Rockchip_Developer_Guide_Android_Multi_Audio_CN

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前言

概述

本文主要介绍Android Multi Audio，开发或技术支持人员通过阅读此文档，对Android平台Mulit Audio模块有一个初步的了解，帮助阅读者开发和调试。

产品版本

芯片名称	内核版本	**Android**版本
适配所有芯片	适配所有版本	12

读者对象

本文档（本指南）主要适用于以下工程师：

技术支持工程师

软件开发工程师

修订记录

版本号	作者	修改日期	修改说明
V1.0.0	刘兴亮	2022-04-28	初始版本
V1.0.1	刘兴亮	2022-10-20	添加新增

目录

1. 背景介绍

Android系统多个AudioTrack同时工作默认混音，即使设备支持多个声卡，没有现成的接口可以使得各声卡同时分别输出不同的声音，系统会按照AudioPolicy中预先设置的策略选择优先级最高的声卡。Android系统虽然定义了多种类型声卡设备，但是如果设备有多个同种类型的声卡（例如，多个HDMI），Android系统现有代码无法对其进行区分。

Android 12以后，谷歌框架已经支持多设备同时录音，但是需要厂商依据具体情况去适配开发，现有的代码默认是不支持多设备同时录音的。

鉴于此，RK开发了一套MultiAudio代码，便于用户合理使用设备声卡，提高用户体验。

2. RK MultiAudio

MultiAudio能够实现如下功能：

- 多HDMI/DP 插拔识别
- PRIMARY/HDMI/SPDIF 声音分离
- 多HDMI OUT：HDMI_0/HDMI_1/.../HDMI_N 声音分离
- 多DP OUT：DP_0/DP_1/.../DP_N 声音分离
- 第三方播放器通过包名指定声卡
- JAVA层通过接口指定声卡
- 多HDMI IN插拔识别
- 多HDMI IN：HDMIIN_0/HDMIIN_1 同时分别录音

用户可依据自身实际需求合理利用这些功能。

2.1 SDK需要包含的代码

2.1.1 初始版本（已合并到主分支）

system/media

```
commit 6c0705147c3f3e80d469096eead9bfd23dee7c69 (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Mon Nov 29 10:21:17 2021 +0800

    Audio: Add define for hdmi/hdmi_1/spdif/spdif_1

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I2862278abf20de0e51417564a5e6c15b2b32faed
```

frameworks/av

```
commit d239c978d8b4edfbce0dbaad9a89f7460644b0a9 (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Wed Apr 27 11:20:27 2022 +0800

    MultiAudio: Add route for output of spdif/hdmi/spdif_1/hdmi_1

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I8c24e894682bdb44243d03d5df4f7acd148d307b
```

frameworks/base

```
commit ab4cdd3f83534908b6523d006cf1edc1e33d5396 (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Wed Apr 27 10:48:57 2022 +0800

    Audio: add multiaudio support for tablet

    1. add support for hdmi_1/spdif_1
    2. add plug in/out uevent support for hdmi/hdmi_1/spdif/spdif_1
    3. fix volume ajust and save

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I7c09273791fe95c8853c70b9cd22cace424cc28b
```

device/rockchip/common

```
commit eb55d8057b2505ba3adc640e65a23d026f1843e3 (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Mon Nov 29 10:13:49 2021 +0800

    add multiaudio support for tablet

    1. audio_policy: separate hdmi and spdif from primary
    2. audio_policy: add support for hdmi_1 and spdif_1
    3. automake for hdmi/spdif/hdmi_1/spdif_1 hal

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I8a5c7287d6abf14d90eea2ed6d4e8d762e0a667c
```

vendor/rockchip/common

```
commit efacda0a974fad003eb5d9e08de44642c49a7d8f (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Thu Apr 28 11:28:49 2022 +0800

    vpu: librkmultiaudio: add init version

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I2d3a4973f964c7c8379fa281dedde7bf7b05f3a9
```

hardware/interfaces

```
commit 6d6bdc031705c0560d20bac28ae3cfd758763bc8 (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Wed Apr 27 11:15:20 2022 +0800

    Audio: Add spdif/hdmi/hdmi_1/spdif_1 in devicefactory

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I65802c82f85133cd4a10a78149210bba6f7ca986
```

hardware/rockchip/audio

```
commit 0ea8e9bb709a7cd576bfe585b60f97b9b250001f (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Thu May 12 16:09:57 2022 +0800

    [MultiAudio]: Add multiaudio support for tablet sdk

    Separating HDMI0/HDMI1/DP0/DP1 to their own hal modules so that they
    can work independently at the same time

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I519802684fb09602954bfdea115a3de891667859
```

build/make

```
commit 0a3eb78a77087fffbc3a3e0e45f005661efcf4b1 (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Wed May 11 09:58:00 2022 +0800

    envsetup: Add BOARD_SUPPORT_MULTIAUDIO env definitions

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I2adc1b3fc79ff88eb9a4284a4956f1e341c2e7cf
```

