NAME

sbpro – Sound Blaster Pro, Sound Blaster 16, and Sound Blaster AWE32 audio device driver

SYNOPSIS

sbpro:sound,sbpro
sbpro:sound,sbproctl

AVAILABILITY

x86

DESCRIPTION

The Creative Labs Sound Blaster family of audio cards comprises DMA-capable ISA bus plug-in cards that provide 8 and 16 bit mono and stereo digitized sound recording and playback over a wide range of sampling rates. Each card includes a digital sound processor and mixing capability. Some of the cards also support more advanced audio features such as FM synthesis, advanced signal processing, advanced wave effects, and MIDI capability; however, the **sbpro** driver does not currently support those advanced features. The features and interfaces supported by the Solaris **sbpro** driver are described here and in **audio**(7I).

Some Sound Blaster cards support optional non-audio capabilities such as SCSI interfaces and CD-ROM interfaces. These interfaces are not supported by the **sbpro** driver. The Sound Blaster 16 optional SCSI-2 interface is supported by the **aic**(7D) driver.

APPLICATION PROGRAMMING INTERFACE

The Sound Blaster device is treated as an exclusive resource: only one process may open the device at a time. Since the Sound Blaster hardware does not support simultaneous sound input and output, the **sbpro** driver does not allow the simultaneous access of the device by two processes, even if one tries to open it read-only and the other write-only.

The **sbpro** driver will return **"SUNW,sbpro"** or **"SUNW,sb16"** in the *name* field of the **audio_device** structure. The *version* field will contain the version number of the card's DSP chip, and the *config* field will be set to **"SBPRO"** or **"SB16"**. The AWE32 is currently identified as an SB16. In all the discussion below, the Sound Blaster AWE32 behaves the same as the Sound Blaster 16.

Audio Data Formats

The Sound Blaster Pro handles 8-bit samples. In mono mode, audio data may be sampled at rates from 4,000 to 44,100 samples per second. In stereo mode, samples may be handled at the rates of 11,025 and 22,050 samples per second. The SB-16 can sample 8-bit or 16-bit mono or stereo data in the range of 5,000 to 44,100 Hz.

The Sound Blaster Pro hardware handles 8 bit linear samples in excess-128 format. The Sound Blaster 16 handles that format, as well as 16 bit linear samples in two's complement format. The **sbpro** driver will generate and accept data in these formats if **AUDIO_ENCODING_LINEAR** is selected in the *encoding* field of the audio information structure. 16 bit precision is not available on the Sound Blaster Pro. The **sbpro** driver will also accept and generate *u*–law format data if the *encoding* field is set to **AUDIO_ENCODING_ULAW**. In this case, driver software performs the translation between linear and *u*-law formats. *u*-law encoding is designed to provide an improved signal-to-noise ratio at low amplitude levels. To achieve best results when using *u*-law encoding, the audio record volume should be set so that typical amplitude levels lie within approximately three-fourths of the full dynamic range.

Audio Ports

The Sound Blaster hardware does not support multiple output devices, so the *play.port* field of the audio information structure only supports **AUDIO_HEADPHONE**. Output volume is controlled by software. There is a volume control thumbwheel on the back of the card which should be turned all the way up to maximum; otherwise no sound may be audible.

The *record.port* field of the audio information structure allows selection of which audio source is used for recording, and may be set to one of **AUDIO_MICROPHONE**, **AUDIO_LINE_IN**, or **AUDIO_CD**. These select input from the microphone jack, line-level input jack, or internal CD input, respectively. The microphone input is treated as a mono source by the hardware, although the microphone jack is a stereo jack. If your microphone has a mono plug, you should convert it to a stereo plug using an appropriate adapter. Line and CD are stereo sources. When recording in mono mode, both stereo channels are mixed before recording.

FILES

/dev/audio	linked to **/dev/sound/0**
/dev/audioctl	linked to **/dev/sound/0ctl**
/dev/sound/0	first audio device in the system
/dev/sound/0ctl	audio control for first audio device
/usr/demo/SOUND	audio demonstration programs

SEE ALSO

ioctl(2), **aic**(7D), **audio**(7I), **streamio**(7I)

Creative Labs, Inc. *Sound Blaster Pro User Reference Manual*

BUGS

The current driver implementation does not support the A-law encoding mode.