Jaffa's Encoding Guide V2 – prepared for <u>www.thebox.bz</u>

TV Encoding

Once you've got equipment ready for capturing live digital TV, you'll be in a position to save all your recorded shows as files onto your hard drive. This guide will take you through the process of converting these files into XviD encoded .avi files ready for sharing.

Tools Required:

- A copy of VideoReDo Plus Not the best piece of software in the world, but it's frame accurate which makes it one of the best tools available for editing. Either buy a copy, recommended, or look somewhere like Demonoid.
- Gordian Knot This suite of tools will make the encoding process into a simple GUI making life a lot easier than typing a lot of commands at a prompt. Download GK from http://gordianknot.sourceforge.net/
- 3) XviD codec Download the latest stable release from: http://www.koepi.org/ xvid.shtml

There are many other tools and software available for the process. Some are better than others. Some are more accurate than others. Some will work on a Mac, many don't. Some will work under Linux, many won't. I recommend these tools for Windows users only.

You may have come across similar tools that you prefer, if so..use them. But if you want accurate encoding, don't use tools like Auto-GK – which were designed for people who don't know what they are doing. This guide is designed to avoid compromise like that.

Configuring your software

When installing and running VideoReDo for the first time it will take you through a series of prompts. Answer them appropriately for the file formats you wish to use. When prompted, tell VideoReDo you want to use it in 'Scene' mode.

Gordian Knot should be configured slightly on a per torrent basis, but there are some defaults you should ensure are selected. I'll take you through all the areas that need configuring below.

The XviD codec has lots of options to configure. Once installed, look for the XviD group on your Windows start menu and choose the 'Configure Encoder' option. You will then see a dialog like the one below.

Main Setting	s	-			
Profile @ Le	vel:	Advanced 9	Simple @ L	5 - mo	re
Encoding typ	be:	Twopass - 2	2nd pass	▼ mc	ore
Target size	(kbytes):	157371		ca	lc
×					×
					-
Zones					
Frame #	Weight	/Quant Mor	re-		
122.12		20 C C C C C C C C C C C C C C C C C C C	difiers		
0	W 1.00	20 C C C C C C C C C C C C C C C C C C C			
0		20 C C C C C C C C C C C C C C C C C C C	ainers		
0		20 C C C C C C C C C C C C C C C C C C C	aners		
	W 1.00	0			870
0 Add		0		Zone Optio	ns
	W 1.00	0		Zone Option	ns

At this point, it's easier for me to just to screen dump my settings for you to copy. I will explain some of them as I go along though. Note: Ignore the target sizes, as these will change each time you do an encode.

Profile @ Level: Ensure it's set to Advanced Simple @ L5 and then click "more..."

XviD Configuration	
Profile Level Aspect Ratio	
Profile @ Level: Advan	ced Simple @ L5 📃
Quantization type:	H.263
Adaptive Quantization	
🔲 Interlaced Encoding 🛛	Top field first
🔽 Quarter Pixel	
🔲 Global Motion Compensat	ion
B-VOPs	
Max consecutive BVOPs:	1
Quantizer ratio:	1.50
Quantizer offset:	1.00
Packed bitstream	
	OK Cancel

Choose Quantization type of H.263. Other option can be higher quality, but are slower to encode and can be overkill. H.263 is just fine for our purpose.

Ensure all the other options are set as required. For example, if Quarter Pixel (often known a Q-Pel) is enabled, your encoded video won't play back on many standalone players. The B-VOP settings are also important. There's a lot of myths surrounding these settings, but the ones above are used by 'The Scene' and should be just fine for all viewers. 'Packed bitstream' also raises a few eyebrows as it's not incompatible with a few players. Other players depend on it. Leaving it turned on will ensure compatibility for the most people, so ensure it's enabled.

Ignoring the Level tab, which should already be set to Advanced Simple @ L5, click on the Aspect Ratio tab.

ronie	Level Aspect Ratio	
•	Pixel Aspect Ratio Select the shape of a pixel	Quick Setting Default
	Square (default)	
	X: 1 Y: 1	
-0	Display Aspect Ratio	-
	Select the shape of the image	4:3
	X: 4 Y: 3	16:9
		2,35:1
likely gena Thei defa	ect Ratio is written to mpeg-4 bitstream, y to be ignored if video stream is encap: eral-purpose container (like .avi, .ogm., refore, be aware that using different asp ult might be ignored by some players, e oded on Windows.	sulated in a .mkv). pect ratio than

Ensure you're set to Square (default) as above. Don't change this unless you really know what you are doing...there's no need.

Click OK.

Advanced Simple @ L5 🝷	more
Twopass - 2nd pass	more
	-
s): 157371	calc
	×
55,52 m 1 4 s	
.00 0	
	Orthurs
nove Zone	Options
nove Zone	Options
	ght/Quant Modifiers .00 0

Now ensure you have 'Twopass – 2^{nd} pass' selected and click 'more...'.

Incidentally, a Twopass encode is the highest quality. The encoder effectively does a dummy run first to see which areas of the video needs the highest bitrate. For example, high action scenes like a fire in a building would require a much higher bitrate in your final video to prevent the picture breaking up into blocks. A fairly static scene, like a talk show with a plain background, won't need as many screen updates so the bitrate can be minimised. By doing the 2-pass encode, you ensure the areas of the video that need a high bitrate get enough by taking bitrate away from 'quieter' scenes. Note:Again, ignore the target size, it will be changed for each encode.

(viD Configuration	D
2nd Pass	
Stats filename: 521 1758 i7Home a	and Away.stats
Intra-frames tuning	
I-frame boost (%):	10
I-frames closer than (frames):	1
are reduced by (%):	20
- Overflow treatment	
Overflow control strength (%):	5
Max overflow improvement (%):	5
Max overflow degradation (%):	5
Curve compression	
High bitrate scenes degradation (%):	0
Low bitrate scenes improvement (%):	0
)K Cancel

On the 2^{nd} pass config, there should be nothing to change – unless your differ from the ones above. Ignore the filename dialog, this will change after every encode.

Click OK.

viD Configu Main Setting				
Profile @ Le Encoding typ	vel:	Advanced Simple (Twopass - 2nd pas		
Target size	(kbytes):	157371	cal	¤ ×
Zones				
Frame # 0	Weigh W 1.0	it/Quant Modifiers 0 0		
Add	Remov	/e	Zone Option	S]
	t	(User defined)	▼ more	e
Quality prese				_

Click Zone Options, copy the settings below, click OK.

