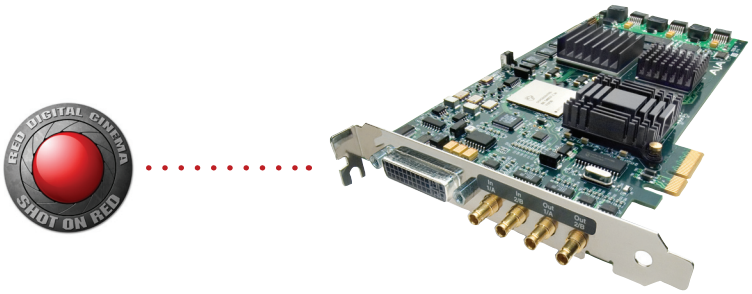
Whitepaper Author:
Jon Thorn, Product Manager—AJA Video Systems

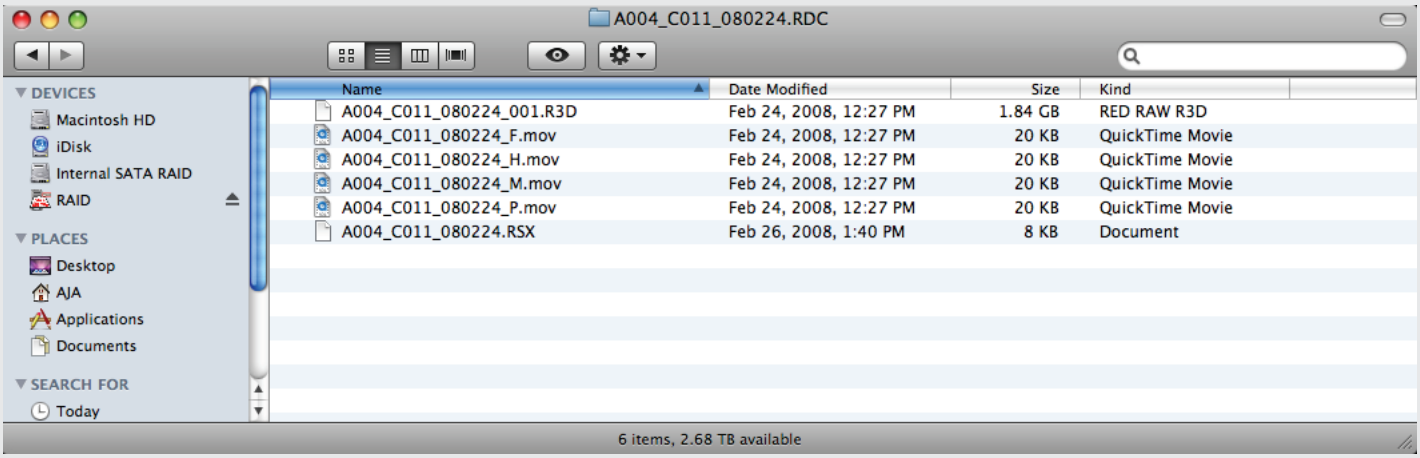
AJA KONA 3 Support for RED



When working with footage produced by the RED One camera there are many possible workflows to choose from due to the flexibility of the hi-resolution images that are produced. Outlined in this short document are three possible workflows that Apple Final Cut Pro and AJA KONA 3 users might elect to implement.

Workflow using RED proxy files

RED recordings produce .R3D files as well as proxy files. These proxy files (which are essentially QuickTime reference movies) are denoted with an underscore and then a letter designation that denotes their quality, such as A004_C011_080224_H.mov; this file represents a half-resolution proxy of the source 4K file. Half-resolution proxy files reside with the source .R3D files and are at a 2048x1024 frame size in the REDCODE codec. These half resolution 2K files can be imported into Final Cut Pro if the RED QuickTime codec has been installed on the system. For the latest version of the RED QuickTime codec, visit www.red.com/support .



Once proxy files are imported into Final Cut Pro, they can be used in a Final Cut Pro timeline. If the files are added to a new sequence, the sequence settings dialog prompt will appear. Users should select the "yes" button in the prompt so that the sequence is set appropriately. Since the proxy file is essentially a QuickTime reference movie based on the source .R3D wavelet compression file, it requires a fair amount of processing to be played back seamlessly within Final Cut Pro and out of the KONA 3 video outputs. For optimum playback results, the Final Cut Pro timeline RT settings should be switched to Unlimited RT, Playback Video Quality set to Dynamic and Playback Frame Rate to Full. On a high performance 8-core Mac Pro configured with these settings, the playback from Final Cut Pro should be realtime or close to realtime.

