

**erwicked.com – The ultimate portal to Digital Video – XviD Guide**

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# 1 Introduction

The MPEG-4 scene has been very active lately and therefore we have a variety of codecs to choose from.

Namely, MPEG-4 codecs available to the public for free are:

- DivX
- XviD
- OpenDivX
- On2 VP3
- Windows Media 8

The former two seem to outperform the rest and therefore we recommend either DivX or XviD. There is a comprehensive list of features that will help you pick the one you like best.

## *DivX*

DivX 4 has been around for quite a few months and DivXNetworks recently released version 5 of their MPEG-4 based codec.

DivX 5 was split into three:

- DivX 5
- DivX 5 Pro Ad ware supported
- DivX 5 Pro Lisenced

As you can see there are two different versions. DivX and DivX Pro. To avoid confusion I will be referring to the former as DivX Lite.

DivX Lite has small improvements, bug fixes and speed ups from the previous version of DivX 4.12 whereas DivX Pro includes a set of advanced MPEG-4 Tools and is rated as "professional grade" software by DivXNetworks.

The decoder of the DivX 5 codec that comes with the Lite and Pro versions, is completely identical in features. The DivX 4 decoder cannot always playback 4.xx content obviously.

The Pro version of the codec is ad supported. This means that the package includes the Gator program that will pop-up windows with advertisements while you surf the net. The Lite version does not include any adware programs.

## *XviD*

XviD is lisenced under GPL and therefore open source. It is based on OpenDivX but does not have many similarities nowadays.

## *Which one?*

A comprehensive list of differences between DivX 4/DivX 5 Lite, Pro and XviD follows (the table covers the encoders).

<i>Feature</i>	<i>DivX 4.12</i>	<i>DivX 5 Lite</i>	<i>DivX 5 Pro</i>	<i>XviD</i>
I (Key/Intra) and P (Delta) Frames	✓	✓	✓	✓
B (Bidirectional) Frames	✗	✗	✓	✗
Quality based encoding	✓	✓	✓	✓
One-Pass VBR	✓	✓	✓	✓
Two-pass encoding	✓	✓	✓	✓
Quarter Pixel	✗	✗	✓	✗
Global Motion compensation (GMC)	✗	✗	✓	✗
Psychovisual modeling	✗	✓	✓	✓
Intergrated preprocessing	✗	✗	✓	✗
Integrated IVTC	✗	✗	✓	✗
Integrated Deinterlacing	✗	✗	✓	✗
Integrated resizing	✗	✗	✓	✗
Integrated cropping	✗	✗	✓	✗
AVI to MPEG-4 File Format conversion	✗	✓	✓	✗
MP4 File Format Output	✗	✗	✓	✗
Resolution	Up to 1280x1024 at multiples of 4	Up to 1920x1088 at multiples of 4	Up to 1920x1088 at multiples of 4	Unknown
Minimum Bitrate	20kbps	20kbps	20kbps	Unknown
Maximum Bitrate	6Mbps	10Mbps	10Mbps	10Mbps
Adjustable Min/Max quantizers	I P	I P	I/P/B	distinct I P
Quantizer tables definition	✗	✗	✗	✓
Curve compression/Alternative Curve	✗	✗	✗	✓
Credits custom compression	✗	✗	✗	✓
Lisence	Free for private use	Free for private use	Ad-supported or US\$30	GPL

**Note:** The list is not complete. I only compiled the main features of the codecs.

### ***Brief Intoduction***

Nowadays, DVD-ROMs are considered an essential piece of hardware. However, most people do not know what a DVD consists of. So let's briefly describe that.

As you may be aware, video is a very demanding type of multimedia content in terms of storage. Consider a simple image of 352x288 pixels. We need 3bytes for each pixel. Doing the sum we have  $352 \times 288 \times 3 = 297$ kbytes. Furthermore video consists of several frames per second. For example a PAL video plays back 25 frames per second (fps). A bit of maths again and we have 7.25Mbytes for just one second of video! As you can see this makes video very hard to store and requires expensive storage media.

Fortunately, advances in digital video technology and storage have made it possible to use digital video into a number of applications. In 1988, the Moving Pictures Expert Group (MPEG) was established by ISO to develop standards for the coded representation of moving pictures – video – and the associated audio. Thus MPEG–1 was created in 1991 which allowed digital storage of video at up to 1.5Mbits/sec. Further development led to MPEG–2 which allows higher bitrates and great input–format flexibility. This new video codec resulted in the Digital Versatile Disc known as DVD. So when you playback your favourite movie you are actually looking in a MPEG–2 compliant stream of video.

Later on, MPEG–4 has come to rival both previous implementations. It can feature very high (HDTV) resolutions just like MPEG–2 but at much lower bitrates with decent quality. The standards have been finalized in 1998 and the first implementation of MPEG–4 video came from Microsoft. The latter was hacked from a group of people to result in DivX 3.11 alpha. However this hack was illegal and development stopped a year ago. Since then there have been many news on the scene. In fact, OpenDivX appeared as an open–source MPEG–4 implementation. The attempt was not successful and the project was aborted and continued in a closed–source environment from the DivXNetworks. There have been more implementations of MPEG–4 video such as the [On2](#) VP3/VP4 and [XviD](#). Microsoft has integrated their implementation in their movie maker and it is known as Windows Media Video.

As of the audio, MPEG–2 supports up to five high–fidelity audio channels plus a low frequency enhancement channel. These six channels are known as Dolby Digital 5.1. The AC–3 coding standard is being used to compress the stream from 5Mbits/s down to 384kbit/s (13:1 compression).

Most of us have been using the MP3 codec (MPEG–1 Layer III) to distribute our music for quite a long time. However other codecs have been implemented in the mean time such as AAC, MPC and Ogg Vorbis. The latter has quite impressive results when used at lower bitrates and compared to MP3 and since it is yet another free codec (in fact open–source) I recommend its use.

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#### ***Disclaimer:***

***This guide will take you through the process of backing–up your own DVDs and it was not written to be used for piracy. The author assumes that you own the DVD and that you will be using the copy for your own personal use. It is illegal to give away copies of movies with copyrighted material. All software products used in this guide are freely distributed by their respective authors. This site does not host or provide links to illegal software or copies of copyrighted material. The author of this guide does not take any responsibility of illegal use of the guide e.g. for piracy.***

***I do not endorse piracy by any means and the responsibility of misuse of this guide is completely held to the reader.***

***Therefore if you are going to use these methods for piracy, I urge you to leave the site immediately or you will run into trouble. Note that several lawsuits were launched up to date, connected to DVDs. However if you are on the other side of users that legally copy their own DVDs for their own use you may continue reading the guide without any doubt.***

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#### ***Software***

We will need the following software for this guide. All of this can be found in the [Downloads section](#) of everwicked.com.

- DivX 4.12/5 Lite/5 Pro or XviD.

- Standalone Version of Gordian Knot 0.23

We don't need everything coming in the rippack and it is quite outdated so we are going to install our software in a custom way. Double click on the executable and just click next until the install is finished.

- HeadAC3he (download and unzip to a directory)

- ◆ Vorbis.dll (for Vorbis output)
- ◆ LAME.dll (for MP3 output)
- ◆ Azid.dll
- ◆ SSRC.dll if you need to downsample the audio to 44.1KHz.

Put the above libraries in HeadAC3he's directory. Download the version that best suits you.

- DVD2AVI 1.76

Extract DVD2AVI to Gordian Knot's root directory: C:\Program Files\GordianKnot.

Note: Later versions of DVD2AVI may cause problems.

- mpeg2dec.dll

Put this in C:\Program Files\GordianKnot\

- Avisynth 1.05

To install copy avisynth.dll to your C:\Windows\System32 directory and then double click on install.reg

- Smartripper 2.40

Extract Smartripper to Gordian Knot's root directory: C:\Program Files\GordianKnot. Later versions are not stable.

