

## File Formats: MP4 or Exe?

When the final tweak to your new project is done, you're ready to press the Publish Show button if you're a PTE AV Studio user and export your sequence to the waiting world. You're faced with two options – executable file or video file?

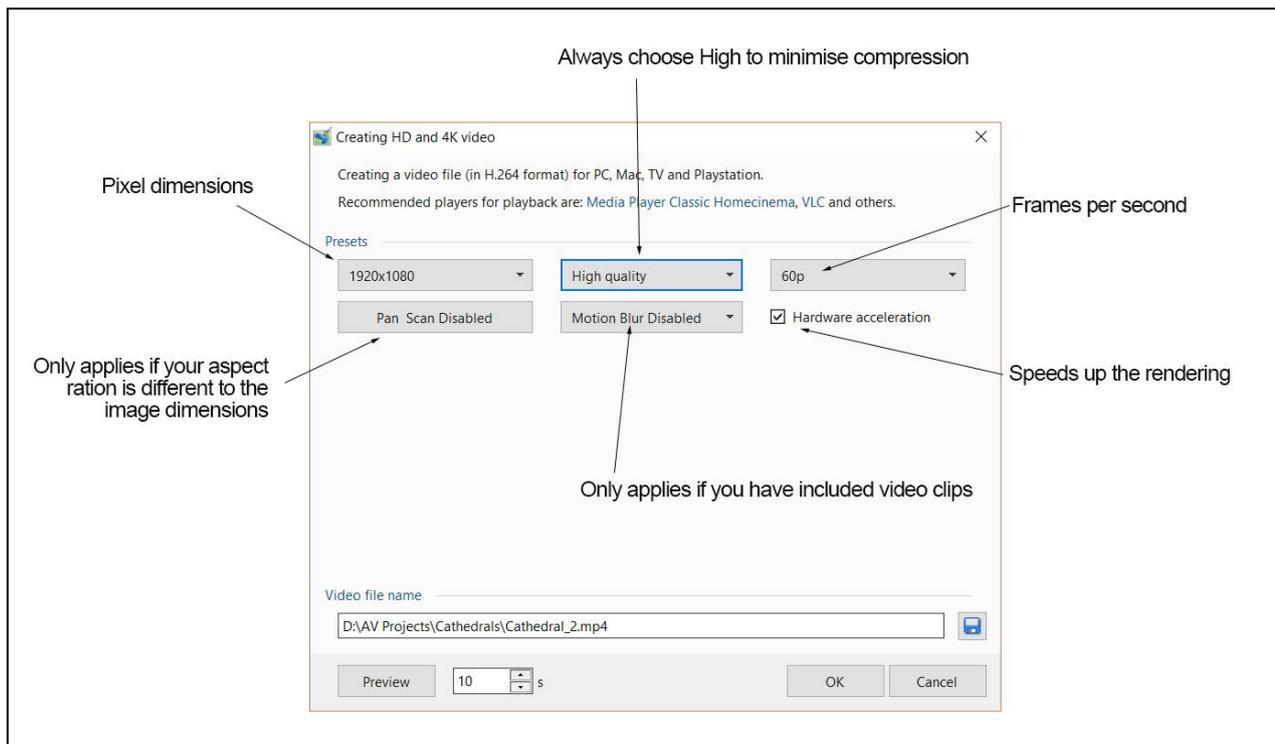
For many years it was a no-brainer – an executable file would contain the original images and audio, and an instruction set for the host computer to play them all back in the right order with a synchronised soundtrack. So long as the computer was powerful enough, the show would look exactly the same as your original creation, with no compression or rendering to spoil the effect. The only reason to ever export as a video file was if you wanted to upload the sequence to a streaming website, or to share with someone using a Mac.

