

Ripping yarns

During the last few years I've joined the now-widespread trend toward playing audio files using a computer. For playing I mainly use two Linux boxes, not RO machines. The main reason for this is that, at present, RO hardware can't access any of the high quality DACs on the market. So if you want good audio quality, RO machines like my Iyonix are currently ruled out for playing music. This is a frustrating situation I'd love to see fixed. But at present there are no sign of any RO hardware that would be worth using as part of a serious Hi Fi system. Nor the improvement to the RO USB stack that would be vital to letting us use the best audio DACs on the market.

In general I still prefer to play commercially produced audio CDs on a dedicated CD player. I like having CDs in their boxes along with their leaflets giving details of what they contain. However I also have hundreds of home-recorded CDRs of audio. Back in 2001 I bought a CD audio recorder. I then used this to make 'convenience copy' CDRs from some of my old LPs, and also of cassettes of radio concerts I'd recorded in the previous decades. In addition I also recorded new concerts from BBC Radio 3 direct to audio CDR.

These home-made audio CDRs all play fine. But the contents of the discs are rather muddled up as I often fitted items onto each disc to use the space efficiently. This meant that – as with some of my old cassettes and reel-to-reel tapes – I often 'lost' recordings when I forgot where they were! More recently I've also changed to using a 'solid state' audio recorder that makes its recordings as files on a CF memory card. This is much more flexible in use. And as it is now a decade since I started recording to CDR I began to wonder how well those CDRs would last. Would they deteriorate? Would players become hard to find in the future? So I decided to copy the contents of the CDRs as computer files so I could label them, and then search for items in whatever ways suited me. As with my old LPs and tapes, though, I keep the originals stored away.

Initially, I experimented with using my Linux boxes to 'rip' tracks from these CDRs. But I rapidly ran into some problems. I therefore started to experiment with different software, and also compared my Iyonix (and my wife's!) with the Linux machines. One outcome was obvious fairly quickly. Although the Linux boxes were much faster at reading audio CDRs and generating output LPCM Wave files, they were much more prone to either stalling because they found a disc 'unreadable', or to making errors when reading the sample values. I also found that the problems varied from disc to disc and from machine to machine. I tried different software, and found this also affected the results. So the main purpose of this article is to report my findings and help others steer away from problems.

For an Iyonix the obvious choice of software is !CDVDBurn. This works fairly well, but unlike a program like CDParanoia it doesn't give the user a diagnosis of any difficulties with reading or the chance that some results may contain errors. For Linux I rapidly settled on using CDParanoia. Partly because it seemed to give good results. Partly because it gives feedback to let me see if the reading is going well, or struggling! During the comparisons I found that in more than one case I could read one CDR and get four *different* results by using the two Iyonix and two Linux boxes. I also found that !CDVDBurn has a buglet than means it writes an incorrect value into the header of Wave files it generates. (It states the length of the recording as having a number of bytes that isn't a multiple of four. This is impossible for a stereo recording with two bytes per sample!)

Having been through the tests I ended up deciding that to minimise the risk of having errors in the results the best method was to use a RO version of CDParanoia on my wife's Iyonix. My own Iyonix is slightly poorer at reading audio CDRs. But both of the Iyonix machines are much better than the Linux machines. This is despite the version of CDParanoia available with my Linux machines being later versions than the one available for RO. The root of the problem seems to be that modern hardware tends to have a DVD ROM drive, not a CD ROM drive. So although the hardware can make a stab at reading CDs, it isn't optimised for them. Whereas I was able to use older CD ROM drives in our Iyonix machines. I suspect that the Linux hardware is also too eager to be "as fast as possible" which also makes reading harder. (And with the advent of 'Blu Ray' drives replacing DVD ones, I suspect this will get worse in the future!) So although reading the discs with an Iyonix takes longer, the results are considerably less prone to errors.

The version of CDParanoia I use for an Iyonix is the one you can download from a page at <http://www.archifishal.co.uk/riscos/tools.shtml>. Note that the documents with this do warn that it is based on an old version of CDParanoia and may not work well on all systems. To examine the differences in the drives I wrote a small program that scans for optical drives and reports how any that it finds identify themselves.

Running this on my Iyonix I get

```
*cdinquire
```

```
0 0 0 = 0 is LITE-ON DVDRW SOHW-1693SKS02
```

```
1 0 0 = 0 is SONY CD-RW CRX220E1 6YS1
```

This shows I have two drives. Drive 0 is a Lite-On DVDRW drive, and Drive 1 is a Sony CRX220E1 CD-RW drive.

On my wife's Iyonix I get

```
*cdinquire
```

```
0 0 0 = 0 is SONY CD-RW CRX230ED 4YS1
```

So that also has a Sony CD-RW drive, but the details are different.

CDinquire scans all the possible drive, card, etc, values, and returns the 'handle' for any drive it finds as well as listing how the drive identifies itself. All being well I'll provide Jim with a copy to make available with this copy of Archive so you can see how the program works or try it yourself.

Having obtained Wave files on my (wife's) Iyonix I then shift these to one of the Linux boxes using a USB memory stick that is FAT32 formatted. (Note this requires using FAT32FS.) There I use the Linux tool, 'sox', to convert them into flac files. Having mentioned sox, I can also point out that it does offer a slightly different approach. If you like !CDVDBurn and want to avoid the header problem with its Wave file output, you can use sox to convert 'data' files saved by CDVDBurn into LPCM Wave files.

It isn't much of a surprise that, as things stand, a Linux system may be faster or more convenient for manipulating data or playing the audio files. But it is interesting that an old Iyonix with its CD ROM drive can systematically do a much better job of reading audio CDs than modern hardware used for Linux. If you have any audio CDs/CDRs you are thinking of 'ripping' and want to ensure the audio isn't corrupted, it may be worth bearing this in mind. The Iyonix is slower, but may take more care of the details!

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