- Virtualdub 1.4.9

Extract Virtualdub to the directory: C:\Program Files\GordianKnot\Virtualdub

- Nandub (AVI only)

- OggMux (Ogg only)

- OggCut (Ogg 2CD only)

- Ogg DirectShow Filter (Ogg only)

- Ogg Subtitle Directshow Filter (Ogg only)

- Subrip (only for subtitles in Ogg)

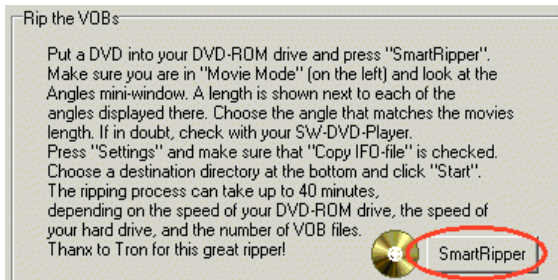
- VobSub (only for subtitles in AVI)

The first few steps are common for all versions of DivX. In fact the only difference is the configuration of the codec.

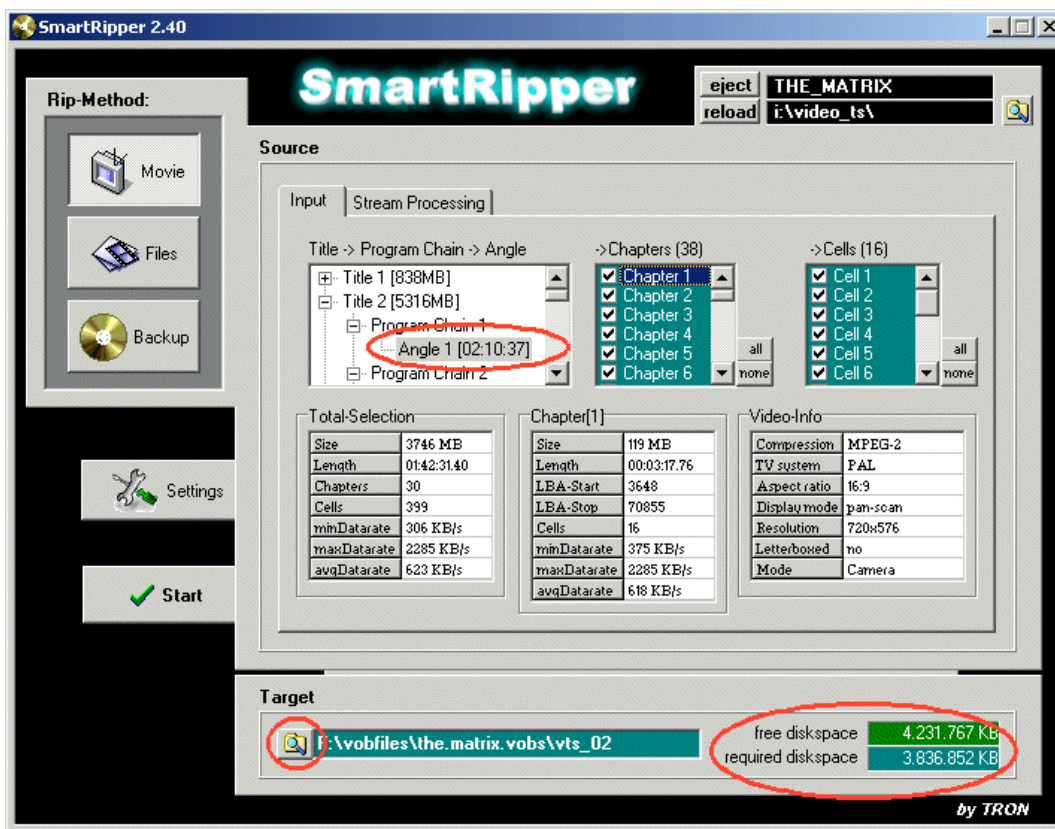
## 2 DVD Decryption

As you probably are aware, DVD disks come with CSS encryption. To allow the conversion, we need to decrypt the DVD and copy it to the hard disk.

Launch Gordian Knot from your Start Menu. Your default tab should be the "Ripping" one. There, click on the Smartripper button.



Note that all-in-one solutions that claim to read directly from your DVD, MAY damage your DVD drive and it is not recommended at all.



Once Smartripper is finished detecting your DVD, you should have a window like the one displayed above. Smartripper automatically selects the Angle/Title with the longest delay which is most likely the movie. If you are not sure, you can either check the duration with your Software DVD player or the title number.

Tip: Some DVDs contain music videos. If you would like to encode them so that you can keep them on your hard disk and watch them in a playlist sequence with your favourite player, then this is the way to go. Select the Title that contains

the music video and keep reading.

Smartripper will display the needed and available disk space on the very right corner. If you don't have enough space you will see a red indication. Select the target directory on the left by hitting on the explorer button and hit Start. You don't need to change any settings. The defaults are what you will need for the most of your encoding life.

Note: For multi-angle DVDs like the Matrix, select one of the angles. DO NOT rip the DVD in files because you will get all the angles mixed up. If you want to rip the whole DVD, then just rip one title at a time in different directories.

Tip: If you have Windows 2000 or later, use NTFS in your hard disks for a performance gain.

If Smartripper says that it can't find the ASPI layer, then you need to install the ASPI Layer on your system available in the [downloads](#) section.

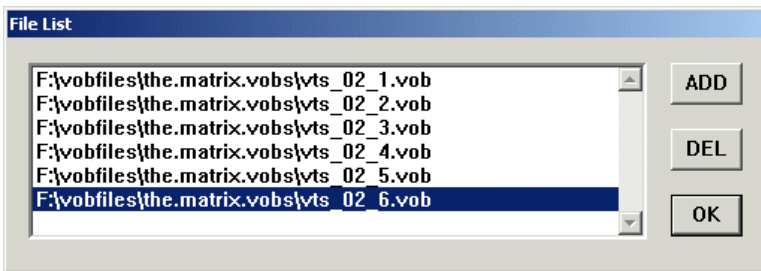
### 3 DVD2AVI

DVD2AVI has the facilities to decode the MPEG-2 stream and lets us use it for further processing through "frameserving". Although its name implies the capability of direct conversion to AVI, it does not perform that well.

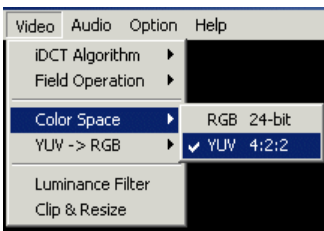


Go back to Gordian assuming that you did not close it in the first place. On the right side of the "Ripping" tab, there should be a DVD2AVI button.

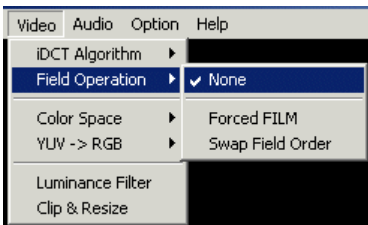
Once DVD2AVI comes up, press F3. It will launch the open dialog. Now browse to the directory that you ripped the DVD. The movie is usually split up to several 1GB files so you will see a few files, each one of them having the VTS prefix. Select the very first of them e.g. VTS\_02\_1.vob and press OK.



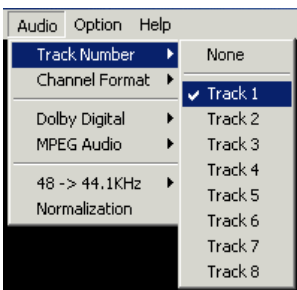
DVD2AVI will automatically select the complete sequence of VOB files. Press OK again to accept the selection.



Select YUV as the color space.



Make sure that Field Operation is set to None when you start.



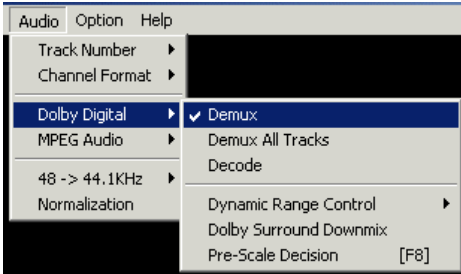
Select the Audio Track. Track 01 is usually the first language of the DVD.

