# Haswell HDMI audio
## with or without dsdt edits

**Haswell/8 Series/Socket 1150 HDMI Audio**

Mountain Lion HDMI audio for Haswell systems with either: 1. HDMI audio edited dsdt or 2. the Haswell HDMI audio ssdt. Both techniques enable native Haswell graphics power management.  Haswelll HDMI audio is not native; an AppleIntelFramebufferAzul.kext edit is always required as well as an AppleHDA.kext edit.  Credit, PikeRAlpha for both fixes.

**Haswell HDMI Audio dsdt edits/HDMI Audio ssdts** - **Desktop**
toleda/audio_hdmi_8series
Configure MaciASL/Preferences/Sources/+ with URL:
[CODE]https://raw.github.com/toleda/audio_hdmi_8series/master[/CODE]

**News:**
1. Haswell/HD4600/AMD/Nvidia HDMI audio is working
2. AMD HD 7xxx HDMI audio is working
3. This guide assumes Azul framebuffer 0x0300220D, edit AAPL,ig-platform-id (dsdt or ssdt) for your preferred framebuffer.

**Requirements** (this version, Haswell HDMI audio)
1. AMI UEFI/Haswell/8 Series/Socket 1150 Intel motherboard
2. HD4600 graphics and/or native OS X HDMI audio graphics support including Nvidia 4xx, 5xx, 6xx and some AMD 5xxx, 6xxx 7xxx.
3. OS X 10.8.5 and newer.

**Before You Start**
1. OS X does not provide HDMI audio controls (no volume, no mute, no balance, etc.)
2. The connected HDMI device (TV, receiver, etc.) provides any and all audio controls
3. Remove S/L/E/HDAEnabler1.kext or S/L/E/HDAEnabler2.kext (if present)
4. Remove any property-type injection (Extra/org.chameleon.Boot.plist, remove the injection not the plist file)
5. Apply kext patches per Notes 1 and 2, below

**ML Haswell HDMI audio enabling techniques** - select one
1. 1. ML: Haswell HDMI Audio dsdt (with dsdt edits)
2. 2. ML: Haswell HDMI Audio ssdt (no dsdt/no dsdt edits)

**Installation - Haswell HDMI audio dsdt**
1. dsdt must compile before HDMI audio editing dsdt
2. MaciASL/Preferences/Sources/raw.github.com/toleda/audio_hdmi_8series/master
3. MaciASL/Patch/Open/
4. MaciASL/Apply/Compile/Save

5. Install Extra/dsdt.aml
6. Rebuild kernel cache
7. Restart
8. Verify HDMI audio

**Installation - Haswell HDMI audio ssdt**
1. audio_hdmi_8series/ssdt_8series at master · toleda/audio_hdmi_8series
2. Copy Downloads/ssdt-ami-8_series_hdmi_audio-1/SSDT-1.aml to Extra
    1. If Extra/SSDT.aml is present, install Downloads/audio_ssdt-uefi_hdmi_v3/SSDT-1.aml as Extra/SSDT-1.aml
    2. If no Extra/SSDT.aml, rename Downloads/audio_ssdt-uefi_hdmi_v3/SSDT-1.aml to SSDT.aml and install as Extra/SSDT.aml
3. Rebuild kernel cache
4. Restart
5. Verify HDMI audio

**Native ML/10.8.5 HDMI Audio Graphics**
1. HD4600 (no native HDMI audio support, framebuffer edits required)
    1. HDMI display (Azul framebuffer 0x0300220D)
        1. AppleIntelFramebuffer@0, additional edit required
        2. AppleIntelFramebuffer@1, additional edit required
        3. AppleIntelFramebuffer@2, recommended, edit required
    2. DP audio supported
    3. DVI audio, not tested
2. Nvidia 4xx/5xx/6xx7xx
    1. Not supported natively: GTS 450, GTX 550ti, and GTX560ti
    2. All Nvidia graphic card connectors support HDMI audio (DVI2HDMI, DP2HDMI)
    3. DP audio supported
3. AMD HD5xxx/HD6xxx/HD7xxx (framebuffer injection/editing may be required)
    1. Framebuffers, see [ATI/AMD 5xxx & 6xxx Graphics Cards Framebuffer Personalities,](#)
    2. Framebuffer edits, [Lion HDMI Audio - Part 3a: Kext Edits - AMD,](#) Editing custom personalities for ATI Radeon HD[45]xxx - ATi - InsanelyMac Forum)
    3. DP audio supported
4. Supported Configurations (ML Haswell HDMI Audio)
    1. HD4600 only
    2. Nvidia only
    3. AMD only
    4. HD4600 and Nvidia
    5. HD4600 and AMD

