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Audio Driver Release Notes for Intel(R) Desktop Boards
Running Red Hat Desktop Linux*

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Intel(R) Platforms

Intel(R) 845G Express Chipset
Intel(R) 865 Express Chipset
Intel(R) 865GV Express Chipset
Intel(R) 865G Express Chipset
Intel(R) 915G Express Chipset
Intel(R) 945G Express Chipset
Intel(R) 945P Express Chipset
Intel(R) 965 Express Chipset
Intel(R) 946 Express Chipset

===== PRODUCT =====

ALSA* Open Source Audio Driver Package Version 1.0.11 for
AC'97*
Intel(R) High Definition Audio

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DATE: Sept. 6, 2006

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1 - Purpose and Scope
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This document provides installation information for ALSA* audio driver package for AC'97* and Intel(R) High Definition Audio on Intel(R) Desktop Boards. This document is intended for use with the following boards:

845G/865G/865GV chipset-based Intel(R) Desktop Boards containing built-in AC'97*.

915G*/915P*/945G*/945P* chipset-based Intel(R) Desktop Boards containing built-in Intel(R) High Definition Audio.

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2 - Document Conventions

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To enhance readability, the following conventions are used throughout the rest of this document:

-- Commands are listed either as stand-alone indented lines such as:

```
cd /tmp
```

or surrounded by single quotation marks when used in sentences such as:

Enter the 'uname' command.

-- Special callouts, buttons, and paths are placed within double quotation marks. For example:

Onboard audio must be "enabled".
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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3 - Supported Linux Distributions

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Intel has performed limited validation to ensure basic functionality of the AC'97* Audio driver and Intel(R) High Definition Audio driver on the following distributions:

Distribution	Kernel Version
Red Hat Desktop 3.0 Update 3	2.4.21-20.EL 2.4.21-20.ELsmp
Red Hat Desktop 3.0 Update 4	2.4.21-27.EL 2.4.21-27.ELsmp
Red Hat Desktop 3.0 Update 5	2.4.21-32.EL 2.4.21-32.ELsmp
Red Hat Desktop 4	2.6.9-5.EL 2.6.9-5.ELsmp 2.6.9-5.EL x86-64 2.6.9-5.ELsmp x86-64
Red Hat Desktop 4 Update 1	2.6.9-11.EL 2.6.9-11.ELsmp 2.6.9-11.EL x86-64 2.6.9-11.ELsmp x86-64
Red Hat Desktop 4 Update 2	2.6.9-22.EL 2.6.9-22.ELsmp 2.6.9-22.EL x86-64 2.6.9-22.ELsmp x86-64
Red Hat Desktop 4 Update 3	2.6.9-34.EL 2.6.9-34.ELsmp 2.6.9-34.EL x86-64 2.6.9-34.ELsmp x86-64

Red Hat Desktop 4 Update 4

2.6.9-42.EL

2.6.9-42.ELsmp

2.6.9-42.EL x86-64

2.6.9-42.ELsmp x86-64

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4 - Pre-Install Requirements
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Prior to installing the audio driver on an Intel Desktop Board product, please ensure that your system meets the installation requirements defined in the following sub-sections.

4.1 - Platform Hardware Requirements

Verify that the following hardware requirements are met:

- On the 845G/865G/865GV desktop systems, the system must contain an integrated AC'97*.
- On the 915G*/915P*/945G*/945P*/965/946 desktop systems, the system must contain an integrated Intel(R) High Definition Audio.

4.2 - Platform BIOS Requirements

Onboard Audio must be "Enabled" in the system BIOS. Please check any documentation accompanying your product for instructions on changing BIOS settings.

4.3 - Platform Software Requirements

Verify that the kernel version installed in the system meets the required kernel version listed in Section 3. If needed, check the currently running kernel version using the 'uname' command as follows:

```
uname -r
```

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5 - Installing the Driver Package

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5a. Login as root to perform installation. Ensure that the speakers are connected to the audio playback output on your desktop system.

5b. Go to Section 6 to check if your distribution already supports audio. If your Linux distribution does not have audio support, go to step 5c.

5c. Go to the directory where you downloaded the driver installation package. If you downloaded the driver installation package to "/tmp":

```
cd /tmp
```

5d. Run the sound installation and configuration script as below. When the installation completes, you will hear audio on the speakers connected.

```
./audio_install
```

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6 - Verifying Driver was installed correctly

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6a. Run the following script to check if ALSA is running on your system.

```
/etc/rc.d/init.d/alsasound status
```

OR

```
/etc/init.d/alsasound status
```

If the above command reports "ALSA sound driver loaded", then ALSA is currently running. If the result is "ALSA sound driver not loaded", then ALSA is not running. If the result is something like "No such file or directory", then your system does not have the script to check the status. Proceed to step 6b.

6b) Check the version of the installed ALSA driver. The result of the following command will be something like "Driver Version x.x.x"

```
cat /proc/asound/version
```

6c) Run the following command. The result of the command should contain the string "Intel HDA" "Azalia" or "ICH4".

```
cat /proc/asound/cards
```

6d) Test the audio output with the following command.

```
speaker-test -c 2 -f 400
```

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7 - Known Issues/Errata

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7a) With this Audio Driver package, audio recording on the desktop board D945GNT does not work. There is no known workaround for this.

7b) gnome-volume control settings are not retained across system boot. The workaround is as follows.

Before rebooting the machine, store the current mixer settings as below:

```
alsactl -f mixer.cfg store
```

After rebooting the machine, restore the mixer settings as below:

```
alsactl -f mixer.cfg restore
```

7c) Please be aware that if you decide to remove the Audio Driver package (by doing `rpm -f` on the alsa components), you will not be able to use the graphical user interface (GUI). This is because the GUI uses the libasound library (alsa API) so that it can play it's sounds.

A work-around for this is to reinstall the alsa-106 from the Red Hat distribution CD set after removing the Audio Driver package.

7d) If you are using an Intel(R) Celeron(R) processor, you will need to manually install the SMP kernel. The Red Hat* installer will perform an install for the UP (non SMP) kernel as the Intel(R) Celeron(R) processor is a single processor.

The audio installation will not work on a UP (non SMP) kernel running with RHEL4u1. It will work okay with RHEL3u5.

You need to install the SMP kernel and then boot off of the SMP kernel before you attempt to install the Audio Driver package.

To install the SMP kernel, you need to have the distribution CD #2 in your CD drive and do the following:

1. Go to the top level of the CD directory
2. `cd` to RedHat/RPMS within the CD hierarchy
3. Do `'rpm -ihv kernel-smp-2.6.9-5.EL.i686.rpm'`
4. Re boot the system. When the boot menu shows, be sure that you select the smp kernel option.

Six-channel audio does not appear to function on Intel Desktop Boards containing three audio jacks,: Only two-channel audio is enabled by default. No workaround exists for this issue. A fix is currently under investigation.

Center channel and surround channel audio output are switched on Intel Desktop Boards based on the Intel 102 chipset: This only occurs when SUSE Linux Enterpris Desktop Version 10 is installed on an Intel Desktop Board based on the Intel 102 chipset. The workaround is to switch the speaker connections between the center audio channel output and the surround audio channel output on the back of the system.

```
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8 - Important Notice  
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```

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