If you are unsure, browse the directory that you saved the vobfiles. There should be a vts\_01\_INFO.txt that Smartripper generated. Open it in Notepad or any other text editor and scroll down to Stream Info. You will see a list of the available audio tracks. In this DVD the audio stream info will be similar to this:

Stream[002] X=[[0x80] Audio English AC3(6Ch) 48kHz ] [] [] [] []  
 Stream[003] X=[[0x81] Audio English AC3(2Ch) 48kHz ] [] [] [] []

Now, what this means. 0x80 is Track 01, 0x81 is Track 02 and so on. You can also see the language which is English in this case. Thus, if for example you would like to select German, and there was a line:

Stream[007] X=[[0x85] Audio German AC3(6Ch) 48kHz ] [] [] [] []  
 then you should select audio Track 6.

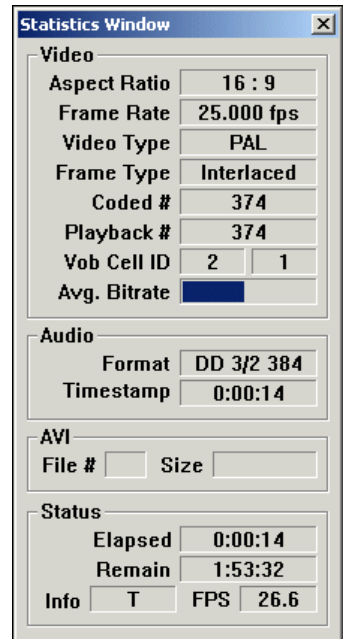


Click on Demux. If you experience trouble, then choose Demux All. Most of the times Demux works but some DVDs are nasty so have that in mind if you can't find your AC3.

Press F5. On the right, a preview window will appear. You will see some statistics on the movie. Let the movie play for a few minutes and look closely to the statistics.

#### Video Type: PAL

- If your Video Type is PAL and your Frame type Progressive then it is the ideal case and you do not need to take any extra steps.
- For Interlaced frame type, let the movie play for a while. If you notice any Interlacing Artifacts like [this picture](#), then the movie is really Interlaced and you will need to perform Deinterlacing later on this guide so make a note. If the frame type is Interlaced but you cannot see any Artifacts, then ignore it and do not perform deinterlace. The explanation of this is that DVD2AVI only reads the information from the file's tags and does not detect the frame type.



#### Video type: NTSC/FILM

- If DVD2AVI displays FILM 95% or more (plain FILM is FILM 100%) as video type and the frame type is Progressive then check Force FILM from the Field operation Video options as shown below.
- In case you have a FILM Interlaced source, scroll the bar to see if there are interlacing artifacts. If there are not any, then Force FILM. If you can see the nasty interlacing effects, then note that you will need to deinterlace or perform IVTC later on.
- When your movie is NTSC/Progressive, then check Force FILM. If it is Interlaced, scroll through the movie to see if Interlacing Artifacts appear and act same as above.

When you have finished with deciding what's your movie, make a note of the movie's Aspect Ratio, press ESC to stop the Preview and press F4 to save the project. Select a location that is somehow connected to your vobs so that you can find all files later on.

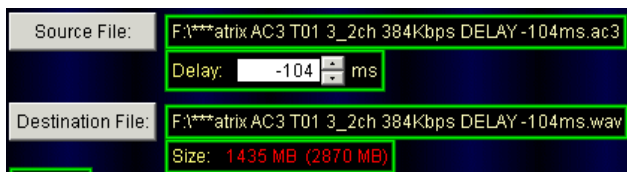
Once DVD2AVI is finished demuxing your AC3 audio from the vobfiles, close it down.

# 4 Audio transcoding

Now we need to transcode the AC3 audio to our preferred audio codec. The best two choices are MP3 and Vorbis. Let me present you the main advantages and disadvantages of both codecs. You might also prefer to keep the original AC3 track in which case, you don't need to read this step, but rather go on to the next step.

	Vorbis	MP3
Advantages	<ul style="list-style-type: none"> <li>• It is free, open–source and completely legal to encode with distributed binaries.</li> <li>• Gives better quality at lower bitrates than Mp3. Many people find that audio encoded with Vorbis at 64kbps sounds equivalent to MP3 audio at 128kbps.</li> <li>• True variable bitrate audio support</li> <li>• Support of up to 255 streams making 5.1</li> <li>• Channel coupling: Lower space usage with multiple streams without quality loss (possible only with 2 channel output)</li> </ul>	<ul style="list-style-type: none"> <li>• It has been around for a few years and we all know it.</li> <li>• For the same reason, it has been tuned to the extreme.</li> </ul>
Disadvantages	<ul style="list-style-type: none"> <li>• Still under development. Release Candidate 3 is out at the time being. Backwards compatibility is the developers' aim though.</li> <li>• Cannot be integrated in AVI because it is true Variable Bitrate Audio and AVI does not support that.</li> </ul>	<ul style="list-style-type: none"> <li>• Limited to two channels.</li> <li>• Old technology with many limitations, not many more optimizations possible.</li> </ul>

No matter what you prefer, launch HeadAC3he.



Select your source file. It is located in the directory that you saved the DVD2AVI project and its name is something like this: matrix AC3 T01 3\_2ch 384Kbps DELAY –104ms.ac3 For those of you used to delay compensation, you don't need it anymore, HeadAC3he has builtin support. In this case, I did not have enough space to do the conversion so HeadAC3he warned me by making the MB indication red.



HeadAC3he will automatically display the AC3 information.



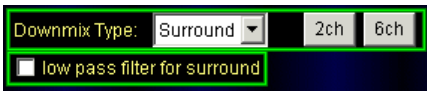
Select your destination format. I prefer Vorbis but you can also select MP3. Make sure you have 2–pass ticked.

HeadAC3he offers two transcoding methods, namely: dumb and float. Dumb mode will give you no intermediate files whereas float will store a temporary WAV file on your hard disk (you can see how much space the temp file needs above). Hence, if you have enough space, use float because it is faster assuming that you have a relatively fast Hard Disk. If you don't have enough space or you are encoding on your laptop where the performance is not that great, use Dumb mode.



If you have an old soundcard and you want to downsample to 44.1kHz, then use the tick the "Resample to:" box.

Press the Options button.



A new window will appear on the right. At the bottom, you will see the options displayed on the left of this page. If you are using Vorbis as your destination, you can pick up 6channel output. If you are using MP3 or you don't have a 5.1 hi-fi, pick up 2channels.

Press the Options button AGAIN. If you have selected Vorbis, you will be given the following settings to choose from.



VBR Mode is based on the quality setting. In that mode the codec will choose a different bitrate for each second depending on the sample. I use a value of 2 which averages at about 96kbps. If you are doing a 2CD rip, consider using a quality value of 4.99 (not 5).

If your movie is long, do not hesitate to go as low as Quality 0 (64kbps), the quality is very good! Do not change the channel coupling mode unless you know what you are doing.

If you have chosen Vorbis then you are ready to go, press Start and wait for HeadAC3he to finish.

If you select MP3 as your destination, you have the following options to choose from.

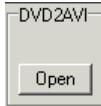


Select the Alt ABR preset and also pick up your bitrate. Values from 120 to 140 produce very good results.

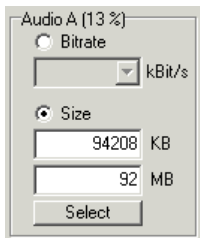
Yet again, press Start and wait for the transcoding to finish.

# 5 Cropping and resizing

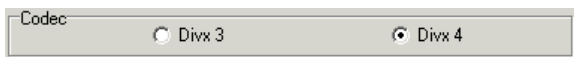
Switch to Gordian Knot. Have in mind that Gordian Knot is just an advanced calculator that saves you a lot of calculations.