XviD Configuration		
Zone		
Start frame #:		
Rate control		
 Weight: 	1.00	
C Quantizer:	5.00	
0.01	IND.	2.00
	-]	
- Static		
🔲 Begin with keyframe	🥅 Cartoon Mode	
Greyscale encoding		
Chroma optimizer ena	bled	_
BVOP sensitivity:	0	
	-	23 27
	OK	Cancel

	s	7	- 77
Profile @ Le	vel:	Advanced Simple @ L5	▼ more
Encoding typ	be:	Twopass - 2nd pass	▼ more
Target size	(kbytes):	157371	calc
×			×
Zones			
Frame #	Weigh	t/Quant Modifiers	
0	W 1.0	0 0	
Add	Remov	/e Zo	ne Options
Add	Remov	/e Zo	ne Options

Back at the front page, shown above, click the 'more...' button in the 'Quality preset' section.

XviD Configuration		×
Motion Quantization		. 1
Motion search precision:	6 - Ultra High 💌	
VHQ mode: VHQ tor bframes too VHQ for bframes too VHQ for bframes too VHQ mode: Use chroma motion Other	1 - Mode Decision 💌	
Frame drop ratio: Maximum I-frame interval:	0 300	
	OK Cance	

Copy the settings avove, the 'Turbo' option can really help. Then click Quantization and confirm your settings are as below. Then Click OK to return to front page.

XviD Configuration		
Motion Quantization		
Quantizer restrictions	510	1
Min I-frame quantizer:	۵	
Max I-frame quantizer:	31	
Min P-frame quantizer:	1	
Max P-frame quantizer:	31	
Min B-frame quantizer:	1	
Max B-frame quantizer:	31	
✓ Trellis quantization		
	ОК	Cancel

Back at the front page, click the "Other Options..." button.

XviD Configuration		
Encoder Decoder Common		
FourCC used: Number of threads: Print debug info on each frame Display encoding status	€	
	OK Car	ncel

You'll see I've disabled the option to 'Display encoding status'. This is a personal preference as it just opens another window up that has no real benefit, it just gets in the way. If you want to see it, check the box, if not disable it like I have.

The decoder tab has no effect on the encode process. The 3rd tab should be as below:

XviD Configuration	×
Encoder Decoder Common Performance optimizations Automatically detect optimizations Force optimizations MMX Integer SSE SSE SSE SSE SSE SSE SDNowl 3DNowl 2	
OutputDebugString debug level: 0x0	1

XviD is now configured.

Click OK and OK again to close the encoder config.

We're now ready to start editing and encoding a TV show.

Editing your TV Show

Open VideoRedo and then open your video file. This will hopefully be in a .ts file or similar.



You'll see in the example above that I've launched straight into the end of the show before, this is common if you record a couple of mins before or after each show.

Using the cursor keys on your keyboard, scroll to the first frame of your TV show. Pressing the RightArrow key will skip 1 frame at a time. Pressing ShiftRight will skip one second at a time and pressing CtrlRight will shit 1minute at a time. So skip minutes, then seconds, then frames to optimise the skipping process.

Ensure you get the FIRST FULL FRAME.

For example:



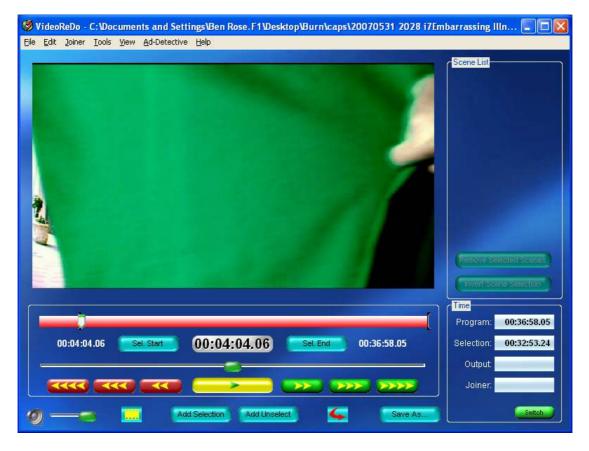
Above is the last frame of the Channel 4 logo. Wrong place to be.



Above is a frame that's half the C4 logo and half the new show. Wrong place again.

۲	Video	ReDo -	C:Woo	umer	nts and Setti	tings\Ben Rose.F1\Desktop\Burn\caps\20070531 2028 i7Embarrassing Illn.ts 📰 🗖 📘	
Eile	Edit	<u>]</u> oiner	<u>T</u> ools	⊻iew	Ad-Detective	e <u>H</u> elp	
						Scene List	
	_	0:00:0	0.00	Columnation	el, Start	00:04:04.06 Set. End 00:36:58.05 00:04:04.06 Set. End 00:36:58.05 Selection Add Unselect Save As:	

Now the new show has started. This is the point you need, so click 'Sel. Start'.



You'll see the little I marker moves up to where the cursor is on the timeline.

Getting these selections frame perfect is essential. Each show on digital TV has a different audio stream. The audio and video have to be played back in perfect sync, otherwise the mouths on screen do not match the sound; what's known as a sync error...a common cause of bad encodes. During the encode process, Gordian Knot will measure the sync to ensure your output file is correct. If you include just **one frame** that isn't the show, you may well get a bad encode. This is particularly important at the start of the show as this is the first point of reference when encoding. You may realise at this point why some downloads are just fine until the first advert break and then out of sync from that point onwards. Sometimes 3 or 4 part shows are split and encoded in part by different people. It only takes one of them to get it wrong and some or all of the show may be wrong.

Now skip through the show to the advert break. Again make sure you get the very last FULL FRAME.



Not the one with a Big Brother logo appearing!

🧐 VideoReDo - C:\Documents and Settings\Ben Rose.F1\Desktop\Burn\caps\20070531 2028 i7Em	ıbarrassing Illn 🗖 🗖 🔀
<u>Eile Edit Joiner Iools Yiew A</u> d-Detective <u>H</u> elp	
Embarrassing illnesses	Scene List
00:04:04.06 Sel. Start 00:15:48.05 Sel. End 00:15:48.04	Time Program: 00:36:58.05 Selection: 00:11:43.23 Output: Joiner:
🧑 — 🦲 🫄 Add Selection Add Unselect 🦕 Save As	Switch

When you've got the right frame, click 'Sel. End' and then 'Add Selection'.



You'll see part of the timeline goes green to show the piece you've selected and the 'scene list' shows the timings of that first selection.



Repeat for each part of the show up to the end. Ensure you only include frames of the show.

You'll see above that my show is in 2-parts and the total length, with the adverts removed, is 24mins 9.07secs.

Now click Save As...

Save As					? 🛛
Save in:	20070531 20	28 i7Embarrassing Illn	O	🌶 🕩 🛄-	
My Recent Documents Desktop My Documents					
My Network	File name: Save as type:	20070531 2028 i7Embarras MPEG Program Stream (*.n			Save Cancel
	Recent folders:	C:\Documents and Setting	s\Ben Rose.F1	\Des 💙 🗌	Options

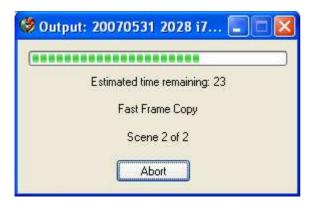
At this point I usually copy/paste the default filename and create a folder with that name to save the output file into. This helps in the encode process as it keeps all the files for that show in one place.

