

[Guide]_HD5x0-hdmi_audio_(clover_or_ssdt)_v1.2



HD5x0 HDMI Audio

Skylake/100 Series/Socket 1151: Desktop/Laptop/NUC/BRIX

v1.2: 7/12/2015 - Typos

v1.1: 4/22/2016 - HD530 Update

v1: 4/10/2016 - Initial release

macOS HDMI audio for HD5x0 systems with either: 1. Clover enabled HDMI audio or 2. HDMI audio ssdt (any bootloader). Laptops, use NUC-BRIX Clover/ssdts.

Requirements

1. OS X 10.11.4 and newer
2. AMI UEFI/Skylake/100 or 200 Series/Socket 1151 Intel motherboard
3. HD5x0 graphics, recognized and enabled
4. 100 Series Desktop/Laptop/NUC/BRIX configurations supported
5. 100 Series motherboard audio codecs
 - a. Supported: ALC283, ALC887, ALC892 and ALC1150
 - b. Unsupported audio codec/HDMI audio only
6. Audio ID: 1 and 2 only

Before You Start

1. MacOS 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. Make a bootable backup of your system (CarbonCopyCloner/SuperDuper)

Tools

1. [IORegistryExplorer_v2.1.zip](#) (View Raw)
2. [MaciASL](#)
3. [Xcode on the Mac App Store](#)

MacOS/HD5x0 HDMI Graphics and Audio

1. HD5x0 (no native HDMI audio support, framebuffer edits required)
 - a. HDMI display (SKL framebuffer 0x00001219 or 0x0002619)
 - i. AppleIntelFramebuffer@0, Port 0x5/DP
 - ii. AppleIntelFramebuffer@1, Port 0x6/DP
 - iii. AppleIntelFramebuffer@2, Port 0x7/DP (0x00002619 N/A)
 - b. DP audio supported
 - c. DVI audio supported (if BIOS enable)
 - d. Three displays supported, one with HDMI audio
 - i. DP
 - ii. DVI (w/DVI2HDMI adapter)
 - iii. HDMI
2. Supported Configurations macOS HDMI Audio)
 - a. HD5x0 only
 - b. Nvidia only
 - c. AMD only
 - d. HD5x0 and Nvidia
 - e. HD5x0 and AMD

