

[Guide] ML-5_series-hdmi_audio_dsdt_edits



Mountain Lion HDMI Audio 5 Series Motherboards w/AMI BIOS/DSDT or Award BIOS/DSDT

A simple HDMI Audio dsdt editing tool for OS X HDMI audio on 5 Series motherboards with HD4000 graphics. Based on the MaciASL built by SJ_UnderWater, the Apply button automatically makes the HDMI audio dsdt edits.

Verify BIOS supplier:

1. Verify first line of an AMI dsdt is similar to:

DefinitionBlock (".dsdt.aml", "DSDT", 2, "ALASKA", "A M I", 0x000000..)

2. Verify first line of an Award dsdt is similar to:

DefinitionBlock (".dsdt.aml", "DSDT", 1, "GBT ", "GBTUACPI", 0x00001000)

Benefits

1. Automated HDMI audio dsdt editing
2. Installs HD4000 integrated graphics HDMI audio dsdt edits
3. Installs AMD/Nvidia discrete graphics card HDMI audio dsdt edits
4. No copy, no paste, no finding the right place to paste....

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. Delete any audio enablers (S/L/E/HDAEnabler1.kext)
4. Remove any property-type injection (Extra/org.chameleon.Boot.plist)

Requirements

1. Intel
 - 1a. 5 Series motherboards - H55, P55, X58
2. OS X
 - 2a. Mountain Lion - 10.8.2 and newer
3. dsdt - no compile errors
 - 3a. No dsdt, extract dsdt, see **I. Preparation**

4. Motherboard onboard audio codec
 - 4a. Realtek supported audio codecs (8xy): 885, 887, 888, 889, 892, 898
 - 4b. Unsupported audio codecs: ML HDMI audio works with any unsupported audio codec/no onboard audio
5. AppleHDA.kext (one of the following)
 - 5a. ML: MultiBeast 5.2.1 or newer/Audio/Realtek ALC8xx/With DSDT/ALC...
 - 5b. ML: Native AppleHDA.kext (unsupported audio codecs)

More Information

Special HDMI Audio Considerations

Detailed Instructions

See [Mountain Lion HDMI Audio - AMI DSDT](#)

Or **Mountain Lion HDMI Audio - Award DSDT**

Tools

1. MaciASL [MaciASL | Free Development software downloads at SourceForge.net](#)
2. IORegistryExplorer see [\[Guide\] How to Make a Copy of IOReg](#)
3. CarbonCopyCloner or SuperDuper
4. Download/ZIP: https://github.com/toleda/audio_hdmi_5series

Mountain Lion Audio IDs (10.8.2 AppleHDA.kext_v2.3.1 or newer)

1. Audio ID 1/A1: AMD/Nvidia HDMI audio with 3/5/6 port onboard audio

Patches - github.com/toleda/audio_hdmi_5series/tree/master/Patches

- 5s1. AMI-BIOS-AMD-Nvidia-5_Series-A1 - AMD/Nvidia HDMI audio dsdt edits
- 5s2. Award-BIOS-AMD-Nvidia-5_Series-A1 - AMD/Nvidia HDMI audio dsdt edits

Attachments

N/A ML HDMI audio dsdt edits are available in MaciASL/Patch

Key Information

1. Determine graphics device names and address
 - 1a. IOReg/Search display
 - 1a. Example: Discrete Graphics - PEG0@1, P0P1@1, P0P3@3, NVE3@3, etc.

IOService

Q= display

IOService:/AppleACPIPlatformExpert/PCI0@0/AppleACPIPCI/G...r@0/AppleMCCSControlModule/AppleMCCSParameterHandler

AppleMCCSParameterHandler

Class Inheritance: AppleMCCSParameterHandler : IODisplayParameterHandler : IOService : IORegistryEntry : OSObject

Bundle Identifier: com.apple.driver.AppleMCCSControl

Registered Retain Count: 4

Matched Busy Count: 0

Active

Property Type Value

CFBundleIdentifier	String	com.apple.driver.AppleMCCSControl
IOClass	String	AppleMCCSParameterHandler
IOKitDebug	Number	0x0
IOMatchCategory	String	IODisplayParameter
IOProbeScore	Number	0x0
IOProviderClass	String	AppleMCCSControlFamily
IOResourceMatch	String	IOKit

Root

- Macmini5,1
 - AppleACPIPlatformExpert
 - PCI0@0
 - AppleACPIPCI
 - GFX0@2
 - AppleIntelFramebuffer@0
 - AppleMCCSControlModule
 - AppleMCCSParameterHandler
 - AppleIntelFramebuffer@1
 - AppleMCCSControlModule
 - AppleMCCSParameterHandler
 - AppleIntelFramebuffer@2
 - AppleMCCSControlModule
 - AppleMCCSParameterHandler
 - display0
 - AppleDisplay
 - PEG0@1
 - IOPCI2PCIBridge
 - PEGP@0
 - ATY,Duckweed@0
 - ATIFramebufferNI
 - AppleMCCSControlModule
 - AppleMCCSParameterHandler
 - ATY,Duckweed@1
 - ATIFramebufferNI
 - AppleMCCSControlModule
 - AppleMCCSParameterHandler
 - ATY,Duckweed@2
 - ATIFramebufferNI
 - AppleMCCSControlModule
 - AppleMCCSParameterHandler
 - ATY,Duckweed@3
 - ATIFramebufferNI
 - AppleMCCSControlModule
 - AppleMCCSParameterHandler
 - IOResources
 - IODisplayWrangler