2.1.2 新增修改（已合并到主分支）

- 多设备音量同时调节/保存

```
#frameworks/base
commit d9361a73e6c7bfeb2056be0fc50162a8514e7778
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Thu Jul 14 09:09:37 2022 +0800

    audioservice: add mSyncAjustVolumeDevices support

    mSyncAjustVolumeDevices include speaker/hdmi_x/spdif_x, the volumes
    of these devices are being ajusted and saved at the same time.

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I97d13de27a9f9aed2ef55c2aa000629dd9067d06
```

- 修复hdmi0/hdmi1 dp0/dp1多设备识别紊乱

```
#frameworks/base
commit c208bdab6436bdbce1daf6af8841fb4347ad137c
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Wed Oct 12 19:49:44 2022 +0800

    services: Fix mismatch between hdmi0/hdmi1/dp0/dp1

    The value of OF_ALIAS_0 from sys/class/extcon/extcon*/device/uevent
    can be used to distinguish between xxx0/xxx1

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I9032711d243784b73aa585cb8ab9096fe2424ed5
```

- hdmiin插拔识别

```
#frameworks/base
commit de1edd1364f49c75f98a75a32f2a7340e2c33c04
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Fri Oct 14 16:27:02 2022 +0800

    WiredAccessoryManager: Add support for hdmiin

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: If7d1925f2fdade02c76be669cc993fbd498805bf
```

```
#device/rockchip/common
commit 02a73aee7ed1f5932690362dce2c3461e712b792 (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Fri Oct 14 16:50:55 2022 +0800

    audio_policy: move hdmiin to the module of hdmi

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: Icd8a3038c4fec304a5d856497061b2e79e330275
```

```
#kernel-5.10
commit 6035a2c253eaf7bf2abce8c56e40d87aab07f9dd (HEAD)
Author: Shunhua Lan <lsh@rock-chips.com>
Date:   Thu Oct 13 12:21:53 2022 +0000

    media: rockchip: hdmirx: Add extcon support

    Signed-off-by: Shunhua Lan <lsh@rock-chips.com>
    Change-Id: Ia19b8f7230af515b8dbc7bb953d03e8e5dbb1f7a
```

- 多hdmirx设备支持（hdmirx0、hdmirx1）

```
#frameworks/base
commit 2e7f584607f81558b84add842446ae6568493123
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Tue Oct 18 16:30:47 2022 +0800

    AudioService: add support for hdmirx0 and hdmirx1

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: Ib2edf3bd9bd0077407099a2c027d1b4c20ce1187
```

```
#frameworks/av
commit abdd240fcc4a7de4e47f31ee52e45372265a087e (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Tue Oct 18 16:43:34 2022 +0800

    MultiAudio: Add support for hdmirx0 and hdmirx1

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I18f8223b8a7804d38d123f380caa00cbc0b6591a
```

```
#system/media
commit c107419196c68a944ca92998ca36534ab77b8a84 (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Tue Oct 18 16:47:41 2022 +0800

    Audio: Add define for hdmirx0 and hdmirx1

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: If4d2cc201a4dd2ab56b855ac61195130f3e619fd
```

```
#hardware/interfaces
commit 9a81d31b33767d2573ba072c75e57eb4256918db (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Tue Oct 18 16:38:49 2022 +0800

    Audio: Add AUDIO_SOURCE_HDMIIN and AUDIO_SOURCE_HDMIIN_1

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I1e21840106122fb1a68e0060e1698fa695e94496
```