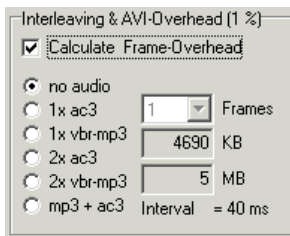
Press on the Bitrate tab and click the Open button on the bottom left corner of Gordian Knot. Then, browse and select the .d2v project we create with DVD2AVI. A window with a picture from the movie will appear. Do not close it!



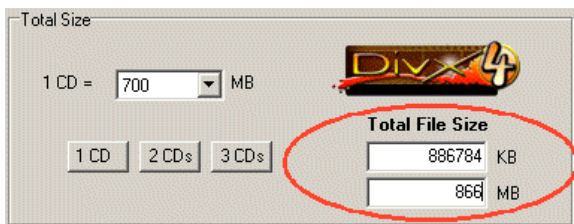
Click on the Select button and select your audio file. The format does not matter and thus .ogg or .mp3 will not make a difference.



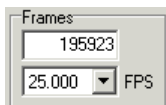
Select DivX 4 as your codec. Gordian Knot is quite outdated so even if you use DivX 5 the selection is the same. The algorithm to calculate the bitrate is the same.



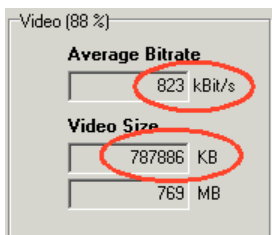
In the overhead settings, select "No audio" if you are using Vorbis as audio or else "1x vbr-mp3" for ABR/VBR MP3 encodes. Additionally, for those of you keeping the original AC3 track, check the "1x AC3" checkbox.



Last but not least, select the numbers of CDs you are aiming for. You can select one of Gordian Knot's predefined CD sizes or define your own on the right. For example, i always use 99min CDs with my Lite-On 24x burner. You can find information on the overburning abilities of your burner [here](#). I recommend 2CD rips only if you are keeping the original AC3 track or the movie is longer than 140minutes.



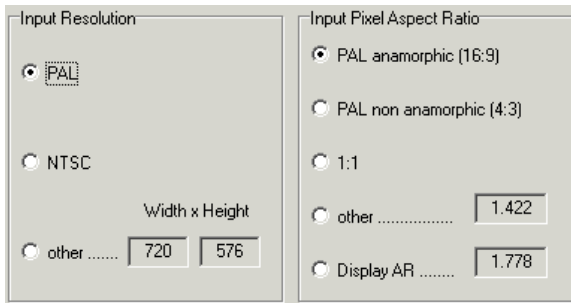
Before we move on, check that Gordian Knot reports the correct frame rate. It should be 25 for PAL, 23.976 if you Forced FILM in DVD2AVI and 29.970 for NTSC/FILM.



Write down the Average Bitrate, if you are using DivX 4/5 or the Video Size in KB for XviD.

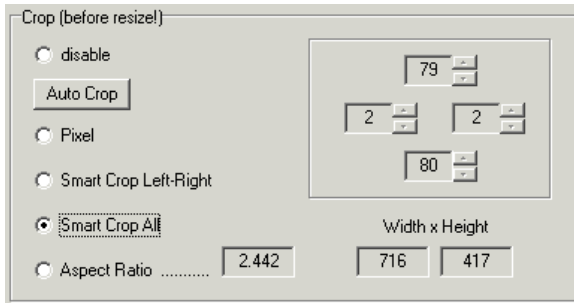
## 6 Cropping and resizing: Part 2

Switch to the Resolution tab of Gordian Knot.



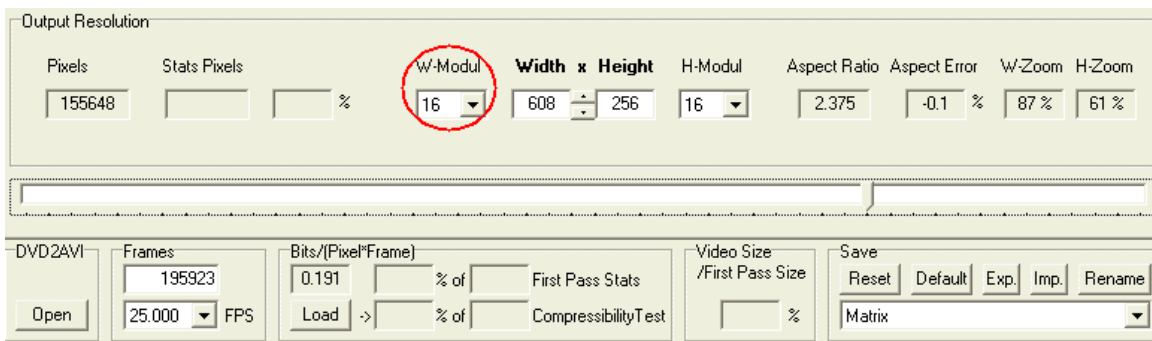
Make sure that Gordian Knot detected the correct information on the movie. In this example, the movie is PAL 16:9. We extracted this info from DVD2AVI.

Go to the Options tab. Uncheck the Follow ITU-R BT.601 Standard option.



Click on Auto Crop. Gordian Knot will attempt to remove the black bars from the movie automatically so that we don't waste bits. It can fail to be accurate sometimes so click on the movie window and see if the black bars have vanished. If they haven't, trigger the arrows in the cross style until the bars have vanished.

Next, press on Smart crop all.



Select 16 as the W and H Modul. This will make sure that you resolution is a multiple of 16. It will also give you a variety of resolutions. Slide the bar from the right to the left until you reach a Bits/Pixel\*Frame value close to 0.190.

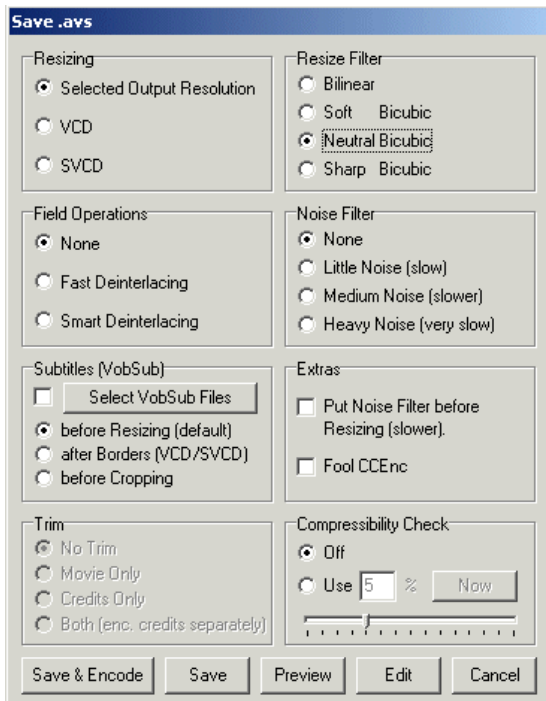
**Important: Do not go lower than 0.175 in any case. Always check that any of the W-Zoom, H-Zoom values do not exceed 100%. Also make sure that the Aspect Ratio error is 0.0%.**

Generally, the Bits/(Pixel\*Frame) indicator shows how many pixels will be used to encode each frame. The more the better. Each time you lower the resolution the Bits/(Pixel\*Frame) grows. However if you use too many bits for each frame, you sacrifice resolution i.e. when you playback the movie and it gets resized you will have a blocky picture. Therefore, there should be a balance between your encoding resolution and the Bits/(Pixel\*Frame).

## 7 Completing the process

Click on the window that displays the movie and press on the "Save and Encode" button on the bottom left corner.

The following window will pop up.



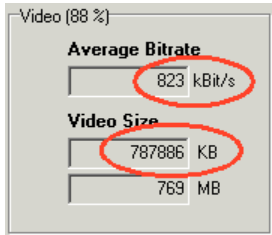
If your Average bitrate was somewhere near 900kbps use Neutral Bicubic as your resizing filter. For higher bitrates such as 1000kbps you can use Sharp Bicubic if you like sharp images. For extreme cases, where you have to use very low bitrates, use Soft Bicubic. In all cases it is also a matter of preference.