2. Determine discrete graphics device names and address

2a. IOReg/Search PEG0

2a. Example: PEG0@1

IOService

Search

IOService:/AppleACPIPlatformExpert/PCI0@0/AppleACPIPCI/PEG0@1

PEG0@1

Class Inheritance: IOPCIDevice : IOService : IORegistryEntry : OSObject

Bundle Identifier: com.apple.iokit.IOPCIFamily

Registered Retain Count: 12

Matched Busy Count: 0

Active

Property Type Value

| | | |
|----------------|------|---------------|
| #address-cells | Data | <03 00 00 00> |
| #size-cells | Data | <02 00 00 00> |

pci8086,1e3a@16

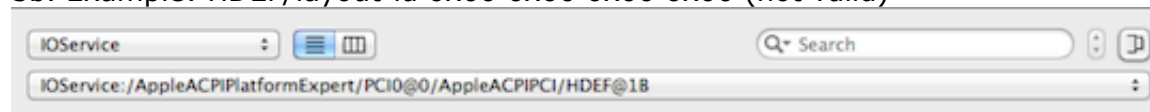
- AppleIntelMEIDriver
- PEG0@1

| | | |
|------------------------------|------------|--|
| acpi-device | String | IOACPIPlatformDev
ice is not
serializable |
| acpi-path | String | IOACPIPlane:/_SB/
PCI0@0/
PEGP@10000 |
| acpi-pmcap-offset | Number | 0x80 |
| built-in | Data | <00> |
| class-code | Data | <00 04 06 00> |
| compatible | Data | <"pcif,0", "pci8086
,151", "pciclass,06
0400"> |
| device-id | Data | <51 01 00 00> |
| IODTPersist | Data | <> |
| IOInterruptControllers | Array | 1 value |
| IOInterruptSpecifiers | Array | 1 value |
| IOName | String | pci-bridge |
| IOPCIConfigured | Boolean | True |
| IOPCIExpressASPMDefault | Number | 0x0 |
| IOPCIExpressLinkCapabilities | Number | 0x261ad03 |
| IOPCIExpressLinkStatus | Number | 0x5101 |
| IOPCIResourced | Boolean | True |
| IOPowerManagement | Dictionary | 3 values |
| name | String | pci-bridge |
| pcidebug | String | 0:1:0(1:1) |
| ranges | Data | <00 00 00 82
00 00 00 00
00 00 e0 f7
00 00 00 82
00 00 00 00
00 00 e0 f7
00 00 00 00
00 00 10 00
00 00 00 c2
0f 00 00 00
00 00 00 10
00 00 00 c2
0f 00 00 00
00 00 00 10
00 00 00 00
00 00 00 10
00 00 00 81
00 00 00 00
00 e0 00 00
00 00 00 81
00 00 00 00
00 e0 00 00
00 00 00 00
00 10 00 00> |
| reg | Data | <00 08 00 00
00 00 00 00
00 00 00 00
00 00 00 00
00 00 00 00> |
| revision-id | Data | <09 00 00 00> |
| subsystem-id | Data | <00 00 00 00> |
| subsystem-vendor-id | Data | <0f 00 00 00> |
| vendor-id | Data | <86 80 00 00> |

5. Verify HDEF

5a. IOReg/Search HDEF, Select HDEF, Cancel Search (X), Scroll up

5b. Example: HDEF/layout-id 0x00 0x00 0x00 0x00 (not valid)

