

Rescuing optical media

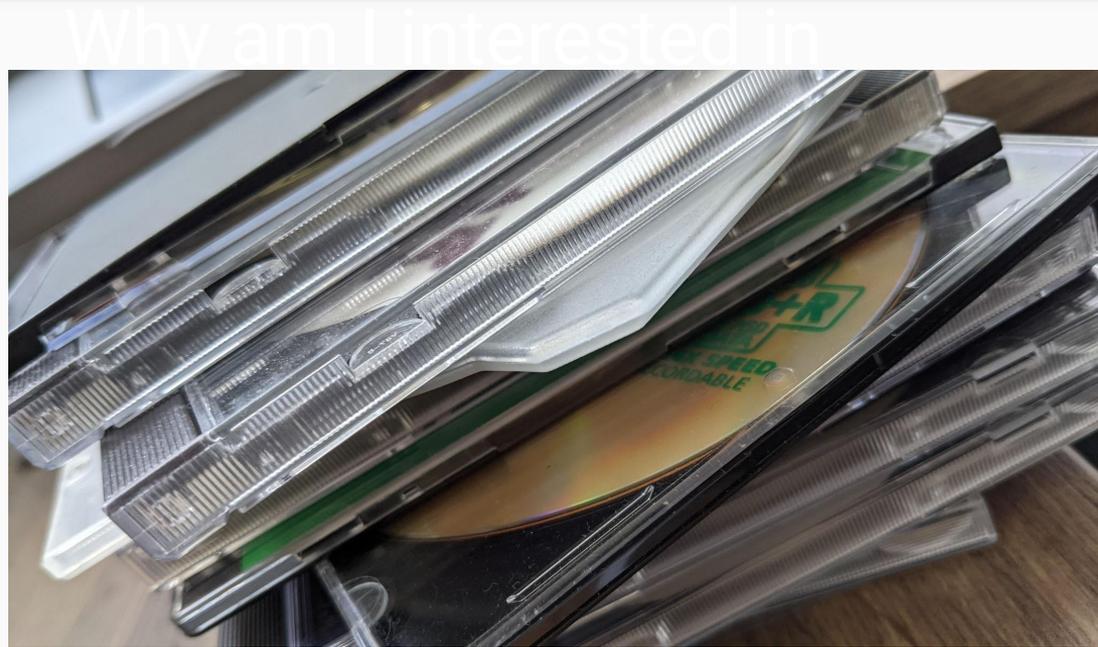
DVD-Rs don't last forever!



Why am I interested in this?

I realised that many old DVD-R discs I have were failing.

These are mainly videos.