The only reason to choose a sharper filter as you raise the bitrate is that the Sharper filters will stress the codec more and hence need more bitrate to look good.

If your source was Interlaced then check the Smart Deinterlacing feature. If your source is NTSC/FILM and appeared to have Interlace Artifacts in the DVD2AVI step then you can just perform Deinterlace or IVTC (It will be an extra option if your frame rate is 29.970) but results are not guaranteed.

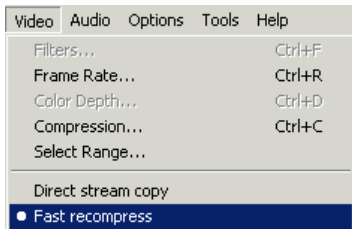
Press save and select a location for the avs script. We are now ready to encode.

# 8 Encoding with XviD



Go back to Gordian Knot and check the video size (in KB) noted below the average bitrate.

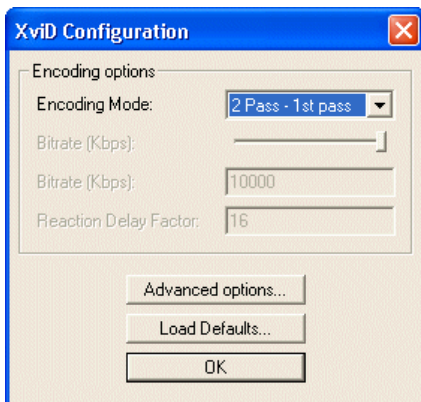
Now launch Virtualdub. Press Ctrl+O and select the .avs file.



Select Fast Recompress under the Video menu.

The difference between Fast recompress and Full processing mode is that in the Fast recompress mode, the video is not converted to RGB from YUV where as in full processing mode the video is converted from YUV to RGB and back to YUV after the filters are applied.

Next press Ctrl+C, select the XviD MPEG-4 codec and click Configure.

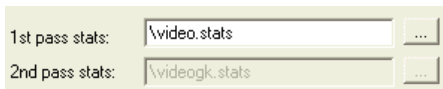
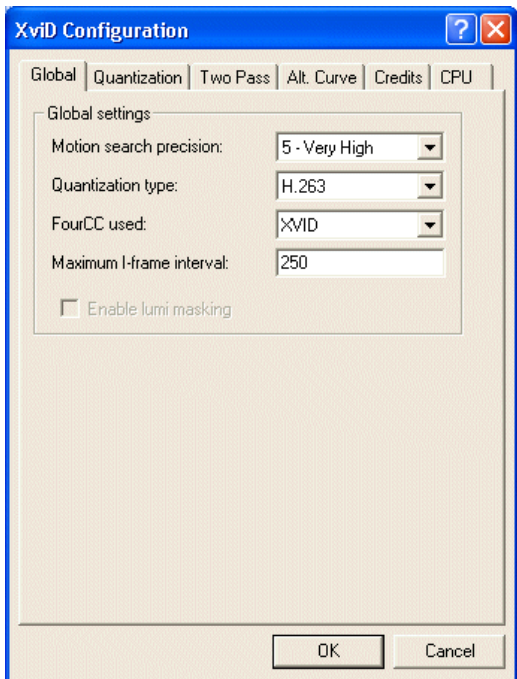


Pick up 2 pass – 1st pass and click on Advanced options.

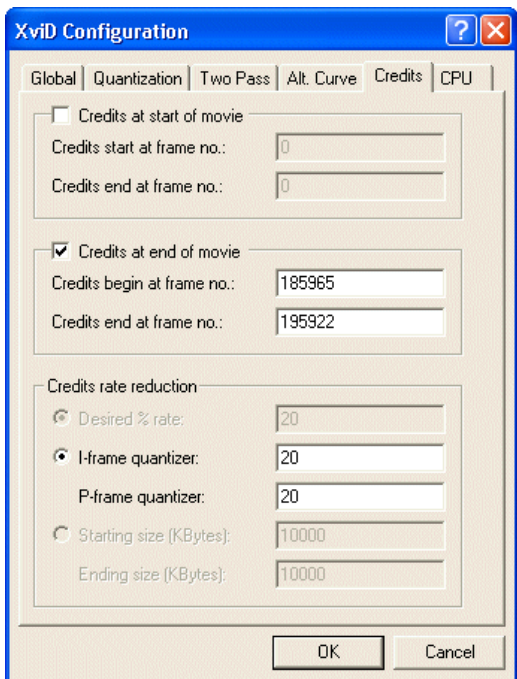
Quantization type should be H.263 for low bitrate rips and MPEG for high bitrates.

Use a Maximum I-frame interval of 250 for PAL, 240 if you forced FILM or 300 for NTSC/FILM.

Encoding freaks would use Motion search precision of 6 – Ultra high. Normal people should stick with the default of 5 – Very high.



Jump to the Two pass tab and select the directory where the statistics file will be saved. It defaults to the current working directory.

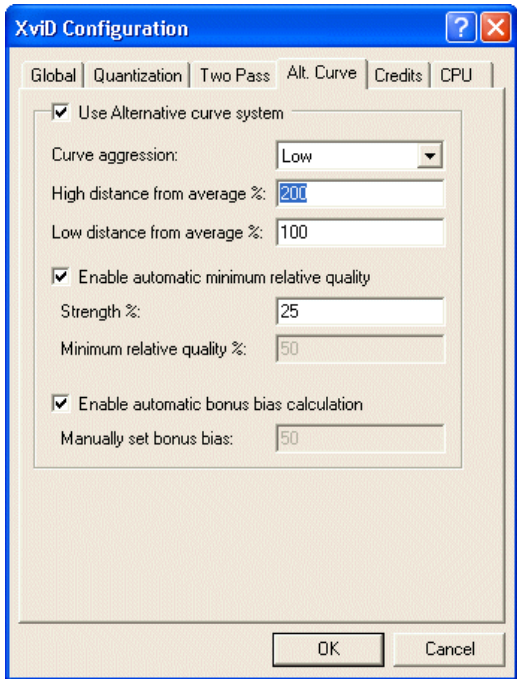


Click on the Credits tab. Tick the Credits at the end of the movie box. You now have to go back to Gordian Knot and determine the frame number where the credits start from the preview window. In this example the credits started at frame number 185965. At the "Credits end at frame no:" box you should enter the total frames of the movie.

Also tick the I,P-frame quantizer box. Quantizers 16+ should compress very well, adjust appropriately

### *Alternate Curve*

This is the most interesting part of XviD. It is optional but it will enhance quality if you use it properly. This is something like DivX4log for DivX 4.12 and SBC for DivX 3.11 but it is built in the codec so it is more accurate.



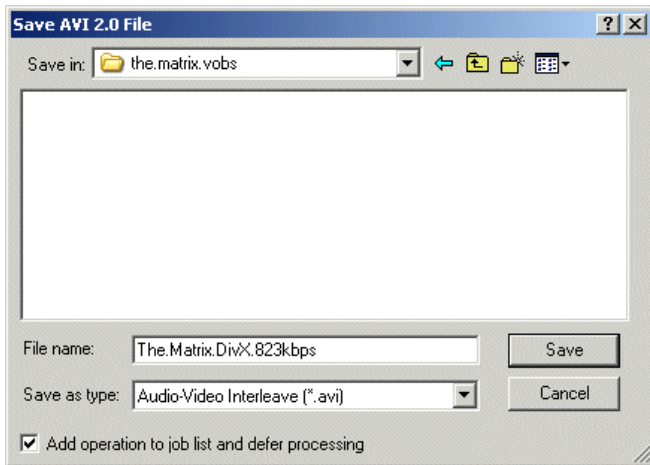
I will not go into details on how this works because it is quite complicated and it's out of the scope of this guide. However I will present you the rules that work out best so that you use it wisely.