2.2 宏开关

SDK默认支持MultiAudio，如果想关闭或者禁用此功能，可以通过修改BOARD_SUPPORT_MULTIAUDIO来控制。

device/rockchip/common

```
diff --git a/BoardConfig.mk b/BoardConfig.mk
```

```
index 0ddef35..858698f 100755
--- a/BoardConfig.mk
+++ b/BoardConfig.mk
@@ -412,7 +412,7 @@ BOARD_USER_FAKETOUCH ?= true
 endif

 ifeq ($(TARGET_BOARD_PLATFORM_PRODUCT), tablet)
-BOARD_SUPPORT_MULTIAUDIO ?= true
+BOARD_SUPPORT_MULTIAUDIO ?= false
 endif

 #for Camera autofocus support
```

2.3 调用及测试

2.3.1 多设备输出

声卡的选择是通过AudioSessionId来控制的，如下：

```
typedef enum {
    PRIMARY         = 57,//1110001
    HDMI            = 65,//1000001 //hdmi0
    SPDIF           = 73,//1001001 //dp0
    HDMI_1          = 81,//1010001 //hdmi1
    SPDIF_1         = 89,//1111001 //dp1
}multi_audio_device_t;
```

- JAVA层通过接口调用

  ```
  MediaPlayer mp = new MediaPlayer();
  mp.setAudioSessionId(audioSessionId);
  mp.setDataSource(...);

  在setDataSource之前调用setAudioSessionId
  audioSessionId = 57 声音从speaker输出
  audioSessionId = 65 声音从hdmi输出
  audioSessionId = 73 声音从dp输出
  audioSessionId = 81 声音从hdmi_1输出
  audioSessionId = 89 声音从dp_1输出
  ```

- 通过应用包名判断

  补丁中有测试用例供参考，如需测试，请将frameworks/av下的宏MultiAudioTest打开

```
diff --git a/media/libaudioclient/include/media/AudioTrack.h
b/media/libaudioclient/include/media/AudioTrack.h
index 53b0be725e..b46a941fe3 100644
--- a/media/libaudioclient/include/media/AudioTrack.h
+++ b/media/libaudioclient/include/media/AudioTrack.h
@@ -35,7 +35,7 @@
 #include "android/media/IAudioTrack.h"
 #include "android/media/IAudioTrackCallback.h"

-#define MultiAudioTest 0
+#define MultiAudioTest 1
 namespace android {

 using content::AttributionSourceState;
```

系统自带RockVideoPlayer和gallery3d，需要再安装一个第三方的mxplayer，并安装多屏显示应用multi-display，补丁包中带这两个应用的安装包。

测试用例已经将应用和声卡绑定，实际测试有如下效果：

RockVideoPlayer播放视频声音走hdmi声卡

gallery3d播放视频声音走hdmi_1声卡

mxplayer播放视频声音走speaker声卡

并且可以同时播放。

```
#代码实现位置在frameworks/avmedia/libaudioclient/AudioTrack.cpp，用户可以参考这部分代码依据自身需求修改
#if MultiAudioTest
            String8 tmp = String8(mPackageName);
            if (strstr(tmp.string(), "RockVideoPlayer")) {
                sessionid = (audio_session_t)65;
            } else if (strstr(tmp.string(), "gallery3d")) {
                sessionid = (audio_session_t)81;
            } else if (strstr(tmp.string(), "mxtech")) {
                sessionid = (audio_session_t)57;
            }
#endif
```

通过multi-display将不同的应用投到不同的屏幕，需要设置如下属性，鼠标可以进入不同屏幕控制视频播放。

```
setprop sys.mouse.presentation 1
```

另外Android系统有音频焦点功能，多屏多个应用同时播放视频会出现暂停现象，frameworks/base需打上如下补丁:

```
diff --git
a/services/core/java/com/android/server/audio/MediaFocusControl.java
b/services/core/java/com/android/server/audio/MediaFocusControl.java
index 9548ada14b8e..d82eb3311aeb 100644
--- a/services/core/java/com/android/server/audio/MediaFocusControl.java
+++ b/services/core/java/com/android/server/audio/MediaFocusControl.java
@@ -899,6 +899,7 @@ public class MediaFocusControl implements
PlayerFocusEnforcer {
                     + " flags=0x" + Integer.toHexString(flags)
                     + " sdk=" + sdk))
                 .printLog(TAG));
+        focusChangeHint = 3;
         // we need a valid binder callback for clients
         if (!cb.pingBinder()) {
             Log.e(TAG, " AudioFocus DOA client for requestAudioFocus(),
aborting.");
```

