

# mplayer / mencoder

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## Features

- Plays Audio & Video files, **BRD**/DVD/VCD, TV, network streams, stdin
- Platforms: Linux, FreeBSD, Solaris, DOS/FreeDOS, Mac OS X, OS/2, Amiga OS, Microsoft, ...
- Uses own codecs, external codecs possible
- GPLv2

```
bash-3.2$ mplayer -vc help | wc -l
```

```
244
```

# Installation

[www.mplayerhq.hu](http://www.mplayerhq.hu)

```
./configure
```

```
--enable-gui
```

```
--enable-dvdnav
```

```
--with-codecsdir=/usr/local/lib/codecs
```

```
--with-win32libdir=/usr/local/lib/codecs
```

```
make
```

```
make install
```

```
ln -s /path/to/sample_font.ttf ~/.mplayer/subfont.ttf
```

# Playing

```
mplayer filename.mpg
mplayer mms://54.12.90.135/blubbblubb
mplayer http://site.com/file.asf
wget ftp://micorsops.com/something.avi -O - |
    mplayer -cache 8192 -
mplayer *
mplayer dvd://
mplayer dvdnav://
mplayer dvd:// -dvd-device filename.iso
mplayer dvd://4 -dvd-device /dev/sg1
mplayer vcd://2 -cdrom-device /dev/hdc
```

libdvdread, **libdvdcss**

§ 95a Abs. 1 UrhG

## Stdin/netcat

- Client:

```
nc -l -p 1234 | mplayer -
```

- Server:

```
cat /home/user/somefile.mkv | nc client.test.com 1234
```

- Easily scriptable

- Even better with mencoder

## Keyboard controls

Q	Quit
< >	Previous / next playlist item
#	Select audio stream
j	Select subtitle steam
SPACE	Pause
.	Step one frame forward
9 / 0	Volume down / up
w / e	Panscan
3 / 4	Adjust brightness
o	Toggle OSD status information
m	Mute

left / right	Seek 10sec
up / down	Seek 1min
PgUp / PgDn	Seek 10min

## Video output

-vo parameter

- xv
- x11
- gl & gl2
- fbdev & fbdev2
- sdl
- gif89a & jpeg
  
- directx
  
- aa & caca

## Video Filters

-vf parameter

- Deinterlacing
  - pp=lb (liner blend)
  - pp=fd (ffmpeg deinterlacer)



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# Video Filters

-vf parameter

- Enhance Image

- hqdn3d

- 3-way low-pass filter

- can completely remove high-frequency noise

- scale

- crop

- delogo

- remove-logo

- mplayer -vf help

## Audio Filters

-af parameter

- delay=20:20:0:0:0:0
  
- mplayer -af help

## Analogue: Requirements

- V4L

  - CONFIG\_VIDEO\_DEV

  - CONFIG\_VIDEO\_ALLOW\_V4L1

- Driver (kernel module) for the DVB card/stick (probably bttv)

## Analogue: Searching channels

```
mplayer tv:// -tvscan autostart
```

```
.  
. .  
. .
```

```
Trying: 67 (839.25). % ??% ??,%?% 0 0
```

```
Trying: 68 (847.25). % ??% ??,%?% 0 0
```

```
Trying: 69 (855.25). % ??% ??,%?% 0 0
```

```
TV scan end. Found 34 new channels.0
```

```
channels=R6-ch1,R12-ch2,SR11-ch3,SR17-ch4,SR18-ch5,E6-ch6,  
E7-ch7,E8-ch8,E9-ch9,E10-ch10,E11-ch11,E12-ch12,SE7-ch13,  
SE8-ch14,SE9-ch15,SE12-ch16,SE13-ch17,SE14-ch18,SE15-ch19,  
SE16-ch20,SE17-ch21,SE18-ch22,S21-ch23,S22-ch24,S28-ch25,  
S29-ch26,S30-ch27,S31-ch28,S32-ch29,S33-ch30,S35-ch31,  
S36-ch32,21-ch33,22-ch34V: 0.0 112
```