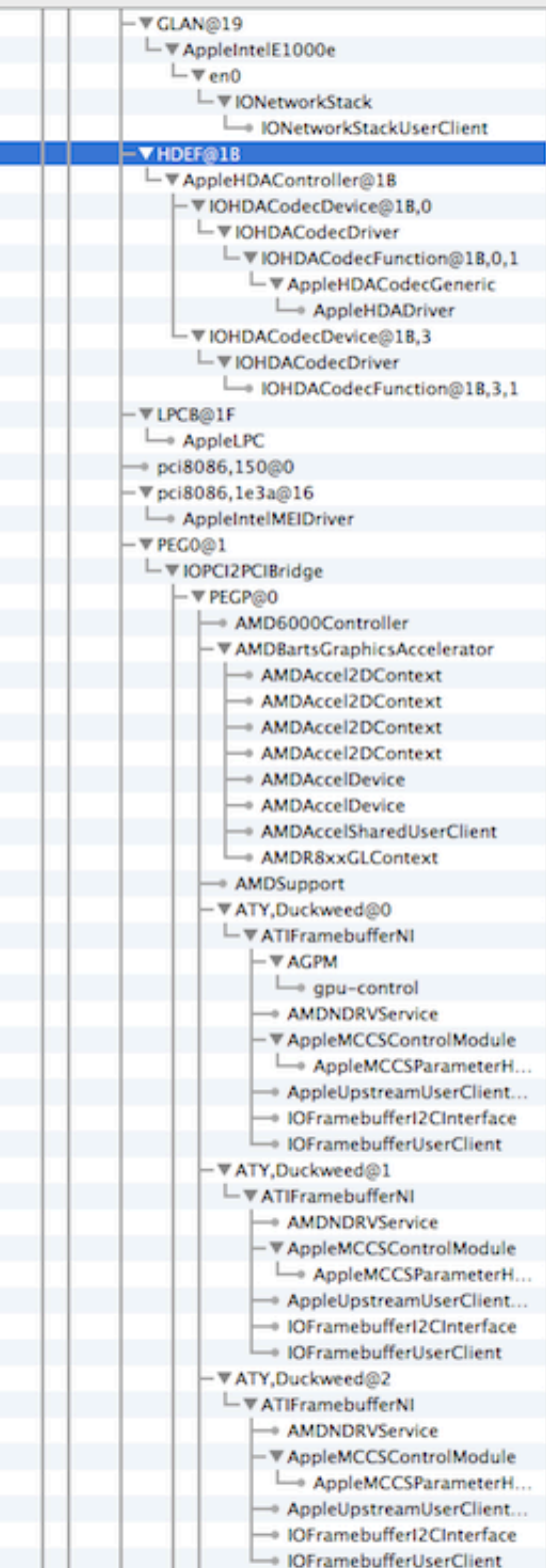


HDEF@1B

Class Inheritance: IOPCIDevice : IOService : IORegistryEntry : OSObject

✓ Registered Retain Count: 10
✓ Matched Busy Count: 0
✓ Active

Bundle Identifier: com.apple.iokit.IOPCIFamily



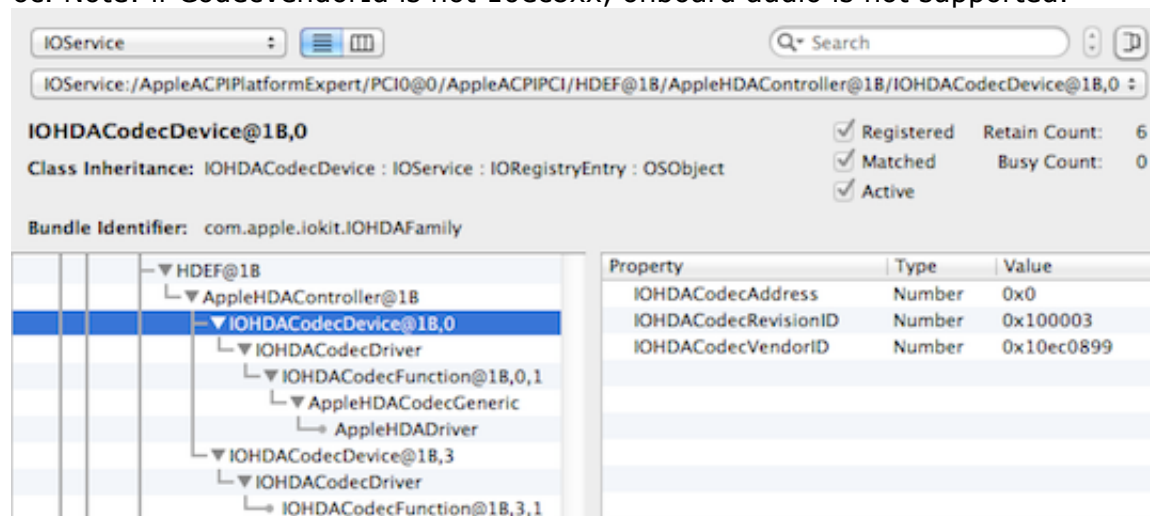
| Property | Type | Value |
|------------------------------|------------|---|
| acpi-device | String | IOACPIPlatformDev
ice is not
serializable |
| acpi-path | String | IOACPIPlane:/_SB/
PCI0@0/
HDEF@1b0000 |
| acpi-pmcap-offset | Number | 0x50 |
| assigned-addresses | Data | <10 d8 00 82
00 00 00 00
00 00 f3 f7
00 00 00 00
00 40 00 00> |
| built-in | Data | <00> |
| class-code | Data | <00 03 04 00> |
| compatible | Data | <"pci1043,851f", "
pci8086,1e20", "pc
iclass,040300"> |
| device-id | Data | <20 1e 00 00> |
| IODeviceMemory | Array | 1 value |
| IOInterruptControllers | Array | 2 values |
| IOInterruptSpecifiers | Array | 2 values |
| IOName | String | pci8086,1e20 |
| IOPCIExpressASPMDefault | Number | 0x0 |
| IOPCIExpressLinkCapabilities | Number | 0x0 |
| IOPCIExpressLinkStatus | Number | 0x0 |
| IOPCIMSIMode | Boolean | True |
| IOPCIResourced | Boolean | True |
| IOPowerManagement | Dictionary | 3 values |
| layout-id | Data | <00 00 00 00> |
| name | String | pci8086,1e20 |
| pcidebug | String | 0:27:0 |
| reg | Data | <00 d8 00 00
00 00 00 00
00 00 00 00
00 00 00 00
10 d8 00 02
00 00 00 00
00 00 00 00
00 00 00 00
00 40 00 00> |
| revision-id | Data | <04 00 00 00> |
| subsystem-id | Data | <1f 85 00 00> |
| subsystem-vendor-id | Data | <43 10 00 00> |
| vendor-id | Data | <86 80 00 00> |

6. Determine motherboard audio codec device_id (Select 2nd line after HDEF)

6a. IOREg/AppleHDAController/OHDACodecDevice/IOHDACodecVendorId

6b. Example: IOREg/10ec0899

6c. Note: if CodecVendorId is not 10ec8xx, onboard audio is not supported.



