

Poor Man's Multiroom Audio

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DareVanReed

2011-03-11, 01:15

Poor Man's Multiroom Audio

hi there,

just wanted to chime in about my home system, in case there is other people thinking of a similar setup. i have 4-zone multiroom audio (all in sync) running off a single soundcard.

i have an onboard IntelHDA surround-sound card that has been split into 4 stereo pairs using a custom /etc/asound.conf:

```
-----  
  
#  
# Place your global alsa-lib configuration here...  
#  
  
@hooks [  
{  
func load  
files [  
"/etc/alsa/pulse-default.conf"  
]  
errors false  
}  
]  
  
pcm.dmixer {  
type dmix  
ipc_key 1099  
ipc_perm 0660  
slave {  
pcm "hw:0"  
rate 44100  
channels 8  
periods 128  
period_time 0  
period_size 1024  
buffer_size 4096  
}  
}  
  
pcm.green {  
type route  
slave.pcm dmixer  
slave.channels 8  
ttable.0.0 1
```

```
ttable.1.1 1
}
```

```
pcm.orange {
type route
slave.pcm dmixer
slave.channels 8
ttable.0.4 1
ttable.1.5 1
}
```

```
pcm.gray {
type route
slave.pcm dmixer
slave.channels 8
ttable.0.6 1
ttable.1.7 1
}
```

```
pcm.black {
type route
slave.pcm dmixer
slave.channels 8
ttable.0.2 1
ttable.1.3 1
}
```

i have a custom script for starting the squeezeslave instances, as shown below:

```
#!/bin/bash
```

```
# Check if Orange is running, restart it if it's not
```

```
# if ps aux | grep 'squeezeslave' | grep '00:00:00:00:00:01'
```

```
# then
```

```
# echo spare.ORANGE is Running
```

```
# else
```

```
# echo spare.ORANGE is not Running, restarting now...
```

```
# ORANGE=$(squeezeslave -L | grep orange | sed -e 's/^[ \t]*//' | cut -d: -f1)
```

```
# nice -10 /usr/local/bin/squeezeslave -m00:00:00:00:00:01 -o$ORANGE 10.20.30.10 --
retry &
```

```
# fi
```

```
#
```

```
#sleep 4
```

```
# Check if Green is running, restart it if it's not
```

```
if ps aux | grep 'squeezeslave' | grep '00:00:00:00:00:02'
```

```

then
echo Green/Kitchen is Running
else
echo Green/Kitchen is not Running, restarting now...
GREEN=$(squeezeslave -L | grep green | sed -e 's/^[ \t]*//' | cut -d: -f1)
/usr/local/bin/squeezeslave -m00:00:00:00:00:02 -o$GREEN 10.20.30.10 --retry &

fi
sleep 4

# Check if Black is running, restart it if it's not

if ps aux | grep 'squeezeslave' | grep '00:00:00:00:00:03'
then
echo Black/Bedroom is Running
else
echo Black/Bedroom is not Running, restarting now...
BLACK=$(squeezeslave -L | grep black | sed -e 's/^[ \t]*//' | cut -d: -f1)
/usr/local/bin/squeezeslave -m00:00:00:00:00:03 -o$BLACK 10.20.30.10 --retry &

fi
sleep 4
# Check if Grey is running, restart it if it's not
#
# if ps aux | grep 'squeezeslave' | grep '00:00:00:00:00:04'
# then
# echo spare.GREY is Running
# else
# echo spare.GREY is not Running, restarting now...
# GRAY=$(squeezeslave -L | grep gray | sed -e 's/^[ \t]*//' | cut -d: -f1)
# nice -10 /usr/local/bin/squeezeslave -m00:00:00:00:00:04 -o$GRAY 10.20.30.10 --
retry &
#
# fi

```

it all works quite well, the CPU is a Dual-Core AMD Opteron(tm) Processor 1210

sound quality is quite good, i'm using Lepai amplifiers, which can be had for about €15 on Fleabay

they are paired up with acoustic solutions AV21's in one room (great budget speaker, amazon and farnell sell them in the UK for about £25), and ancient philips hifi speakers in the kitchen, about 20 years old but sounding fantastic.

i just wanted to make the point that you don't have to spend oodles of cash to get set up initially, but i do plan to move to proper squeezebox receivers at a later date, when i'm not so strapped for cash :(.

if anyone has any questions about my setup, i'll be happy to answer them.

oh, the whole shootin match runs under Ubuntu, and should be similarly easy to setup under any other Linux OS.