Video playback can be routed through the KONA 3 outputs as either 1080psf23.98 10-bit (1920x1080) — which is the default output for the AJA KONA 3- RED 2K x 1024 psf 23.98 REDCODE Final Cut Pro Easy Setup — or as 2K (via a change to the A/V Devices>Video Playback to the appropriate RED 2K 2048x1024 setting) all in realtime.

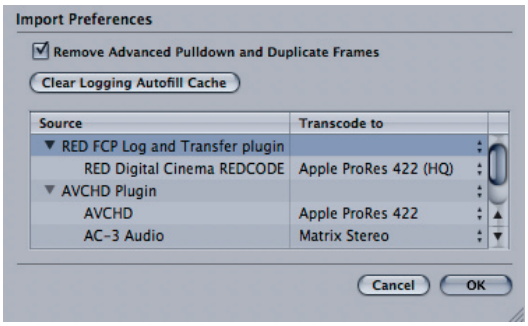
Note that the RED proxy files are assigned HD video values by default, resulting in a Rec. 709 HD video color space with a gamma of 2.2.

The workflow using the RED proxy files is suitable for an offline editorial where a later conform to the .R3D files is planned. Additional software tools for conforming the offline edit to a finishing format (like sequential DPX files) might include Crimson or Monkey Extract alongside RED's own REDCINE. For more information on using Crimson visit www.crimsonworkflow.com/home.htm and for Monkey Extract visit www.rubbermonkeysoftware.com/

AJA VIDEO SYSTEMS

Workflow using Apple ProRes 422 (HQ) media created via RED plugin for Final Cut Pro Log and Transfer

RED provides a plugin for the Log and Transfer feature within Final Cut Pro. This plugin can be obtained from www.red.com/support and can be used with Final Cut Pro version 6.0.3 or higher.