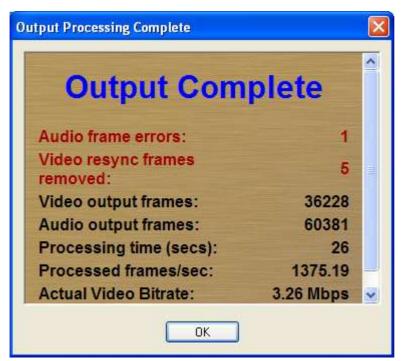
For convenience, save your output file as an MPEG Program Stream (.mpg) file. VideoRedo will do all the chopping, editing etc. necessary for this. You can make this the default output type in the VideoReDo options.

When you're happy with your save location etc. click Save.

🦃 Outpu	t: 20070531 2028 i7 🔳 🗖 🔀
)
	Encoding Frames
	Scene 1 of 2
	Abort

VideoRedo will then do it's stuff.





Job done.

Any reported errors can be ignored at this point, but you must ensure you test the file before uploading.

Now your file is edited, you're ready to encode. Close VideoRedo and open Gordian Knot. Now skip to the section entitled **Encoding Your Show.**

DVD Ripping

You may not have a TV capture card or similar and, instead, may wish to use a DVD source instead. No problem, Gordian Knot will help with this.

Open Gordian Knot

🔗 Gordian Knot 0.35.0 (gordianknot.sourceforg	ge.net)	
Ripping Bitrate Resolution Subtitles / Chapters Options	Program Paths Info Encoder	
-1+2 · Rip & Prepare the VOBS in one pass	ur project name d2v	Name
1 - Rip the VOBs		
Put a DVD into your DVD-ROM drive and press "D length is shown next to each PGC (program chair) SW-DVD-Player. Make sure that in "Tools" - "Sett The ripping process can take up to 40 minutes, der VOB files. Thank to LightningUK for this great rip	displayed there. Choose the chain that matches the ings'' everything is set to defaults. Choose a destina pending on the speed of your DVD-ROM drive, the	e movies length. If in doubt, check with your ation directory and click on the green arrow.
To process DVD data lying on hard disk already you Thanx to Maven for this essential tool! 2 - Prepare the VDBs	u have to use vStrip, which is a little harder to use	
 Press this button to create a DGIndex - project file (Press F3 and select the first VDB you just ripped, th Press F5 for a preview, let it run for a while, then pri equal to 95% check "ForceFilm" in "Field Operation press F4 to save the project file. This will take a few Thank to Jackei for the best decoder available! 	ie following VOBs are selected automatically. Press ess "ESC". If "Framerate" is 29.970 (NTSC) and "V ", otherwise make sure it is NOT checked. In "Dol	'ideo Type'' is FILM at a percentage higher or
If you want to add subtitles to your movie go to the right "Rename" it and press "Open" at the bottom I		done choose a free Save-Slot at the bottom
	<pre>6 of First Pass Stats 6 of CompressibilityTest 2%</pre>	Reset Deraut Exp. (mp.) Rename

You'll see the first tab on the Ripping tab is called 'Rip the VOBs'. This is what we will use by clicking the button with the picture of a disc on it.

Video on retail DVDs is stored encrypted in mpeg2 format, but .vob files are used as a container. A disc may contain many different VOBs which are up to 1GB in size each. In the case of a movie, it's usually spread across all the VOBs on the disc. In the case of TV, an episode will span one of more of the VOBs on the disc. The trick is to extract just the date you need from the disc and encode that, having already decrypted it.

If you haven't done so already, click the disc icon to open DVD-decrypter.

Stream Processing	
	Input Stream Processing

DVD Decrypter loads and shows the content of one of your DVD drives. No disc is mounted in the current disc. You can rip the content from physical discs, or even from a disc image you may have that has been mounted using Alcohol 110% or similar drive emulators. Ripping from a disc image can be a lot faster.

If you click the Mode menu, you will see 3 main modes, File, IFO or ISO.

First choose mode ISO...write.

😌 DVD Decrypter 📃 🗖 🔀						
File View Mode Tools Help						
Source 📄 Please select a file						
Label: Unknown Sectors: Unknown Size: Unknown Time: Unknown						
Destination Image: Destination						
	Settings Write Speed: MAX 💽					
Device Not Ready (Medium Not Present)						

ISO write mode allows you to burn .ISO images you may have to disc. It's no use for ripping at all, but can be handy if you've downloaded an image and want to burn it to DVD.

Now choose Mode ISO..read.

📀 DVD Decrypter	
File View Mode Tools Help	
Source So	AOpen DVD-1640 PRO 1.24 (ATA) Current Profile: DVD-ROM
Label: BBCDVD2349 Region: 2, 4 - RCE Protection: No Copyright Protection System Type: CSS/CPPM	Status: Complete Erasable: No Sessions: 1 Sectors: 4,013,146 Size: 8,218,923,008 bytes
Destination Image: C:\BBCDVD2349.ISO Image: C:\BBCDVD2349.ISO Capacity: 389,664,572 KB Free Space: 288,714,736 KB	Time: 891:50:46 (MM:SS:FF) Physical Format Information (Last Recorded): Book Type: DVD-ROM Part Version: 1 Disc Size: 120mm
	Maximum Read Rate: 10.08Mbps Number of Layers: 2 Track Path: Opposite Track Path (OTP) Linear Density: 0.293 um/bit Track Density: 0.74 um/track
Ready	

This allows you to create a disc image from the disc in the drive. Choose a destination and click the green arrow. Job done.

Now choose Mode..File

[3:0:0] AOpen DVD-1640 PRO (E:)	VIDEO_TS.IFO VIDEO_TS.VOB VIDEO_TS.BUP	[12 KB] [34,438 KB]
	VIDE0_TS.BUP	[34,438 KB]
L E	The Walk of the State of the	
		[12 KB]
Labaly PDCDUD2240	VTS_01_0.IF0	[18 KB]
Label: DDCDVD2349	VTS_01_0.VOB	[10 KB]
Region: 2, 4 - RCE Protection: No	VTS_01_1.VOB	[10 KB]
eep/ngnerreteenene/etenni/per eeeperret	VTS_01_0.BUP	[18 KB]
	VTS_02_0.IFO	[134 KB]
Destination	VTS_02_0.VOB	[2,384 KB]
	VTS_02_1.VOB	[1,048,488 KB]
C:\BBCDVD2349\VIDEO_TS\	VTS_02_2.VOB	[1,048,246 KB]
capacity, 002/004/072 ND	VTS_02_3.VOB	[1,048,228 KB]
Free Space: 288,714,596 KB	VTS_02_4.VOB	[1,048,346 KB]
	VTS_02_5.VOB	[1,048,472 KB]
	VTS_02_6.VOB	[1,048,280 KB]
	VTS_02_7.VOB	[1,048,308 KB]
	VTS_02_8.VOB	[649,972 RB]
	VTS_02_0.BUP	[134 KB]

This will show you the contents of the disc in native format. You can extract this as is by clicking the green arrow. This can be useful if you want to copy a large disc and then use DVD Shrink or some other tool to then shrink that down and burn it on a smaller 4.7GB blank DVD-R.

