



ASC CDL and Avid Workflow



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Introduction

With the many steps, processes and applications used in a postproduction workflow, maintaining consistency of picture color values has been difficult. This complex problem has been addressed by the American Society of Cinematographers, which has devoted two years of work to developing the ASC Color Decision List (CDL). The ASC CDL allows cinematographers to assign looks to images that carry through postproduction by specifying the exchange of color correction information between processes in the postproduction workflow in a way that enables images to maintain a consistent look as they move from system to system. A number of industry manufacturers have developed support for and tested the specification.

CDL Application

Directors and producers get used to working with color adjusted images throughout the offline editing process. When they move to the digital intermediate (DI) stage to do the final color grade, it can feel like they're starting from square one, as they don't typically see the offline color corrections in the DI suite on the original scans or files. Maintaining color values in the color correction process throughout creative editorial provides a common starting point for DI (versus starting over) and is highly efficient. It also helps alleviate last-minute surprises, saving time and money.

The ASC CDL specifies the parameters of primary color grading on a per-clip basis to enable the exchange of a primary color grade applied to the images. Without the ASC CDL, offline editors can choose to either 'bake in' the look, which limits creative options downstream, or create a look-up table (LUT) to be applied as-is to the images when viewing, without much opportunity to change the look as LUT editing is more complex. Assuming that calibration is done on every monitor and environment per recommended procedures, the ASC CDL provides consistency of intent throughout postproduction. The CDL has been implemented by many manufactures to provide end-to-end workflows.

Avid in the Color Workflow

Avid's long history of capturing and managing metadata enables Avid® systems to store the ASC values easily on each of the clips as provided by the transfer and grading facility. The additional metadata is added to the Avid Log Exchange (ALE) format at

time of transfer or scan and made available as part of the total metadata needed in post production (see Avid Metadata Logging & Tracking in the Avid Whitepaper Online Library).

The Avid Log Exchange (ALE) format, a simple TAB formatted file with a global heading, has been universally adopted as a means of metadata exchange in most applications. Avid editing products now support ASC CDL parameters in addition to more than eighty standard metadata values and unlimited custom fields as needed for a particular vendor or workflow.

Storing ASC CDL parameters in an Avid Log Exchange (ALE) file

Two new column headers have been added to the ALE specification for the purpose of storing ASC CDL data in the ALE on a Take by Take basis. The new column headers are:

- **ASC_SOP** (the American Society of Cinematographers combined Slope, Offset and Power parameters)
- **ASC_SAT** (the American Society of Cinematographers Saturation parameter)

The ASC_SOP column header is used to associate the nine color values that make up the Slope, Offset and Power parameters for each event in the ALE. The first three numbers associated with this column header will be the RGB (Red, Green and Blue) values of the Slope parameter, in that order. The second three will be the RGB values of the Offset parameter, and the third set of three numbers will be the RGB values of the Power parameter. Each parameter's three color values are grouped by surrounding parentheses.

The ASC_SAT column header is used to associate the single value that makes up the ASC Saturation parameter. This parameter is independent of the ASC_SOP header and it can exist with or without it. There are no parentheses around this value.

Sample ALE file:

Heading

FIELD_DELIM TABS

VIDEO_FORMAT NTSC FILM

FORMAT 35mm, 4 perf

AUDIO_FORMAT 48khz

FPS 24

Column

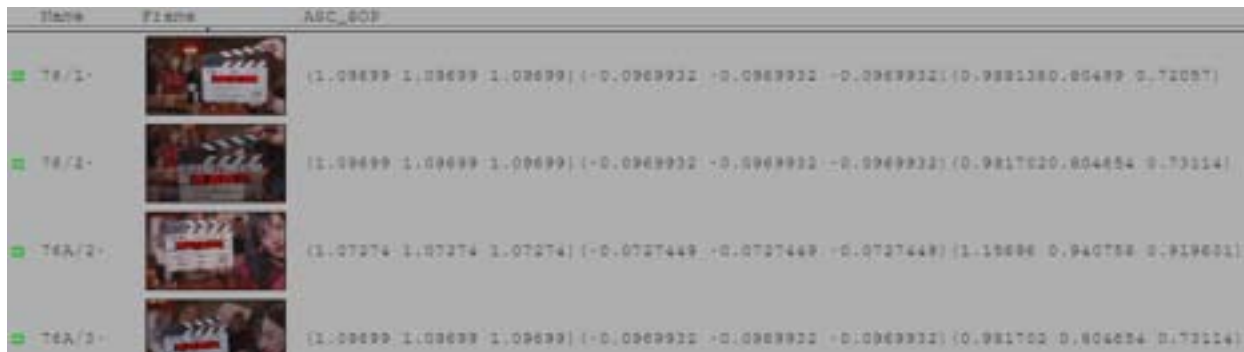
Name Labroll Camroll KN Start Tape Start End Scene Take Pullin ASC_SOP ASC_SAT




