

FIRST STEPS VIDEO EDITING SERIES

Kino Burning video to DVD

PART 3 The end is in sight. After ripping and editing his film, Andy Channelle works up to the final presentation of *Sports Day: The Director's Cut* to a ravenously expectant public.

**LAST
TIME**



The First Steps tutorial in *LXF66* used *Kino* to trim video footage and sort the running order of sports-day scenes. If you missed the issue, call 0870 8374722 or +44 1858 438794 for overseas orders.



In the last two issues of *Linux Format* we covered the process of grabbing raw digital video via FireWire, cleaning up the start and end points of individual clips, assembling a selection of scenes and adding transitions, effects and a few titles. Now comes the difficult bit: exporting the entire project from *Kino* – the open-source editing package – and burning a DVD that you can watch on the telly.

Unfortunately, free software in this sector isn't very mature, so some of the procedures here will be a little more complicated than previous tutorials, and some will even require you to use the command line – but where a graphical tool exists, we'll use it.

In *LXF65* we mentioned some of the tools needed to put the package together, and it's worth our while to revisit these requirements and ensure that we have the latest stable versions. First on the list is *Kino* itself, which has been updated since the beginning of our tutorial and now stands at version 0.75-5. This is mainly a bugfix release, but does include a few cosmetic refinements. You will also need the package *dvdauthor* – which is included in most distributions – for creating a DVD structure; and a package called *mjpegtools*, which provides the options for encoding the video and audio to the correct format. It's also

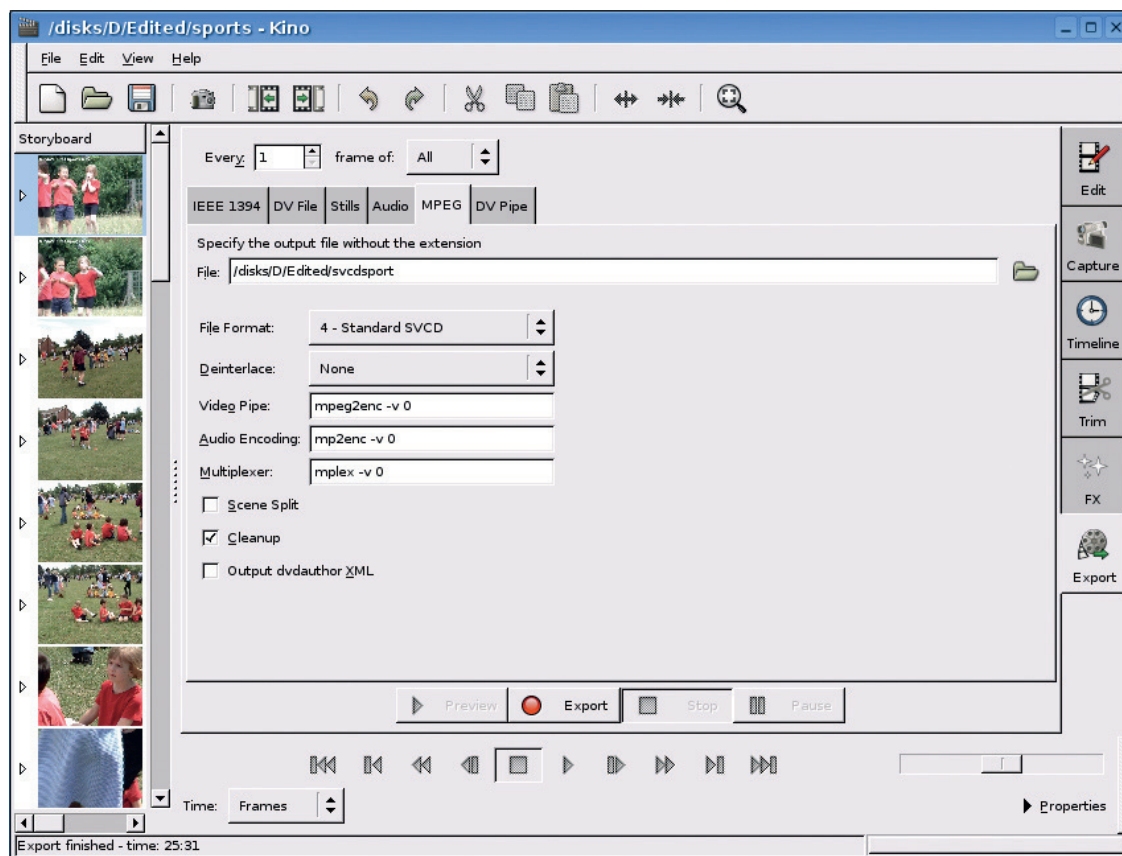
worthwhile making sure you have LAME (the MP3 encoding package) installed in case you need to do some audio encoding.