A couple of years ago though, a few things changed to make the 'exe' option no longer the obvious choice. Firstly, Windows 10 had a major update that affected the performance of NVidia video card drivers. High-spec laptops tend to have dual graphics cards - a low-power Intel graphics chip on the motherboard and a high-spec GeForce card for complex graphics. For most uses, the Intel card would normally suffice and hence prolong the battery life. For AV sequences and games though, the extra power of the GeForce card would a much smoother result. The Windows 10 update inadvertently introduced a conflict between the two cards when playing back through a projector. Instead of simply using the faster card, the conflict caused stuttering on some sequences, or simply not play them back at all, depending on which version of PTE the sequence was created with.

Switching off the laptop screen and only using the projector usually got around the problem, but not with every sequence. WnSoft are aware of the problem and have been in extensive dialogue with NVidia, but as yet the problem remains unresolved. If you only play back your sequences on a computer with a single graphics card and single monitor/screen, everything will look fine and you may not even know that this problem exists.

At the same time, PTE improved the quality of its video file exports, and the current MP4 files can play back every bit as smoothly as the 'exe' version but without the possible problems described above. So does this mean that MP4 files should now be the export format of choice? Sadly, it's not as clear cut as that would imply, and video files can bring their own set of problems with them.

To get the best possible quality, choose the "HD and 4K Video" option from the Publish Show menu. This will export an MP4 file using H.264 compression (the codec), which is the current industry standard for high quality output. The frame rate of the video file needs to be set as high as possible - in v10 of PTE AV Studio, this is 60 frames per second. In real terms this means that the sequence is rendered into 60 still images for every second of the playback time. So a four minute sequence would be made up of 14,400 images at a resolution of (say) 1920 x 1080 pixels. When this plays back, the speed at which the images are shown means that even the most delicate of dissolves and slowest of zooms and pans will be very smooth.



There is of course a downside to this, of which the most obvious is that the file size will be a lot larger than the exe equivalent. For a four minute sequence the file size will typically be 150Mb, which is about three times bigger than the exe version. The other problem is that to play back a 60 fps video file, a computer needs to have a fast processor and high-spec graphics card. Using a lower frame rate – eg 30 fps – will produce a smaller file that can be played back on older computers, but the dissolves and motion effects won't be as smooth.

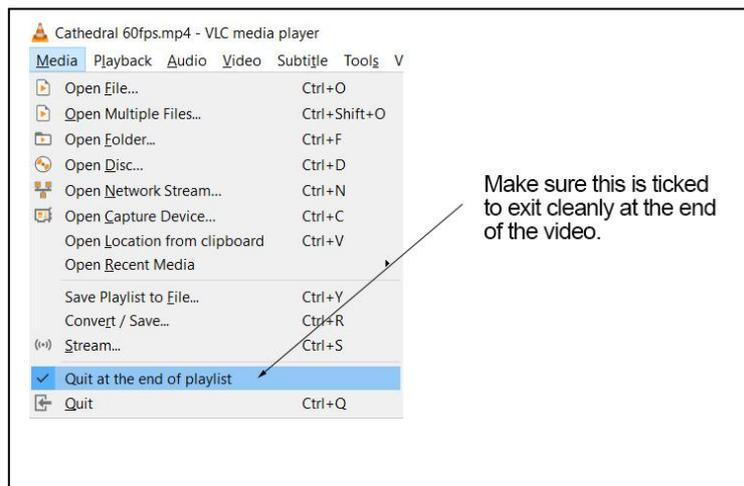
An earlier version of this article was included in the AV News Extra bulletin, and it prompted a discussion on the AV News Facebook page over the use of the "Hardware Acceleration" checkbox. Ticking this will switch the video rendering from your main processor to your graphics card. If you have an older main processor, then the process will be speeded up considerably by ticking this box. However, there was a debate about whether this would produce a lower quality file than allowing the main processor to do the job. Igor at WnSoft at one time said that for the best quality result the box should be left unticked, which is the reverse of what I'd been doing. So as a test, I exported a four minute AV sequence to two different MP4 files – one with the box ticked and one without. They were both 1920 x 1080 pixels, rendered at 60 frames per second. The 'ticked' one took about 18 minutes to do this, and surprisingly the 'unticked' version took only a short while longer at 18 minutes 33 seconds. The last time I'd tried this was several years ago with a much slower computer, and then the time difference was huge, but now there is not much to choose between the two. I then uploaded both versions for people on the Facebook page to view themselves and see if anyone could notice any difference in quality. The majority couldn't tell the difference, but one person thought the 'unticked' one was smoother. So ultimately, if you have a fast main processor ticking this checkbox doesn't make a great deal of difference.

