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Linux* Driver Release Notes For Intel(R) Desktop Boards
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PRODUCT =====
Intel AC'97 Audio Drivers ALSA* Open Source Audio Driver Rev 1.0.1
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DATE: May 21, 2004

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Purpose
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This readme provides installation information for the Intel AC'97* ALSA* Open Source Audio Driver on Intel desktop boards.

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Text and Command Conventions for this Document
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- Commands are listed either as stand-alone indented lines such as:
 make install
or surrounded by => ____ <= delimiters in sentences such as:
 Enter the => make install <= command.
- Special callouts, buttons, and paths are placed within quote marks. For example:
 Go to the "/root/test" directory and click on the "test.bin" file.
 Always press the "Enter" key after each command entry.
- Bullet items are called out with a double dash "--" prefix at the left side of the page.

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Before Installation
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1. Ensure that the motherboard you are attempting to load this audio driver on is an Intel(R) Desktop Board with a ADI1985 AC'97 audio CODEC. This audio driver is intended for these products only.
2. Verify that the specific kernel version installed in the system meets the minimum required kernel version listed below for your distribution. (If needed, use the => uname -r <= command to check the current kernel version that the system is running.)
 - RedFlag* (Hong Qi*) 4.0,(2.4.20-3)
 - Red Hat* 9.0,(2.4.20-6)
 - Red Hat* 8.0,(2.4.18-14)
 - SuSE* 8.2,(2.4.20)
3. The driver installation requires kernel source and development tools. The kernel source is usually located at the "/usr/src/linux" or "/usr/src/linux-2.4" paths. Choose "Custom" or "Complete" Linux installation to ensure that all required libraries and tools are installed.

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Installation Instructions
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Use one of the following instruction methods to install the driver:
-- Method 1 provides a simple script-controlled driver installation.
-- Method 2 lets the user install the driver with manually entered commands.

Method 1 (script controlled installation)

1. Log into the system as the "root" user to ensure all necessary rights needed to compile and configure the audio driver.
2. If you boot into the X-Windows GUI, open either a terminal or shell window.
3. Go to the directory where you downloaded the driver package file.
4. Decompress the downloaded file with the following command:
 gunzip intel8x0-alsa-1.0.1.sh.gz
5. Run the downloaded package using the following command:
 ./intel8x0-alsa-1.0.1.sh
6. The script should auto-detect your hardware. Select "OK" to continue (with the "Enter" key).
7. Review and accept the license as follows:
 - Use the "Up" and "Down" arrow keys to scroll the license.
 - Use the "Left" and "Right" arrow keys to select.
 - Select "Exit".
 - Click either "Yes" or "No".

-- Then press the "Enter" key to complete the selection.

8. Then select "OK" at each dialog box to complete the installation.

Method 2 (manually controlled installation)

1. Log into the system as the "root" user to ensure all necessary rights needed to compile and configure the audio driver.

2. If you boot into the X-Windows GUI, open a terminal or shell window.

3. Uncompress the downloaded file with the following command:
gunzip intel8x0-alsa-1.0.1.sh.gz

4. Extract the compressed package to the "/root" directory using the following command:
./intel8x0-alsa-1.0.1.sh -d

5. Now navigate to the directory that contains the extracted audio package. For example:
cd /tmp/audio.<DIR>/alsa-driver-1.0.1
(Note: <DIR> is the directory that the installer outputs on the screen)

6. From this directory enter the following command:
./configure --with-cards=intel8x0 --with-sequencer=yes

7. Next enter the following commands (note that this may take a few minutes to complete):
make
make install
./snddevices

8. Now enter the following commands (note that there will not be any text feedback during this step):
modprobe soundcore
modprobe snd-intel8x0
modprobe snd-pcm-oss
modprobe snd-mixer-oss
modprobe snd-seq-oss

9. Change to the "libs" directory. For example:
cd /tmp/audio.<DIR>/alsa-libs-1.0.1/
(Note: <DIR> is the directory that the installer outputs on the screen)

10. Enter the commands:
./configure
make
make install

11. Change to the "utils" directory. For example:
cd /tmp/audio.<DIR>/alsa-utils-1.0.1/
(Note: <DIR> is the directory that the installer outputs on the screen)

12. Enter the commands:
./configure
make
make install

13. Change to the "oss" directory. For example:
cd /tmp/audio.<DIR>/alsa-oss-1.0.1/
(Note: <DIR> is the directory that the installer outputs on the screen)

14. Enter the commands:
./configure
make
make install
alsaconf
This will launch the ALSA Configuration Utility.

15. Now select "OK" on all screens.

16. On the "Audio Solution Selection" screen, select the "snd-intel8x0" device.

17. Now exit the Configuration utility and the settings will be automatically saved.

===== After Installation =====

1. Reboot your system, restarting the x-server is not sufficient. If the new hardware detection starts upon reboot, simply highlight "Configure" and allow the system to continue rebooting.

2. Once the desktop is loaded, open the audio mixer and adjust the "Master" and "PCM" volume sliders up from the default 0 position or no audio will be heard.

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Known Issues
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-- Support for 2-channel stereo audio is all that is currently provided by this audio driver.

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Errata
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Workqueue.h Error

If you receive an error related to workqueue.h while doing a manual install, the following workaround may help fix the problem.

1. Follow the manual install instructions until you get to the part about configuring and compiling the ALSA driver (step 6 above).
2. Run `./configure --with-cards=intel8x0 --with-sequencer=yes`
3. After this completes, enter (`$klocation` = the directory where your kernel is located. Usually `/usr/src/linux-2.4/`):
 `mkdir -p $klocation/include/linux`
 `touch $klocation/include/linux/workqueue.h`
 `mkdir -p include/linux`
 `touch include/linux/workqueue.h`
4. Continue with the manual install instructions starting from step 7.

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