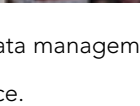
Data

Z109-1 87948 Z29 EQ581196-9221+00 033 13:00:13:25 13:00:40:00 Z109 1 A (1.0 1.0 1.0
(0.0 0.0 0.0)(1.0 1.0 1.0) 1.0

Maintaining ASC CDL parameters in Avid Bins

The ASC_SOP and ASC_SAT are now standard columns in the Media Composer® system; they can be displayed by selecting Headings in the Bin menu. The ASC values can be edited if needed, but it is not recommended unless an error or correction has been applied to the same source clip. Changes to any values can be merged into existing clips via the ALE file merge function. Please see the Avid User Guide for further information.



Name	File	ASC_SOP
T8/1-		(1.09699 1.09699 1.09699) (-0.0969932 -0.0969932 -0.0969932) (0.9881380 80489 0.72097)
T8/2-		(1.09699 1.09699 1.09699) (-0.0969932 -0.0969932 -0.0969932) (0.9817020 804854 0.73014)
T8A/2-		(1.07274 1.07274 1.07274) (-0.0727449 -0.0727449 -0.0727449) (1.13686 0.940758 0.919601)
T8A/3-		(1.09699 1.09699 1.09699) (-0.0969932 -0.0969932 -0.0969932) (0.981702 0.806624 0.73014)

Avid metadata management will keep these values on a per-clip basis for all edits used in a sequence.

Exporting ASC CDL parameters in EDLs

Metadata can be exported as part of CMX EDL as per ASC_EDL specification below.

Storing ASC CDL parameters as notes in a CMX Edit Decision List (EDL)

To distinguish the proposed ASC CDL notes, the Note ID strings are the first characters in the ASC CDL notes: *ASC_SOP and *ASC_SAT.

Note ID string: *ASC_SOP

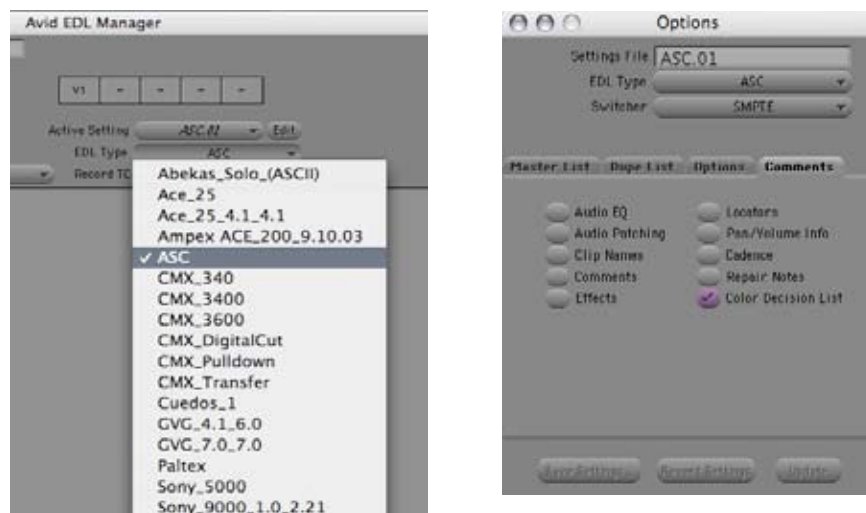
The ASC_SOP note associates the nine ASC CDL color values that make up the parameters Slope, Offset and Power with the edit that precedes this note. The first three numbers following the Note ID string will be the R, G and B values of the Slope parameter, respectively. The second three will be the RGB values of the Offset parameter, and the third three will be the RGB values of the Power parameter.

