

[Guide]\_HD6x0-hdmi\_audio\_(clover\_or\_ssdt)\_v1



## HD6x0 HDMI Audio

**Kaby Lake/200 Series/Socket 1151 - Desktop** (0x00001259 only)

**Laptop/NUC/BRIX - TBA**

**v1: 7/12/2017 - Initial release**

macOS HDMI audio for HD6x0 systems with either: 1. Clover enabled HDMI audio or 2. HDMI audio ssdt (any bootloader). Laptops, use NUC-BRIX Clover/ssdts.

### Requirements

1. macOS 10.12.5 and newer
2. AMI UEFI/Kaby Lake/100 or 200 Series/Socket 1151 Intel motherboard
3. HD6x0 graphics, recognized and enabled
4. 200 Series Desktop/Laptop/NUC/BRIX configurations supported
5. 200 Series motherboard audio codecs
  - a. Supported: ALC283, ALC887, ALC892 and ALC1150
  - b. Unsupported audio codec/HDEF required/HDMI audio only
6. Audio ID: 1 or 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/HD6x0 HDMI6Graphics and Audio

- 1. HD6x0 (no native HDMI audio support, framebuffer edits required)
  - a. HDMI display (KBL framebuffer 0x00001259)
    - i. AppleIntelFramebuffer@0, Port 0x5/DP
    - ii. AppleIntelFramebuffer@1, Port 0x6/DP
    - iii. AppleIntelFramebuffer@2, Port 0x7/DP
  - 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

