

Customizing the Optimized Lion AppleHDA.kext_v0.1

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Change Log

v0.1 - 5//28/2012 - Draft

v0.2 - 6/13/2012 - Added Download

Guidelines

1. This is not a how to guide. It tells what something looks like before and what it should look like after the edit. The how is left to the reader.

OS X Surround Sound

1. OS X volume control and mute (OSD, System Preferences, keyboard, mouse, Apple Remote, etc.)
 - a. Supports volume control/mute for connected analog stereo speakers only
 - b. No volume control/mute support for digital audio or aggregate devices
 - i. Use the controls and/or remote for the audio device attached making sound
 - ii. There is no known way around this; don't ask. For DD/DTS, Windows is the same
2. Surround Sound in OS X requires
 - a. DD/DTS source (movies, iTunes/AC3 only)
 - b. DD/DTS player (Plex, XBMC, Boxee, VLC - see 5 below)
 - c. DD/DTS sound system.
3. Analog 5.1/7.1 Surround Sound [tonymacx86 Forum • View topic - Universal 5.1-channel analogue audio](#)
4. Audi MIDI Setup/Audio Devices/Digital Output/ always shows 2 Channel Stereo.
5. VLC encoded digital audio requires the edited Optical Surround/AppleHDA binary.

Requirements

1. 10.7.2 or newer - 64 bit kernel
2. Any optimized AppleHDA.kext v2.1.3 or newer

Tools

1. Property List Editor -
 - a. Mac OS X Retail Install Disc v10.6 or v10.6.3 (Optional Installs/Xcode)
 - b. http://sveinbjorn.org/install_property_list_editor_app_on_mac_os_x_lion
2. PListEdit Pro <http://www.fatcatsoftware.com/plisteditpro/>
3. TextEdit - Applications

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Editing Tip

1. To ensure successful pasting of printed data into a plist
 - a. paste first to TextEdit and make plain text (Format/Plain Text)
 - b. copy from TextEdit and paste into plist

Credits

The KiNG [HOW TO] Patch AppleHDA - Knowledge Base - Project OS X Forums

VHC888 ALC889A, Gigabyte (Intel): now having a working front mic - InsanelyMac Forum

0. AppleHDA.kext Assumptions, Structure and Documents

a. AppleHDA.kext Assumptions

Audio ID = codec device_id = LayoutID = PathMapID = hex (Audio ID)

Ex. 889 = 889 = 889 = 889 = 889 = 379 hex

CodecID= decimal (codec_vendor_device_id)

Ex. 283904137 = 10ec0889 hex

Audio ID xyz where

8yz = ALC8yz for 5/6 audio port on board with and without AMD/Nvidia HDMI audio

3yz = ALC8yz for 3/5/6 onboard audio with HD3000 HDMI audio (only)

2yz = ALC8yz for 3 port on board with and without AMD/Nvidia HDMI audio

and

y=8 or 9 and z = 2, 5, 7, 8 or 9 (for Realtek 885, 887, 888, 889 ,892 and 898 audio codec support).

b. AppleHDA.kext Structure

AppleHDA.kext>

Contents> MacOS> AppleHDA binary

Plugins> AppleHDAController.kext>

AppleHDAHardwareConfigDriver.kext>

Resources> layoutxyz.xml

Platforms.xml

AppleHDAController.kext>

Contents> MacOS> AppleHDAController binary

AppleHDAHardwareConfigDriver.kext>

Contents> Info.plist

c. AppleHDA.kext documents and their location

Info.plist AppleHDA.kext/Contents/Plugins/AppleHDAHardwareConfigDriver.kext/

Contents>/nfo.plist

layoutxyz.xml AppleHDA.kext/Contents/Resources/layoutxyz.xml

Platforms.xml AppleHDA.kext/Contents/Resources/Platforms.xml

1 Add SPDIFIn

Adds SPDIF Input as an audio input device

a. Edit Platforms.xml

Open PathMap 885

Copy Item 2 SPDIFIn (NodeID/Number/31)

Open PathMap for edit

Paste SPDIFIn on PathMap

Move Item 2 to top of Items

Repeat

New

Item 2 PathMap as follows:

Item 0/NodeID/Number/10

Item 1/NodeID/Number/31

Save

b. Edit layoutxyz.xml

Open layout885.xml

Open PathMapRef

Open Item 0

Copy SPDIFIn

Open layoutxyz.xml
Open PathMapRef
Open Item 0
Paste SPDIFIn on Item 0
Move all items above SPDIFOut to Item 0 (one at a time)

In layout885.xml
Open Inputs
Copy SPDIFIn

In layoutxyz.xml
Open Inputs
Paste SPDIFIn
Move all items above SPDIFIn to Inputs(one at a time)