Now choose Mode...IFO.

🕑 DVD Decrypter		
File Edit View Mode Tools Help Source Source Source L E Label: BBCDVD2349	Input Stream Process VTS_01 VTS_02	
Region: 2, 4 - RCE Protection: No Copyright Protection System Type: CSS/CPPM Destination Image: C:\BBCDVD2349\VIDEO_TS\	PGC 1 [02:56: PGC 2 [00:59: PGC 3 [00:58: PGC 4 [00:58:	02] 22]
Capacity: 389,664,572 KB Free Space: 288,714,532 KB	Chapter 1 Chapter 2 Chapter 3 Chapter 4 Chapter 5	Cell 1
Ready	02:56:22.12 / 25 fps	7,988,340 KB

IFO mode uses the index that's supplied on the disc to display it in a similar way to how it would show on your DVD player. You'll see that you can select different chapters etc.

On this disc, there are 3 episodes that are approximately 1 hour long. It's clear that these are represented by PGC 2, PGC3 and PGC4. If you wanted to extract them all in one go, PGC1 could be used. Instead, we'll select PGC2.

😌 DVD Decrypter		
File Edit View Mode Tools Help Source [3:0:0] AOpen DVD-1640 PRO (E:) L E Label: BBCDVD2349 Region: 2, 4 - RCE Protection: No	Input Stream Process VT5_01 VT5_02 PGC 1 [02:56:	22]
Copyright Protection System Type: CSS/CPPM Destination C:\BBCDVD2349\VIDEO_TS\ Capacity: 389,664,572 KB Free Space: 288,714,532 KB	PGC 2 [00:59: PGC 3 [00:58: PGC 4 [00:58: Chapter 1 Chapter 2	22]
Ready	Chapter 3 Chapter 4 Chapter 5 Chapter 5	2,672,626 KB

You can see that this episode is 59mins 2 secs long and is a PAL 25fps video. Now click the stream processing tab.

📀 DVD Decrypter	
File Edit View Mode Tools Help Source [20] [3:0:0] AOpen DVD-1640 PRO (E:) L E Label: BBCDVD2349 Region: 2, 4 - RCE Protection: No Copyright Protection System Type: CSS/CPPM Destination	Input Stream Processing Enable Stream Processing OxE0 - Video - 720x576 (PAL) / 16:9 Ox80 - Audio - AC3 / 2ch / English Ox20 - Subtitle - English - [SP 01; W/L]
Capacity: 389,664,572 KB Free Space: 288,714,532 KB	Stream: N/A Direct Stream Copy O Demux O Raw Map to:
Ready	00:59:02.12 / 25 fps 2,672,626 KB

Here you can choose which streams you want to include. For example, you can exclude the subtitles and any foreign language audio tracks. In this example, I'm going to extract the lot and ignore the extracted subtitles later. This avoids the decryption process having to do much process which is quicker in theory.

Choose a suitable destination and then click the play button.

DVD Dec	rypter			
File View H	lelp			
	v We Built Britain\E01\ 288,519,840 KB			
Information				
VTS / PGC:	2 / 2 - [00:59:02.12 / 25 fps]	Transferred:	195,730 KB	
Size:	2,672,626 KB	Read Errors:	0	
Cell:	1 - [00:10:43.13 / 25 fps]	Read Rate:	3,051 KB/s (2.2x)	
LBA:	18849 - 261459	Time Elapsed:	00:01:11	
Key:	D5 CA 6F 01 9D	Time Remaining:	00:13:52	
Complete				7%
Buffer				^{0%} 0
xtracting Sec	cors			

Now you just have to wait for a few minutes while the VOB files are extracted. A new set of VOBs will be created in your target folder containing just the selected content. You'll see from the screenshot that it could be quicker, but DVD reading isn't that fast. Making an ISO first and then mounting that as a virtual drive can be a lot quicker.

Encoding Your Show

Before getting this far, ensure you've edited. Chopping out all the adverts and stuff beforehand will help minimise the likelihood of sync errors.

Now, if you haven't already, open Gordian Knot.

Gord	lian Kn	ot 0.35.0 (gordia	nknot.sourcefo	rge.net)				
ipping	Bitrate	Resolution Subtitles	/ Chapters Option	s Program Paths	Info Enco	der		
	. The second	pare the VOBS in one p are the vobs in one pass		our project name, d2	Y		Name	Rip
1 - Rip	the VOE	3s						
	length SW-D The ri	DVD into your DVD-R0 i is shown next to each I VD-Player. Make sure ti pping process can take illes. Thanx to Lightnir	PGC (program chain nat in "Tools" - "Se up to 40 minutes, da) displayed there. Ch ttings'' everything is epending on the spe	noose the chain set to defaults. ed of your DVD	that matches the m Choose a destinatio -ROM drive, the spo	ovies length. If in dou in directory and click	bt, check with your on the green arrow.
T	Than	ocess DVD data lying or (to Maven for this esser		ou have to use vStri	ip, which is a litt	le harder to use		
2 - Pre	epare the			-				
	Press Press equal press	this button to create a E F3 and select the first V F5 for a preview, let it ru to 95% check "ForceFil F4 to save the project fi < to Jackei for the best of	OB you just ripped, I In for a while, then p m'' in ''Field Operatio le. This will take a fe	the following VOBs a ress "ESC". If "Fran on", otherwise make	nerate" is 29.97	0 (NTSC) and 'Vide	o Type" is FILM at a	
		want to add subtitles to Rename'' it and press ''l					ne choose a free Save	e-Slot at the bottom
*.d2 *.avi Opei	<u> </u>	Frames 32557 25.000 ✔ FPS			°ass Stats ressibilityTest	Video Size /First Pass Size %	Save Reset Default	Exp. Imp. Renam

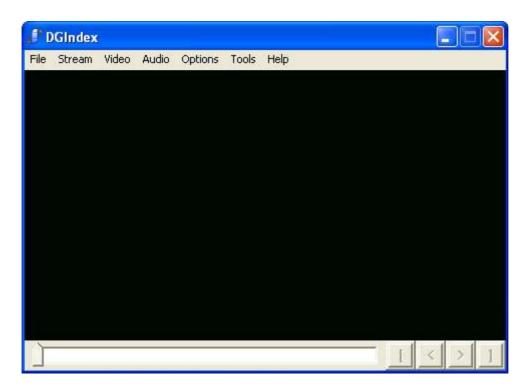
Gordian Knot, or GK, is a complex looking beast that is pretty simple really. You work your way through the tabs, top to bottom, left to right.

