

任务 2：找到你的板子

课程名称： 嵌入式 实验类型： 综合

实验项目名称： 任务 8: Airplay

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AirPlay

在 Acadia 或 RPi 或 WRTnode 上实现 AirPlay 播放歌曲的功能，使其能够产生音频流。

实现目的

1. 掌握 Acadia 或 RPi 或 WRTnode 和 PC 建立音频交互的方式；

实验器材

硬件

- Acadia 或 RPi 或 WRTnode 板一块；
- 5V/1A 电源一个；
- microUSB 线一根；
- USB-TTL 串口线一根（FT232RL 芯片或 PL2303 芯片）。
- PC（Windows/Mac OS/Linux）一台；
- 声卡一个；
- 以太网线一根（可能还需要路由器等）。

软件

- PC 上的 USB-TTL 串口线配套的驱动程序；
- PC 上的串口终端软件，如 minicom、picocom、putty 等；

- PC 上的 SSH 软件，如 putty 等。

实验步骤

1. AirPlay 的仿真器 Shairport 在安装前需要预装一些其他的软件，直接使用一条指令就可以完成安装：

```
sudo apt-get install git libao-dev libssl-dev libcrypt-openssl-rsa-perl libio-socket-inet6-perl libwww-perl avahi-utils libmodule-build-perl
```

```
root@Acadia:~# sudo apt-get install build-essential libssl-dev libcrypt-openssl-rsa-perl libao-dev libio-socket-inet6-perl libwww-perl avahi-utils pkg-config
Reading package lists... Done
Building dependency tree
Reading state information... Done
build-essential is already the newest version.
libwww-perl is already the newest version.
libwww-perl set to manually installed.
pkg-config is already the newest version.
pkg-config set to manually installed.
```

2. 针对 ios6 的修改，安装 perl Ner-SDP:

先安装 git:

```
root@Acadia:~# sudo apt-get install git
Reading package lists... Done
Building dependency tree
Reading state information... Done
git is already the newest version.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
root@Acadia:~#
```

安装 perl Ner-SDP:

```
root@Acadia:~# git clone http://github.com/njh/perl-net-sdp.git perl-net-sdp
Cloning into 'perl-net-sdp'...
remote: Counting objects: 193, done.
remote: Total 193 (delta 0), reused 0 (delta 0), pack-reused 193
Receiving objects: 100% (193/193), 40.48 KiB, done.
Resolving deltas: 100% (83/83), done.
root@Acadia:~#
```

```

root@Acadia:~# cd perl-net-sdp
root@Acadia:~/perl-net-sdp# perl Build.PL
WARNING: the following files are missing in your kit:
    Makefile.PL
    META.yml
Please inform the author.

Created MYMETA.yml and MYMETA.json
Creating new 'Build' script for 'Net-SDP' version '0.07'
root@Acadia:~/perl-net-sdp#

```

```

root@Acadia:~/perl-net-sdp# sudo ./Build
Building Net-SDP
root@Acadia:~/perl-net-sdp# sudo ./Build test
t/00use.t ..... ok
t/10generate.t .. ok
t/10parse.t ..... ok
t/20repeat.t .... ok
t/30asstring.t .. ok
All tests successful.
Files=5, Tests=69, 0 wallclock secs ( 0.18 usr 0.03 sys + 0.60 cusr 0.06 csy
s = 0.87 CPU)
Result: PASS
root@Acadia:~/perl-net-sdp# sudo ./Build install

```

```

root@Acadia:~/perl-net-sdp# sudo ./Build install
Building Net-SDP
Installing /usr/local/man/man1/sdp2rat.1p
Installing /usr/local/share/perl/5.14.2/Net/SDP.pm
Installing /usr/local/share/perl/5.14.2/Net/SDP/Media.pm
Installing /usr/local/share/perl/5.14.2/Net/SDP/Time.pm
Installing /usr/local/man/man3/Net::SDP.3pm
Installing /usr/local/man/man3/Net::SDP::Media.3pm
Installing /usr/local/man/man3/Net::SDP::Time.3pm
Installing /usr/local/bin/sdp2rat
root@Acadia:~/perl-net-sdp# cd ..
root@Acadia:~#