Evaluate IOREg > HDMI Audio dsdt edit file Key Information

1. AMI BIOS/5 Series

| AMI BIOS/5 Series | IOReg | HDMI Audio Edit file | After HDMI Audio Edits |
|-------------------|-------|----------------------|------------------------|
| discrete graphics | @ | P0P1@1 | PEGP@1 |

1a. If IOREg shows P0P1@1, no edit is required

1b. If IOREg shows ABCD@n, the edits are:

1c. Edit Name/Find: P0P1/Replace All: ABCD

1d. Edit Address/Find: 0x00010000/Replace All: 0x000n0000

2. Award BIOS/5 Series (Verify PEG0 address, 1 or 3)

| Award BIOS/5 Series | IOReg | HDMI Audio Edit file | After HDMI Audio Edits |
|---------------------|--------------|----------------------|------------------------|
| discrete graphics | pci-bridge@1 | pci-bridge@1 | PEGP@1 |

2a. If IOREg shows pci-bridge@1, no edit is required

2b. If IOREg shows ABCD@n, the edits are:

2c. Edit Address/Find: 0x00010000/Replace All: 0x000n0000

Patch File Edits

1. If the Patch file requires edits,

1a. Edit the Patch file in MaciASL Patch window or

1b. Download the Patch from:

github.com/toleda/audio_hdmi_5series/tree/master/Patches

Select Folder/Select Patch/Raw/Copy/Save to Desktop

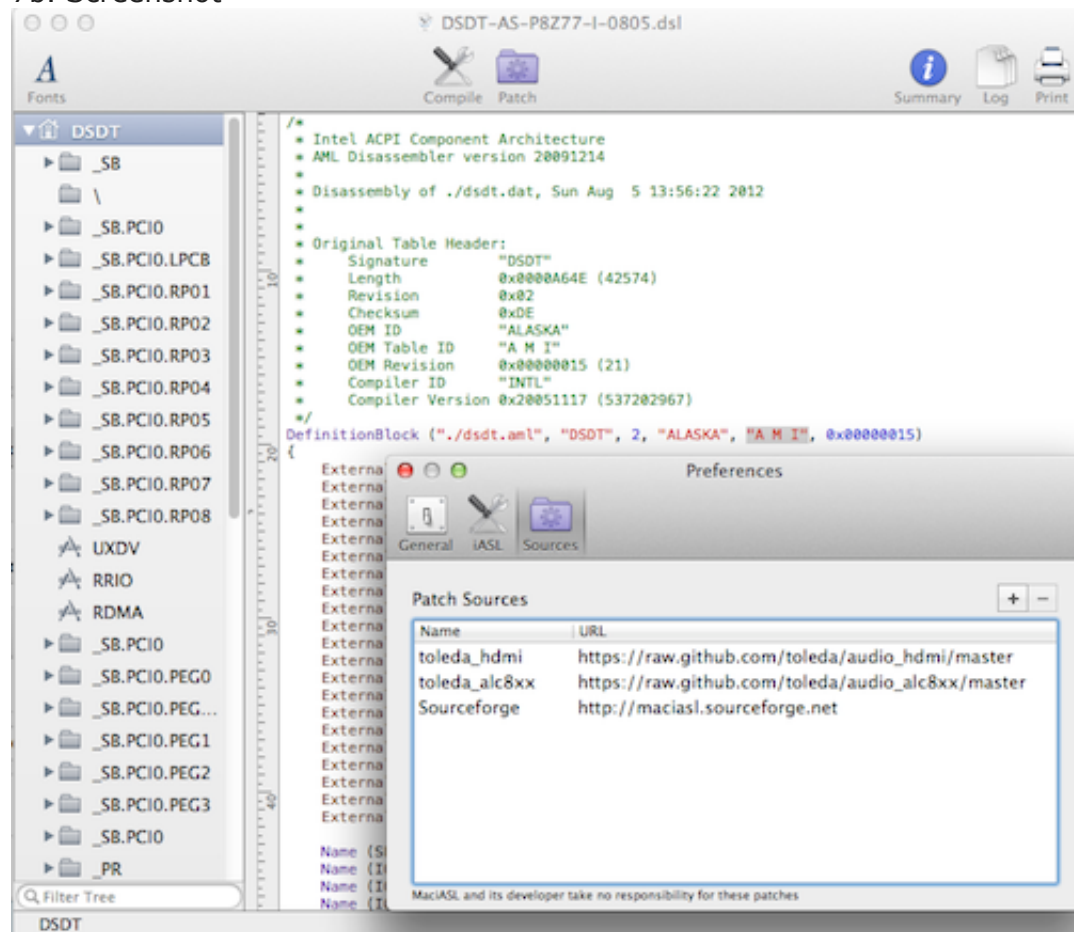
edit with TextEdit and save to desktop.