We'll be using *K3b* to burn the final CDs and DVD and we'll need to augment this with the *VCDImager* package for burning video to (S)VCD, and *dvd+rw-tools*, which will burn to DVD.

DV output

We have assembled our sports day production, rendered effects and transitions and watched the final project through in *Kino*'s Edit tab to make sure there are no glitches. It's finally time to output everything for wider distribution. Most of the options available in the Export tab rely on the *mjpegtools* package, so either install it from your distribution's discs or download the RPM from <http://sourceforge.net/projects/mjpeg>.

There are a number of options available: you can output video to send back to your DV camera (if the hardware supports it); create a new DV file for email or web use; or burn it on to VCD (Video CD) or DVD. Writing the project back to DV tape might be an option for those without CD/DVD burners or who need to record on to standard video. If the FireWire system is working correctly it should simply be a case of plugging



Outputting to SVCD in Kino took just over half an hour.

everything in, hitting the export button and watching the result as it steams to the camera, but check your camera's documentation before trying to do this. There are a couple of options to play with, but we've had perfectly acceptable results with the defaults. However, we want to output files suitable for playback on domestic DVD players, and that means VCD (or SuperVCD, SVCD) for those with CD burners and DVD for DVD burners.

VCD is an intermediary format that allows for playback of video from CDs (hence the name) on DVD players. Not all players support the format, so check yours before taking the time – and it does take some time – to transcode the file. A conservative estimate would be to allow at least twice the length of your movie for the transcoding process – and this on a fairly recent CPU. VCD provides facilities to burn about 70 to 80 minutes of video and stereo sound to a plain old CD-R, and the quality is comparable with VHS. By using SVCD we can improve the quality (resolution is 480x576 pixels as opposed to VCD's 352x288) almost as far as DVD standard – but this reduces the available time to around 35 minutes. SVCD is also capable of rendering menus, subtitles and two independent stereo audio tracks, but that is all a little beyond our requirements at the moment.

Our production lasts just 12 minutes and so is perfectly suited to SVCD – and that's what we'll be using. Again, the defaults should be adequate for our needs (and changing them would require a deeper understanding of the capabilities of *mjpegtools*) so we will be leaving them as they stand.

Once the video is encoded, we have to burn it on to a CD for playback, so launch *K3b* and select File > New Project > New Video CD Project. We can now simply drag our MPEG file into the Project window and hit Burn. Play the file back using either *Xine* or *MPlayer* before you get to the burning stage – just to make sure you won't be making shiny coasters instead of movie magic. Just do File > Open and navigate to the correct file.



Xine is useful for checking your video before and after burning the disc.

The next step up in quality means outputting to DVD, and we start this process by selecting 8 – DVD from the file format drop-down in *Kino*'s Export tab. There is also an extra option for DVD output in this dialog – Output Dvdauthor XML – which will render an XML file that *dvdauthor* will be able to read and that can be used to build up the correct file format for burning.

Set the location for the final file, hit the Export button and sit back. Creating this file will take longer than the SVCD, which took just over half an hour to process our 12-minute-long video.

