ALS-007/ALS-100/ALS-200 based sound cards

Support for sound cards based around the Avance Logic ALS-007/ALS-100/ALS-200 chip is included. These chips are a single chip PnP sound solution which is mostly hardware compatible with the Sound Blaster 16 card, with most differences occurring in the use of the mixer registers. For this reason the ALS code is integrated as part of the Sound Blaster 16 driver (adding only 800 bytes to the SB16 driver).

To use an ALS sound card under Linux, enable the following options as modules in the sound configuration section of the kernel config:

- 100% Sound Blaster compatibles (SB16/32/64, ESS, Jazz16) support
- FM synthesizer (YM3812/OPL-3) support
- standalone MPU401 support may be required for some cards; for the ALS-007, when using isapnptools, it is required

Since the ALS-007/100/200 are PnP cards, ISAPnP support should probably be compiled in. If kernel level PnP support is not included, isapnptools will be required to configure the card before the sound modules are loaded.

When using kernel level ISAPnP, the kernel should correctly identify and configure all resources required by the card when the "sb" module is inserted. Note that the ALS-007 does not have a 16 bit DMA channel and that the MPU401 interface on this card uses a different interrupt to the audio section. This should all be correctly configured by the kernel; if problems with the MPU401 interface surface, try using the standalone MPU401 module, passing "0" as the "sb" module's "mpu_io" module parameter to prevent the soundblaster driver attempting to register the MPU401 itself. The onboard synth device can be accessed using the "opl3" module.

If isapnptools is used to wake up the sound card (as in 2.2.x), the settings of the card's resources should be passed to the kernel modules ("sb", "opl3" and "mpu401") using the module parameters. When configuring an ALS-007, be sure to specify different IRQs for the audio and MPU401 sections - this card requires they be different. For "sb", "io", "irq" and "dma" should be set to the same values used to configure the audio section of the card with isapnp. "dma16" should be explicitly set to "-1" for an ALS-007 since this card does not have a 16 bit dma channel; if not specified the kernel will default to using channel 5 anyway which will cause audio not to work. "mpu_io" should be set to 0. The "io" parameter of the "opl3" module should also agree with the setting used by isapnp. To get the MPU401 interface working on an ALS-007 card, the "mpu401" module will be required since this card uses separate IRQs for the audio and MPU401 sections and there is no parameter available to pass a different IRQ to the "sb" driver (whose inbuilt MPU401 driver would otherwise be fine). Insert the mpu401 module passing appropriate values using the "io" and "irq" parameters.

The resulting sound driver will provide the following capabilities:

- 8 and 16 bit audio playback
- 8 and 16 bit audio recording
- Software selection of record source (line in, CD, FM, mic, master)
- Record and playback of midi data via the external MPU-401
- Playback of midi data using inbuilt FM synthesizer
- Control of the ALS-007 mixer via any OSS-compatible mixer programs. Controls available are Master (L&R), Line in (L&R), CD (L&R),

DSP/PCM/audio out (L&R), FM (L&R) and Mic in (mono).

Jonathan Woithe
jwoithe@physics.adelaide.edu.au
30 March 1998

Modified 2000-02-26 by Dave Forrest, drf5n@virginia.edu to add ALS100/ALS200
Modified 2000-04-10 by Paul Laufer, pelaufer@csupomona.edu to add ISAPnP info.
Modified 2000-11-19 by Jonathan Woithe, jwoithe@physics.adelaide.edu.au
 - updated information for kernel 2.4.x.