

# Non Linear video Editing with LML33

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## 1 Notational Conventions

Your input is designated with \$, for the command shell input prompt, and with # for superuser mode input.

## 2 System Requirements

- \* RedHat Linux 7.2 or higher
- \* Kernel 2.4.7 or higher
- \* CPU 300 MHz or more (1 GHz recommended)
- \* RAM 64 Mb or more (512 Mb recommended)
- \* EIDE or SCSI-2 HDD (separate HDD specially for your video clips recommended)
- \* Any video card (1024x768 or higher resolution recommended)
- \* LML33 capture card

## 3 Installation

Please install NLE software from LML CD:

```
$ mount /mnt/cdrom
$ su
Password:
# cd /mnt/cdrom/contrib
# sh softwareInstall.sh
```

Please install zoran v4l driver (also from LML CD):

```
# cd /mnt/cdrom/LML33
# sh lml33install.sh
# exit
```

For SMP systems :

```
# cd /mnt/cdrom/LML33
# sh lml33installSMP.sh
# exit
```

Also you can install zoran v4l driver from source: `/mnt/cdrom/LML33/driver-zoran.tar.gz`.

Please don't forget exit superuser mode. After installation your system is ready for NLE.

## 4 Capturing AV stream

Connect your AV signal source to LML33 input. Connect LML33 output to TV set or TV card.

This is useful for monitoring capture process. Now your system ready for capture.

### 4.1 Capturing NTSC video

1. Go to your video clips directory, for example:  
`$ cd ~/clips`
2. Prepare for capture (rewind video tape, or tune camera)
3. Launch lavrec:  
`$ lavrec -f A -i n -d 1 -a 16 -r 22050 -R m -l 100 -s -w clip1.avi`  
after that you will prompted for pressing Enter when ready to capture  
Press 'play' button on your VCR and press enter on PC keyboard simultaneously. Capture process starts.
4. For stopping capture you just need to press Ctrl+C. If you know for how long you wish the recording session to last, you may use the `-t` command followed by the needed recording time in seconds.

### 4.2 Capturing PAL video

1. Go to your video clips directory, for example:  
`$ cd ~/clips`
2. Prepare for capture (rewind video tape, or tune camera)
3. Launch lavrec:  
`$ lavrec -f A -i p -d 1 -a 16 -r 22050 -R m -l 100 -s -w clip1.avi`  
after that you wil prompted for pressing Enter when ready to capture  
Press 'play' button on your VCR and press enter on PC keyboard simultaneously. Capture process starts. In orderd to control the amount of time for which lavrec will record, use the `-t` option followed by the number of seconds for which you wish to record the stream.

4. For stopping capture you just need to press Ctrl+C. If you know for how long you wish the recording session to last, you may use the -t command followed by the needed recording time in seconds.

## 5 Playing back AV stream

You can play back captured AV stream on LML33 output:

```
$ lavplay clip1.avi
```

## 6 Editing with MainActor Sequencer

Launch MainActor Sequencer:

```
$ maseq
```

First of all you need to create AV profile.

1. Specify stream resolution: 720x480 for NTSC video and 720x576 for PAL video
2. Specify FPS rate for Export and for Timeline (29.97 for NTSC and 25.00 for PAL)
3. Also specify audio parameters. Defaults is 44.100 KHz (High Quality), Stereo, 16 bit.

Save this profile for further use (for example with 'LML33 profile' name).

You can insert your clip into Timeline: right click on video (Va, Vb) track and pick up 'Insert Multimedia...'. Import dialog appears. By default you need just press OK button. Browse file system, select your clip and press 'Open'. Wait for clip importing (it may look like MainActor hangs up).

After that you will see 'film' icon near mouse pointer when mouse pointer is over the timeline. Click left mouse button at the desired place on the timeline. Your clip is then inserted into the timeline at the designated location. You can slice it, insert other clips, create transitions from one clip to other, apply special effects and various other options.

For detailed instructions, please read MainActor Users Manual.

You can export you MainActor project to AVI file (rendering): In 'File' menu select 'Export'.

Specify wanted parameters (quality, resolution and other) and press 'Save' button. After pressing render process starts.

During render you can see currently rendering frame in preview window.

Rendered AV stream you can play back on LML33 using lavplay program.

**Note:** MPlayer and MainActor require different field orders. MainActor needs the `-fa` option to be present in lavrec and MPlayer needs the `-fA` option to display the stream correctly. This problem will be addressed through software updates.

## 7 Editing with Cinelerra

If you wish to utilize the Cinelerra non-linear editor to alter your captured video stream, you will need to record your video using the QuickTime format. This is accomplished by the following command:

```
$ lavrec -t 1 -d 1 -in -fq x.mov
```

To launch Cinelerra:

```
$ cinelerra
```

From the menu look into File/Load Files and locate the QuickTime clip that you have just recorded above. This will get you into the timeline of the clip.

**Note:** Currently the fields will be swapped. This is similar to the field order options for MainActor and MPlayer. The desired lavrec option for Cinelerra is `-fQ`. However this option is not present in the current release of lavrec. This problem will be addressed through software updates.

## 8 Creating VCD, SVCD, DVD and DivX4 clips

You can transcode LML33 AV stream (MJPEG) to low bitrate formats. For this you can use 'transcode' program.