### HD6x0 HDMI Audio Installation

#### Step 1: HD6x0 HDMI Audio kext edits

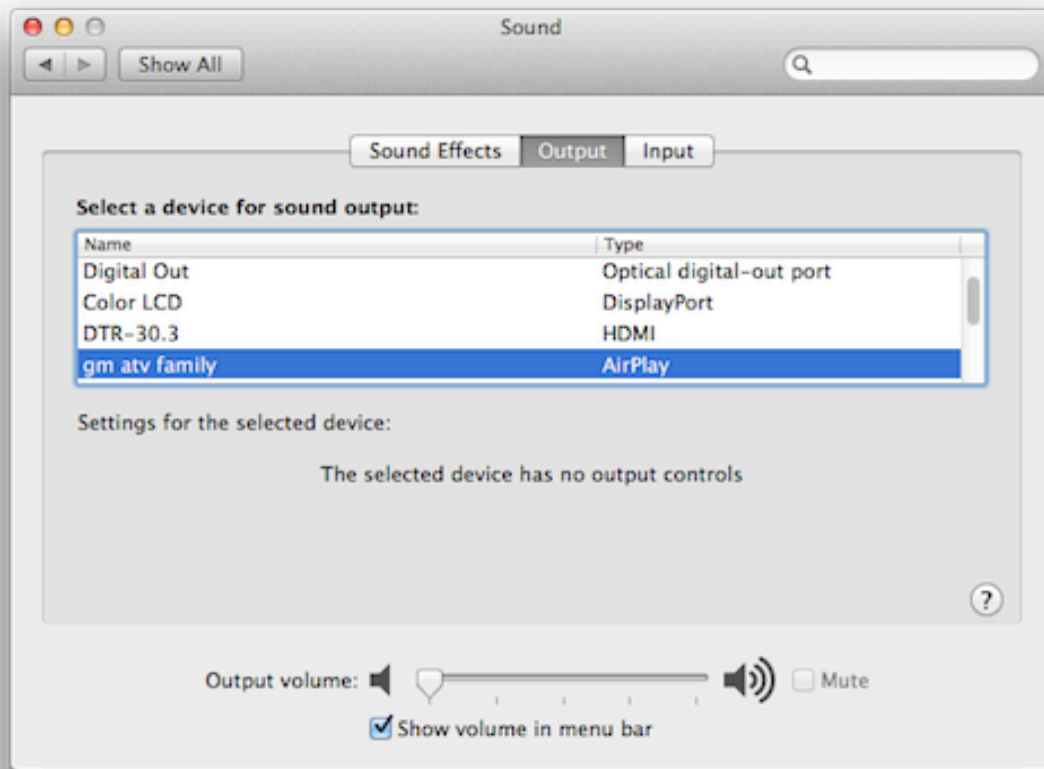
- 1. None required

#### 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 Kaby Lake: 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. HD630/Desktop: config.plist
    - i. Device/Arbitrary/
      - 10.11.4+-Intel-HDA-Desktop
    - ii. Graphics/
      - ig-platform-id/19120000 (remove " # HD630")
2. ssdt: [Guide]-OSX-hdmi\_audio-hdef\_audio-ssdt\_v3.pdf.zip
- a. ssdt\_v3: ssdt\_hdmi\_hd5x0
    - i. ssdt\_hdmi-hd630
  - 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

**Step 3: Verify HDMI Audio** (Ex., HDMI/DP/AirPlay audio enabled)



### **kext edit** (ex.,HD630)

1. AppleIntelKBLGraphicsFramebuffer.kext
  - c. HD530 Only
    - i. Hex Editor (ex., connector edit)
      - binary: AppleIntelSKLGraphicsFramebuffer
      - find: 01050900 00040000 87010000
      - repl: 01050900 00080000 87010000
      - cmt: 10.12.6-KBL-5912000-Port\_0x5-DP2HDM

### **ssdt edit** (ex.,HD630)

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, 0x59
        },

        "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.

IOService

IOService:/AppleACPIPlatformExpert/PCI0@0/AppleACPIPCI/HDEF@1B

**HDEF@1B**

**Class** IOPCIDevice : IOService : IORegistryEntry : OSObject

**Bundle** com.apple.iokit.IOPCIFamily

Registered Retain Count: 10

Matched Busy Count: 0

Active

Property	Type	Value
Credits	String	2008 (c) Kabyl/Taruga
subsystem-vendor-id	Data	<58 14 00 00>
IOPCIMSIMode	Boolean	True
IOInterruptControllers	Array	2 values
name	Data	<"pci8086,1e20">
vendor-id	Data	<86 00 00 00>
IOPCIResourced	Boolean	True
acpi-pmcap-offset	Number	0x50
IOPCIExpressASPMDefault	Number	0x0
device-id	Data	<20 1e 00 00>
compatible	Data	<"pci1458,a002", "pci8086,1e20", "pci-class,040300", "HDEF">
layout-id	Data	<02 00 00 00>
IOPCIExpressLinkCapabilities	Number	0x0
acpi-path	String	IOACPIPlane:/_SB/PCI0@0/HDEF@1b0000
subsystem-id	Data	<02 a0 00 00>
revision-id	Data	<04 00 00 00>

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 59>
  - f.



IOService : AppleACPIPlatformExpert/PCI0@0/AppleACPIPCI/IGPU@2

**IGPU@2**

Class: IODevice : IOService : IORegistryEntry : OSObject  
 Bundle: com.apple.iokit.IOPCIFamily

Registered: ☒ Retain Count: 17  
 Matched: ☒ Busy Count: 0  
 Active: ☒

Property	Type	Value
IODevice	IOService	IODevice
IOName	String	IGPU@2
IOInterruptControllers	Array	2 values
hda-gfx	Data	<"onboard-1">
name	Data	<"display">
vendor-id	Data	<86 00 00 00>
IOPCIResourced	Boolean	True
device-id	Data	<12 04 00 00>
graphic-options	Data	<0c 00 00 00>
compatible	Data	<"pci1043,8534", "pci8086,412", "pci-class,030000", "GPU">
AAPL,lokkit-ndrv	Data	<f0 0c 1c 81 7f ff ff ff>
acpi-path	String	IOACPIPlane:/_SB/PCI0@0/IGPU@20000
model	Data	<"Intel Iris Pro">
AAPL,gray-value	Data	<00 00 00 00>
IOPCIPMCState	Number	0x0
AAPL,ig-platform-id	Data	<03 00 22 0d>

5. Verify AppleIntelFramebuffer@[0, 1 or 2] with display0 attached
  - a. HDMI: connector-type=<00 08 00 00>
  - b. DVI: connector-type=<00 08 00 00>
  - c. DP: connector-type=<00 04 00 00>
  - e.