At its simplest, we can create a playable DVD by navigating to the location of the file we just created using the command line – `cd /disks/D/Edited/Sports` – and using the command `dvdauthor -o sportssday -x sportssday-dvdauthor.xml` »

DVD BURNERS AND LINUX

The price drop of DVD-writing machines over the past year has been simply astonishing. A device that just 12 months ago might have cost £200 can now be acquired for under £50. And the best thing is that device support is now just a case of installing it and booting Linux. As is becoming a habit, we picked up a dirt-cheap generic model for testing purposes, installed it and could burn a disc through Xandros's file manager and *K3b* within minutes of rebooting the PC. Smart.

Here's a quick rundown of the formats to look out for.

■ DVD-R/DVD-RW

The big backers of this format are Philips, Sony, HP and Dell. As with recordable CDs, media can be writable or rewritable – meaning that discs can be either burnt only once or overwritten several times.

This is the best supported of the formats, and discs made using it (remember you have to buy specific discs for each format) are readable on most domestic DVD players and, of course, on your Linux box. Current standard capacity is 4.7GB.

■ DVD-R/DVD-RW

Technology thrives on competing 'standards', and this seems to be the reason that Panasonic, Toshiba, Apple, Hitachi, NEC, Pioneer, Samsung and Sharp would all like us to use this 'minus' format. Again, discs can either be written once or rewritable, and should play in most home players. Choosing between + and – isn't too difficult as most devices work with both. However, on our last trip to the local disc emporium, DVD-R(W) was slightly more expensive than its positively monikered cousin. Standard capacity is 4.7GB.

■ DVD-RAM

The runt of the litter. Usually housed in a cartridge – which is so 1980s – DVD RAM discs are rewritable, but only on special DVD-RAM drives. The advantage of the format is that discs (which technologically are closer to hard disks than CDs) can be used as though they were floppies or hard disks, and can be written to more than 100,000 times. The big disadvantage is that you have to buy a special device for both reading and writing, so your productions won't be viewable on DVD players.

« to create the files needed to add to a new DVD Video project in *K3b*. Don't be alarmed if you don't have anything in the folder **AUDIO_TS**: it just means that the file was ripped with an integrated audio stream. Again you can check the status of the process before the all-important burn by launching *Xine* and opening up the **mts_x_**

xx.vob (where x represents numbers relating to the chapters in your movie), or even by burning to a rewritable disc.

It is also possible to compile the necessary ISO file, which is the DVD image that is burnt to disc, using the command line. Just type **mkisofs -dvd-video -o sportsday.iso**

where **sportsday.iso** is the name of your project, and prepare for a wait.

```
andy@Downstairs: /disks/D/Edited/sports - Shell - Console
Session Edit View Bookmarks Settings Help
Send bugs to <dvdauthor-users@lists.sourceforge.net>

INFO: Locale=en_GB
INFO: Converting filenames to ISO-8859-1
INFO: dvdauthor creating VTS
STAT: Picking VTS 01

STAT: Processing /disks/D/Edited/sports/sportsday.mpeg...
STAT: VOB 752 at 412MB, 1 PGCS
INFO: Video pts = 0.184 .. 457.624
INFO: Audio[8] pts = 0.184 .. 457.600
STAT: VOB 767 at 420MB, 1 PGCS
INFO: Generating VTS with the following video attributes:
INFO: MPEG version: mpeg2
INFO: TV standard: pal
INFO: Aspect ratio: 4:3
INFO: Resolution: 720x576
INFO: Audio ch 0 format: mp2/2ch, 48khz 20bps

STAT: fixed 767 VOBUS
INFO: dvdauthor creating table of contents
INFO: Scanning sportsday/VIDEO_TS/vts_01_0.ifo
andy@Downstairs: /disks/D/Edited/sports$
```

Nick Veitch will be pleased to see us using the console to compile the ISO image.

From Varsha with love

It's no secret that the command line is not the most user-friendly interface known to man. As we have just seen, it can be useful – but once we get beyond making a very basic DVD, working the command strings and configuration files can become more a feat of memory than of design skill. Though the standard of Linux DVD applications isn't mind-blowing, there are a couple that are workable; one of which is *Varsha*. This is a Java-based front-end for many of the tools we have already used – *dvdauthor*, *mjpegtools*, etc – that lets you build up a menu visually.