DareVanReed

2011-03-11, 02:01

oh...

forgot to add. with no squeezeslaves running, this is my sound device list:

```
root@tucker:/usr/local/bin# ./squeezeslave-1.0.210-ubuntu -L
```

Output devices:

```
0: (ALSA) HDA ATI SB: ALC888 Analog (hw:0,0) (11/46)
1: (ALSA) HDA ATI SB: ALC888 Digital (hw:0,1) (11/46)
3: (ALSA) Ensoniq AudioPCI: ES1371 DAC2/ADC (hw:2,0) (11/46)
4: (ALSA) Ensoniq AudioPCI: ES1371 DAC1 (hw:2,1) (11/46)
5: (ALSA) front (11/46)
6: (ALSA) surround40 (11/46)
7: (ALSA) surround41 (11/46)
8: (ALSA) surround50 (11/46)
9: (ALSA) surround51 (11/46)
10: (ALSA) surround71 (11/46)
11: (ALSA) iec958 (11/46)
12: (ALSA) spdif (11/46)
13: (ALSA) dmixer (46/46)
14: (ALSA) green (46/46)
15: (ALSA) orange (46/46)
16: (ALSA) gray (46/46)
17: (ALSA) black (46/46)
*18: (ALSA) default (42/46)
19: (ALSA) dmix (42/42)
20: (OSS) /dev/dsp (11/46)
21: (OSS) /dev/dsp2 (11/46)
```

there are actually 2 soundcards in there, as you can see, but the slaves that i'm running all run off the ALC888 realtek (Intel HDA codec) chip, which is onboard.

StuartUSA

2011-03-11, 02:31

Cool, am working on the "Dust Man's" multi room audio system myself ;0) as I have a few old VIA C3 boards to hand. Plus I have CAT-5 running round the house so it's easier to work with that than run speakers wires to the various rooms.

Are those amps TA-2020 based?

Speakers look good, I had a Creative 4.1 set I picked up about 6 years ago for 15 euro (refurbished) and a Klipsch ProMedia 4.1 set I got back in 1999 for a \$1 when I bought a PC :0)

The only things I have purchased so far is a 2nd hand M-Audio card, to use in the living room with my AV amp, and a set of Numark NPM5 (a birthday present for my daughter) can't wait to hear them properly (it's not her birthday yet!)

So your absolutely right, you don't need a huge budget to get multi-room audio...

DareVanReed

2011-03-11, 02:35

how suitable is cat5 for running audio, are you using baluns? what type of cat5 are you running? yeah, the amps are TA-2020 based.

the trickiest part of the whole setup was getting 4 squeezeslaves running on the same card, but what's nice is that the card shares a clock so they are always in sync (if required), as opposed to using 4 seperate sound cards or computers.

StuartUSA

2011-03-11, 03:17

Sorry I meant that I use CAT-5 just for IP, and use the VIA boards in each room. Wouldn't use CAT-5 for audio.

On the sync stuff, I only have two systems running at the moment, but as I have built the two machines out the same, same OS and hardware, except sound card, I don't think it will be a problem, plus the only things these machine run is the kernel, ALSA, squeezeslave and an SSH server. So I am hoping they will sync OK. Did a brief test yesterday and was happy with it :0)

Was pleased with the system build as I got the whole OS and squeezeslave down to under 30Meg, I based it on Microcore and so it all runs in RAM, the OS files are stored on a Compact Flash, so no moving parts in these systems.

Was trying to achieve an under 10 second boot time, but the BIOS posting takes at least that and these aren't the best processors for de-compression, first boot times were over a minute, but now I am down to 28 seconds, about 12 for BIOS to post and approx 6 seconds to extract the initrd so I guess I'll stick with that.

I was interested in how you got multiple instances of squeezeslave running on the same machine as I have a server that is on 24x7 with a sound card, and was thinking of using that for the patios, had the builder run speaker cable out there when they were building the house :0) that would be the final stages of the project though, two more rooms to do first...

I also have a TA-2020 amp, so I might use that for the patios, I have the Muse, I tried it out recently with some old Monitor Audio speakers circa 1985 and wasn't too happy, but that may be because they are not very sensitive speakers; what speakers did you use with your amp?

DareVanReed

2011-03-11, 03:41

Quote:

Originally Posted by **StuartUSA** »

Sorry I meant that I use CAT-5 just for IP, and use the VIA boards in each room. Wouldn't use CAT-5 for audio.

well that explains it ;)

Quote:

Originally Posted by **StuartUSA** »

On the sync stuff, I only have two systems running at the moment, but as I have built the two machines out the same, same OS and hardware, except sound card, I don't think it will be a problem, plus the only things these machines run is the kernel, ALSA, squeezeslave and an SSH server. So I am hoping they will sync OK. Did a brief test yesterday and was happy with it :0)

excellent

Quote:

Originally Posted by **StuartUSA** »

Was pleased with the system build as I got the whole OS and squeezeslave down to under 30Meg, I based it on Microcore and so it all runs in RAM, the OS files are stored on a Compact Flash, so no moving parts in these systems.

Was trying to achieve an under 10 second boot time, but the BIOS posting takes at least that and these aren't the best processors for de-compression, first boot times were over a minute, but now I am down to 28 seconds, about 12 for BIOS to post and approx 6 seconds to extract the initrd so I guess I'll stick with that.

i'm going to stick with my setup for the moment, i actually have 2 via boards that i could use similarly, but for the time + effort involved, it's probably more worth me saving for squeezebox receivers (these can be gotten from amazon for about £89 at the moment), as they would have a quick boot time, and no tinkering involved.