2.3.2 hdmiin录音

通过传入MediaRecorder.AudioSource.HDMIIN，框架最终会选择hdmiin声卡完成录音

```
m_in_rec = new AudioRecord(MediaRecorder.AudioSource.HDMIIN, frequence,
channelConfig,
                AudioFormat.ENCODING_PCM_16BIT, m_in_buf_size);
```

3. 调试

3.1 查看声卡

```
cat proc/asound/cards
```

```
rk3588_s:/ # cat proc/asound/cards

 0 [rockchipes8388 ]: rockchip-es8388 - rockchip-es8388
                      rockchip-es8388
 1 [rockchiphdmiin ]: rockchip_hdmiin - rockchip,hdmiin
                      rockchip,hdmiin
 2 [rockchiphdmi0  ]: rockchip-hdmi0 - rockchip-hdmi0
                      rockchip-hdmi0
 3 [rockchiphdmi1  ]: rockchip-hdmi1 - rockchip-hdmi1
                      rockchip-hdmi1
```

3.2 测试驱动是否正常

如果要测试3.1中3588的hdmi0声卡，找一个wav文件，测试命令如下：

```
tinyplay xxx.wav -D 2 -d 0
```

如果声音正常，说明hdmi0声卡驱动正常。

4. Bug及解决思路

4.1 更新到最新的代码后，HDMI声音没输出，没更新前是正常的

- 问题分析

  ```
  4、rk3588_s:/ # cat /proc/asound/cards
  0 [realtekrt5616co]: realtek_rt5616- - realtek,rt5616-codec
  realtek,rt5616-codec
  1 [rockchiphdmiin ]: rockchip_hdmiin - rockchip,hdmiin
  rockchip,hdmiin
  2 [rockchiphdmi1 ]: rockchip-hdmi1 - rockchip-hdmi1
  rockchip-hdmi1
  ```

  新的框架支持多hdmi声卡识别，如果系统只有一路hdmi，上层会识别成hdmi0, 最终会调用hdmi_hal，但hdmi_hal中不包含rockchiphdmi1，找不到声卡，因此没有声音

- 解决办法

  ```
  将dts中rockchip,card-name = "rockchip-hdmi1"改成rockchip,card-name =
  "rockchip-hdmi0"
  ```

4.2 uboot开启了logo后, hdmi就没有声音了, 要插拔下hdmi才会有声音

- 问题分析

  extcon状态更新不及时

  ```
  rk3588_s:/ # cat /sys/class/extcon/extcon12/state
  cat /sys/class/extcon/extcon12/state
  HDMI=0
  rk3588_s:/ # cat /sys/class/extcon/extcon11/state
  cat /sys/class/extcon/extcon11/state
  HDMI=0
  ```

- 解决办法

```
+++ b/drivers/gpu/drm/bridge/synopsys/dw-hdmi-qp.c
@@ -1716,6 +1716,14 @@ dw_hdmi_connector_detect(struct drm_connector
*connector, bool force)
                else
                        result = connector_status_disconnected;
        }
+    mutex_lock(&hdmi->mutex);
+    if (result != hdmi->last_connector_result) {
+        dev_dbg(hdmi->dev, "read_hpd result: %d", result);
+        extcon_set_state_sync(hdmi->extcon, EXTCON_DISP_HDMI, result ==
connector_status_connected);
+        handle_plugged_change(hdmi,result == connector_status_connected);
+        hdmi->last_connector_result = result;
+    }
+    mutex_unlock(&hdmi->mutex);
```

4.3 SPDIF和其它声卡同时出声声音断断续续

- 问题分析

- 解决办法

  kernel包含以下三个提交

```
commit cbce2baa6fea4ca806442699a348418a909e7ec3
Author: Sugar Zhang <sugar.zhang@rock-chips.com>
Date:   Wed May 16 15:31:40 2018 +0800

    ALSA: pcm_dmaengine: always get stream position from DMA driver

    This patch fixup that the wrong position when dma desc status
    is DONE. even if the desc status is DONE, it is still able to
    get the position from the dma driver. so, just remove the judgement.

    Change-Id: I40e92bae09a002f4f5f0b2fab8b0e99fd3ee269d
    Signed-off-by: Sugar Zhang <sugar.zhang@rock-chips.com>
```

```
commit 4039352c7d055abc701b8c890d12af69bf239a2b
Author: Sugar Zhang <sugar.zhang@rock-chips.com>
Date:   Sat Mar 26 18:01:21 2022 +0800

    dmaengine: pl330: Fix unbalanced runtime PM

    This driver use runtime PM autosuspend mechanism to manager clk.
```

```
commit 78de4e20d0c97393171d033ad137bc823faf7618
Author: Sugar Zhang <sugar.zhang@rock-chips.com>
Date:   Wed Apr 27 09:38:06 2022 +0800

    dmaengine: pl330: Improve dma cyclic transfers efficiency

    Currently, the driver implements cyclic transfers by desc list.
    Each desc describes one period and started by CPU after last
    one done(tasklet), which maybe delayed due to schedule or
    heavy system load, which will cause device FIFO xrun.、
```