Start of Procedure

5 Series Motherboards - Mountain Lion HDMI audio edits

I. Preparation

1. Make bootable backup of system (CarbonCopyCloner or SuperDuper)
2. Make a copy of IOReg, see **Tools/2**.
3. Verify no audio enablers (S/L/E/HDAEnabler1.kext, HDAEnabler8xx.kext, etc.)
4. MultiBeast 5.2.1 or newer - Select/Drivers & Bootloaders/Drivers/Audio/Realtek ALC8xx/With DSDT/ALC8-- , if Realtek ALC8xx audio,
5. Download MaciASL and install/Applications, see **Tools/1**.
6. Applications/MaciASL
7. MaciASL/Preferences/Sources/+/https://raw.githubusercontent.com/toleda/audio_hdmi_5series/master
- 7a. URL: https://raw.githubusercontent.com/toleda/audio_hdmi_5series/master
- 7b. Screenshot



8. With dsdt,
 - 8a. Copy Extra/dsdt.aml to Desktop
 - 8b. MaciASL/File/Open/Desktop/dsdt.aml
 - 8c. jump to **II. Native Compile**
9. If no dsdt,
 - 9a. MaciASL/File/New from ACPI/DSDT
 - 9b. MaciASL/File/Save As../Desktop/dsdt-motherboard-native.dsl

II. Native Compile

10. Verify AMI dsdt (1st line)
 - 10a. DefinitionBlock ("./dsdt.aml", "DSDT", 2, "ALASKA", "A M I", 0x000000..)

10b. See Screenshot at 7b.

10c. If dsdt is not AMI or Award, this method will not work. Full Stop.

11. MaciASL/Compile

11a. See Screenshot at 19a

12. If no errors, jump to **III. Apply Patch file - MaciASL**

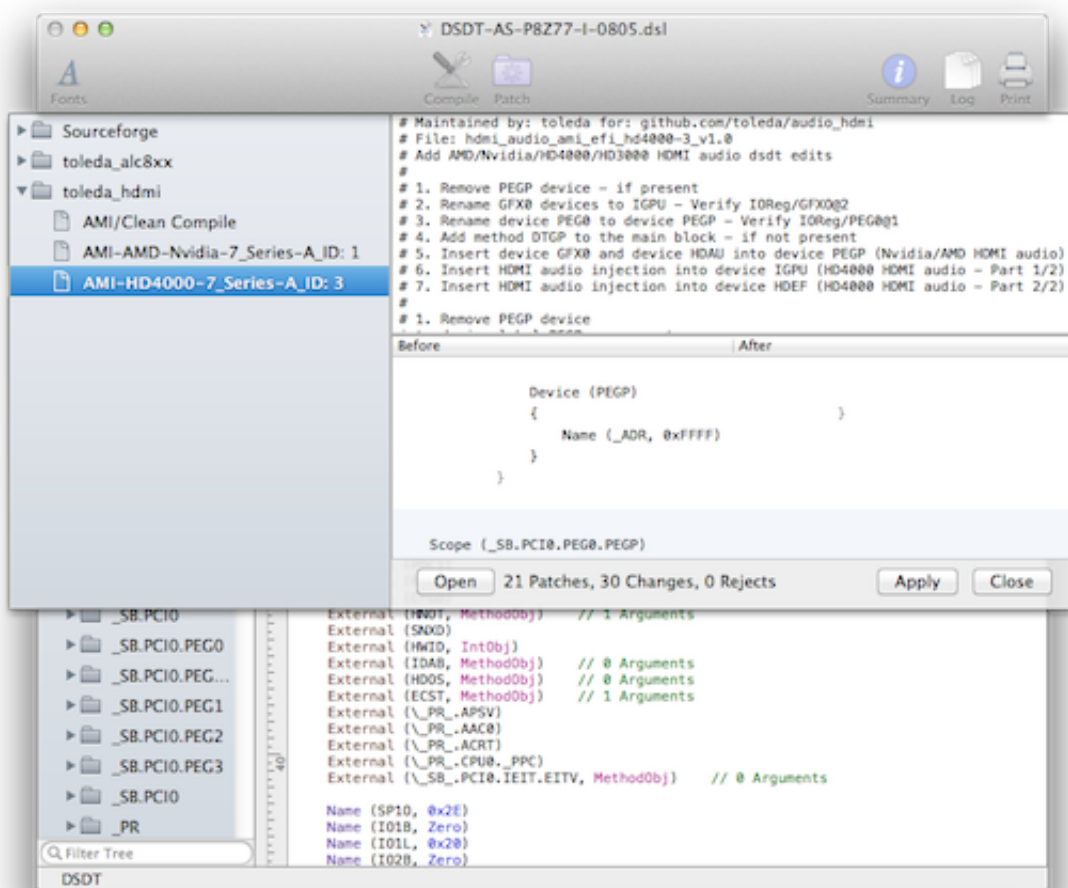
12a. Errors, see Troubleshooting/Problem Reporting/4.