HD5x0 HDMI Audio Installation

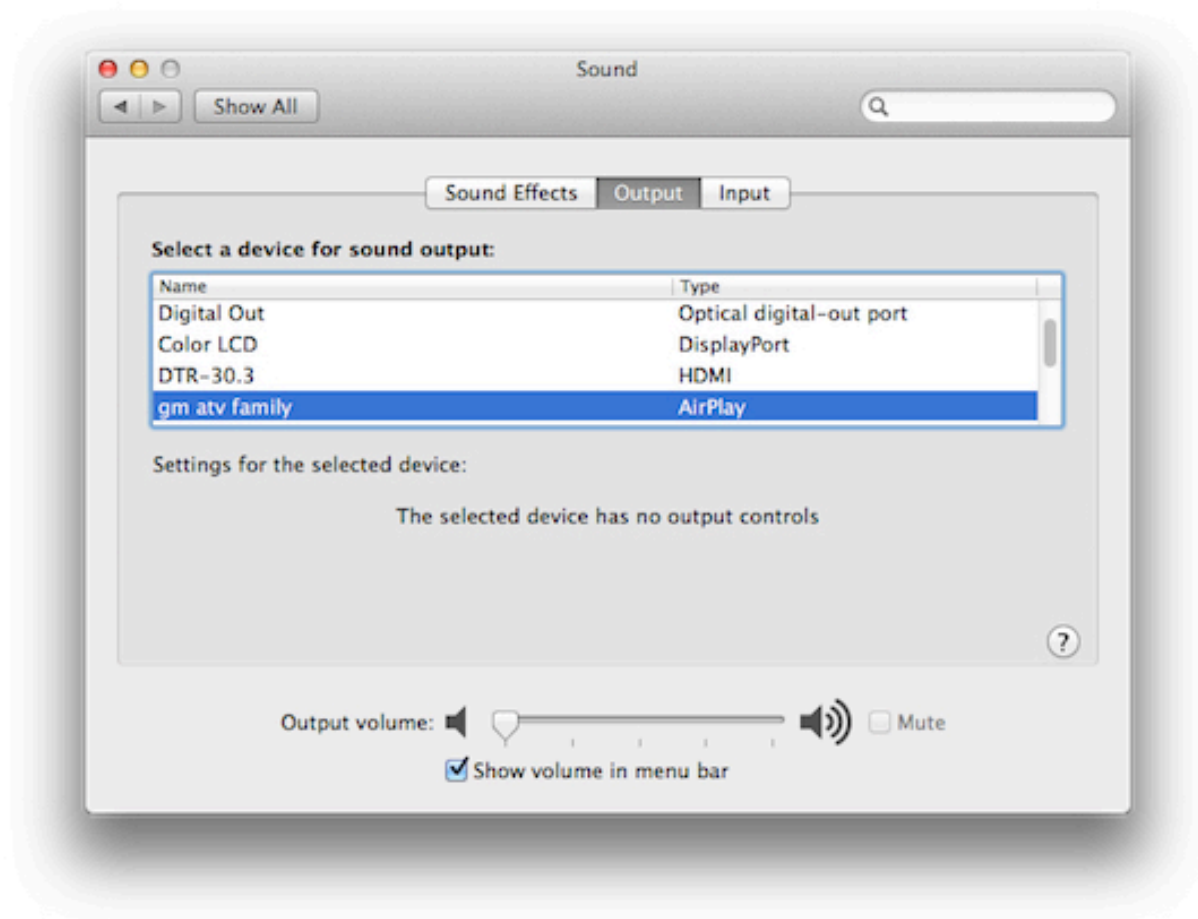
Step 1: HD5x0 HDMI Audio kext edits (see Step 2/Clover)

1. AppleIntelSKLGraphicsFramebuffer.kext (select one)
 - a. HD530 Only (copy and paste to config.plist)
 - i. [config-hdmi_hd5x0-110.plist](#) (config.plist/
KernelAndKextPatches/KextsToPatch)
 - 10.11.4+-SKL-1912000-4_displays

Step 2: OS X HDMI Audio Guides- select Clover or ssdt, one method only

1. Clover:

- a. config-hdmi_hd5x0-110.plist
 - i. Use Xcode, plist editor, etc.
 - ii. Copy and paste each patch
 - b. All Skylake: config.plist/
 - i. ACPI/DSDT/Patches
 - 10.8+-Rename-GFX02IGPU
 - 10.11+-Rename-HDAS2HDEF
 - 10.11+-Rename-HECI2IMEI
 - ii. Device/Arbitrary/
 - 10.8+-Intel-IGPU-HDMI-HDA
 - c. HD530/Desktop: config.plist
 - i. Device/Arbitrary/
 - 10.11.4+-Intel-HDA-Desktop
 - ii. Graphics/
 - ig-platform-id/19120000 (remove " # HD530")
 - iii. KernelAndKextPatches/KextsToPatch
 - 10.11.4+-SKL-1912000-4_displays
 - If no motherboard DP connector, add one HDMI port patch
 - 10.11.4-SKL-1912000-Port_0x5-DP2HDM
 - 10.11.4-SKL-1912000-Port_0x6-DP2HDM
 - 10.11.4-SKL-1912000-Port_0x7-DP2HDM
 - d. HD540/NUC: config.plist
 - i. Device/Arbitrary/
 - 10.11.4+-Intel-HDA-NUC
 - ii. Graphics/
 - ig-platform-id/19260000 (remove " # HD540")
2. ssdt: [Guide]-OSX-hdmi_audio-hdef_audio-ssdt.pdf.zip
 - a. ssdt_v3: [ssdt_hdmi_hd5x0](#)
 - i. ssdt_hdmi-hd530
 - ii. ssdt_hdmi-hd540
 - b. ssdt - [ssdt_hdef](#) (onboard audio, if needed)
 - i. ssdt_hdef-1-100-hdas
 - ii. ssdt_hdef-2-100-hdas
 3. Restart with HDMI device connected, both methods
 - 4.
 5. **Step 3: Verify HDMI Audio** (Ex., HDMI/DP/AirPlay audio enabled)