Some festivals – notably the Trophee de Paris - have decided since 2017 to request video file entries despite the massively increased file sizes. In the 2020 event, 85% of entries were in MP4 format and only 15% as ‘exe’ files.

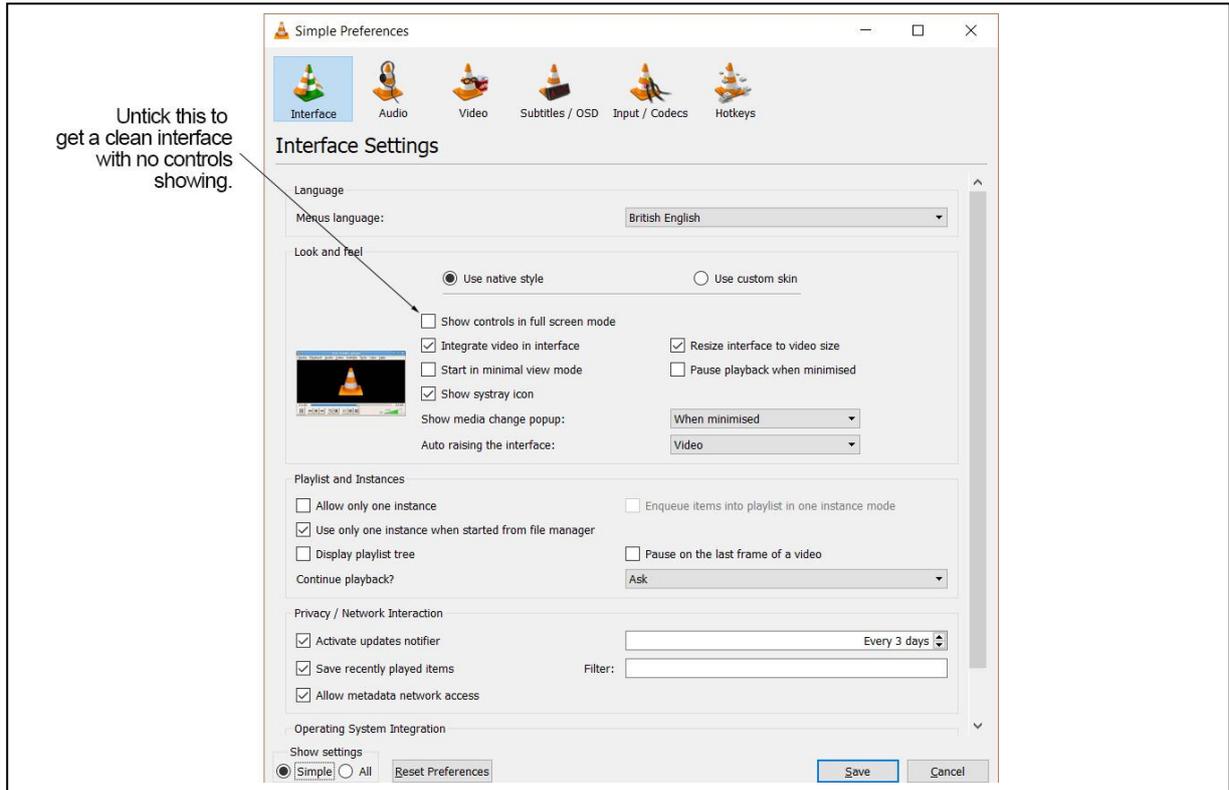
Another problem is that not all video files are created equal. The ones produced by PTE are generally fine, but outside of these the video files, even all those with an “MP4” suffix, can have been made with any one of many different codec systems. I recently judged an AV competition at home, and one video file played back in such poor quality it was unwatchable. I tried it with VLC, Faststone Viewer and Windows Media Player without any success. After more experiments, I discovered that it was suffering from the “two graphics cards conflict”, which was a big surprise as I’d thought that this was purely an ‘exe’ problem. I eventually imported it into PTE and re-exported it as a new video file, after which it played back perfectly.