III. Apply Patch file - MaciASL

13. Choose Patch:

13a. Patch/toleda_hdmi_5series/Select appropriate Patch file and make any edits
OR Patch/Open/Desktop/Edited Patch file from **Patch File Edits** above

13b. Screenshot

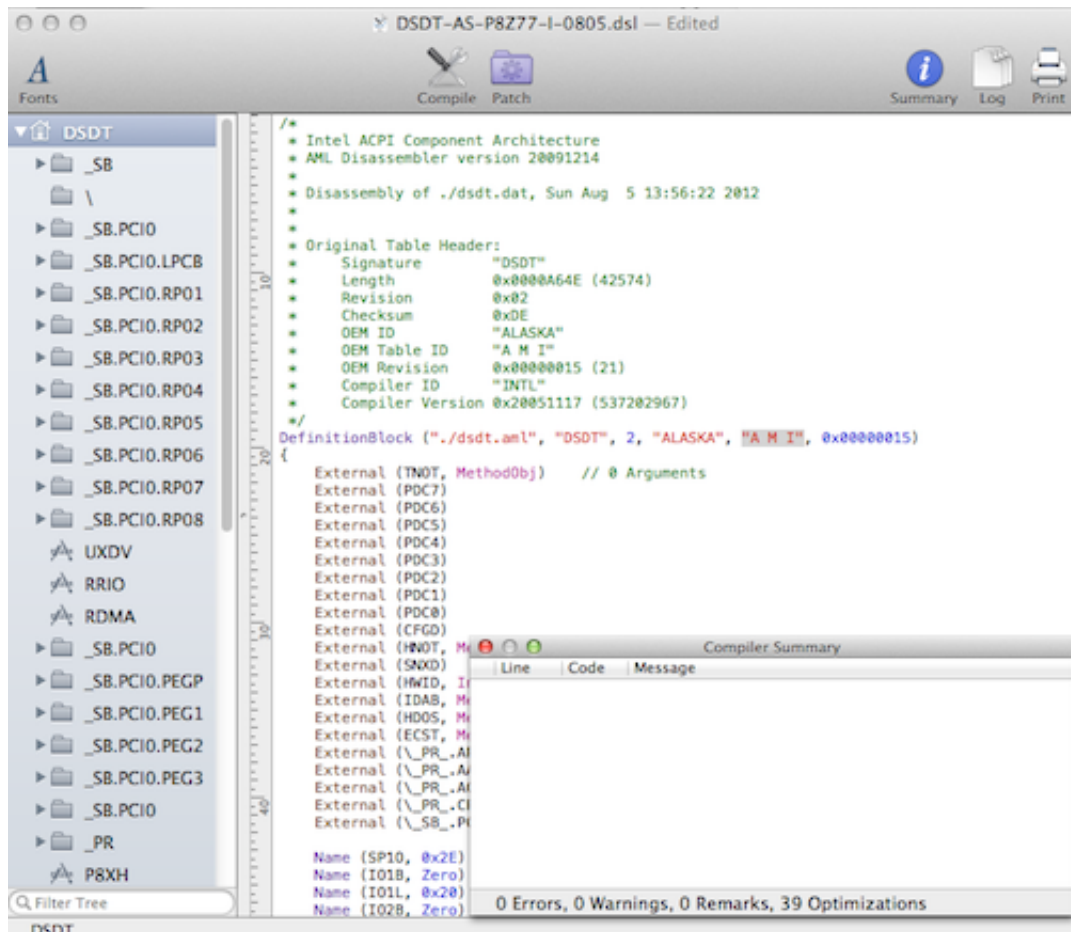


14. MaciASL/Patch/Apply

15. MaciASL/Patch/Close

16. MaciASL/Compile

16a. Screenshot



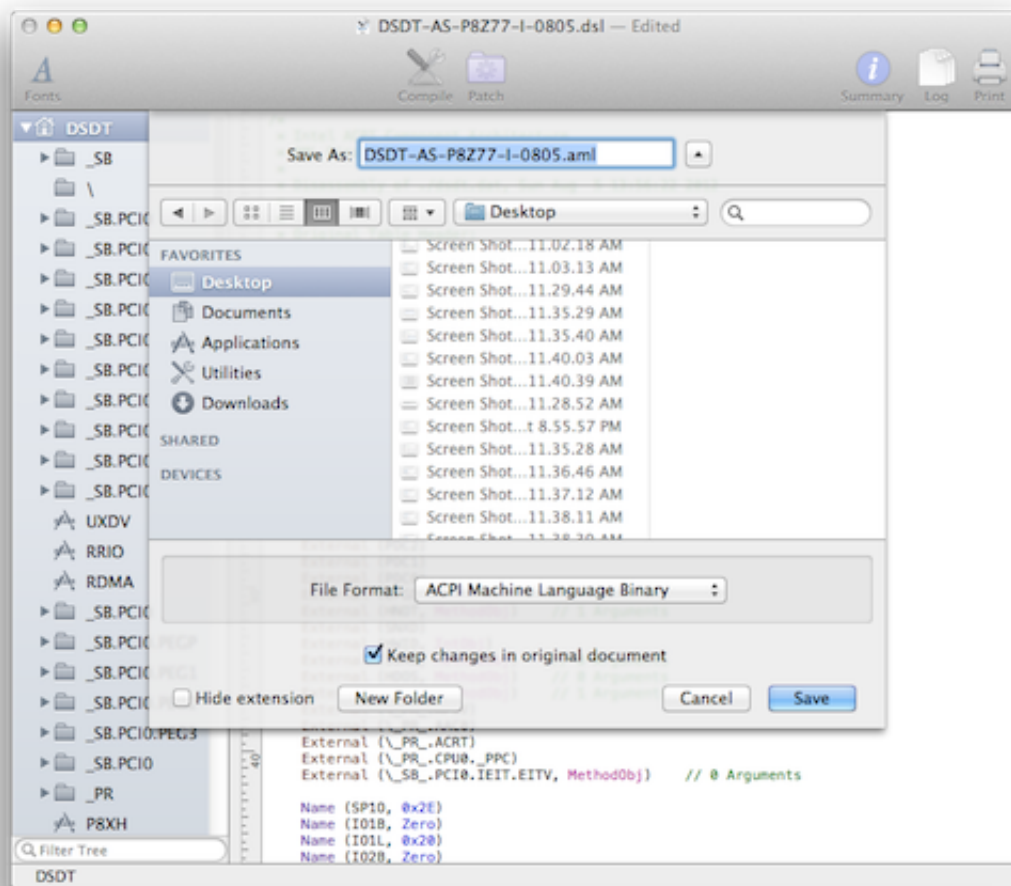
17. If no errors, jump to **IV. Save dsdt.aml - MaciASL**

