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5.1/7.1 multichannel audio using VoodooHDA

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5.1/7.1 multichannel audio using VoodooHDA

by Cassio » 25 Oct 2011, 15:38

In order to have multichannel audio in Mac OS we just have to open **Applications - Utilities - Audio MIDI Setup** and create an **aggregate device** with 3 (5.1) or 4 outputs (7.1)

The problem is that on most codecs VoodooHDA enables only one output. It happens because the codec has more than one node with the same **Default Association**, only **Sequence** changes.

To get a dump of your codec use the **getDump** command (get it in VoodooHDA official thread).

Example:

```
Code: Select all

nid 17 0x02214030 as  3 seq  0   Headphones  Jack jack  1 loc  2 color
nid 18 0x01014010 as  1 seq  0     Line-out  Jack jack  1 loc  1 color
nid 19 0x511711f0 as 15 seq  0       Speaker  None jack  7 loc 17 color
nid 20 0x02a1902e as  2 seq 14   Microphone  Jack jack  1 loc  2 color
nid 21 0x01813021 as  2 seq  1      Line-in  Jack jack  1 loc  1 color
nid 22 0x01011012 as  1 seq  2     Line-out  Jack jack  1 loc  1 color
nid 23 0x01a19020 as  2 seq  0   Microphone  Jack jack  1 loc  1 color
nid 24 0x99331122 as  2 seq  2     CD Fixed       jack  3 loc 25 color
nid 27 0x0145f1a0 as 10 seq  0    SPDIF-out  Jack jack  5 loc  1 color
nid 28 0x41c5f160 as  6 seq  0     SPDIF-in  None jack  5 loc  1 color
nid 36 0x01016011 as  1 seq  1     Line-out  Jack jack  1 loc  1 color
nid 37 0x01012014 as  1 seq  4     Line-out  Jack jack  1 loc  1 color
```
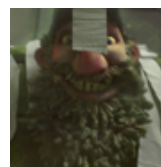
PinDefault is composed of 8 hex chars

```
Code: Select all

0x01011012
   ||||||||+- Sequence
   |||||||+-- Default Association
   ||||||+--- Misc
   |||||+---- Color
   ||||+----- Connection Type
```

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```
||+------ Default Device
|+------- Location
+-------- Port Connectivity
```

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Apple doesn't use multichannel analog output, so we need to use a different Default Association for each line-out (use the first available value). Sequence is always zero.

To change these values we include **NodesToPatch** in VoodooHDA Info.plist file, for example:

Code: Select all
```
<key>NodesToPatch</key>
<array>
    <dict>
        <key>Codec</key>
        <integer>0</integer> <!-- codec address ("Probing codec #0" in g(
        <key>Config</key>
        <string>0x01011070</string> <!-- new PinDefault -->
        <key>Node</key>
        <integer>22</integer> <!-- node ID (nid) -->
    </dict>
</array>
```

In some cases it's also necessary to adjust **Port Connectivity**. For **jacks**, bits 6 and 7 must be zero, so any value greater than 1 in char 7 of PinDefault means the node is disabled (you will see "Disabling pin nid X due to None connectivity" in getDump).

This also works for inputs, so if you don't have mic or line-in in sound preferences, you can use the same method to enable the inputs.

The only case we use the same Default Association in two nodes is when we want auto-detection, for example, line-out (green rear) and headphones (green front)

Code: Select all
```
nid 17 0x0221401f as  1 seq 15  Headphones  Jack jack  1 loc  2 color
nid 18 0x01014010 as  1 seq  0    Line-out  Jack jack  1 loc  1 color
```

The primary output (line-out or speaker) has Sequence **0** and headphones (auto-detect) has Sequence **f**.

If your mobo has only one line-out you can change rear mic and line-in into line-out to have 5.1 audio, for this you just have to change the **Default Device** byte of these nodes to **zero**.

Before

Code: Select all
```
nid 24 0x01a19830 as  3 seq  0    Microphone  Jack jack  1 loc  1 color
nid 26 0x01813050 as  5 seq  0       Line-in  Jack jack  1 loc  1 color
```

After

Code: Select all

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```
nid 24 0x01019830 as  3 seq  0      Line-out  Jack jack  1 loc  1 color
nid 26 0x01013050 as  5 seq  0      Line-out  Jack jack  1 loc  1 color
```

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