**Notes**
1. Haswell/AppleHDA.kext edit
    1. MultiBeast 5.5.2 or newer
    2. audio_hdmi_8series/audio_hdmi_hd5K-hda-85_patch.command.zip at master · toleda/audio_hdmi_8series - select View Raw
2. Haswell/AppleIntelFramebufferAzul.kext
    1. See **Azul Patch for HDMI audio on AppleIntelFramebuffer@2**,

below
2. audio_hdmi_8series/audio_hdmi_hd5k_azul-85_patch.command.zip at master · toleda/audio_hdmi_8series - select View Raw
3. Haswell HDMI audio woks with two ML Audio IDs select one ID
   1. Audio_ID: 1 supports HD4600/AMD/Nvidia HDMI and 3, 5 and 6 port ALC8xx onboard audio
   2. Audio_ID: 2 supports HD4600/AMD/Nvidia HDMI and 3 port ALC8xx onboard audio
4. Haswell patches must be applied after each software update.
5. No testing on laptops has been performed to date.

**Troubleshooting**
1. Verify HDMI device connected
   1. System Information/Graphics/Display/HDMI device name/Television/ Yes
2. Run IOJones/Verify Devices (PEGP, IGPU and HDAU)
   1. Device (IGPU and HDAU) may not be present if HD4600/HD5000 Graphics is not enabled
   2. Device (PEGP) may not be present if no discrete graphics

**Problem Reporting**
1. Motherboard/BIOS version/processor/graphics/OS and version
2. Copy of dsdt (if edited)
3. Copy of installed SSDT
4. Copy of IOJones

**Credit**
PikeRAlpha Haswell HDAU solution | Pike's Universum
bcc9 http://www.insanelymac.com/forum/top...ort/?p=1934889, Post #11


**Tools** (Guides below)
1. Patch Haswell framebuffer: Resolving the DP4 HDMI hang | Pike's Universum
   1. Update-2, Download AIFBAzul v1.2,
   2. Rename Downloads/aifbazul2.doc to aifbazul2.sh
2. Edit dsdt with MaciASL SourceForge.net: MaciASL - Project Web Hosting - Open Source Software
3. Find HD4600 HDMI port-number: Alternative to IORegistryExplorer: IOJones
4. Rebuild kernel cache: see DPCIManager 1.5 Open Beta

**Guides**
**Rebuild kernel cache**
1. Open Downloads/DPCIManager/DPCIManager
2. Select: Rebuild Cache


**Azul Patch for HDMI audio on AppleIntelFramebuffer@2**

**1. Edit aifbazul2.sh**
1. TextEdit/Open/aifbazul2.sh
2. Textedit/Copy (code below)
3. TextEdit/Paste (over the same entry in aifbazul2.sh)

4. TextEdit/Save

```
0x0d220003) PATCHED_PLATFORM_INFO="0:
          0300 220D 0003 0303 0000 0002 0000 0001
          0000 0000 0000 0040 9914 0000 9914 0000
          0000 0000 0000 0000 0105 1200 0004 0000
          8700 0000 0204 1400 0004 0000 8700 0000
          0306 1000 0008 0000 0000 0000 FF00 0100
          0100 0000 4000 0000 0200 0000 0101 0000
          0400 0000 0000 0000 0000 0000 0000 0000
          0000 0000 0000 0000"
          ;;
```

## 2. Patch AppleIntelFramebufferAzul.kext
1. Terminal/cd Downloads
2. sudo chmod 755 aifbazul2.sh
3. sudo ./aifbazul2.sh 0x0d220003 patch
4. Enter Password
5. sudo touch /System/Library/Extensions
6. exit

**3. To restore** native AppleIntelFramebufferAzul.kext, run
sudo ./aifbazul2.sh 0x0d220003 restore

## Find HD4600 HDMI AppleIntelFramebuffer
1. Boot system with only HDMI display connected
2. Open Downloads/IOJones
3. Search: AppleIntelFr
   - Screenshot
4. Open each framebuffer to find display0
5. Select: AppleIntelFramebuffer (with display0)
6. Cancel Search (X)
7. Scroll up for AppleIntelFramebuffer to show
8. Note AppleIntelFramebuffer#0, 1 or 2
9. If HDMI display is attached to
10. AppleIntelFramebuffer#2, no further edits
11. AppleIntelFramebuffer#0, see instructions below
12. AppleIntelFramebuffer#1, see instructions below