Step 1 – Rip the VOBs

This step isn't required, unless you're ripping DVDs. If required, you can use this stage to extract vob files from a DVD in order to encode them. Usage of DVD Decrypter is covered in the previous section.

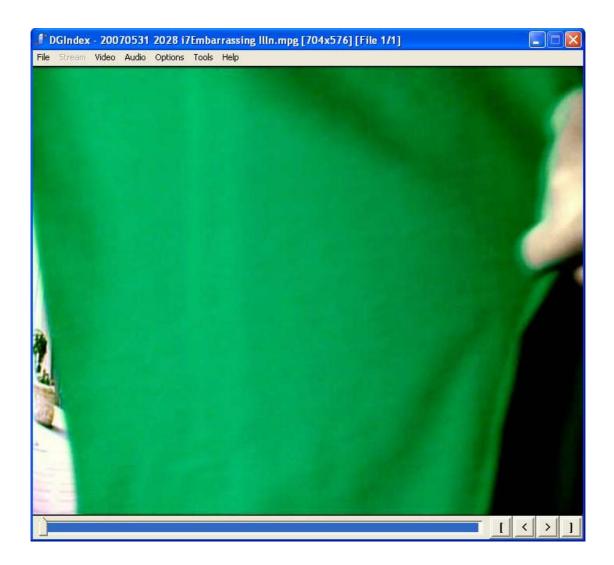
Step 2 – Prepare the VOBs.

Click the icon in this section and DGIndex will open.



Do not be afraid. Simply click File. Open and point it to the file you just saved in VideoRedo. For TV sources, you're only encoding one file, so just click OK and then your opened file will appear. For DVD-Rips, add each VOB file in the extract folder one at a time as shown below then click OK.

File List	
C:\How We Built Britain\E01\VTS_02_1.V0B C:\How We Built Britain\E01\VTS_02_2.V0B C:\How We Built Britain\E01\VTS_02_3.V0B	ADD UP DOWN DEL DEL ALL
	ок



You may recognise the first frame of the edited show from the VideoRedo guide above.

You'll see black borders around the image, this will be fixed later. You'll see an option for marking a start/end on the timeline. DON'T USE IT, this is highly inaccurate and often results in sync errors and other issues.

All you need to do now is just click File..Save Project..Save...accepting the defaults. DGIndex will then go ahead and do it's stuff.

How long is takes depends on the speed of your machine, particularly the hard drive. Some people save the output d2v file on a different drive for performance, but I find it easier just to keep all the files together in one place.

deo		Audio	
Aspect Ratio	16:9	Track 1	MPEG Audio
Frame Size	704×576	Track 2	
Profile	main@main	Track 3	
Frame Rate	25.000 fps	Track 4	
Video Type	PAL	Track 5	
Frame Type		Track 6	
Colorimetry	-	Track 7	
Frame Struct		Track 8	
Field Order	-	Timestamp	0:13:27
Coded #			
Playback #			
Vob Cell ID			
Bitrate			
Status			
Elapsed	0:01:13		
Remain	0:00:54		
FPS			
Info			

While encoding you'll see various bits of info. Important is the aspect ratio (AR) which is 16:9 widescreen. This guide is only designed for widescreen input files. The frame size of 704x576 shows this is a full quality pdtv capture.

When you get the 'FINISH' appear, you can close DGIndex.

Now switch back to GK and click the 'Open' button on the bottom left. Point it to the d2v file you just created.

You should now see a preview window appear.



From the view menu choose 'Resized' and, if it's a bit big on your screen, also choose the half size option. There's also an 'always on top' option if you feel the need.

Switch back to GK and click on the Bitrate tab.

🤗 Gordian Kn	ot 0.35.0	(gordianknot.sou	irceforg	ge.net)						
Ripping Bitrate	Resolution	Subtitles / Chapters	Options	Program Paths	Info [Encode	i)			
Container	⊙ AVI	O OGM	() MKV	Codeo	O Div	X 3.11	O DivX 5	⊙ XviD	🔿 x264
Mode Calco	ulate Average	e Bitrate 🛛 🔘 Cal	culate Av	i File Size	Total :	Size				
Duration			1449	Seconds	10	:D =	700	мв		
		24 Minutes	9	Seconds	Numb	er CD	1 CD	*		238592 KB
	Hours	24 Minutes	9	Seconds		plit fina	l file into C	CDs	j.	233 😂 MB
Audio A (9 %) Bitrate	i.e.	Audio B (0 %) O Bitrate	_	es (0 %)			AVI-Over Frame-Ov	head (1 %) /erhead	Video	(90 %) Average Bitrate
	✓ kBit/s	kBit.	′s	Add	Audio		in law	kudio 2:		1212 kBit/s
O Size 2264	1 KB	Size 0 KB		0 КВ	vbr m	рз		No audio 💉		Video Size
	2 MB		-	0 MB			-	1 MB		214536 KB
Select		Select			1	V Fr	ames (_I	nterval = 40 m	s	210 MB
*.d2v *.avi	Frames 36228 25.000	Bits/(Pixel*Fi 0.231 FPS Load >	2		Pass Stats ressibilityT		Video Size /First Pass	2000 C		Exp. Imp. Rename
					- something it		-			

Ensure AVI is selected as the container and then click 'Calculate Average Bitrate' in the Mode selection. Many people choose the other option here, but I cap to scene specifications which demand the first option. You can either choose the bitrate OR the

output filesize. Some people prefer to specify a fixed bitrate, as they don't want to worry about the length of the file. This isn't always ideal though as it can lead to shows being very different lengths. By fixing the filesize, you ensure that all episodes of a show are almost exactly the same. A fixed size will also optimise the number of episodes that will fit on a CD-R if archiving to disc. For example, a 700MB disc will hold 1 x 700MB show, 2 x 350MB, 3 x 233MB or 4 x 175MB. This may seem obvious, but many people don't recognise this which can make it difficult to save files to a CD.

Check all the other settings are correct, audio bitrate should be 128kBit/s. Audio1 should be 'vbr mp3' and Codec must be XviD.

Some of these settings may conflict with other info you have been given. For example, some people may tell you to use 'cbr mp3' instead of vbr. This is because cbr is much easier to edit, if you edit vbr files it's too easy for them to go out of sync. But remember, we've already edited our files so it's no risk to us at all so we get the benefit of higher quality vbr audio.