Close layout885.xml
Save

c. Edit Info.plist

Fix PinConfig
Find: 21f71cf0 21f71d00 21f71e00 21f71f40
Replace: 21f71ca0 21f71d01 21f71ecb 21f71f01

d. Save, install and restart

2. Manual Mic/Rear and Mic /Front Selection

Displays both Internal Microphone and Line In (Mic/Front) audio output devices

For 892, see below

885, 887, 888, 889, 892, 898

a. Edit Platforms.xml

Copy and paste the current Rear Mic /Front Mic so there are two of the same (usually Item 0)
Open Item 0 and Item 0 and Item 1 appear; delete Item 1 (front mic).
Open Item 1 and Item 0 and Item 1 appear; delete Item 0 (rear mic).
Edit this path map as follows:

Current:

Item 0/NodeID/Number/9
Item 1/NodeID/Number/34
Item 2/NodeID/Number/25

New:

Item 0/NodeID/Number/7
Item 1/NodeID/Number/36
Item 2/NodeID/Number/25

Save, install and restart.

892

a. Edit Platforms.xml

Line In (Blue/Rear) is not available
open Item 0, Item 0 and Item 1 appear; delete Item 1 (front mic)
open Item 1

Current:

Item 0/NodeID/Number/8
Item 1/NodeID/Number/35

Item 2/NodeID/Number/26

New:

Item 0/NodeID/Number/8

Item 1/NodeID/Number/35

Item 2/NodeID/Number/25

b. Save, install and restart

3. Manual Internal Speaker and Headphone Selection

Displays both Internal Speaker and Headphones audio output devices

a. Edit Platforms.xml

Copy and paste the current speaker/headphone so there are two of the same (usually Item 2)

In first one, open next level and there are Item 0 and Item 1; delete Item 1 (headphones).

In second one, open next level and there are Item 0 and Item 1; delete Item 0 (speakers).

Edit this path map as follows:

Current:

Item 0/NodeID/Number/27

Item 1/NodeID/Number/12

Item 2/NodeID/Number/2

New:

Item 0/NodeID/Number/27

Item 1/NodeID/Number/38

Item 2/NodeID/Number/37

b. Save, install and restart.

4. Add Boost to input (Mic/Rear. Mic/Front and/or Line In)

Increase audio level for audio input devices

a. Edit Platforms.xml (add to audio input devices as appropriate)

i. Mic/Rear

Current:

Item 0/NodeID/Number/9

Item 1/NodeID/Number/34

Item 2/NodeID/Number/24

Select Item1

Select Add Item

Enter Boost

Select Number

Enter 3

New

Item 0/NodeID/Number/9

Item 1

Boost/Number/3

NodeID/Number/34

Item 2/NodeID/Number/24

Save

ii. Mic/Front (displayed as Line In/Built-In)

Note: NodeIDs are different if 2. Manual Mic/Rear and Mic /Front Selection (above) is implemented

Current:

Item 0/NodeID/Number/9

Item 1/NodeID/Number/34
Item 2/NodeID/Number/25

Select Item1
Select Add Item
Enter Boost
Select Number
Enter 3

New
Item 0/NodeID/Number/9
Item 1
 Boost/Number/3
 NodeID/Number/34
Item 2/NodeID/Number/25

Save

iii. Line In
Current:
Item 0/NodeID/Number/8
Item 1/NodeID/Number/35
Item 2/NodeID/Number/26

Select Item1
Select Add Item
Enter Boost
Select Number
Enter 3

New
Item 0/NodeID/Number/8
Item 1
 Boost/Number/3
 NodeID/Number/35
Item 2/NodeID/Number/26

b. Save, install and restart.

5. Substitute Gray (Side Speakers) for Black (Rear Speakers)

Allows configuring Side Speakers in 5.1 analog surround sound.

a. Edit Platforms.xml

Open 2nd to last item
Edit this path map as follows:

Current:
Item 0/NodeID/Number/21
Item 1/NodeID/Number/13
Item 2/NodeID/Number/3

New:
Item 0/NodeID/Number/23
Item 1/NodeID/Number/15
Item 2/NodeID/Number/5

b. Save, install and restart

6. Add Line Out (Rear Speakers) for analog 7.1 Surround Sound

Adds side speaker for 7.1 analog surround sound

Note: Not available for Audio ID: 3yz

a. Edit Platforms.xml

Copy and paste the Line Out so there are two of the same. (2nd to last item)

Edit this path map as follows:

Current:

Item 0/NodeID/Number/21

Item 1/NodeID/Number/13

Item 2/NodeID/Number/3

New:

Item 0/NodeID/Number/23

Item 1/NodeID/Number/15

Item 2/NodeID/Number/5

b. Edit Hardware Config/info.plist

PinConfig

Find: 21771cf0 21771d00 21771e00 21771f40

Replace: 21771c80 21771d20 21771e01 21771f01

c. Save, install and restart

7. Substitute SPDIF-2 Wire Output

Replaces SPDIFOut Optical with motherboard SPDIF 2 wire SPDIF audio output device

a. Edit Platforms.xml

Copy and paste the current SPDIFOut (last item)

Edit this path map as follows:

Current:

Item 0/NodeID/Number/30

Item 1/NodeID/Number/6

New:

Item 0/NodeID/Number/17

Item 1/NodeID/Number/16

b. Edit Hardware Config/info.plist

Fix PinConfig

Find: 21171cf0 21171d00 21171e00 21171f40

Replace: 21171ca0 21171d01 21171e43 21171f99

c. Save, install and restart

Credit: intamara <http://www.tonymacx86.com/viewtopic.php?p=325680#p325680>

8. SPDIF OpticalOut/Encoded Digital Audio - Not available for 892 or 898

Required for VLC Encoded Digital Audio Option

Alternative AppleHDA binary edit

Note: popping may occur with attached analog speakers.

a. Download

Attachment 2 - 885_Lion_AppleHDA.zip

b. Edits

No edit is required for the 885. Encoded Digital Audio is native.

AppleHDA binary edits (assumes AppleHDA.kext is in Downloads/885_Lion_AppleHDA

i. 887 SPDIFOut/Encoded Digital Audio
sudo perl -pi -e 's/\x85\x08\xec\x10\x87\x08\xec\x10lg' Downloads/885_Lion_AppleHDA/
AppleHDA.kext/Contents/MacOS/AppleHDA

ii. 888 SPDIFOut/Encoded Digital Audio
sudo perl -pi -e 's/\x85\x08\xec\x10\x88\x08\xec\x10lg' Downloads/885_Lion_AppleHDA/
AppleHDA.kext/Contents/MacOS/AppleHDA

iii. 889 SPDIFOut/Encoded Digital Audio
sudo perl -pi -e 's/\x85\x08\xec\x10\x89\x08\xec\x10lg' Downloads/885_Lion_AppleHDA/
AppleHDA.kext/Contents/MacOS/AppleHDA

iv. 892 SPDIFOut/Encoded Digital Audio
Applying this edit for the 892 disables audio. Do not try.

c. Copy Downloads/885_Lion_AppleHDA/AppleHDA.kext to Desktop

d. Install and restart

9. HDMI audio (AMD/Nvidia/HD3000)

tonymacx86 Forum • View topic - Lion HDMI Audio - Part 1: Requirements

Appendix:. AppleHDA.kext Reference

a. AppleHDA.kext>
Contents> MacOS> AppleHDA binary
Plugins> AppleHDAController.kext>
AppleHDAHardwareConfigDriver.kext>
Resources> layoutxyz.xml
Platforms.xml

AppleHDAController.kext>
Contents> MacOS> AppleHDAController binary

AppleHDAHardwareConfigDriver.kext>
Contents> Info.plist

b. info.plist

AppleHDA.kext> Contents> Plugins/AppleHDAHardwareConfigDriver.kext>
AppleHDAHardwareConfigDriver.kext>
Contents>Info.plist>
Info.plist>
IOKitPersonalities>
HDA Hardware Config Resources>
HDAConfiDefault>
Item 0>
....
CodecID 283904137
ConfigData <21471c10 21471d40 21471e11 21471f01.....
FuncGroup 1
LayoutID 889

c. Platforms.xml

AppleHDA.kext> Contents> Resources>Platforms.xml

Platforms.xml
Root>
PathMaps>

Item 0>

....

PathMapID

PathMap> 889

Item 0>

Item 0>

Item 0

Amp

NodeID/Number 9

Item 1

NodeID/Number 34

Item 2

NodeID/Number 24

Item 1>

....

d. layoutxyz.xml

AppleHDA.kext> Contents> Resources>layoutxyz.xml

layoutxyz.xml

Root

LayoutID

PathMapRef

Item 0

....

Item 0

LayoutID 889

PathMapRef

Item 0

CodecID Item 0 283904137

HeadPhone

....

PathMapID 889

.....

e. AppleHDA binary

AppleHDA.kext> Contents>MacOS>AppleHDA

f. AppleHDAController binary

AppleHDA.kext> Contents>Plugins>AppleHDAController.kext

AppleHDAController.kext> Contents>MacOS>AppleHDAController binary