17a. Errors, see Troubleshooting/Problem Reporting/4.

IV. Save dsdt.aml - MaciASL

18. MaciASL/File/Save As... /ACPI Machine Language Binary/Desktop/dsdt.aml (add extension)

18a. Screenshot



V. Install dsdt.aml - MaciASL

19. MaciASL/File/Save As... /ACPI Machine Language Binary/Extra/dsdt.aml (add extension)

VI. Restart

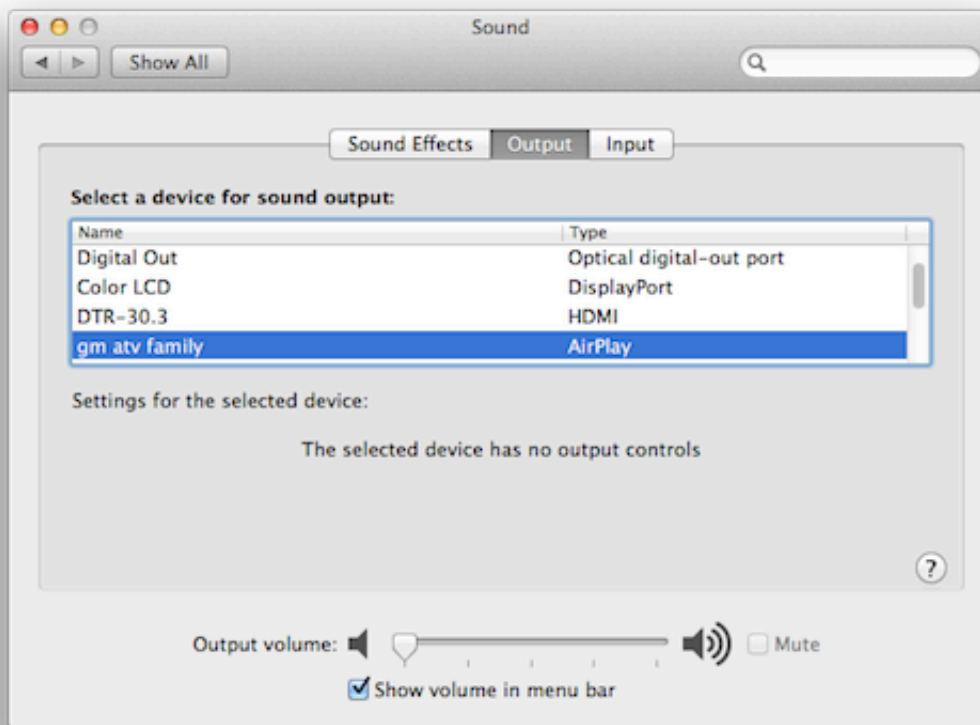
20. Repair permissions and cache (Ex., Disk Utility, Kext Beast, Kext Utility, Kext Wizard, etc.)