Also, if we were to set the filesize and then edit the adverts out afterwards, we would again have an odd sizes output file which varied depending on the amount of adverts. Additionally, we'd be wasting a LOT of time encoding video that we didn't need in the end file...pointless. There is no good reason to edit a file after the encode process, it just leaves too much room for errors and inconsistency.

In the example above you will see my video length is 24mins 9secs and the output file size is 233MB. Recommended file sizes are below:

23min show 175MB 30min show 233MB 45min show 350MB 60min show **466MB – Updated for V2 as 700MB was overkill.** 90min show 700MB

These are optimised for burning to CD. Many people make a 60min show 450MB or 700MB, it's personal preference. 466MB allows a 233MB show to fit on the same disc when burning. For a DVD-Rip I'd use 700MB to allow better quality.

Once you've set the setting appropriate, move on to the Resolution tab.

🤗 Gordian Knot 0.35.0 (gordi	anknot.sourceforge.net)		
Ripping Bitrate Resolution Subtitle	s / Chapters Options Program Paths	Info Encoder	
Input Resolution	Input Pixel Aspect Ratio	Crop (before resize!)	
O PAL	 PAL anamorphic (16:9) PAL non anamorphic (4:3) 	disable Auto Crop Pixel	8 🗘
ONTSC	1:1 Select 1.459	Smart Crop Left-Right	8
other 704 576	O Display AR 1.783	Smart Crop All Aspect Ratio	Width x Height 698 560
Output Resolution			
Pixels Stats Pixels	W-Modul Width % 16 624	x Height H-Modul Aspect Ratio 336 16 1.857	Aspect Error W-Zoom H-Zoom -2.1 % 89% 60%
1	Q		
*.d2v *.avi Close 25.000 FPS		ass Stats Video Size Save /First Pass Size Rese 2%) Default Exp. Imp. Rename

You'll likely see 'other' has already been selected under 'Input Resolution'. This was set from your d2v file that you opened, so leave it as is; along with the 16:9 setting. These should never need to be changed.

Next select the output resolution:

BBC1 - 608 x 336 BBC2 - 608 x 336 ITV1 - 624 x 352 C4 - 624 x 352 C5 - 624 x 352

Many other stations, like E4 or ITV2, broadcast in a much lower resolution. For these I choose the maximum resolution possible whilst ensuring the W-Zoom and H-Zoom remain no larger than 100%. Over the output width is something like 512 x 288. This explains why shows like Coronation Street or Hollyoaks are poor quality when capped from repeats on ITV2 or E4. Note: When capping from these lower res channels, override the input resolution settings and click 'PAL'. This maintains the aspect ratio during encoding (thanks Gamma).

For DVD I would normally use 640 x 352 or similar. This is much lower quality than the CD, but keeps file sizes down. If anybody wants higher quality, they should buy the DVD.

As the show I am encoding is from Channel 4, I've set it to 624 x 336.

W-Modul and H-Modul should always be set to 16 to ensure compatibility with playback devices.

Only after you've set the output resolution, move on to the cropping section.

First click disable, to reset the existing settings, then click the Pixel option. All the borders to the right should now be set to zero.

inning Bitrate	Resolution	Subtitles / Chapters	Ontions	Program Paths	Info	Encoder	
ipping Bitrate Input Resolutio PAL NTSC	n	Input Pix PAL PAL 1:1 other	xel Aspect F anamorphic non anamo	Ratio c (16:9) rphic (4:3) Select 1.459	Cro () () () ()	p (before resize!)) disable Auto Crop) Pixel) Smart Crop Left-Right) Smart Crop All	Vidth x Height
Output Resolut Pixels 219648		O Displ	ay AR W-M 16			Aspect Hatio	1.783 704 576 ect Ratio Aspect Error W-Zoom H-Zoom 1.773 0.6 % 89 % 61 %

You'll now need your preview window visible. 'Always on top' may be sensible at this point.



You may see a black line at the top and bottom of my image. We need to get rid of these and any others like them.

Firstly, whether there is any black or not, set the bottom crop setting to 4. If there is still any black at the bottom add some more but ensure 4 is set as a minimum.

🥺 Gordian Kn	ot 0.35.0	(gordianknot.sou	irceforg	e.net)				
Ripping Bitrate	Resolution	Subtitles / Chapters	Options	Program Paths	Info	Encoder		
- Input Resolution	η	PAL a	namorphic		C	p (before resize!)) disable Auto Crop) Pixef		
○ NTSC		◯ 1:1		Select) Smart Crop Left-R	light	4
⊘ other	704 5	576 O Displa		1 700) Smart Crop All) Aspect Ratio	1.	Width x Height 795 704 572
Output Resoluti	on							
Pixels 219648	Stats Pix	iels 2	W-M	odul Width	x Hei 3			t Ratio Aspect Error W-Zoom H-Zoom 773 1.3 % 89 % 62 %
	*****						avata va	-
*.d2v *.avi	rames 36228 25.000	FPS	%		Pass Sta pressibilit		0.000	Save Reset Default Exp. Imp. Rename

This will remove some of the blurring that may occur at the bottom of your video file after encoding, it's simply chopped off.

Now add crop settings to each side as necessary to clean off all the black borders. Scroll the slider along the timeline to see different parts of your show. Often the borders will vary in different parts of the show, for example during outside broadcasts in news bulletins.

	5.0 (gordianknot.sourceforge.net)		و کارک
Ripping Bitrate Resolu	tion Subtitles / Chapters Options Program I	Paths Info Encoder	
Input Resolution	Input Pixel Aspect Ratio	Crop (before resize!)	
PAL	 PAL anamorphic (16:9) PAL non anamorphic (4:3) 	disable Auto Crop	4 🗘
○ NTSC	O 1:1 Select		4
⊙ other 704	576 Display AR 1.78	Smart Crop All	Width x Height 704 568
Output Resolution			
Pixels Sta		vidth x Height H-Modul Aspect Ratio 624 352 16 1.773	Spect Error W-Zoom H-Zoom 2.0 % 89 % 62 %

Shown above, my crop settings are now set to get rid of all the black. I only had a bit at the top and bottom, none at the sides. You will see, however, that there is an Aspect Error of 2.0%. This is unacceptable. Your Aspect Error should be 0.0% or, at most, 0.1%. To get it right, you need to crop the sides to even out the cropping you had to do top and bottom. Sometimes you may need to add top/bottom crop to even out the side cropping, it depends on the source material.

Essentially, add cropping on each side until the Aspect Error is minimal.