## Analogue: Playing

```
mplayer tv:// -tv driver=v4l2:device=/dev/video0:  
width=768:height=576:channels=SE7-Das_Erste,SE8-ZDF,  
E12-Sat1,E11-RTL,SE16-ProSieben,E6-Kabel1,SE18-RTL_2,  
E5-VOX,SE13-SuperRTL,S33-Das_Vierte,SE9-SWR,  
E10-Bayern_3,SE19-WDR,22-NDR,S31-MDR,SE15-3sat,  
S30-BR_Alpha,S28-Arte,SE11-SF1,SE12-n_tv,S35-N24,  
S32-CNN,E7-MTV,SE14-VIVA,S36-Nick,E9-DSF,  
SE17-EuroSport,21-Comedy_Central,S37-Bloomberg,S22-QVC,  
S29-Sonnenklar_TV,S34-Astro_TV
```

## Analogue: Deinterlacing, cropping and filtering

### ■ Cropping

```
mplayer tv:// -vf cropdetect...
```

```
.
```

```
.
```

```
.
```

```
[CROP] Crop area: X: 719..0 Y: 399..0
```

```
(-vf crop=-704:-384:714:394)
```

### ■ Applying the cropping data, deinterlacing, filtering

```
mplayer -geometry 1168:0 tv:// -vf crop=752:550,  
screenshot,pp=1b,hqdn3d  
-tv driver=v4l2:device=/dev/video0:chanlist=...
```

# DVB

- Mplayer can decode all flavors of DVB
  - DVB-S
  - DVB-T
  - DVB-C
  - DVB-H
    - Based on DVB-T
    - Working DVB-T card or stick
    - sdp, faad

## DVB-S: Requirements

- V4L

  - `CONFIG_VIDEO_DEV`

  - `CONFIG_VIDEO_ALLOW_V4L1`

  - `CONFIG_DVB_CORE`

- Driver (kernel module) for the DVB card or stick

- `./configure --enable-dvb`

- `dvb-utils`

## DVB-S: Searching channels

- linuxtv-dvb-apps
  - scan
    - Expects a frequency list to scan
    - → dvbt-scanaid
  - mv channels.conf /.mplayer/

## DVB-S: Playing

- “Primitive” playing

```
szap -r "ZDF"
```

```
cat /dev/dvb/adapter0/dvr0 | mplayer -
```

- Better

```
mplayer dvb://ARD
```

## DVB-S: Dumping the stream

```
\item szap -r "ZDF"
```

```
\item cat /dev/dvb/adapter0/dvr0 > record.mpegts
```

## mencoder

- Encodes (almost) everything mplayer can play

## 3-pass

1. First the sound:

```
mencoder -dvd 1 -ovc frameno -o frameno.avi  
-oac mp3lame -lameopts abr:br=128
```

2. First pass:

```
mencoder -dvd 1 -nosound -oac copy -o /dev/null  
-ovc lavc -lavcopts vcodec=mpeg4:vbitrate=800:vhq  
:vpass=1:vqmin=1:vqmax=31 -vop scale -zoom -xy 640  
-npp 1b
```

3. Second pass:

```
mencoder -dvd 1 -oac copy -o file.avi -ovc lavc  
-lavcopts vcodec=mpeg4:vbitrate=800:vhq:vpass=2  
:vqmin=1:vqmax=31 -vop scale -zoom -xy 640 -npp 1b
```

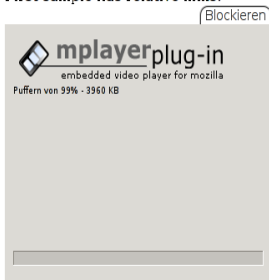
## Analogue TV capturing

```
mencoder tv:// -tv driver=v4l2:chanlist=europe-east:  
width=768:height=576:channels=E11-RTL -vf crop=752:  
560,pp=1b,hqdn3d -ovc lavc -lavcopts vcodec=mpeg4:  
vbitrate=1600 -oac mp3lame -lameopts cbr:br=96:  
mode=3 -o /home/pagan/rtl.avi
```

# plug-in

- Plays videos in Firefox
- mplayerplug-in.so in
  - `/.mozilla/plugins/`
  - `/usr/lib/mozilla/plugins`
  - `/opt/mozilla/lib/plugins/`

First sample has relative links:



## Slave mode

- Control mplayer via stdin or named pipe

```
-slave -quiet  
      tv_step_channel 1\n
```

```
-slave -input file=mpl  
      echo "tv_step_channel 1" > mpl
```