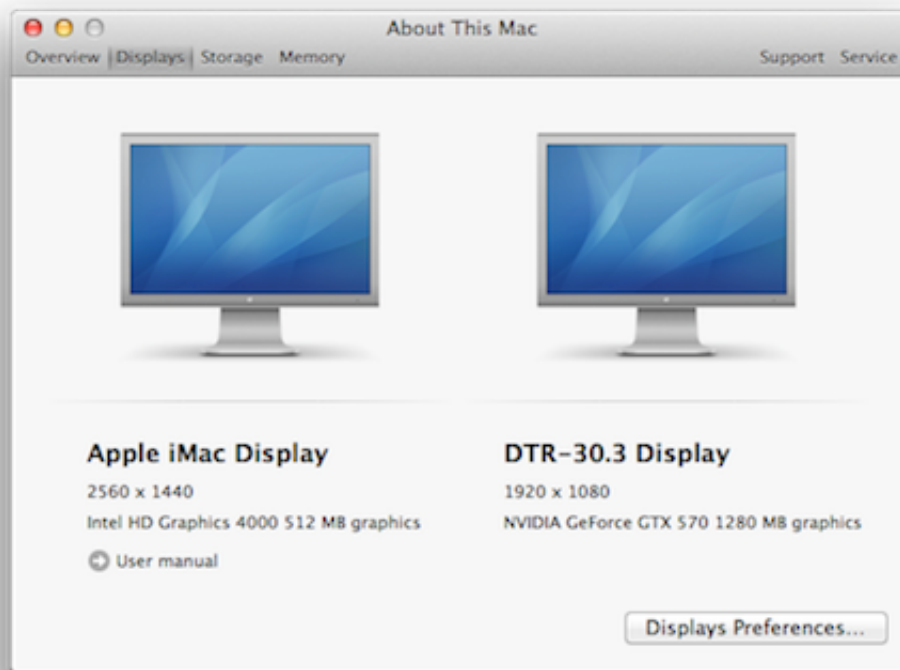
21. Restart

VII. Verify HDMI Audio

P8Z77 I Deluxe/i7-3770K/HD4000 DP audio/NVidia HDMI audio/AirPlay Mirroring

22. System Preferences/Sound/Outputs/Select HDMI





| Mac mini | | | | |
|-------------------|---------------------------------------|-----|----------|---------|
| ▼ Hardware | Video Card ▲ | | | |
| | Intel HD Graphics 4000 | GPU | Built-In | |
| ATA | NVIDIA GeForce GTX 570 | GPU | PCIe | PCIEX16 |
| Audio | | | | |
| Bluetooth | | | | |
| Card Reader | | | | |
| Diagnostics | | | | |
| Disc Burning | | | | |
| Ethernet Cards | | | | |
| Fibre Channel | | | | |
| FireWire | | | | |
| Graphics/Displays | Intel HD Graphics 4000: | | | |
| Hardware RAID | Chipset Model: Intel HD Graphics 4000 | | | |
| Memory | Type: GPU | | | |
| PCI Cards | Bus: Built-In | | | |
| Parallel SCSI | VRAM (Total): 512 MB | | | |
| Power | Vendor: Intel (0x8086) | | | |
| Printers | Device ID: 0x0166 | | | |
| SAS | Revision ID: 0x0009 | | | |
| Serial-ATA | Displays: | | | |
| Thunderbolt | iMac: | | | |
| USB | Display Type: LCD | | | |
| ▼ Network | Resolution: 2560 x 1440 | | | |
| Firewall | Pixel Depth: 32-Bit Color (ARGB8888) | | | |
| Locations | Main Display: Yes | | | |
| Modems | Mirror: Off | | | |
| Volumes | Online: Yes | | | |
| WWAN | Rotation: Supported | | | |
| Wi-Fi | Connection Type: DisplayPort | | | |
| ▼ Software | NVIDIA GeForce GTX 570: | | | |
| Accessibility | Chipset Model: NVIDIA GeForce GTX 570 | | | |
| Applications | Type: GPU | | | |
| Components | Bus: PCIe | | | |
| Developer | Slot: PCIEX16 | | | |
| Extensions | PCIe Lane Width: x16 | | | |
| Fonts | VRAM (Total): 1280 MB | | | |
| Frameworks | Vendor: NVIDIA (0x10de) | | | |
| Installations | Device ID: 0x1086 | | | |
| Logs | Revision ID: 0x00a1 | | | |
| Managed Client | ROM Revision: preset 1.0.0 | | | |
| Preference Panes | Displays: | | | |
| Printer Software | DTR-30.3: | | | |
| Profiles | Resolution: 1920 x 1080 @ 60 Hz | | | |
| Startup Items | Pixel Depth: 32-Bit Color (ARGB8888) | | | |
| Sync Services | Mirror: Off | | | |
| | Online: Yes | | | |
| | Rotation: Supported | | | |
| | Television: Yes | | | |

Troubleshooting

1. Verify HDMI device connected
 - 1a. System Information/Graphics/Display/HDMI device name/Television/Yes
2. Verify Extra/dsdt.aml is
 - 2a. .aml file
 - 2b. edited
3. Run IOREg/Verify Devices (PEGP, GFX0, HDAU, HDEF)
4. Problem Reporting/AMI dsdt/Post to Mountain Lion HDMI Audio - AMI DSDT
4. Problem Reporting/Award dsdt/Post to Mountain Lion HDMI Audio - Award DSDT
 - 4a. dsdt
 - 4b. copy of IOREg

References

[Mountain Lion HDMI Audio - AMI DSDT](#)

Mountain Lion HDMI Audio - Award DSDT

https://github.com/toleda/audio_hdmi_5series

Credits:

VCH888: [ALC889A, Gigabyte \(Intel\): now having a working front mic - Page 38 - Sound - InsanelyMac Forum](#)

SJ_UnderWater: [Native DSDT/AML IDE & Compiler: MaciASL Open Beta](#)

[Guide] ML-5_series-hdmi_audio_dsdt_edits_v1.0