kext edit (ex.,HD530)

1. AppleIntelSKLGraphicsFramebuffer.kext
 - a. HD530 Only
 - i. Hex Editor
 - binary: AppleIntelSKLGraphicsFramebuffer
 - find: 01030303
 - repl: 01030403
 - cmt: 10.11.4+-SKL-1912000-4_displays
 - ii. Hex Editor (ex., connector edit)
 - binary: AppleIntelSKLGraphicsFramebuffer
 - find: 01050900 00040000 87010000
 - repl: 01050900 00080000 87010000
 - cmt: 10.11.4-SKL-1912000-Port_0x5-DP2HDM

ssdt edit (ex.,HD530)

1. Name (GFX0._STA, Zero)
Device (IGPU)

```

{
    Name (_ADR, 0x00020000)
    Method (_INI, 0, NotSerialized)
    {
        Store (Zero, \_SB.PCI0.GFX0._ADR)
    }

    Method (_DSM, 4, NotSerialized)
    {
        If (LEqual (Arg2, Zero))
        {
            Return (Buffer (One)
            {
                0x03
            })
        }

        Return (Package (0x04)
        {
            "AAPL,ig-platform-id",
            Buffer (0x04)
            {
                0x00, 0x00, 0x12, 0x19
            },

            "hda-gfx",
            Buffer (0x0A)
            {
                "onboard-1"
            }
        })
    }
}

```

2. Name (HECI._STA, Zero)
 Name (HECI._STA, Zero)
 Device (IMEI)
 {
 Name (_ADR, 0x00160000)
 Method (_INI, 0, NotSerialized)
 {

```

        Store (Zero, \_SB.PCI0.HECI._ADR)
    }

    Method (_DSM, 4, NotSerialized)
    {
        If (LEqual (Arg2, Zero))
        {
            Return (Buffer (One)
            {
                0x03
            })
        }

        Return (Package (0x02)
        {
            "device-id",
            Buffer (0x04)
            {
                0x3A, 0xA1, 0x00, 0x00
            }
        })
    }
}

```

3. Name (HDAS._STA, Zero)
Device (HDEF)


```

{
    Name (_ADR, 0x001F0003)
    Method (_INI, 0, NotSerialized)
    {
        Store (Zero, \_SB.PCI0.HDAS._ADR)
    }

    Method (_DSM, 4, NotSerialized)
    {
        If (LEqual (Arg2, Zero))
        {
            Return (Buffer (One)
            {
                0x03
            })
        }
    }
}