### Rules

- Use a value between 20–40% for strength. 25% works OK.
- For movies with small change in motion (doesn't matter if it is high or low motion overall), select High Curve Aggression.
- For really dynamic movies, use Low Curve Aggression.
- For middle cases, use Medium.
- Use a value for "Low distance from average %" lower than 100%. 100% works quite well. Lowering this, will improve the low bitrate frames which usually are the static ones.
- For the "High distance from average %", use a value according to your content. For expensive frames, increasing this will improve quality.

Use these rules with care and do not abuse them. The choice of Low/100% Low/200% High works quite nice for most movies. However to achieve optimal quality, adjust properly. Additional testing will always help ofcourse, feel free to share your experiances with us. If you are lost by now, just disable this feature.

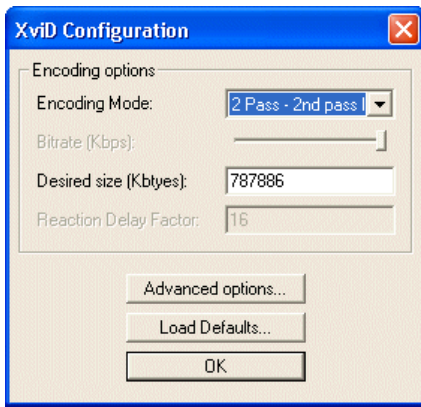
Press OK twice. Now, press F7, the following dialog will show up.



Make sure you tick the "Add operation to list and defer processing" option. Press Save.

Press Ctrl+C and using the same sequence (Configure) enter the codec settings again. Change the Encoding mode to "2 pass – 2nd pass Int.". Put the Desired size in KBytes from Gordian Knot and press OK to return. The only setting you may want to change is the Min and Max I-frame quantizers in the Quantization tab. I always set both to 2.

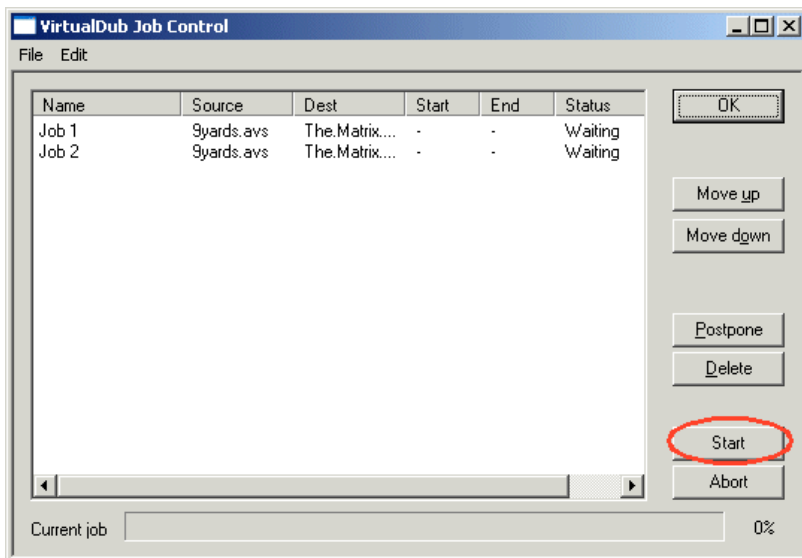
You may also want to change the quantization type to Modulated during the second pass. With this option, the codec will use both H.263 and MPEG



quantization depending on each frame. It is meant to produce better quality.

Press F7 again and save the AVI with the same filename as before. Once again, check the "Add operation to list and defer processing option" and press Save.

Now press F4. The next dialog should look like this:



If the screenshot is similar to what you see then you have done everything correctly. Else you should try again but read more carefully this time.

Press the Start button to start the encoding, go have a nap and come back for the Audio/Video muxing.

# 9 Audio/Video Muxing

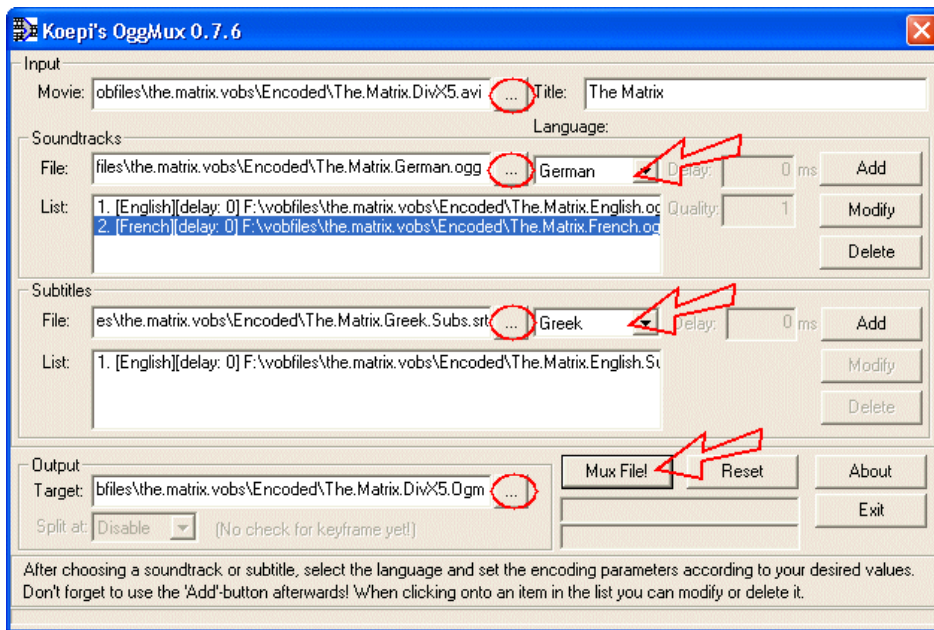
This step will completely depend on your audio choice. If you have chosen Vorbis for your audio then you will have to use the Ogg Container to put your Video and Audio. If you would like to use subtitles, please read the next step in addition before you proceed.

If you have kept the original AC3 track or encoded to MP3, then you can use either AVI or Ogg. However, the Ogg container has less sync issues whereas VBR MP3 is known not to work really well with AVI.

Let me start with the Vorbis users since they are becoming more more every single day.

## Vorbis

Launch Oggmux. It is really easy to use and therefore I will just include the final image.



Fill in the fields top to bottom. First of all select your Movie (click on the browse button) and type the Title on the right.

Then, for each Audio Track and Subtitle language that you ripped (the next step describes how), you need to select the file and also specify the language in the dropdown menu next to the browse button. Remember to press the Add button each time.

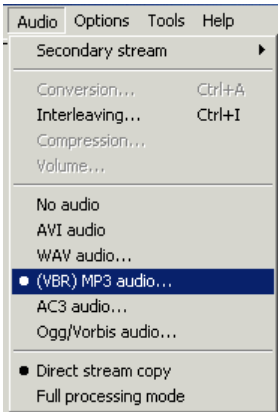
Next, select your Target and press the Mux file button to do the muxing.

## MP3/AC3 with Ogg

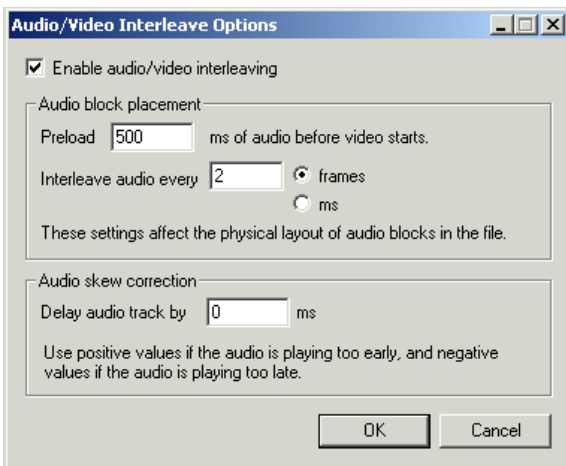
The same process with above applies. The only difference is that instead of Ogg Audio streams you should select your MP3/AC3 files.