### 8.1 NTSC video

#### 8.1.1 VCD (352x240)

Video CD's have a restricted format for audio (MP2, 44100 Hz, 224 kBits/s, stereo) and video (MPEG-1, 352x240, 1152 kBits/s CBR) parameter.

```
$ transcode -i clip1.avi -x af6 -k -V -J dilyuvmmx,dnr -C 3 -y mpeg -F v,4  
-E 44100 -b 224 -o result  
$ tcomplex -o result.mpg -i result.m1v -p result.mpa -m v
```

### 8.1.2 SVCD (480x480)

Super Video CD's have a less restricted format for audio (MP2, 44100 Hz, 32-384 kBits/s, stereo) and video (MPEG-2, 480x480, up to 2600 kBits/s VBR) parameter. The preset profiles take care of the SVCD2.0 specification. The default profile bitrate is 2376 kbps.

```
$ transcode -i clip1.avi -x af6 -k -V -J dilyuvmmx,dnr -C 3 -V -y mpeg -F s,2 -E 44100 -b 128 -o result
$ tcmplex -o result.mpg -i result.m2v -p result.mpa -m s
```

### 8.1.3 DVD

Possible frame parameter combination: 720x480, 704x480, 352x480 and 352x240.

For a video frame size of 352x240, resizing can be delegated to the export module with "-F d,4", but this frame size is currently broken in the exncoder, all other values require use of transcode's resize options. The profile default bitrate is 9800 kbps.

```
$ transcode -i clip1.avi -x af6 -k -V -J dilyuvmmx,dnr -C 3 -y mpeg -F d -E 44100 -b 128 -o result
$ tcmplex -o result.vob -i result.m2v -p result.mpa -m d
```

## 8.2 PAL video

### 8.2.1 VCD (352x288)

Video CD's have a restricted format for audio (MP2, 44100 Hz, 224 kBits/s, stereo) and video

(MPEG-1, 352x288, 1152 kBits/s CBR) parameter. The preset profiles take care of the VCD2.0 specification.

```
$ transcode -i clip1.avi -x af6 -k -V -J dilyuvmmx,dnr -C 3 -y mpeg -F v,1 -E 44100 -b 224 -o result
$ tcmplex -o result.mpg -i result.m1v -p result.mpa -m v
```

### 8.2.2 SVCD (480x576)

Super Video CD's have a less restricted format for audio (MP2, 44100 Hz, 32-384 kBits/s, stereo) and video

(MPEG-2, 480x576, up to 2600 kBits/s VBR) parameter. The preset profiles take care of the SVCD2.0 specification.

You may try to increase th bitrate for higher quality (X)SVCD. Most consumer DVD/(S)VCD player can cope with that.

This is done with a profile file xsvcd.prof, which contains the following entries:

```
#(S)VCD profile for improved quality
fixed_vbv_delay = 1
vbv_buffer_size = 230
cbr = 1
cbr_bitrate = 4000000.0
quant_value = 2
qscale_type = 0
vbr_mux = 0
video_buf_size = 230
use_comp_bitrate = 1
```

and will bump up the bitrate to 4000 kbps. The additional profile parameter are passed with the file name as a 3rd argument to "-F".

```
$ transcode -i clip1.avi -x af6 -k -V -J dilyuvmmx,dnr -C 3 -V -y mpeg -F
s,3,xsvcd.prof -E 44100 -b 128 -o result
$ tcmplex -o result.mpg -i result.m2v -p result.mpa -m s
```

### 8.2.3 DVD

Possible frame parameter combination: 720x576, 704x576, 352x576 and 352x288. For a video frame size of 352x288,

resizing can be delegated to the export module with "-F d,1", all other values require use of transcode's resize options.

```
$ transcode -i clip1.avi -x af6 -k -V -J dilyuvmmx,dnr -C 3 -y mpeg -F d -
E 44100 -b 128 -o result
$ tcmplex -o result.vob -i result.m2v -p result.mpa -m d
```

## 8.3 DivX4 encoding

For obtaining DivX4 encoded movie you can use such transcode parameters:

```
$ transcode -i clip1.avi -x af6 -k -V -J dilyuvmmx,dnr -C 3 -y divx4 -o
result.avi
```

## 8.4 'transcode' utility documentation

For detailed documentation on transcode please refer to man pages or transcode homepage:

<http://www.theorie.physik.uni-goettingen.de/~ostreich/transcode/index.html>

## 9 Burning VCD, SVCD, DivxCD

Burning tools vcdimager and cdrdao installed on your system when you launched softwareInstall.sh script , also you can install them from LMLCD/contrib directory.

### 9.1 VCD burning

Capture your video and encode it as discribed in 7.1.1 chapter, after this run:

```
$vcdimager -t vcd11 Mpeg1clip.mpg
$cdrdao write videocd.cue
```

### 9.2 SVCD burning

Capture your video and encode it as discribed in 7.1.2 chapter, after this run:

```
$vcdimager -t svcd Mpeg2clip.mpg
$cdrdao write videocd.cue
```

### 9.3 Divx CD burning

Capture your video and encode it as discribed in 7.3 chapter, after this you can write your Divxclip.avi using mkisofs and cdrecord tools or using X-CD-roast as you wish.  
No need for special CD stucture for DIVX CD burning process.

## 10 Playing movies

For playing your movies, the 'mplayer' package is installed on your system when you launched softwareInstall.sh script , also you can install it from LMLCD/contrib directory.

### 10.1 Mplayer

just run :

```
mplayer -vo sdl Mpeg1or2movie.mpg
or
mplayer -vo sdl DivxMovie.avi
```

Enjoy. (required step:)