Whereas executable files play back with no other software required, video files need to be played within a media player. The Windows Media Player tends to be a bit clunky, so the best option is to use VLC, a free media player that seems to cope with the biggest variety of file formats. You can download it from <https://www.videolan.org>

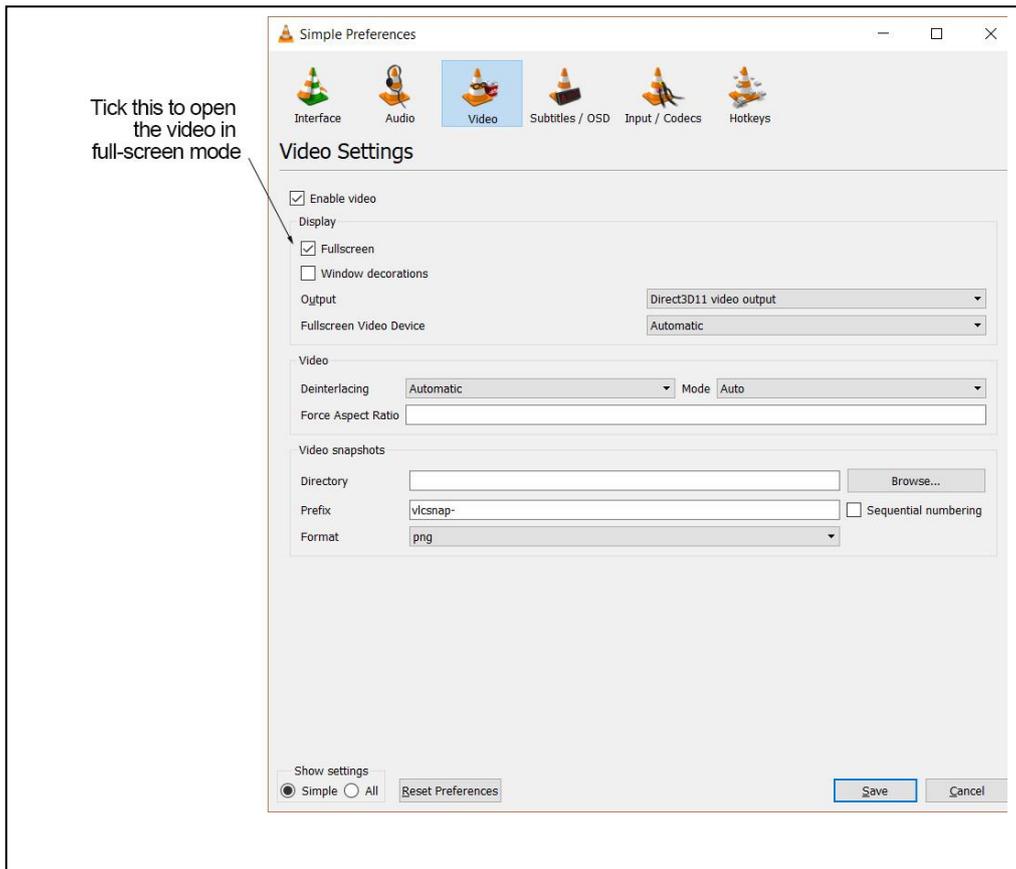
To improve the playback experience, there are a couple of settings that need to be tweaked. First, from the File menu, put a tick in the ‘Quit at End of Playlist’ option. This will avoid the need to close the player at the end of the video.



To avoid having the playback controls and logo appearing before the video starts, from the “Tools” menu, choose “Preferences” (or press ctrl-P). Untick the “Show Controls” option to enable a clean start to the video.



Then click the Video tab and click "Fullscreen" to enable the video to start in full screen mode.



Selecting these options will open and close the video file seamlessly, and it will play back without having to manually fill the screen and close down the program.

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