声卡dts配置需包含simple-audio-card,mclk-fs = <128>

```
spdif_tx0_sound: spdif-tx0-sound {
        status = "disabled";
        compatible = "simple-audio-card";
        simple-audio-card,mclk-fs = <128>;
        simple-audio-card,name = "rockchip,spdif-tx0";
        simple-audio-card,cpu {
            sound-dai = <&spdif_tx0>;
        };
        simple-audio-card,codec {
            sound-dai = <&spdif_tx0_dc>;
        };
    };
```

4.4 hdmiin偶尔出现audio服务崩溃

- 原因分析

  TimeCheck超时

- 解决办法

  kernel加上如下提交

```
From 47c6099b628893b15ee2adfeb169f8426696bf77 Mon Sep 17 00:00:00 2001
From: Shunhua Lan <lsh@rock-chips.com>
Date: Mon, 14 Mar 2022 17:58:21 +0800
Subject: [PATCH] ASoC: rockchip: i2s-tdm: fix wait time for capture

Signed-off-by: Shunhua Lan <lsh@rock-chips.com>
Change-Id: I062ed8e36d5dfbf3b09d658420dd08e2dde9230b
---
 sound/soc/rockchip/rockchip_i2s_tdm.c | 4 ++++
 1 file changed, 4 insertions(+)

diff --git a/sound/soc/rockchip/rockchip_i2s_tdm.c
b/sound/soc/rockchip/rockchip_i2s_tdm.c
index b7ffaaa7153e..e7a58d9c8c43 100644
--- a/sound/soc/rockchip/rockchip_i2s_tdm.c
+++ b/sound/soc/rockchip/rockchip_i2s_tdm.c
@@ -1173,6 +1173,10 @@ static int rockchip_i2s_tdm_trigger(struct
snd_pcm_substream *substream,
         break;
```

```
      }

+     if(substream->stream == SNDRV_PCM_STREAM_CAPTURE) {
+         substream->wait_time = msecs_to_jiffies(500);
+     }
+
      return ret;
  }
```

4.5 更新代码后，声卡无声音

当前推送的代码是基于我司3588evb1开发的，evb1板支持hdmi0/hdmi1/dp0/dp1声卡，且优先级hdmi0 > hdmi1 > dp0 > dp1，实际用户的机器可能没有支持这么多的声卡，可能会存在一些问题，以下举一个例子说明。

举例：机器注册了hdmi1声卡，同时支持hdmi0、hdmi1显示接口，如果hdmi0插入，hdmi1声卡将没有声音

原因：Android上层原生代码是通过sys/class/extcon/extcon*/state来判断设备插拔状态，此state只表示设备是否插拔，并不能确定对应设备是否支持音频传输并注册了对应声卡，当hdmi0插入时，系统判断到hdmi0设备插入，并通知AudioPolicy当前设备hdmi0已连接，声音从hdmi0输出，可实际并没有hdmi0声卡，由于hdmi0的优先级高，此时hdmi1即使插入了也没有声音

解决补丁:

```
diff --git a/services/core/java/com/android/server/WiredAccessoryManager.java
b/services/core/java/com/android/server/WiredAccessoryManager.java
index fc574a84f573..c93213f84751 100644
--- a/services/core/java/com/android/server/WiredAccessoryManager.java
+++ b/services/core/java/com/android/server/WiredAccessoryManager.java
@@ -305,8 +305,8 @@ final class WiredAccessoryManager implements
WiredAccessoryCallbacks {
             } else if (headset == BIT_USB_HEADSET_DGTL) {
                 outDevice = AudioManager.DEVICE_OUT_DGTL_DOCK_HEADSET;
             } else if (headset == BIT_HDMI_AUDIO) {
-                Slog.d(TAG, "hdmi_0 plug");
-                outDevice = AudioManager.DEVICE_OUT_HDMI;
+                // Slog.d(TAG, "hdmi_0 plug");
+                // outDevice = AudioManager.DEVICE_OUT_HDMI;
             } else if (headset == BIT_HDMI_AUDIO_1) {
                 Slog.d(TAG, "hdmi_1 plug");
                 outDevice = AudioManager.DEVICE_OUT_HDMI_1;
```