🗢 Gordian Knot 0.35.0 (gord	ianknot.sourceforge.net)		🛛
Ripping Bitrate Resolution Subtit	es / Chapters Options Program Paths	Info Encoder	
-Input Resolution	Input Pixel Aspect Ratio	Crop (before resize!)]
O PAL	 PAL anamorphic (16:9) PAL non anamorphic (4:3) 	disable Auto Crop OPixel	4 \$ 8 \$ 6 \$
O NTSC	◯ 1:1 Select ◯ other	Smart Crop Left-Right	4
⊙ other 704 576	O Display AR 1.783	Smart Crop All Aspect Ratio 1.772	Width x Height 690 568
Output Resolution			
Pixels Stats Pixels	W-Modul Width % 16 €24	x Height H-Modul Aspect Ratio ³ 52 16 ♥ 1.773	Aspect Error W-Zoom H-Zoom
	Q		
*.d2v *.avi Close * Close * Close * Close * Close * Close * Close * Close		Pass Stats /First Pass Size Res	

You'll see that adding 8 left and 6 right got me an error of 0.0%...perfect. It may seem a bit unusual but you'll get used to doing this as you perform more encodes.

pping Bitrate Resolution Subtitles / Chapters Options Pro	ogram Paths Info Encoder
Delete Registry Keys	Follow ITU-R BT.601 Standard It's recommended to leave this checked. It is the correct resizing method for DVD. If you uncheck 'ITU-Standard' the resizing method will be similar to the regular one used in software DVP-Diavers like WinDVD and PowerDVD and described
Hide Advanced Tabs New log/queue style Save files for all passes (DivX 5) Use advanced SaveAVS window	in most guides. But actually this will result in an aspect ratio that is ~2.5% off! This fact was pointed out to me by jackei, the author of dvd2avi.
Stats File. Show Graph when opening a Stats File.	English Update Ini DivX 5 default codec settings v 6.4.0.51 First Pass Nth Pass Last Pass Credits Use Different Last Pass
	XviD default codec settings x264 default codec settings First Pass Second Pass
*.d2∨ *.avi 36228 0.221 % of Close 25.000 ♥ FPS Load → % of	Video Size Save First Pass Stats /First Pass Size Reset Default Exp. Imp. Rename CompressibilityTest % 1

Now, skipping the Subtitles/Chapter tab (not required0 go to the Options tab.

Under XviD default codec settings, click First Pass.

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8
8
Zone Options
w more

Your settings should be as below, e.g. Twopass -1^{st} pass and all the other options as per the configuring section earlier on. Double check them to make sure. Click OK. Do the same with the second pass options.

(viD Configuration			×
Main Settings			
Profile @ Level:	Advanced Simple (a 1.5 🗸 🔤	ore
Encoding type:	Twopass - 2nd pas	s 🔽 🚾	ore
Target size (kbytes):	454555	63	ilc
X			X
			-
Zones			
Frame # Weigh	t/Qu Modifiers	I.	
0 W 1.00	0		
Add Remov	ล	Zone Optio	ns
	2	(
- More Quality preset:	(User defined)		re
guality preset.			
Load Defaults	Others Onlines	ОК	
Load Deraults	Other Options		

This time you'll see the encoding type is Twopass -2^{nd} pass.

You must ensure all these settings are correct and the 1st and 2nd pass have the same settings. If they don't match, you're 1st pass won't be optimising it and it may as well not happen. When confirmed click OK.

All options are now configured, switch back to your video preview window.

Double check all the black borders are gone and then click "Save & Encode".

Some 'experts' will wonder why I haven't mentioned the "Set Credit Start" button. This is intended for you to be able to mark when the end credits start in the show and lower the bitrate on this section, to ensure the main show is of a higher quality. A good idea in theory, but utterly pointless.

If you want people to be able to read the credits, they need to be a decent quality, so this feature is not an option. If you don't want people to be able to read the credit, you may as well edit them out completely and save on space. Ultimately, the 2-pass encoding will optimise the bandwidth needed for the credits and make the end result perfectly good.

So, go ahead and click the 'Save & Encode' button.

Save .avs	
Resizing Selected Output Resolution VCD SVCD	Resize Filter O Bilinear O Sharp Bicubic O Soft Bicubic O Simple (fast) O Neutral Bicubic O Lanczos (sharp)
Noise Filter Noise Filter Noise Little Noise Medium Noise Heavy Noise Subtitles (VobSub) Select VobSub Files before Resizing (default) after Borders (VCD/SVCD) before Cropping	Field Operations None Kernel Deinterlace Field Deinterlace (no blend) Smart Bob (fast) TomsMoComp Extras Put Noise Filter before Resizing (slower). Fool CCEnc Fool CCEnc
Trim No Trim Movie only Save & Encode Save	Compressibility Check Off Edit Codec Use 5 % Now Settings Freview Edit Cancel

Your now prompted to save another file, this time an .avs file. This will store all the encoding settings required. The defaults are rubbish, for example there is no de-interlace. You don't need to worry about what de-interlacing is, just know you need to do it. Change the settings to the ones below.

Save .avs	
Resizing Selected Output Resolution VCD SVCD	Resize Filter O Bilinear Image: Sharp Bicubic O Soft Bicubic O Simple (fast) O Neutral Bicubic Image: Lanczos (sharp)
Noise Filter Noise Filter Noise Little Noise Medium Noise Heavy Noise Subtitles (VobSub) Select VobSub Files before Resizing (default) after Borders (VCD/SVCD) before Cropping	Field Operations None Kernel Deinterlace Field Deinterlace Field Deinterlace (no blend) Smart Bob (fast) TomsMoComp Extras Put Noise Filter before Resizing (slower). Fool CCEnc
Trim No Trim Movie only Save & Encode Save	Compressibility Check Image: Off Settings Use 5 Now Settings Image: S

Yes, there are other filters available. Yes there are other de-int options, some of them better, but these are the ones recommended by 'The Scene' as giving the best balance between quality and encoding time.

All set, click Save & Encode again.

Save Frameserv	ver						? 🛛
Save in:	20070531 2	028 i7Embarrass	sing Illn	~	0 0	🖻 🛄•	
My Recent Documents							
My Documents							
My Computer							
	File name:	20070531 20	028 i7Embarrass	ing Illn.a	avs	~	Save
My Network	Save as type:	AviSynth Fra	imeserver (*.avs))		*	Cancel

Save the output file by clicking save.

Gordian Knot: Di	ivX Encoding Co	ntrol Panel			
 Multi Passes First Pass Nth Pass Single Pass 	Total Size: Video Size: Audio & Files: Overhead:	238592 214536 22641 1415	KB KB KB KB	Bitrate: Frame Rate: Frame Count: Duration:	Bitrate 25.000 FPS: 36228 0:24:09
Frame Server: Frame Server Credits: AVI Output File:	not availabl	i31 2028 i7Emba le. i31 2028 i7Emba	17.		Select Select Select
XviD Audio 1	Audio 2 Please select	a file.			Select
				Audio-processing disab Just Mux	led.
					:, average Bitrate. :, constant Bitrate
				MP3, 128 KBit/sec MP3, custom Paramete	
				was essential to the second	nglish 🚽 🗌 5.
			Note: mp3 -	Re-Calculate Video Bitr If you check "Re-Calc file size will replace yo gs (Audio1) after transc	ulate" the determined ur estimated calculato
			A	dd Audio-Job to Encodi	ng Queue (no Video !

