a/oem_b 分别烧写 rockdev/下的 super_system.img, super_vendor.img, super_oem.img。

   Use AndroidTool to flash the corresponding image under rockdev/ compiled in this step in the way of AB image, and confirm the image can work normally after flashing. Pay attention to that system_a/system_b, vendor_a/vendor_b, oem_a/oem_b separately flash super_system.img, super_vendor.img, super_oem.img under rockdev/.

   (4) 升级包需使用带 ota-retrofit 的那个升级包，如 rk3399_mid-ota-retrofit-eng.jdy.zip。

   Need to use the upgrading package with ota-retrofit, such as rk3399_mid-ota-retrofit-eng.jdy.zip.

3. 取出第 2 步编译出来的升级包，使用带 ota-retrofit 的那个升级包，如 rk3399_mid-ota-retrofit-eng.jdy.zip。

   Fetch out the upgrading package compiled in step 2, use the upgrading package with ota-retrofit, such as rk3399_mid-ota-retrofit-eng.jdy.zip.

   注意：首先必须确保上面第 2 步编译出来的固件烧写后可以正常工作，具体见上面第 2 点的“注意”中的第(3)点。

   Note: firstly must ensure the image compiled in step 2 can work normally after flashing. Refer to the point (3) of note in step 2 above for more details.

4. 将对应的升级包放置在 Android 9.0 设备上进行正常的 AB 系统升级即可。

   Just use the corresponding upgrading package to do the normal AB system upgrading on Android9.0 device.