ffmpeg VBR modes for DVDStyler

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by manolito (c)2015-2021

This small utility allows 1-pass and 2-pass VBR encodes under DVDStyler. There also are optional High Quality (HQ) and Extreme High Quality (XHQ) modes. Custom Quant Matrices are supported, a few of my favorite matrices are included. Also fixes a CBR padding issue for VCD frame sizes in ffmpeg versions starting from October 2014. The new experimental HD conversion mode of DVDStyler is supported and allows much higher HD bitrates than the DVDStyler limit of 9000 kbps.

Installation:

The plugin is automatically installed and uninstalled with DVDStyler.

Usage:

To enable the plugin start DVDStyler and select "Configuration -> Settings -> Core". Set the Encoder to "ffmpeg-vbr". Then pick one of the four available modes:

"auto" will automatically switch between the encoding modes depending on the video bitrate. The bitrate thresholds must be specified in the file "ff_vbr.ini" which is located in the "DVDStyler\bin" folder. In this mode the HQ settings are also automatically selected according to the specified HQ thresholds in the INI file.

"CBR" will force Constant Bitrate encoding. This is basically the same as the DVDStyler default encoding mode, but with a few small differences. HQ parameters and Custom Quant Matrices are supported in this mode by the plugin.

"1-pass VBR" forces 1-pass Variable Bitrate encoding.

"2-pass VBR" forces 2-pass Variable Bitrate encoding.

When using the last three modes the HQ mode is also selected here. All threshold based HQ settings specified in the "ff_vbr.ini" file will be ignored.

Setup of the tool is done by editing the file "ff_vbr.ini" in a text editor. First you have to specify Custom Quant Matrices for high, medium and low bitrates. Next you must select the bitrate thresholds for the VBR, 2-pass and HQ modes. The XHQ mode provides extremely high quality (at an extremely low speed). It can only be used in 2-pass VBR mode, and the Fox New matrix is forced in this mode.

Then enter the bitrate thresholds for the matrix selection. In the next step you have to specify the ffmpeg parameters which should be added to the command line for HQ encoding.

The latest addition improves the treatment of interlaced source files. If the "Auto_Deint" parameter is set to 1 or 2 such files will be automatically deinterlaced using either "bwdif" or "yadif".

If your bitrate is lower than the VBR threshold, VBR will be used instead of the default CBR mode. A value of 6500 to 7000 is recommended.
If your bitrate is lower than the 2-pass threshold, 2-pass VBR encoding will be used.

If your bitrate is lower than the HQ threshold, the HQ parameters will be added to the command line.

Set the threshold values to 0 to disable and to 1 to enable the respective modes unconditionally.

This only applies if the plugin mode is set to "auto" in the DVDStyler configuration. Otherwise the selected encoding mode and the HQ mode will be forced regardless of the video bitrate.

HD conversions:

The plugin can now overcome the DVDStyler bitrate limit of 9000 kbps.
The HD bitrates are hard coded. After many tests I set the bitrates to 16000 kbps for Half HD, 27000 kbps for HDV and to 36000 kbps for Full HD. The max bitrate is set to 38000 kbps. Power users can edit these values within the "ffmpeg-vbr.bat" file under the ":HD" label.

As an alternative user defined custom HD bitrates can also be used. To do this a text file with the name "hd_bitrate.txt" must be created in the "DVDStyler\bin" folder where the desired bitrate must be entered. If the hard coded bitrates should be used instead, simply rename this file. This option makes it easy to determine the desired bitrate with a bitrate calculator if the encoded result should be burned on a BD blank.

Usage:

In your DVDStyler Core Settings window you need to enable the HD video option. The HD menu option should not be used, it does not work. The Mplex option needs to be set to "Only for Menus", muxing HD streams is not handled correctly by Mplex. The High Bitrate extension only works in 1-pass VBR mode, other modes will not use it. The HQ option does work.

Now open the DVD/Options menu entry. For the resolution pick the HD mode you want. Disk Capacity must be set to "Unlimited", the video bitrate must be set to 9000 kbps (first set it to "User Defined" and then enter a bitrate of 9000 kbps). Any other bitrate setting below 9000 kbps will deactivate High Bitrates and assume that you want to burn your results to a DVD blank.

Now you can load your source file(s), compose your menus, do whatever you need. The conversion can be started by clicking "Burn" in the DVDStyler window. You need to specify "just generate" as your target because you will have to concatenate the VOB files in the generated VIDEO_TS folder after the conversion is finished.

When the conversion is done open the generated VIDEO_TS folder in Explorer and have a look at the VOB files in this folder. The DVD standard limits the number of VOB files for each title to 9. But since we use a much higher bitrate DVDAuthor will most likely have created more VOBs per title than this limit. To make this DVD structure playable without cutting off some content we need to make sure that the number of VOBs per title is not higher than 9. To achieve this we need to fire up a Binary File Joiner which can merge binary files. The IgorSoft FileJoiner is an excellent free tool for this purpose, but there are many others. You can also open a console window and use the good old "Copy" command with the "+" operator.

Example:

You made a HD conversion with only one VTS. In your VIDEO_TS folder you have many VOB files. The first VOB which belongs to the video has the name "VTS_01_1.VOB", the last one may be called "VTS_01_20.VOB". You need to merge all VOBs starting from #9 up to #20 into just one VOB which may have the name "Joined.VOB". After merging has finished delete all VOBs starting from #9 up to #20 and finally rename the file "Joined.VOB" to "VTS_01_9.VOB".

It is also possible to merge all VOBs of a given VTS and rename the result to "VTS_01_1.VOB". If your conversion uses separate title sets for each title you need to apply this merging procedure to every VTS where VOBs with higher numbers than 9 are present.

Advanced:

This tool supports using Custom Quant Matrices. ffmpeg uses the MPEG Standard matrix by default. For this matrix all non-intra coefficients are set to 16. For DVD encodes the MPEG Adapted matrix is usually more suitable. For very high bitrates the Fox Home Theater matrix has a good reputation, lower bitrate encodes work better with a matrix like the Manono1 matrix.

A couple of matrices are included in the distribution. To select your preferred matrix just edit the file "ff_vbr.ini". Specify the desired matrix for high, medium and low bitrates by removing the "#" character for the matrices you want to use.

You can easily add your own preferred matrix by creating a text file in the correct format with the matrix name as the file name. Then add this matrix to the matrix selection part of the "ff_vbr.ini" file.

Known Issues:

I only tested the plugin using DVDStyler version 3.02 and higher under WinXP and Win7. The portable versions should also work.

Credits:

Many thanks to Alex Thüring, the author of DVDStyler. Thanks to JMJ from the DVDStyler forum for testing and debugging and many useful tips. Also thanks to Fishman0919 from the Doom9 forum for providing and testing the XHQ parameters. And of course a big thank you to the ffmpeg development team.

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