## Patch Azul for HDMI on AppleIntelFramebuffer@0

## 1. Edit aifbazul2.sh
1. TextEdit/Open/aifbazul2.sh
2. Textedit/Copy (code below)
3. TextEdit/Paste (over the same entry in aifbazul2.sh)

4. TextEdit/Save

0x0d220003) PATCHED_PLATFORM_INFO="0:
        0300 220D 0003 0303 0000 0002 0000 0001
        0000 0000 0000 0040 9914 0000 9914 0000
        0000 0000 0000 0000 0105 1200 0008 0000
        0600 0000 0204 1400 0004 0000 8700 0000
        0306 1000 0008 0000 0000 0000 FF00 0100
        0100 0000 4000 0000 0200 0000 0101 0000
        0400 0000 0000 0000 0000 0000 0000 0000
        0000 0000 0000 0000"
        ;;

**2. See Patch AppleIntelFramebufferAzul.kext** above

**Patch Azul for HDMI on AppleIntelFramebuffer@1**

**1. Edit aifbazul2.sh**
    1. TextEdit/Open/aifbazul2.sh
    2. Textedit/Copy (code below)
    3. TextEdit/Paste (over the same entry in aifbazul2.sh)
    4. TextEdit/Save

0x0d220003) PATCHED_PLATFORM_INFO="0:
        0300 220D 0003 0303 0000 0002 0000 0001
        0000 0000 0000 0040 9914 0000 9914 0000
        0000 0000 0000 0000 0105 1200 0004 0000
        8700 0000 0204 1400 1200 0008 0000 0600
        0306 1000 0008 0000 0000 0000 FF00 0100
        0100 0000 4000 0000 0200 0000 0101 0000
        0400 0000 0000 0000 0000 0000 0000 0000
        0000 0000 0000 0000"
        ;;

**2. See Patch AppleIntelFramebufferAzul.kext** above


**Successful Terminal/aifbazul2.sh Session**

Last login: Thu Sep 26 13:12:48 on console
$ **cd Desktop**
$ **sudo chmod 755 aifbazul2.sh**
Password:
$ **sudo ./aifbazul2_v3.sh 0x0d220003 show**


AIFBAzul.sh v1.2 Copyright (c) 2013 by Pike R. Alpha

```
-----------------------------------------------------

AAPL,ig-platform-id: 0x0d220003 located @ 329840
-------------------------------------------------
0050870: 0300 220d 0003 0303 0000 0002 0000 0001  .."..............
0050880: 0000 0000 0000 0040 9914 0000 9914 0000  .......@........
0050890: 0000 0000 0000 0000 0105 1200 0004 0000  ................
00508a0: 8700 0000 0204 1400 0004 0000 8700 0000  ................
00508b0: 0306 1000 0004 0000 1100 0000 ff00 0100  ................
00508c0: 0100 0000 4000 0000 0200 0000 0101 0000  ....@...........
00508d0: 0000 0000 0000 0000 0000 0000 0000 0000  ................
00508e0: 0400 1204 0000 0000                       ........
```

## $ **sudo ./aifbazul2_v3.sh 0x0d220003 patch**

AIFBAzul.sh v1.2 Copyright (c) 2013 by Pike R. Alpha
-----------------------------------------------------

AAPL,ig-platform-id: 0x0d220003 located @ 329840
-------------------------------------------------
120+0 records in
120+0 records out
120 bytes transferred in 0.000122 secs (983040 bytes/sec)

## $ **sudo ./aifbazul2_v3.sh 0x0d220003 show**

AIFBAzul.sh v1.2 Copyright (c) 2013 by Pike R. Alpha
-----------------------------------------------------

AAPL,ig-platform-id: 0x0d220003 located @ 329840
-------------------------------------------------
```
0050870: 0300 220d 0003 0303 0000 0002 0000 0001  .."..............
0050880: 0000 0000 0000 0040 9914 0000 9914 0000  .......@........
0050890: 0000 0000 0000 0000 0105 1200 0004 0000  ................
00508a0: 8700 0000 0204 1400 0004 0000 8700 0000  ................
00508b0: 0306 1000 0008 0000 0000 0000 ff00 0100  ................
00508c0: 0100 0000 4000 0000 0200 0000 0101 0000  ....@...........
00508d0: 0400 0000 0000 0000 0000 0000 0000 0000  ................
00508e0: 0000 0000 0000 0000                       ........
```

## $ **sudo touch /System/Library/Extensions**
## $ **exit**
logout

[Process completed]