The latest version of *Varsha* is available under the GPL from <http://varsha.sourceforge.net> as a very small downloadable JAR file. As an added bonus it also works as a front-end to a small application called *dvd-slideshow* (<http://dvd-slideshow.sourceforge.net>), which allows for the creation of disc-based slideshows of your digital photos. Once the dependencies are satisfied – these are Java plus the programs specified over the last three tutorials – you can run *Varsha* by opening a terminal, navigating to the directory where it was downloaded or saved and typing **java -jar varsha.jar**. Jump quickly to the application by making a new shortcut and providing a full path to the JAR file. On my system, for example, the command string is **java -jar/home/andy/applications/varsha.jar**.

The stated aim of *Varsha*'s sole developer, Ram Mallappa, was to create an open-source application that would take MPEGs edited and encoded in *Kino* and burn them to CD or DVD – which, coincidentally, makes it just about perfect for our purposes.

Varsha sets up a blank project with the interface window divided into two panes. On the left should be a single folder icon labelled Disc; this is the root file of the DVD. On the right is a file browser, which we can use to locate the MPEG we recorded earlier. Simply dragging and dropping this file on to the Disc icon will cause *Varsha* to set up the most basic file structure necessary for playing back your production. You could then,

in theory, hit the Write DVD button and wait for the result. In practice, though, there are a few things we need to sort out first.

Do Edit > Preferences to check everything is as it should be. There are four tabs in the dialog box:

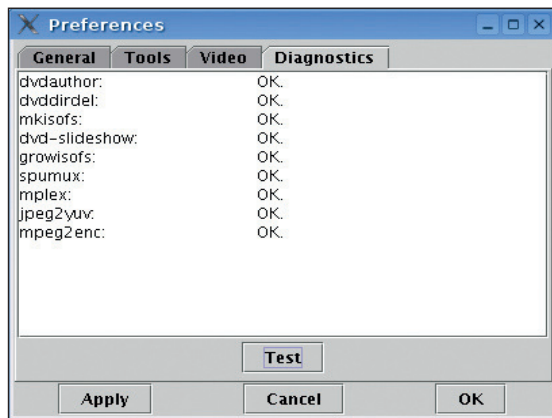
■ **General** Define project and temporary directories in here, and also set the correct device for the system's DVD burner.

■ **Tools** This is where you can tell *Varsha* where the various under-the-hood applications such as *dvd+rw-tools* and *dvdauthor* are. As standard they should all be in the **/usr/bin** directory, so if you deviate from this, make sure the correct path is next to each application.

■ **Video** A nice simple option: NTSC or PAL. In the UK we use the PAL system, so select this. Countries using the NTSC system include the USA and Canada.

■ **Diagnostics** Handily, Mallappa has included a small utility that will check the status of your system to make sure the things that





When the *Kino* test page looks like this, you know you're going in the right direction.

need installing are where they should be. Just hit Test and look for 'OK' listed against all the required apps.

Once this is done, you can drag and drop a *Kino*-created MPEG on to Disc, hit Write CD and Marty Scorsese's your uncle.

Adding DVD extras

While 'play and go' is OK, *Varsha* can create quite complex DVD interfaces with static or animated backgrounds, menus for selecting different videos (once you have edited and exported more than one) and chapters for jumping back and forth through your work.

The easiest additions you can make to a single video are chapter points at specific intervals – you use this function when you jump backwards or forwards using the Skip Forward/Back buttons on the DVD remote. To put chapters into your movie, drop an MPEG file into your project, select it and open the Properties tab. Now just add a figure into the Chapter Every X Minutes option and hit Apply.

You should be getting an idea of the file structure of DVDs by now. At the top is the disc; below this are titlesets and titles, and within titlesets are also menu elements. As an example of how this might be organised, imagine that in addition to *Sports Day* we also have *The Making of Sports Day* as a featurette. Both of these elements would be titles within the first titleset. We could do them as individual titlesets but if the project includes a menu, *Varsha* will not be able to handle more than one titleset.