dp0、dp1的处理方式类似。

5. 扩展

5.1 AudioPatch

现有的tvinput是通过AudioStream来完成hdmiin声音的录音和播放，实际上TvInputHardwareManager.java中已经实现了AudioPatch，可以通过如下补丁将AudioPatch利用起来。

```
commit adad00fee4e844aee6d3117c92dfa5cc6d2321d5 (HEAD)
Author: shine.liu <shine.liu@rock-chips.com>
Date:   Sat Oct 29 10:28:18 2022 +0800

    tvinput: enable audiopatch

    Signed-off-by: shine.liu <shine.liu@rock-chips.com>
    Change-Id: I107328c57052e8bd3e701c147da07eaadc4eb2dd

diff --git a/core/api/system-current.txt b/core/api/system-current.txt
index b2b81a7eb47e..b7701c9b5472 100644
--- a/core/api/system-current.txt
+++ b/core/api/system-current.txt
@@ -5762,6 +5762,8 @@ package android.media.tv {
     method public int getHdmiPortId();
     method public int getType();
     method public void readFromParcel(android.os.Parcel);
+    method public void setAudioAddress(@NonNull String);
+    method public void setAudioType(int);
     method public void writeToParcel(android.os.Parcel, int);
     field public static final int CABLE_CONNECTION_STATUS_CONNECTED = 1; // 0x1
     field public static final int CABLE_CONNECTION_STATUS_DISCONNECTED = 2; //
0x2
diff --git a/media/java/android/media/tv/TvInputHardwareInfo.java
b/media/java/android/media/tv/TvInputHardwareInfo.java
index 0bedbd3c1f46..3992aaeea817 100644
--- a/media/java/android/media/tv/TvInputHardwareInfo.java
+++ b/media/java/android/media/tv/TvInputHardwareInfo.java
@@ -130,6 +130,14 @@ public final class TvInputHardwareInfo implements Parcelable
{
         return mHdmiPortId;
     }

+    public void setAudioType(int type) {
+        mAudioType = type;
+    }
+
+    public void setAudioAddress(@NonNull String addr) {
+        mAudioAddress = addr;
+    }
+
     /**
      * Gets the cable connection status of the hardware.
      *
diff --git a/services/core/java/com/android/server/tv/TvInputHardwareManager.java
b/services/core/java/com/android/server/tv/TvInputHardwareManager.java
index 95ebb14461a3..c781f8b484e8 100755
--- a/services/core/java/com/android/server/tv/TvInputHardwareManager.java
-            mAudioStream.start(6);
+           // mAudioStream.start(6);
         } else {
```

```
-             mAudioStream.stop();
+            // mAudioStream.stop();
          }
      }

@@ -868,6 +868,11 @@ class TvInputHardwareManager implements TvInputHal.Callback
{
          private int mDesiredFormat = AudioFormat.ENCODING_DEFAULT;

          public TvInputHardwareImpl(TvInputHardwareInfo info) {
+             if (info.getAudioType() == AudioManager.DEVICE_NONE) {
+                 info.setAudioType(AudioManager.DEVICE_IN_HDMI);
+                 info.setAudioAddress("");
+                 Slog.i(TAG, "TvInputHardwareImpl for hdmi : "+ info);
+             }
              mInfo = info;
              mAudioManager.registerAudioPortUpdateListener(mAudioListener);
              if (mInfo.getAudioType() != AudioManager.DEVICE_NONE) {
@@ -1094,6 +1099,7 @@ class TvInputHardwareManager implements TvInputHal.Callback
{
                  if (mAudioPatch != null) {
                      mAudioManager.releaseAudioPatch(mAudioPatch);
                  }
+                 Slog.i(TAG, "Start createAudioPatch");
                  mAudioManager.createAudioPatch(
                          audioPatchArray,
                          new AudioPortConfig[] { sourceConfig },
```

此种方式延时可能会小一些，但是录屏无法录制tvinput预览声音，用户可根据自己需求使用。