



How to play audio



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1 Article purpose

This article explains how to play audio through the [ALSA](#) audio framework in [Linux®OS](#) context. The examples below, show how to play audio on the different audio hardware interfaces of the [STM32MPU boards](#).

2 Audio playback overview

The [ALSA](#) framework exposes audio devices associated to the board audio hardware interfaces.

The application audio streams are routed by default through the [PulseAudio](#) sound server. [PulseAudio](#) exposes audio profiles which are mapped on the [ALSA](#) sound card audio devices. The [PulseAudio](#) server provides a command line interface which allows to list audio profiles and to select a profile, to play on a specific audio interface.

The audio playback examples in following sections are given for [ALSA utilities](#). However, the audio playbacks can be launched by other applications, such as [gstreamer](#) multimedia framework.

3 Examples

3.1 Audio playback on headset output

3.1.1 Playback on ALSA device

Run audio playback on 'playback_codec' ALSA device:



'playback_codec' is an alias defined in /etc/asound.conf, for headset output device.

```
Board $> aplay -D playback_codec /usr/share/sounds/alsa/Front_Left.wav
```

3.1.2 Playback via PulseAudio

- **Configure Pulseaudio**

Change the Pulseaudio active profile of the sound card, to 'analog-stereo' profile:



The Pulseaudio analog-stereo profile is the default profile. So next command is not required after boot.



Example below is given for **sound card index 0**. Check sound cards index with "*pactl list cards short*" command.

```
Board $> pacmd set-card-profile 0 output:analog-stereo+input:analog-stereo
```

- **Run audio playback:**

```
Board $> aplay /usr/share/sounds/alsa/Front_Left.wav
```

3.2 Audio playback on HDMI output



The support of HDMI output is board dependent. Please, check available outputs with "*aplay -l*" command.

3.2.1 Playback on ALSA device

Run audio playback on 'playback_hdmi' ALSA device:



'playback_hdmi' is an alias defined in /etc/asound.conf, for hdmi output device.

```
Board $> aplay -D playback_hdmi /usr/share/sounds/alsa/Front_Left.wav
```

3.2.2 Playback via PulseAudio

- **Configure Pulseaudio**

Change the Pulseaudio active profile of the sound card, to 'hdmi-stereo' profile:



Example below is given for **sound card index 0**. Check sound card index with "*pactl list cards short*" command.

```
Board $> pacmd set-card-profile 0 output:hdmi-stereo
```

- **Run audio playback:**

```
Board $> aplay /usr/share/sounds/alsa/Front_Left.wav
```

3.3 Audio playback on S/PDIF output



The support of S/PDIF output is board dependent. Please, check available outputs with "*aplay -l*" command.



S/PDIF ALSA device supports only **32-bit audio streams**. As 32-bit wave files are not provided in sample sound files, speaker-test is used instead of aplay, for convenience, here. Speaker-test generates a 440Hz sine wave in following examples.

3.3.1 Set IEC958 status bits

Example: set IEC958 mode bit.

```
Board $> iecset -c STM32MP1EV -n device=0 pro on
```

3.3.2 Playback on ALSA device

Run audio playback on 'playback_spdif' ALSA device:



'playback_spdif' is an alias defined in /etc/asound.conf, for S/PDIF output device.

```
Board $> speaker-test -D playback_spdif -c 2 -F S32_LE -f 440 -t sine -l 1
```

3.3.3 Playback via PulseAudio

- **Configure Pulseaudio**

Change the sound card active profile, to S/PDIF 'iec958-stereo' profile.



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Example below is given for **sound card index 0**. Check sound card index with "`pacmd list cards short`" command.

```
Board $> pacmd set-card-profile 0 output:iec958-stereo
```

- **Run audio playback:**

```
Board $> speaker-test -c 2 -F S32_LE -f 440 -t sine -l 1
```

Operating System

Advanced Linux sound architecture

High-Definition Multimedia Interface (HDMI standard)

Sony/Philips Digital Interface Format (Protocol (IEC-60958))