## MP3 with AVI

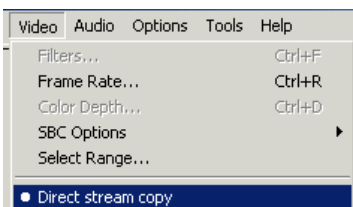
Launch Nandub. Press Ctrl+O and select your DivX AVI file.



Click on Audio -> (VBR) MP3 Audio. Browse and select your MP3 file. Press OK.



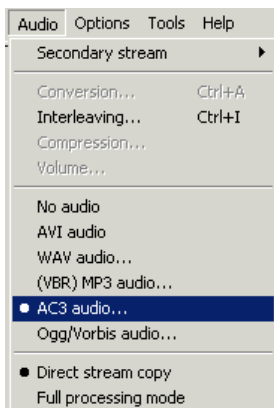
Press Ctrl+I. A window with the Interleaving options of Nandub will pop-up. Change the "Interleave audio every x frames" option to 2 and click OK.

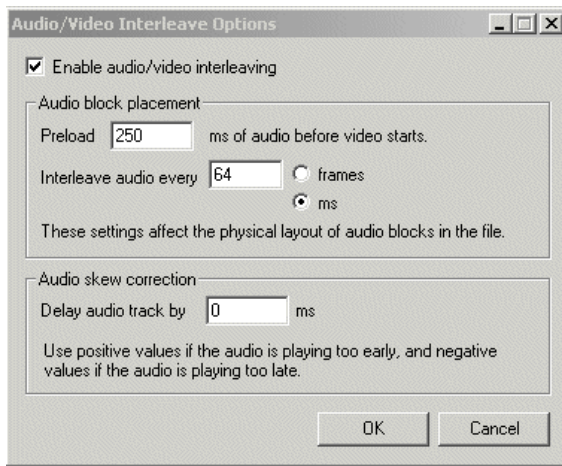


Last but not least, click on Video -> Direct Stream copy. The next step is to press F7 and select location for your muxed AVI.

## AC3 with AVI

This is pretty much the same process with MP3/AVI. Pickup AC3 Audio in Nandub instead of MP3.





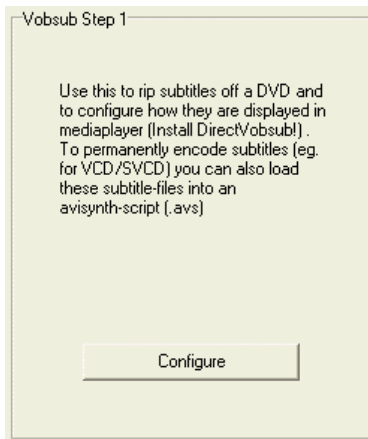
In that case you need to change your Interleave settings also. The most common setting is 250ms of Preload and Interleave by 64ms. However this varies from soundcards to soundcards. If this doesn't work out for you (choppy playback/out of sync) please consult the AC3/SPDIF FAQ. Finally, press F7 and save your muxed AVI.

# 10 Subtitles/Multilingual Oggs

This step will show you how to include subtitles in your Videos.

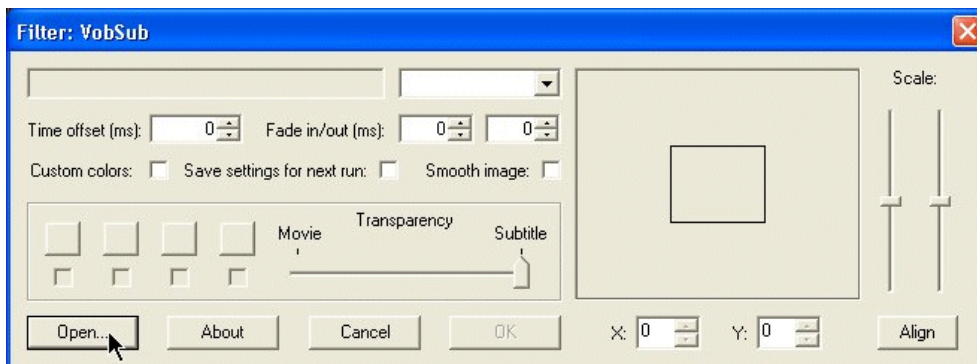
Yet again, you need to use different types of subtitles depending on the Container you chose previously. For AVI you will need to use VobSub where as for Ogg you need to use Subrip. You can find both in the Downloads section.

## AVI – VobSub

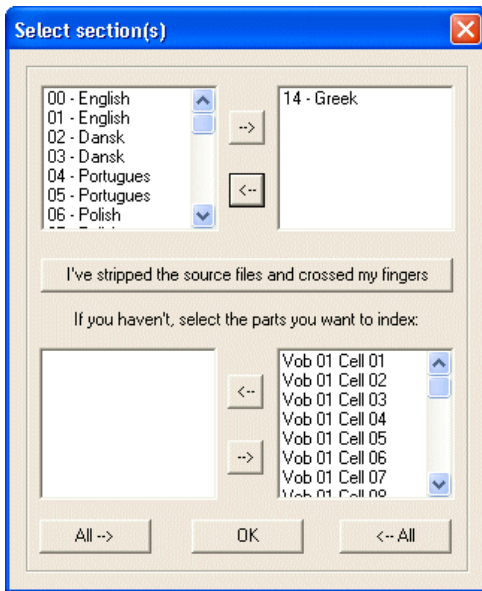


Go back to Gordian Knot. Click on the Subtitles tab and press configure.

The following window will appear:



Press on Open. Go to the directory that you have ripped the DVD and select the .ifo file. VobSub will then ask you for a directory to store the subtitles.



Select all languages that you do NOT want to have on the right menu and press "<--". Finally you should have only the ones you want. In my case, Greek. Press OK.

Vobsub will do its tricks and dump three files. One .idx and one .sub.

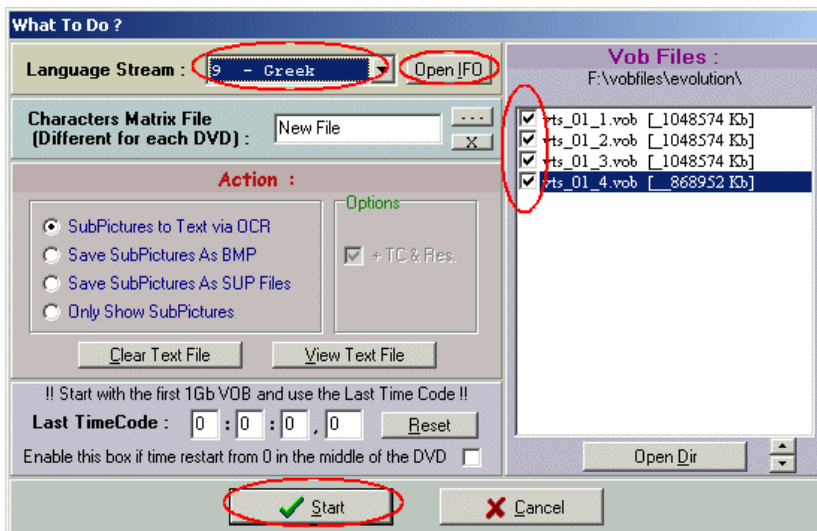
For those of you that want to include all languages to make your backup closer to the DVD, you can use WinRAR to compress these three files.

When burning the CD, include these files in the same directory with your AVI file and name them the same with the AVI. e.g. video.avi video.idx video.sub. When you watch the movie with any DirectShow player such as PowerDivX or Windows Media Player, VobSub will automatically display the subtitles.

## Ogg

The Ogg container allows you to mux your subtitles in the same file. However you need to make the subtitles with Subrip which uses OCR to make them and needs a bit of an effort but nothing complicated.

Launch Subrip and click on File -> Open Vob(s).