<http://www.mplayerhq.hu/DOCS/tech/slave.txt>

- Remote control
- Embedding mplayer

# Timelapse

- Combine Series of images to movie

```
mencoder mf:// \*.jpg on:fps=25:type=jpeg  
-ovc lavc -lavcopts vcodec=mjpeg  
-o timelapse-25fps.avi
```

# Timelapse

```
#!/bin/bash
iCount=0 # stores the number of passes

while [ 0=0 ] # endless loop
do
# set date & time fromat to DATUM, used later for "subtitle"
DATUM='date +%d.%m.%Y %T'

# Format the file number to fixed characters like 0000000001, otherwise
# the resulting files would have the wrong order for mencoder
iFileNum='printf "%010g\n" $iCount'

# aquire image from webcam
streamer -s 640x480 -c /dev/video0 -o webshot.ppm

# filter image and add "subtitle"
convert webshot.ppm -despeckle -font "Courier" -pointsize 16 -draw "gravity southeast
fill grey text 10,6 'Title, $DATUM' " /path/filename$iFileNum.jpg

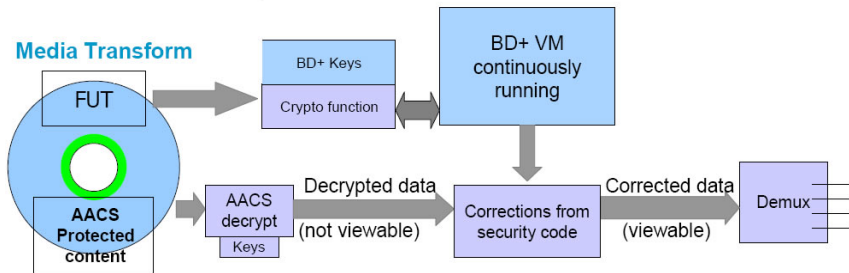
# Increment the file number
((iCount = iCount + 1))

# 10 seconds pause
sleep 10
done
```

## BD+

- Small virtual machine embedded in authorized players
  - Examines the host environment for tampering
  - Verifies player keys
  - Unscramble audio & video
- 
- Slysoft
  - Doom9

## BD+



## BD+

28th October 2008, 19:28 #292 | [Link](#)

Oopho2ei  
Guest

Posts: n/a


I am glad to announce the first successful restoration of the BD+ protected movie "The Day After Tomorrow" in linux. It was done using a blue ray drive with patched firmware (to get the volume id), DumpHD to decrypt the contents according to the AACS specification and the BDVM debugger from this thread to generate the conversion table. The conversion table is the key information to successfully repair all the broken parts in m2ts files to restore the original video content. **This small tool** was finally used to repair the main movie file "00001.m2ts" according to the conversion table.

To verify the correctness i compared my 00001.m2ts with the one AnyDVD-HD creates and they both match. The MD5 hash of this 30GB large file is in both cases "0fa2bc65c25d7087a198a61c693a0a72".

Well done everyone! 😊

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*Last edited by Oopho2ei; 28th October 2008 at 19:40. Reason: fixed verbose console output*

 Quote

<http://forum.doom9.org/showthread.php?t=140571&page=15>  
→ libbluray-0.0.5

# BD+

1) Add this to /etc/sysctl.conf:

Code:

```
dev.rtc.max-user-freq = 1024
```

2) Add this to ~/.mplayer/config:

Code:

```
[bluray]
profile-desc="Blu-Ray mpeg2 transport stream"
demuxer=lavf
fps=24000/1001
fs=true
lavdopts=threads=2:fast=true:skiploopfilter=all
```

3) Play your video:

Code:

```
mplayer -profile bluray -cache 50000 000000.m2ts
```

# BD+

- Enemies of freedom may modify BD+ VM in the future
  - FW updates for all Blu-Ray players
  - Can be reverse engineered again
- Blu-Ray still not broken (in a dvddecss sense)
  - Still relies on “discovered” keys from e.g. WinDVD
    - BackupBluray by muslix64

## Friends of mplayer

- avidemux
- cinelerra
- nextvepg
- mkvtoolnix

## Friends of mplayer

Any questions?