To start, right-click the Disc icon and select Add Title. Now right-click on the new Titleset 1 icon and select Add Title; do it again so that you have Titleset 1, Title 1 and Title 2. Now right-click on Titleset 1 again and select Add Menu. The final elements of the structure are menu items, so right-click on the Menu element and select Add Menu Item: repeat to create a second. *Varsha*'s project window should look like the grab to the right.

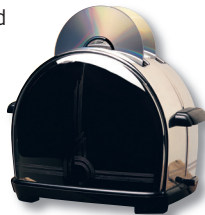
There are tons of ways that we can work with this very simple structure to make a decent-looking DVD front-end. The first thing we will do is add a pretty background (downloaded from www.digitalblasphemy.com). Select the Menu element and open the Properties tab. The first option here will let you set an animated background – which can be any MPEG2 file – but be careful of the file size and remember to set it to loop

using the Loop Radio button on the bottom left. We're going to use a non-animated backdrop, so we hit the Browse button and locate the file.

Next we edit the Menu Item elements to make them more meaningful. The two buttons we have will both be titled Menu Item by default, and they will overlap on the main window. Select each one in turn, use the Menu Item Text box to add a decent label (setting the font, size and style) and then position the text in a sensible, artistically-pleasing place on the screen with the keyboard's arrow keys. You could also use an image here (think back to the Capture Still Image option in *Kino* for the creation of thumbnails) and choosing this will launch tools for selecting an image and positioning or scaling it to fit the design.

A menu obviously needs to point somewhere, so we can right-click on the Menu Item icons in the tree structure, select Jump To... and choose either of the two titles. Selecting either of these elements in the final DVD will cause the player to skip ahead to either *Sports Day* or *The Making of...*

First we need to configure each title. Right-click on Title 1 and select Add Video. This will launch a standard file browser that you can use to navigate to the correct file. Do the same for Title 2. By the way, if you have *dvd-slideshow* installed, you could simply drag a folder full of photos on to a title and it would organise them into a slideshow automatically.



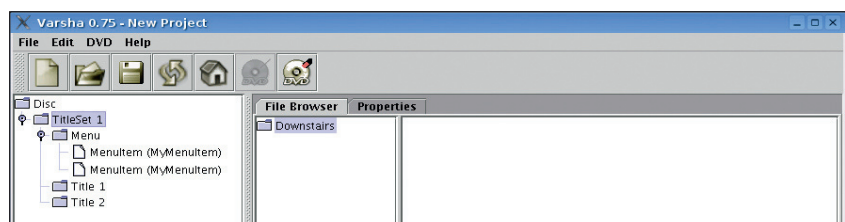
“DRAG AN MPEG TO DISC, HIT ‘WRITE CD’ AND MARTY SCORSESE’S YOUR UNCLE.”

If you had a compilation of home videos, you could put each one in a separate title and add a thumbnail button for each one to the menu.

The final burn

We have a couple of options for output: either create an ISO file for later burning using *K3b*, in which case select DVD > Make DVD ISO Image (and you could burn said ISO from *Varsha* using DVD > Burn DVD Image To Disc) or, if you're feeling adventurous, simply do DVD > Burn DVD! to do it all in one step. *Varsha*'s developer recommends doing test burns to a rewritable disc: you can also format the media from within the application using the Format DVD RW Disc option.

Over the last three issues, we have covered quite a lot of ground, capturing video from a DV camera, editing it into a good-looking production complete with effects and transitions, outputting the footage into a useable format and building up a decent DVD package. Though we've really only scratched the surface, the tools available are capable of quite sophisticated results – this is especially true of *Kino*. And though the Linux world is yet to get a DVD authoring package that will compete with *iDVD* on Mac or *MySonic DVD* on Windows, *Varsha* shows great promise. **LXF**



This is what your disc structure should look like before you add any content with *Varsha*.

NEXT MONTH

Linux software can be updated quite often. And though there is something to be said for keeping an old, reliable edition of some software lying around on your hard disk, it's much more fun to be running the latest, greatest version. Next issue, *First Steps* will look at a few of the ways you can keep on top of the situation by taking the fear out of upgrading.