On the window that appears, click on Open IFO and select the .ifo file in the dir you ripped the VOBs. Select your preferred language on the left and also check all .vobs on the right.

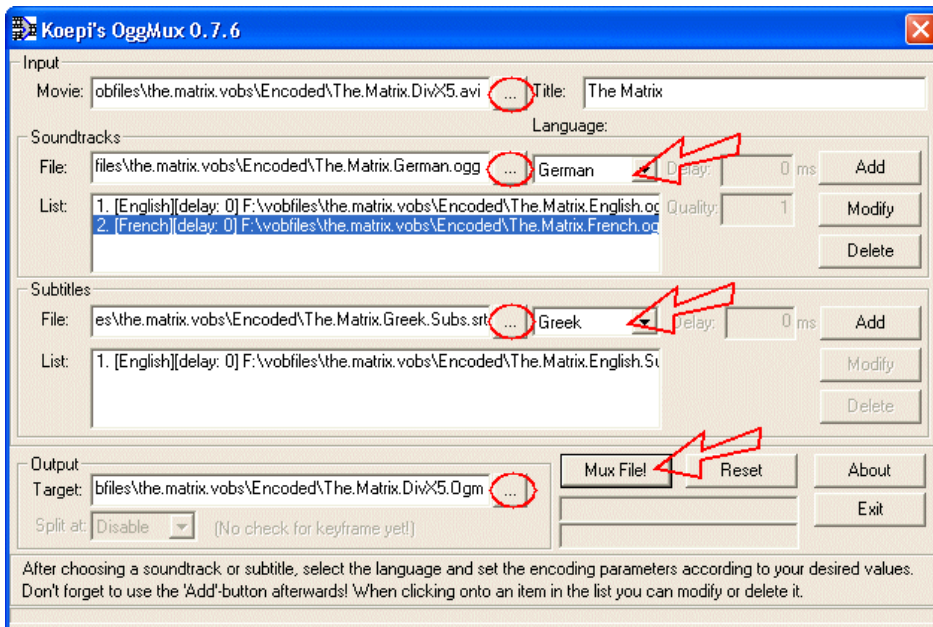
Finally press Start. Subrip might ask you to type some characters since it uses OCR.



When done, press on the Save As button and close Subrip.

If you like more than one subtitle languages, repeat this with a different language setup every time.

To mux the subtitles in your Ogg, simply follow the process described in the previous step with OggMux:



Fill in the fields top to bottom. First of all select your Movie (click on the browse button) and type the Title on the right.

Then, for each Audio Track and Subtitle language that you ripped (the next step describes how), you need to select the file and also specify the language in the dropdown menu next to the browse button. Remember to press the Add button each time.

Next, select your Target and press the Mux file button to do the muxing.

You can pickup the Subtitles in Windows Media Player 6.4 under the Play -> Language menu

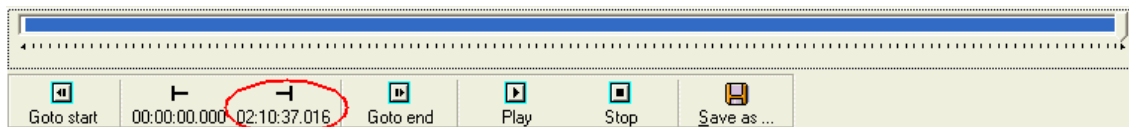
# 11 Splitting the video

If you are reading this, it means that you want to have the rip in two CDs. If that's not the case, return [home](#).

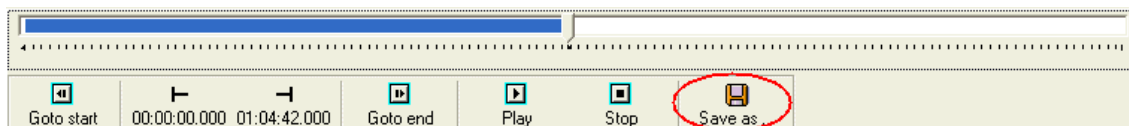
## Ogg Container

Open OggCut. Click on File → Open and select your .ogm file from the previous step.

The program will look like this:

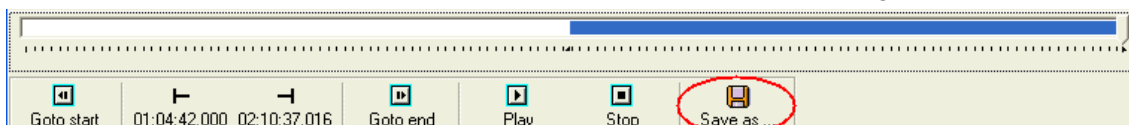


OggCut will display the duration of the movie. It doesn't support size prediction yet and therefore you will have to play with chances to get two equal parts. Drag the slider until you can see a timestamp that corresponds to the end of the first half of the movie. For example this movie is 2 hours and 10 minutes long and I set the slider to 1 hour and 4 minutes.



Click on Save As and select the filename for the First part.

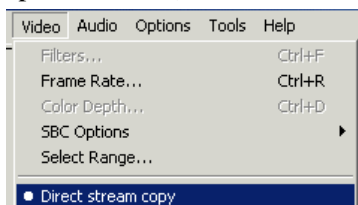
Then click on the "Goto End" button and then on the End button. Save as again and save the second part.



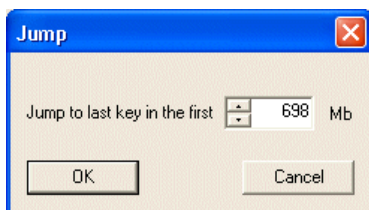
If you have included subtitles, OggCut will cut them as well.

## AVI Container

Open Nandub (resides in C:\Program Files\GordianKnot\Nandub). Press Ctrl+O and load the movie.



Once again, set the Video to Direct stream copy. Next, press the Home button.



Press Ctrl, Shift and J at once. The window on the left will appear. Assuming that your aim was 2x80min CDs then put 698 MBs (700–2) in the Jump dialog.

Now press End and then F7 to save the first part.

Frame 1889 (0:01:15.560) [ ]

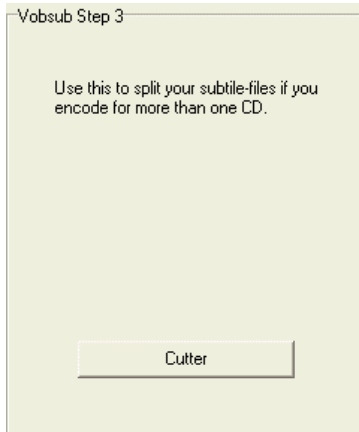
When Nandub is done, press Home again and make a note of the timestamp displayed at the bottom of Nandub. The format is hours:minutes:seconds (e.g. 0:01:15.560 is at the point with timestamp 1min:15sec.

Press Ctrl+Right arrow. Press End and F7 to save the second part.

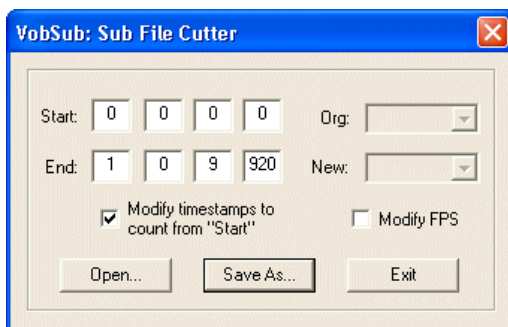
Then make two directories, one for each part and there place the autorun menu files and the AVI files.

Now let's split the subtitles. If you haven't included the subtitles in your rip, just burn the CDs.

Open Gordian Knot again.



Go to the Subtitles tab and there press the Cutter button on the right.



In the window that appears, make note of the numbers in the End field. Next, put the timestamp from Nandub in the End field and press Save as.

Save the file to the first part directory. Remember that the video file has to have the same name with the subtitles files!

Finally, put the timestamp from Nandub to the Start field and restore the End field as it was when you opened the subtitles cutter. Save as, in the second part directory.

Burn the CDs and enjoy!