Quote:

Originally Posted by **StuartUSA** »

I was interested in how you got multiple instances of squeezeslave running on the same machine as I have a server that is on 24x7 with a sound card, and was thinking of using that for the patios

yeah, well as far as i know it's a 7.1 onboard chip, hence 6 audio jacks on the motherboard. the driver is capable of having it's channel map re-arranged, hence the 4 stereo pairs. i know it worked for my chip, but ymmv on other hardware. supposedly people use M-audio gear (like the delta 10/10 and similar pro stuff) similarly by using the asound.conf to split it into multiple stereo pairs. apparently the big problem that you have with sync is that if you use physically different sound cards, they may have different audio buffers + latencies, and separate sync clocks, which doesn't bode well once the next track starts to get buffered before the end of the current one. the sync problems only generally show up once a few tracks have been played in sequence.

Quote:

Originally Posted by **StuartUSA** »

I also have a TA-2020 amp, so I might use that for the patios, I have the Muse, I tried it out recently with some old Monitor Audio speakers circa 1985 and wasn't too happy, but that may be because they are not very sensitive speakers; what speakers did you use with your amp?

i adore music, but am not much of an audiophile. i generally don't tend to care, so long as the frequency response is good, and the sound is well balanced. i'm very happy with the Lepai + Philips setup in the kitchen, but i haven't given much time listening to the Acoustic Solutions setup in the bedroom, as i only got it set up a few days ago. the bedroom speakers are Acoustic Solutions AV21's, seriously budget gear, but i like them (except for the colour) -> <http://www.amazon.co.uk/Acoustic-Sol...9843689&sr=8-1>. it was the reviews on amazon that sold them for me.

DareVanReed

2011-03-11, 03:47

this is the motherboard i'm using:

<http://www.msi.com/product/mb/K9AGM3-F.html#/?div=Basic>

the system is also running a Zoneminder installation with 5 cameras...

StuartUSA

2011-03-11, 05:07

The "players" I am using are <http://linitx.com/viewproduct.php?prodid=11423> but with the VIA C3 board, very cool little boxes, but not cheap, hence the "dust man" comment, they have four ethernet ports and an ISDN modem in them, but I have disconnected what I don't need to speed them up and save power.

What are you using to control your setup? I am using a Joggler, running squeezeplay, I configured the players to use Wake on LAN and adapted a script to work to use WOL packets to turn them off as well, The adapted a squeezeplay plugin to use an on-screen keyboard to wake/sleep the players from the "remote". Would really like to get the power button in the web interface working but haven't been successful with that yet.

I also use SlimControl on a couple of old Windows Mobile PDAs I had in the attic, and an iPhone app.

Would put myself in the same "audiophile-ness" category so I might try those speakers out, certainly the right price point :0)

If you want an image of my system I'd be happy to upload it some where for ya' its pretty basic and I think the only thing you'd have to change is the init file for squeezeslave to connect to the right server, unless of course you run a DNS server on your lan in which case just give the server the DNS name "server". I did change the init script to figure out and use the systems MAC address and also wrote a simple script to keep squeezeslave running, in the early days it crashed a few times, but I suspect that was mainly due to me and not squeezeslave itself.

Tinycore is really quite robust and as the system only reads from the compact flash and works in RAM it won't corrupt the HDD should it have a power failure or what ever.

I too would like to move to the Logitech H/W at some point I have the spare cash, I guess I did this as I was recycling alot of old hardware and really wanted to try it all out before making a serious cash investment :0)
Perhaps the Radio for the bedroom, and receiver for the living room.....

DareVanReed

2011-03-11, 06:35

Quote:

The "players" I am using are <http://linitx.com/viewproduct.php?prodid=11423> but with the VIA C3 board, very cool little boxes, but not cheap, hence the "dust man" comment, they have four ethernet ports and an ISDN modem in them, but I have disconnected what I don't need to speed them up and save power.

well, they're more expensive than a squeezebox receiver, but i'm assuming you had them lying around anyway?

yeah, i figured on power saving too, hence running audio leads down from the attic server soundcard outputs to amplifiers, instead of using physical players. the server is up anyway, so the 'zones' don't cost me any extra power to run, except for the amplifiers.

to control the system, i'm using Squeeze Commander on android (a decent clone, running on my HTC Desire), iPeng on an iPhone, and web browsers. would like something more elegant, but can't see an iPad happening ;)

i also have squeezeslaves on all the computers around the house that start up automatically, and become 'zones' while the computer is up (handy to not have to maintain more than one library).

Quote:

and also wrote a simple script to keep squeezeslave running

could you paste that particular script up here?

StuartUSA

2011-03-11, 07:37

Sure, but when I say "wrote" I think plagiarised is more appropriate ;)

2 Attachment(s)

squeezeslave.txt is /etc/init.d/squeezeslave the init script which starts up monitorProcess which starts up squeezeslave, monitorProcess actually restarts it automatically should squeezeSlave die.

monitorProcess is a shell script in /usr/bin....

Would love an iPad too, but not will too pay that much for a mobile browser :) ... I think once the Android pads get a better touchscreen I'll get one of those and load meego on it :)

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