

Procfile.txt
Proc Files of ALSA Drivers
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General

ALSA has its own proc tree, /proc/asound. Many useful information are found in this tree. When you encounter a problem and need debugging, check the files listed in the following sections.

Each card has its subtree cardX, where X is from 0 to 7. The card-specific files are stored in the card* subdirectories.

Global Information

cards

Shows the list of currently configured ALSA drivers, index, the id string, short and long descriptions.

version

Shows the version string and compile date.

modules

Lists the module of each card

devices

Lists the ALSA native device mappings.

meminfo

Shows the status of allocated pages via ALSA drivers.
Appears only when CONFIG_SND_DEBUG=y.

hwdep

Lists the currently available hwdep devices in format of
<card>-<device>: <name>

pcm

Lists the currently available PCM devices in format of
<card>-<device>: <id>: <name> : <sub-streams>

timer

Lists the currently available timer devices

oss/devices

Lists the OSS device mappings.

oss/sndstat

Provides the output compatible with /dev/sndstat.
You can symlink this to /dev/sndstat.

Card Specific Files

The card-specific files are found in /proc/asound/card* directories. Some drivers (e.g. cmipci) have their own proc entries for the register dump, etc (e.g. /proc/asound/card*/cmipci shows the register dump). These files would be really helpful for debugging.

When PCM devices are available on this card, you can see directories like pcm0p or pcm1c. They hold the PCM information for each PCM stream. The number after 'pcm' is the PCM device number from 0, and the last 'p' or 'c' means playback or capture direction. The files in this subtree is described later.

The status of MIDI I/O is found in midi* files. It shows the device name and the received/transmitted bytes through the MIDI device.

When the card is equipped with AC97 codecs, there are codec97#* subdirectories (described later).

When the OSS mixer emulation is enabled (and the module is loaded), oss_mixer file appears here, too. This shows the current mapping of OSS mixer elements to the ALSA control elements. You can change the mapping by writing to this device. Read OSS-Emulation.txt for details.

PCM Proc Files

card*/pcm*/info

The general information of this PCM device: card #, device #, substreams, etc.

card*/pcm*/xrun_debug

This file appears when CONFIG_SND_DEBUG=y and CONFIG_PCM_XRUN_DEBUG=y.

This shows the status of xrun (= buffer overrun/xrun) and invalid PCM position debug/check of ALSA PCM middle layer. It takes an integer value, can be changed by writing to this file, such as

```
# echo 5 > /proc/asound/card0/pcm0p/xrun_debug
```

The value consists of the following bit flags:

- bit 0 = Enable XRUN/jiffies debug messages
- bit 1 = Show stack trace at XRUN / jiffies check
- bit 2 = Enable additional jiffies check
- bit 3 = Log hwptr update at each period interrupt
- bit 4 = Log hwptr update at each snd_pcm_update_hw_ptr()

When the bit 0 is set, the driver will show the messages to kernel log when an xrun is detected. The debug message is shown also when the invalid H/W pointer is detected at the update of periods (usually called from the interrupt handler).

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When the bit 1 is set, the driver will show the stack trace additionally. This may help the debugging.

Since 2.6.30, this option can enable the hwptr check using jiffies. This detects spontaneous invalid pointer callback values, but can be lead to too much corrections for a (mostly buggy) hardware that doesn't give smooth pointer updates. This feature is enabled via the bit 2.

Bits 3 and 4 are for logging the hwptr records. Note that these will give flood of kernel messages.

card*/pcm*/sub*/info

The general information of this PCM sub-stream.

card*/pcm*/sub*/status

The current status of this PCM sub-stream, elapsed time, H/W position, etc.

card*/pcm*/sub*/hw_params

The hardware parameters set for this sub-stream.

card*/pcm*/sub*/sw_params

The soft parameters set for this sub-stream.

card*/pcm*/sub*/prealloc

The buffer pre-allocation information.

AC97 Codec Information

card*/codec97#*/ac97#?~?

Shows the general information of this AC97 codec chip, such as name, capabilities, set up.

card*/codec97#0/ac97#?~?+regs

Shows the AC97 register dump. Useful for debugging.

When CONFIG_SND_DEBUG is enabled, you can write to this file for changing an AC97 register directly. Pass two hex numbers. For example,

```
# echo 02 9f1f > /proc/asound/card0/codec97#0/ac97#0~0+regs
```

USB Audio Streams

card*/stream*

Shows the assignment and the current status of each audio stream of the given card. This information is very useful for debugging.

HD-Audio Codecs

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card*/codec#*

Shows the general codec information and the attribute of each widget node.

card*/eld#*

Available for HDMI or DisplayPort interfaces.

Shows ELD(EDID Like Data) info retrieved from the attached HDMI sink, and describes its audio capabilities and configurations.

Some ELD fields may be modified by doing ``echo name hex_value > eld#*``. Only do this if you are sure the HDMI sink provided value is wrong. And if that makes your HDMI audio work, please report to us so that we can fix it in future kernel releases.

Sequencer Information

seq/drivers

Lists the currently available ALSA sequencer drivers.

seq/clients

Shows the list of currently available sequencer clients and ports. The connection status and the running status are shown in this file, too.

seq/queues

Lists the currently allocated/running sequencer queues.

seq/timer

Lists the currently allocated/running sequencer timers.

seq/oss

Lists the OSS-compatible sequencer stuffs.

Help For Debugging?

When the problem is related with PCM, first try to turn on `xrun_debug` mode. This will give you the kernel messages when and where `xrun` happened.

If it's really a bug, report it with the following information:

- the name of the driver/card, show in `/proc/asound/cards`
- the register dump, if available (e.g. `card*/cmipci`)

when it's a PCM problem,

- set-up of PCM, shown in `hw_params`, `sw_params`, and status in the PCM sub-stream directory

when it's a mixer problem,

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- AC97 proc files, codec97#*/* files

for USB audio/midi,

- output of `lsusb -v`
- `stream*` files in card directory

The ALSA bug-tracking system is found at:

<https://bugtrack.alsa-project.org/alsa-bug/>