

Using HD-RGB with Film in HD-based DI (Digital Intermediate) Workflows

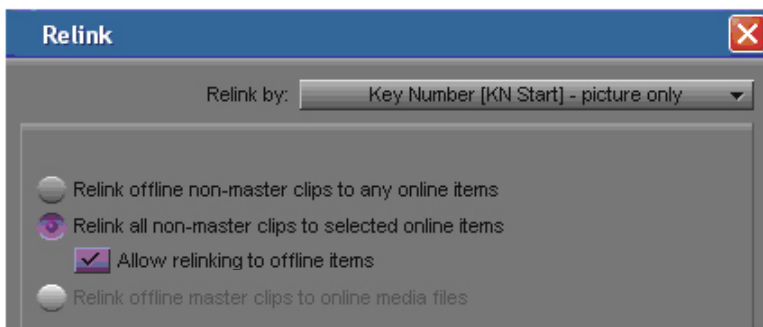
Introduction

The use of super 16 mm (as well as other film formats such as 35mm, 3-perf) has increased substantially with the availability of "HD-based DI" where instead of working with 2K scans, the footage is used in a tape-based high-definition environment. This technique, described below, has the benefits of a video-based format (fast, low cost, etc.), retains all advantages of shooting film (look, dynamic range, grain, etc.), without incurring the additional costs of a file-based infrastructure. It is ideal for the independent filmmaker who wants high production value while keeping an eye on the budget.

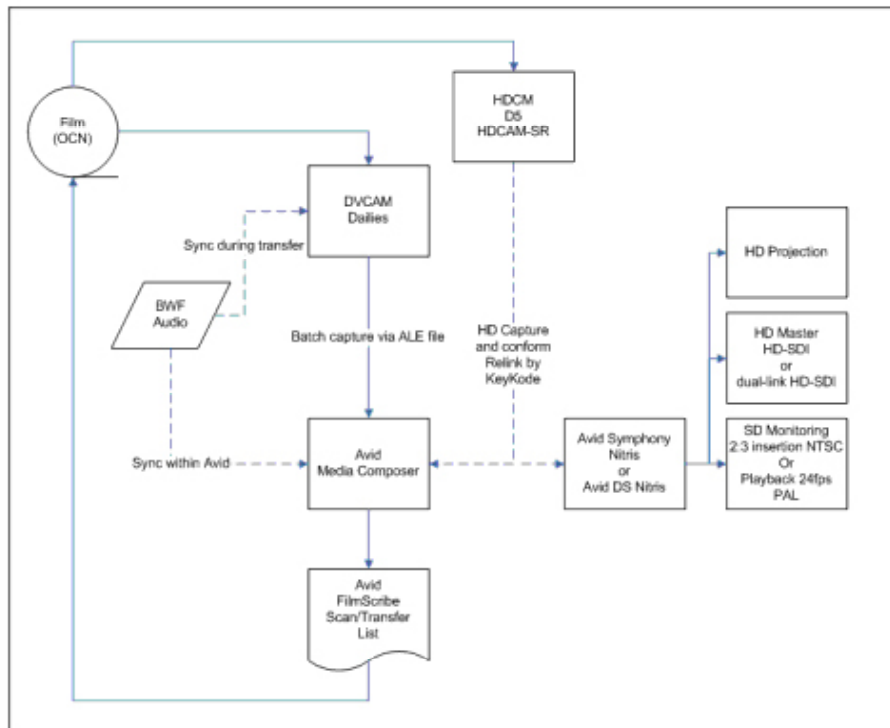
The process starts by transferring the dailies to DVCAM. It is recommended that the dailies be transferred as 16:9 anamorphic so that the conform process will not only be frame-accurate, but also pixel-accurate in the sense that the effects will match the same aspect ratio (titles, shapes, etc.).

Next, import the film transfer files (FLEx, Evertz, Aaton, ALE) into the project bins and batch capture from the DVCAM transfers. Avid editing products are the only products on the market that can capture Normal pulldown directly over FireWire (for Avid Xpress® Pro users). Once picture and sound are captured, and the editing process is complete, the user can easily generate a Scan List with handles. (Avid FilmScribe™ generates many types of lists; Scan is the list type to facilitate a file-based or tape-based workflow.) Each element in the timeline is pulled with user-definable handles. Elements will only be pulled once, regardless of how many times they were used in the final sequence. A concise list of footage to be transferred or scanned is created for an efficient final conform process that minimizes costs in the telecine or scanner room.

The original negative is then transferred to the HD format of your choice: HDCAM, D5, or HDCAM SR. In the case of HDCAM SR, the negative may be transferred in either HD 4:2:2 YCrCb or HD 4:4:4 RGB. There is no need to worry about matching source timecode or tape names during the transfer since the common denominator is the KeyCode information on the original camera negative. After the session, a new film transfer file is created and imported back into the original offline project.



Once these files are imported, the user must put all the retransfer ALE files into the same bin as the offline sequence. Choose "Select All," then go to the Clip/Relink dialogue box and select KeyCode instead of timecode. Once relinked, the sequence will point to the newly transferred sources, tape, timecode, etc. If the original 24-frame timecode from the HD masters was not logged, the user can recalculate the timecode by highlighting the Start timecode column in the bin for the all new sources and then duplicating (cmd-D or ctrl-D) into the 24TC column. During this process, the 30-frame timecode, combined with the pulldown cadence of each clip, is used to create the correct 24-frame timecode.



From there, the online process is very straightforward. A "Total Conform" of the sequence can be done by sending the bin or AFE to a Symphony™ Nitris® or an Avid DS Nitris editing system to work in uncompressed HD 4:2:2 or HD RGB 4:4:4, depending on the transfer. Even productions that are tight on storage can still benefit from a mastering quality format using the Avid DNxHD® codec. Full 10-bit quality and raster are preserved allowing for full image control and manipulation from 4:2:2 sources. Or, if a more traditional linear online is preferred, a 24-frame EDL can be generated.



Because the conform process is so quick, screening can be done directly from the edit systems using the DVI output to a projector. This process is extremely beneficial to assessing the final picture quality on a big screen, but also seeing how the larger image affects the pace and rhythm of story.

Output mastering is easily accomplished back to any of the transfer formats or, in the case of a film out, it is possible to output a final series of DPX images for film recorder compatibility with the proper LUT (look up table).

Many of the features mentioned in this whitepaper are unique to Avid editing systems and provide a streamline post production workflow for the independent filmmaker. The features can be found in all versions of Avid Xpress Pro, Avid Media Composer® Adrenaline™, and Avid Symphony Nitris. HDCAM SR 4:4:4 RGB support is found in Avid DS Nitris v8.0.

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