Now you need to choose an audio file. You don't know it, but you did it earlier when using DGIndex, so it should be in the same folder as your .d2v file; now you're beginning to realise why I keep them all in one place.

Click 'Select' and browse for the .mpa file which has the same filename as your show.

Select Audio So	urce File.					? 🔀
Look in:	20070531 20	028 i7Embarrassing Illn	~	G	1 0	
My Recent Documents Desktop My Documents	20070531 202	28 i7Embarrassing Ilin T01 D	ELAY Oms.	mpa		
My Computer	File name: Files of type:	20070531 2028 i7Embar Audio-Files (*.ac3, *.wav				Open Cancel

Click open.

Multi Passes	Total Size:	238592	KB	Bitrate:	Bitrate
First Pass	Video Size:	214536	КВ	Frame Rate:	25.000 FPS:
O Nth Pass	Audio & Files:	22641	KB	Frame Count:	36228
◯ Single Pass	Overhead:	1415	КВ	Duration:	0:24:09
Frame Server:	\\200705	31 2028 i7Emba	arrassing Illr	1.avs	Select
Frame Server Cre	dits: not availabl	e.			Select
AVI Output File:	_\200705	31 2028 i7Emba	arrassing Ulr	navi	Select
XviD Audi	o1 Audio 2				
Audio Source F	ile: \\20070531	2028 i7Embarra	assing Illn T	01 DELAY Oms.mpa	Select .MPA
Audio Source F	ile: \\20070531	2028 i7Embarra			
Audio Source F				01 DELAY 0ms.mpa Audio-processing disab Just Mux.	
	Delay: 0 ms	in an		Audio-processing disab Just Mux.	
✓ Finally Mux,	Delay: 0 ms ameters:	in an	00	Audio-processing disab Just Mux. MP3, 128 kBit/sec	led.
Finally Mux	Delay: 0 ms ameters: al	s 🔲 negative	000000000000000000000000000000000000000	Audio-processing disab Just Mux. MP3, 128 kBit/sec	led. c. average Bitrate. c. constant Bitrate
Finally Mux. Transcoding Par Azid: c norm	Delay: 0 ms ameters: al 128	s 🗌 negative) 0	Audio-processing disab Just Mux. MP3, 128 kBit/sec MP3, 128 kBit/sec MP3, custom Paramete	led. c. average Bitrate. c. constant Bitrate
Finally Mux, Transcoding Par Azid: -c norm Lame: -habr	Delay: 0 ms ameters: al 128	s 📄 negative) 0	Audio-processing disab Just Mux. MP3, 128 kBit/sec MP3, 128 kBit/sec MP3, custom Paramete	led. c. average Bitrate. c. constant Bitrate rs (Experts). nglish
Finally Mux, Transcoding Par Azid: -c norm Lame: -habr OTA: Hybrid	Delay: 0 ms ameters: al 128 iain 💽	s 📄 negative) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Audio-processing disab Just Mux. MP3, 128 kBit/sec MP3, 128 kBit/sec MP3, custom Paramete Vorbis 96 v Er	led. c. average Bitrate. c. constant Bitrate rs (Experts). nglish 💽 🗆 5 ate. 💽 Delete War ate. 💽 Delete War

Now the audio file is open, all your settings should be correct. 128kBit/sec AVR mp3 is the default, this is correct. Mux is enabled and the correct delay set, in this case there is no delay, but this will vary from show to show...hence the importance of editing correctly before encoding.

All good...click the XviD tab.

	1	ntrol Panel	_		
Multi Passes	Total Size:	238592	КВ	Bitrate:	1212 Kbit/se
First Pass	Video Size:	214536	KB	Frame Rate:	25.000 FPS:
🔿 Nth Pass	Audio & Files:	22641	KB	Frame Count:	36228
◯Single Pass	Overhead:	1415	KB	Duration:	0:24:09
Frame Server:	\\200705	i31 2028 i7Emba	arrassing Illr	1.avs	Select
Frame Server Credits:	not availabl	le.			Select
AVI Output File:		531 2028 i7Emba	arrassing Ulr	n avi	Select
XviD Audio 1	Audio 2				
Stats File:	\\20070531.2	2028 i7Embarras	sing Illn.sta	ts	Select
	\\20070531 2	2028 i7Embarras	sing Illn.sta	ts	Select
Stats File: XVID codec settings	\\20070531 2	2028 i7Embarras	sing Illn.sta	ts	Select
XVID codec settings	\\20070531 2	2028 i7Embarras	sing Illn.sta	ts	
XVID codec settings		2028 i7Embarras	sing Illn.sta	ts	Select
XVID codec settings First Pass	Second Pass	2028 i7Embarras	sing Illn.sta	ts	Select.
XVID codec settings First Pass	Second Pass		sing Illn.sta	ts	Select
XVID codec settings First Pass	Second Pass rate if needed. orrect Frame Count.		sing Illn.sta	ts	Select
XVID codec settings First Pass	Second Pass rate if needed. orrect Frame Count.		sing Illn.sta	ts	
XVID codec settings First Pass	Second Pass rate if needed. orrect Frame Count.		sing Illn.sta	ts	
XVID codec settings First Pass Re-Calculate Bitr IVTC in avs → or	Second Pass rate if needed. orrect Frame Count.		sing Illn.sta	ts	
XVID codec settings First Pass	Second Pass rate if needed. orrect Frame Count.		sing Illn.sta	ts Add Job to Enco	

No need to check the XviD settings, you've checked the defaults, so just click Add Job to Encoding Queue.

Confirm	n 🛛 🔀
?	Job put in queue! Do you want to start encoding now?
	Yes No

Yes you do. If not prompted, hit start encoding manually.

The different phases of encoding will now begin, starting with BESweet.exe which will sort out the audio for your final file.

After that, the 1st pass XviD encode will kick in, then the 2nd pass; which will take a little longer than the first.

On a high spec machine, it should take about 1min to encode 1min of video, so expect at least half an hour for a 30min show.

Once the encode is done, the video and audio files will be merged into your final .avi file.

The output .avi file will be exactly the size you specified, or up to 1MB smaller.

Playback your output file and check for sync errors. Play sections of video about 2mins into the show, then somewhere in the middle, then a few mins from the end. If the sync is good, you're ready to upload.