



## How to play audio



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# 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

- **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
```

- **Playback via 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.**

- **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
```

- **Playback via 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.

- **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
```

- **Playback via PulseAudio**

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

Run audio playback:

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

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# 1 Article purpose

This article explains how to play audio through the ALSA audio framework in Linux<sup>®</sup>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

- Playback on ALSA device

Run audio playback on 'playback\_codec' ALSA device:



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```

- Playback via 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.

- 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
```

- Playback via 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:

```
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## 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.



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- **Playback on ALSA device**

Run audio playback on 'playback\_spdif' ALSA device:



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

- **Playback via PulseAudio**

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



Example below is given for **sound card index 0**. Check sound card index with "*pacctl 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
```

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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.

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## 3 Examples

### 3.1 Audio playback on headset output

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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 "*pacctl list cards short*" command.

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

Run audio playback:

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

- 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
```

- Playback via 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 "*pacctl 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.

- **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
```

- **Playback via PulseAudio**

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

Run audio playback:

```
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```

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## Pages in category "ST boards"

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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

- 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.

```
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Example below is given for **sound card index 0**. Check sound cards index with "*pacctl 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.**

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

```
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```

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.

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

- **Playback via PulseAudio**

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

Run audio playback:

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



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### 3.2 Audio playback on HDMI output



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

- 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.



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

- **Playback via 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.**



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```

Run audio playback:

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```



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