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How to record audio

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1 Article purpose

This article explains how to record audio via the kernel [ALSA](#) audio framework in **Linux® OS** context. The examples below, show how to record audio from the different audio hardware interfaces of the STM32MPU [boards](#).

2 Audio record 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 to list audio profiles and to select one, in order to record from a specific audio interface.

The audio record examples in following sections are based on [ALSA utilities](#). Some input paths are configured through ALSA controls. These configurations are detailed in [sound card configuration](#) article. If an error is issued when running an example, please refer to [Audio troubleshooting grid](#) article for debug.

3 Examples

3.1 Audio record from headset microphone input

3.1.1 Record from ALSA device

Start audio record from 'record_codec' ALSA device:

Information

'record_codec' is an alias defined in /etc/asound.conf, for headset microphone input device.

```
Board $> arecord -D record_codec -f S16_LE -d 10 /tmp/rec.wav
```

3.1.2 Record via PulseAudio

3.1.2.1 *For ecosystem release \geq v1.2.0*

- **Configure Pulseaudio :**

Change Pulseaudio default input source to 'analog_input':

Information

The Pulseaudio analog_input is defined in /etc/pulse/system.pa configuration file.

```
Board $> pacmd set-default-source analog_input
```

- **Start audio record :**

Information

The Pulseaudio device is the default one, so "-D pulse" option can be omitted in the record command.

```
Board $> arecord -d 10 /tmp/rec.wav
```

3.1.2.2 *For ecosystem release \leq v1.1.0*

- **Configure Pulseaudio :**

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

 Information

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
```

- Start audio record :

 Information

The Pulseaudio device is the default one, so "-D pulse" option can be omitted in the record command.

```
Board $> arecord -d 10 /tmp/rec.wav
```

3.2 Audio record from digital microphone input

 Warning

The support of digital microphone input is board dependent. Please, check available inputs with "*arecord -l*" command.

3.2.1 Record from ALSA device

Start mono audio record from 'record_dfscdm0' ALSA device:

 Information

'record_dfscdm0' is an alias defined in /etc/asound.conf, for digital microphone U1 input device.

```
Board $> arecord -D record_dfscdm0 -r 16000 -f S32_LE -c 1 -d 10 /tmp/rec.wav
```

3.2.2 Record multiple digital microphones from a virtual ALSA device

Start stereo audio record from 'multi' ALSA device:

 Information

'multi' device, based on ALSA multi plugin^[1], has to be defined in /etc/asound.conf file.

```
Board $> arecord -D multi -r 16000 -f S32_LE -c 2 -d 10 /tmp/rec.wav
```

3.2.3 Record via PulseAudio

The record via Pulseaudio is only available for ecosystem release \geq v1.2.0

- **Configure Pulseaudio**

Change Pulseaudio default input source to 'dmic1_input':

Information

The Pulseaudio dmic1_input is defined in /etc/pulse/system.pa configuration file.

```
Board $> pacmd set-default-source dmic1_input
```

- **Start audio record :**

Information

The Pulseaudio device is the default one, so "-D pulse" option can be omitted in the record command.

```
Board $> arecord -r 48000 -f S32_LE -c 2 -d 10 /tmp/rec.wav
```

3.3 Audio record from S/PDIF input

Warning

The support of S/PDIF input is board dependent. Please, check available inputs with "*arecord -l*" command.

3.3.1 Get IEC958 status bits

Some restrictions may apply to IEC958 control, depending on the SPDIFRX device configuration as it is explained in [SPDIFRX device tree configuration](#) and [SPDIFRX Linux driver](#) articles.

```
Board $> amixer -c STM32MP1EV cget iface=PCM,name='IEC958 Capture Default'
```

3.3.2 Record from ALSA device

Start audio record from 'record_spdif' ALSA device:

Information

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

Information

A S/PDIF signal must be available on S/PDIF RCA input connector before starting the record command. The record rate must be set according to S/PDIF signal sampling rate.

```
Board $> arecord -D record_spdif -f S32_LE -c 2 -r 48000 -d 10 /tmp/rec.wav
```

3.3.3 Record via PulseAudio

The record via Pulseaudio is only available for ecosystem release \geq v1.2.0 .

- **Configure Pulseaudio**

Change Pulseaudio default input source to 'iec958_input':

Information

The Pulseaudio iec958_input is defined in /etc/pulse/system.pa configuration file.

```
Board $> pacmd set-default-source iec958_input
```

- **Start audio record :**

Information

The Pulseaudio device is the default one, so "-D pulse" option can be omitted in the record command.

```
Board $> arecord -r 48000 -f S32_LE -c 2 -d 10 /tmp/rec.wav
```


4 References

- [↑ ALSA PCM plugins](#)

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