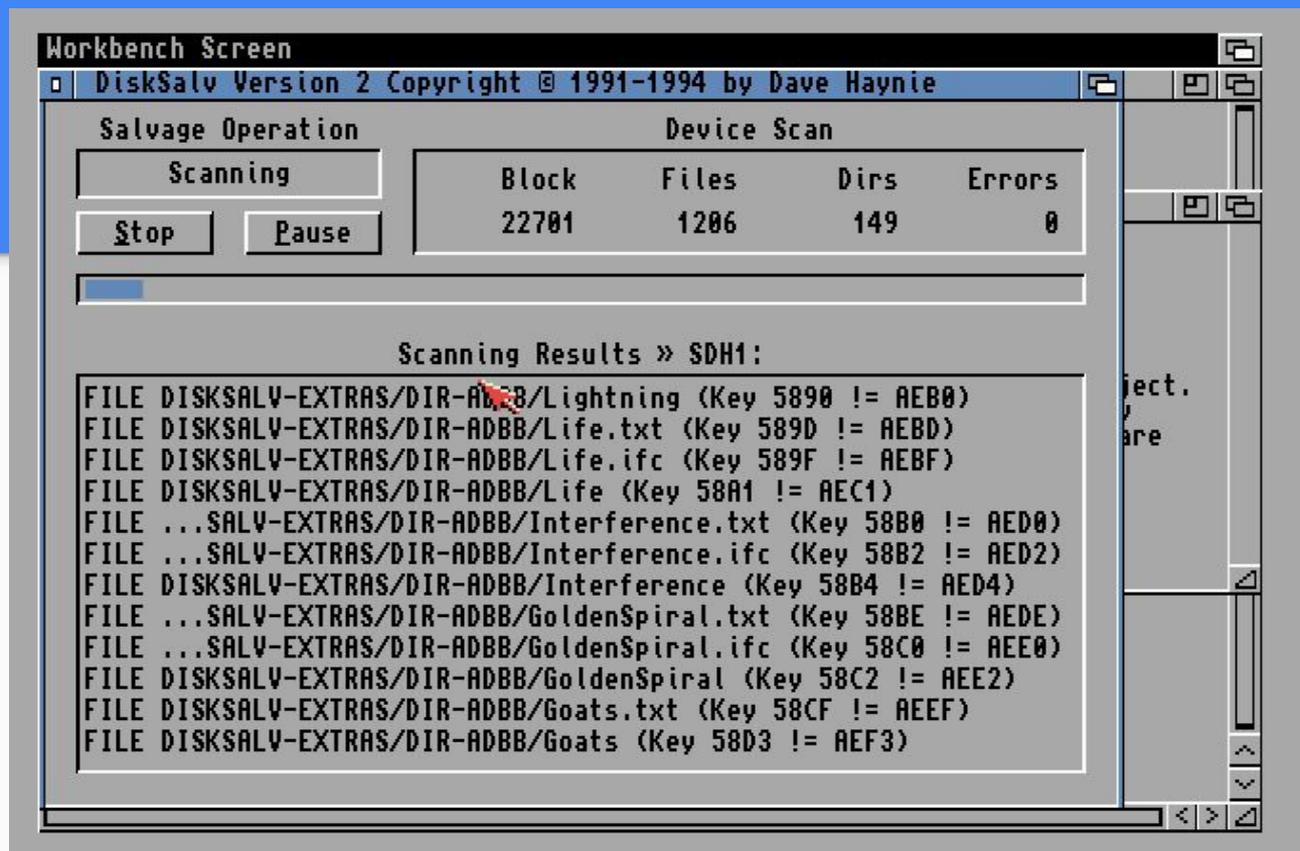
First attempts

Tried the obvious tools for extracting and backing up a DVD.

Handbrake is an excellent cross platform DVD ripper, but it fails on these old discs



... nope



More powerful tools

“GNU **ddrescue** is a data recovery tool. It copies data from one file or block device (hard disc, cdrom, etc) to another, trying to rescue the good parts first in case of read errors.”

“ddrescue uses a sophisticated algorithm to copy data from failing drives causing them as little additional damage as possible.

Ddrescue manages efficiently the status of the rescue in progress and tries to rescue the good parts first, scheduling reads inside bad (or slow) areas for later. This maximizes the amount of data that can be finally recovered from a failing drive.”



Main phases

1. **Copying** - Done in up to five passes. The first pass reads the non-tried parts of the input file, marking the failed blocks as non-trimmed and skipping beyond them. The second pass delimits the blocks skipped by the first pass. The first two passes also skip beyond slow areas.
2. **Trimming** - For each non-trimmed block, read forwards one sector at a time from the leading edge of the block until a bad sector is found. Then read backwards one sector at a time from the trailing edge of the block until a bad sector is found. ...
3. **Scraping** - Scrape together the data not recovered by the copying or trimming phases. Scraping is done in one pass. Each non-scraped block is read forwards, one sector at a time. Any bad sectors found are marked as bad-sector.

How to use ddrescue - First pass

```
ddrescue -n -r 3 -b 2048 -v /dev/sr0 dvd.iso rescue.log
```

-n - No trimming. Avoids spending a time trying to rescue the most difficult parts on the first pass

-r 3 - Number of retry passes

-b 2048 - Sector size for DVD/CD

-v - Verbose messages

`/dev/sr0` - Disc reader

`dvd.iso` - Output iso image

`rescue.log` - Map file tracking progress for restarts

How to use ddrescue - Second pass

```
ddrescue -d -r 3 -b 2048 -v /dev/sr0 dvd.iso rescue.log
```

-d - Direct mode. Use direct disc access for input file. May be able to rescue different sectors.

Additional magic

Multiple drives

Different drives can extract additional data. ddrescue supports running additional passes on different drives.

```
ddrescue -d -r 3 -b 2048 -v /dev/sr1 dvd.iso rescue.log
```

Additional magic

Multiple discs

If you have more than one copy of a disc ddrescue supports creating a combined image from the best parts of multiple discs

```
ddrescue -m mapfile1 dvdimage1 dvdimage mapfile
```

```
ddrescue -m mapfile2 dvdimage2 dvdimage mapfile
```

```
ddrescue -m mapfile3 dvdimage3 dvdimage mapfile
```

(if bad-sector size is zero, dvdimage now contains a complete image of the DVD and you can write it to a blank DVD)



ddrescue is great ...

... but I hope never to have to use it ever again.