```

3. 安装安装 shairport 软件:

```

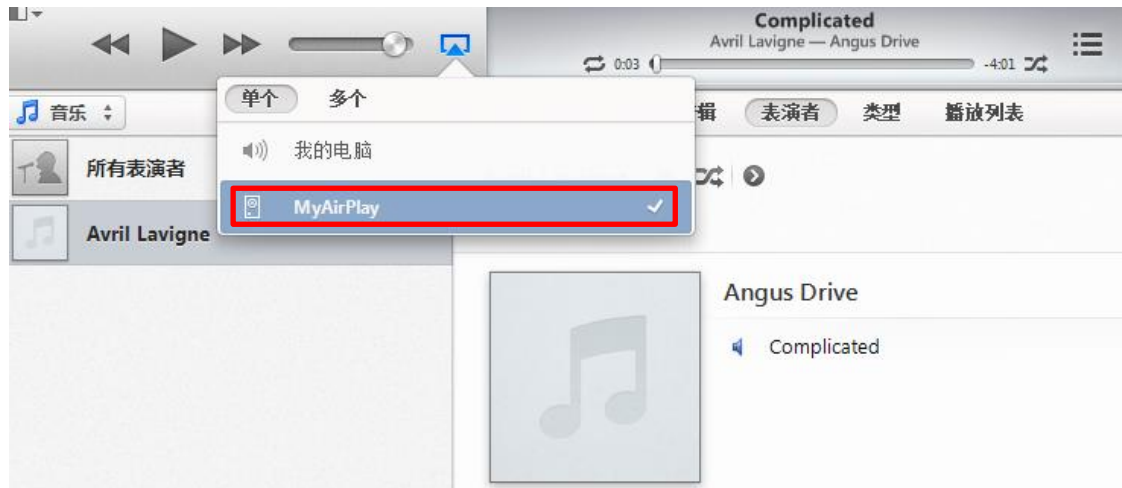
COM3 - PuTTY
root@Acadia:~# git clone https://github.com/hendrikw82/shairport.git
Cloning into 'shairport'...
remote: Counting objects: 697, done.
remote: Total 697 (delta 0), reused 0 (delta 0), pack-reused 697
Receiving objects: 100% (697/697), 204.42 KiB | 52 KiB/s, done.
Resolving deltas: 100% (390/390), done.
root@Acadia:~# cd shairport
root@Acadia:~/shairport# make
cc -O2 -Wall -c alac.c -o alac.o
cc -O2 -Wall -DHAIRTUNES_STANDALONE hairtunes.c alac.o -o hairtunes -lm -lpthr
ead -lssl -lcrypto -lao
cc -O2 -Wall -c socketlib.c -o socketlib.o
cc -O2 -Wall -c shairport.c -o shairport.o
shairport.c: In function 'main':
shairport.c:219:10: warning: ignoring return value of 'dup', declared with attri
bute warn_unused_result [-Wunused-result]
shairport.c:220:10: warning: ignoring return value of 'dup', declared with attri
bute warn_unused_result [-Wunused-result]
shairport.c: In function 'parseMessage':
shairport.c:867:10: warning: ignoring return value of 'write', declared with att

```

6. 运行 shairport:

```
root@Acadia:~/shairport# ./shairport.pl -a MyAirPlay
Established under name 'E00DA8F85190@MyAirPlay'
```

7. 打开 itunes, 使用 pcDuino (选 MyAirPlay) 播放音乐:



播放成功:

```
root@Acadia:~/shairport# ./shairport.pl -a MyAirPlay
Established under name 'E00DA8F85190@MyAirPlay'
Audio Stream+UqhuN0Zrue7PUwMidGQAALSA lib pcm.c:2217:(snd_pcm_open_noupdate) Unknown PCM cards.pcm.front

missing frame.

missing frame.
bye!
```