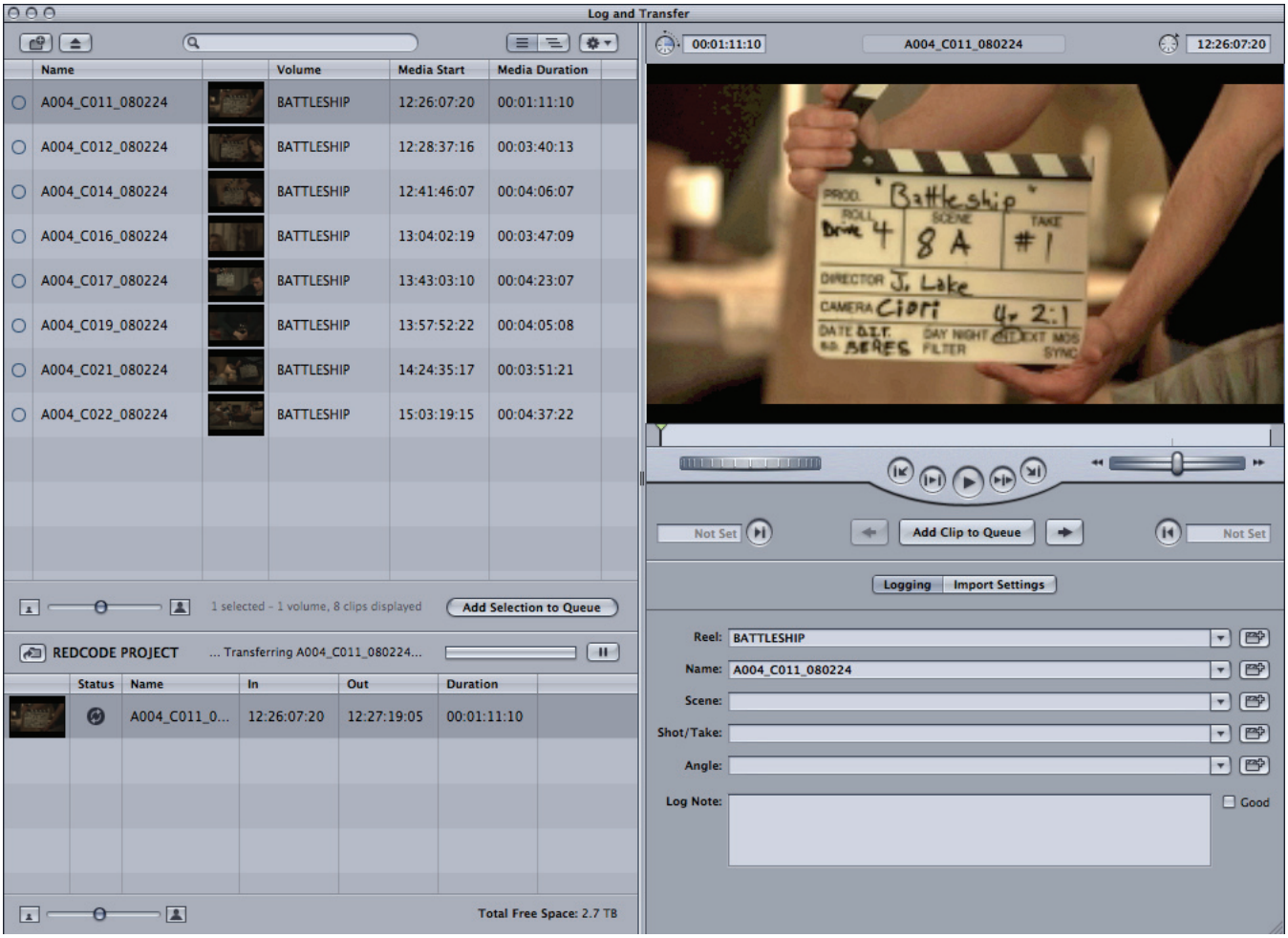


Import Preferences

The RED Log and Transfer plugin imports REDCODE clips and transcodes them to Apple ProRes 422 (HQ) at 2048x1024 and 23.98fps.

These files can be added to a Final Cut Pro sequence and operate in much the same way HD resolution Apple ProRes 422 (HQ) media would. In most cases, these files can be played back in realtime without the need to adjust the Dynamic RT settings for the sequence. The KONA 3 can be configured for video output of this media as either HD at 1080psf23.98 10-bit (1920x1080) — which is the default output for the AJA KONA 3- RED 2K x 1024 psf 23.98 Apple ProRes 422 (HQ) Final Cut Pro Easy Setup — or as 2K (via a change to the A/V Devices>Video Playback to the appropriate RED 2K 2048x1024 setting).

This workflow is simple to use, but does require the time to transcode the media from REDCODE to Apple ProRes 422 (HQ). However, Apple ProRes 422 (HQ) media can be used easily in the Final Cut Studio suite of applications. Like the REDCODE proxy files, these Apple ProRes 422 (HQ) files generated via the Log and Transfer process are assigned HD video values by default, resulting in a Rec. 709 HD video color space with a gamma of 2.2.



RED Log and Transfer being used to transcode media to Apple ProRes 422 (HQ).

Workflow using 2K DPX files created via REDCINE and wrapped as QuickTime files via the AJA DPXToQT Translator application

RED provides the REDCINE software for transcoding REDCODE media into a variety of formats and frame rates. REDCINE can be obtained from www.red.com/support . One option that is available within REDCINE is to convert the source media into sequential DPX files (or only the material used in the finished edit via the aforementioned Crimson or Monkey Extract software tools). The DPX files that can be produced via REDCINE can be assigned a variety of frame sizes, including RED's own RED ONE 2K aspect ratio, which will result in 2048x1152 sized images. Note that a large number of applications may expect to work with DPX files at more standard frame sizes, such as 2048x1556 or 2048x1080. These frame sizes can also be produced in REDCINE and the source image can be scaled to fit within these frame sizes via X and Y scalar settings in the application. Also of note, REDCINE produced DPX files, unlike either the REDCODE proxies or the Apple ProRes 422 (HQ) files created via the Log and Transfer method, can be assigned 4:4:4 RGB values, not just Y,Pb,Pr 4:2:2 values. After producing the sequential DPX files via REDCINE, these files may be used in applications that offer native support for the DPX file type or the DPX files can be wrapped into QuickTime reference movies or self-contained QuickTime movies using the free AJA DPXToQT Translator application.

The 2K uncompressed workflow is more complex than the other two methods outlined, but yields very high quality finishing results. When interfacing with other applications, such as high-end color correction or visual effects applications, DPX files might be the preferred file type. Note that the bandwidth requirements for the playback of sequential DPX files are much higher than the REDCODE proxy files or the Apple ProRes 422 (HQ) media. Appropriate computer and storage configurations need to be in place for realtime playback of 2K media.

For Further Information

For additional information on RED workflows consider visiting:
http://www.red.com/support
http://www.reduser.net/forum/index.php

For information on AJA KONA products visit:
http://www.aja.com/html/products_macintosh_kona.html

To find an AJA dealer near you visit:
http://www.aja.com/where_buy.php

To contact AJA with questions:
Phone +1-530-274-2048
Fax +1-530-274-9442
Email: sales@aja.com

Mailing Address
AJA Video Systems Inc.
P.O. Box 1033
Grass Valley, CA 95945

Copyright ©2008 AJA Video Systems, Inc
AJA®, KONA®, and XENA® are registered trademarks of AJA Video, Inc. Io HD™ and Io™ are trademarks of AJA Video, Inc.
Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. Final Cut Pro, QuickTime and the QuickTime Logo are trademarks of Apple Computer, Inc. All other trademarks are the property of their respective holders.