```

```

    }

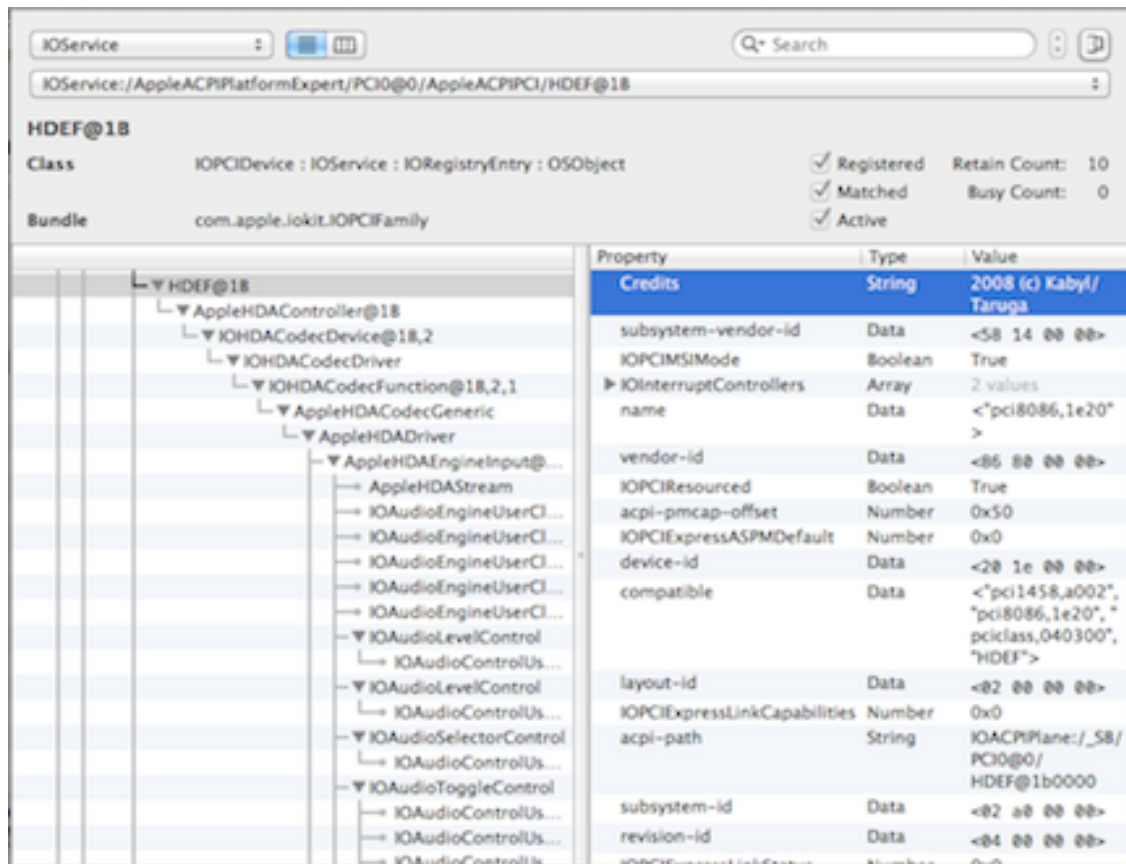
    Return (Package (0x06)
    {
        "hda-gfx",
        Buffer (0x0A)
        {
            "onboard-1"
        },

        "layout-id",
        Unicode ("\x03"),
        "PinConfigurations",
        Buffer (Zero) {}
    })
}
}
}

```

Troubleshooting

1. Verify HDMI device connected
 - a. System Information/Graphics/Display/HDMI device/Television/Yes
2. Run IOREG/IOJones/Verify Devices HDEF, IGPU (native/GFX0) and HDAU
 - a. Ex. IOREG/Search: HDEF
 - b. Select HDEF
 - c. Cancel Search (x)
 - d. Scroll up to view HDEF device and properties
3. IOREG/IOJones/Verify HDEF@1B
 - a. If Credits, delete S/L/E/HDAEnabler1.kext or HDAEnabler2.kext
 - b. Verify layout-id = 3
 - c. Verify hda-gfx = <onboard-1>
 - d.



4. IOREG/IOJones/Verify IGPU@2 (or GFX0@2)
 - a. If no IGPU@2 verify HD5x0 HDMI audio ssdt
 - b. Verify hda-gfx = <onboard-1>
 - c. If no AppleIntelSKLController, verify HD5x0 HDMI audio ssdt
 - d. Verify HD530/AAPL,ig-platform-id=<00 00 12 19> OR
 - e. Verify HD540/AAPL,ig-platform-id=<00 00 26 19>
 - f.