Note ID string: *ASC_SAT

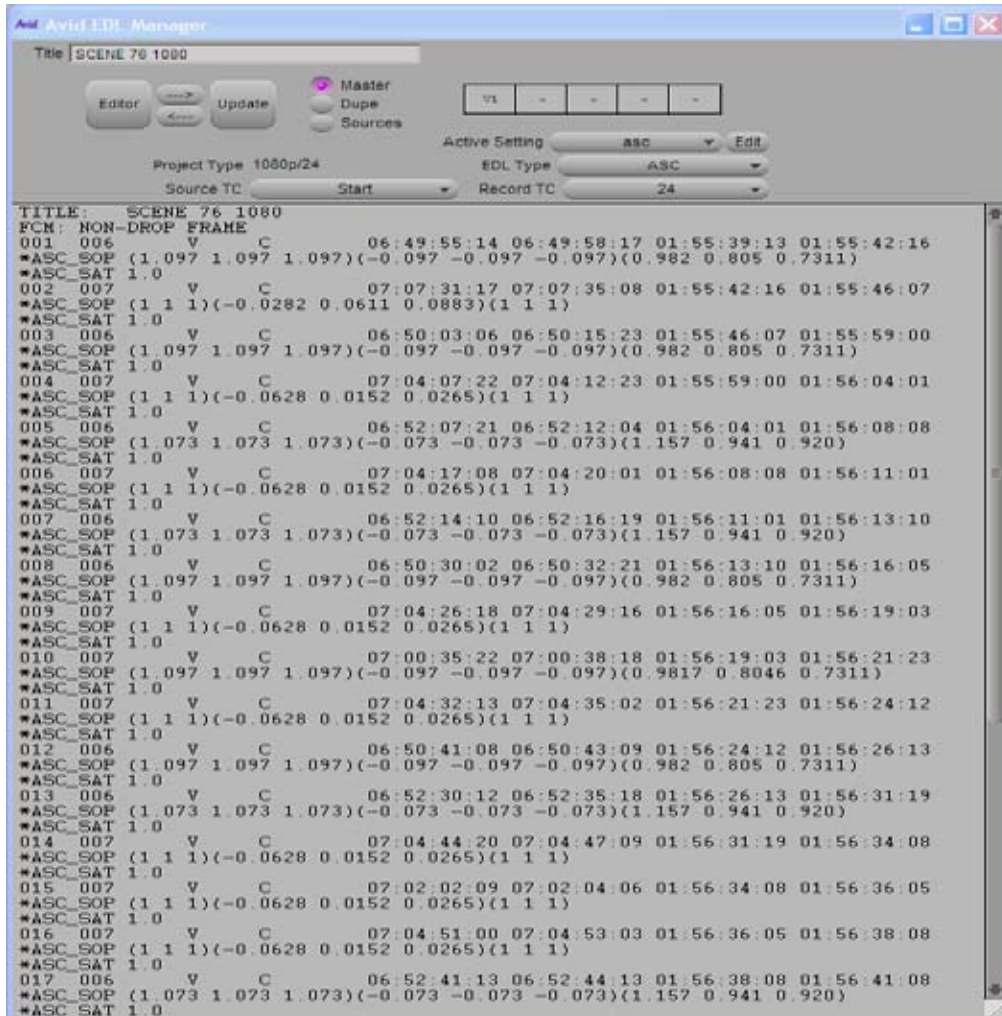
The ASC_SAT note associates the value of the ASC CDL parameter Saturation with the edit that precedes this note. This parameter may be present with or without an ASC_SOP note.

Each of the numbers that represents a color value of an ASC_SOP parameter or the ASC_SAT parameter value should be in the form of a two to five digit number with a decimal point placed anywhere between the most and least significant digits. e.g. from 0.0 or 0.0001 to 9999.9.

EDL Manager has a specific template named "ASC" that is available via the "EDL Type" menu.



In addition to selecting the "ASC" template, the ASC_SOP and ASC_SAT values are added as comments per the specification when selecting "Color Decision List" from the "Comments" tab of the EDL settings. Once selected, the EDL generated can be used to generate ASC values for downstream color correction processes.



Exporting ASC CDL parameters in FilmScribe Lists as XML

Avid is also in the final development stages of making ASC CDL information available as additional metadata in Avid FilmScribe outputs via the Avid FilmScribe XML format, which will include extensive source and record side metadata for film, video, and file-based formats. The XML will be a master file of all Avid standard and custom information including the ASC CDL metadata. Transforms will be applied to the master XML file to create XML files of specific metadata for specific workflows. One of the transforms will be the ASC_CDL_XML that will derive an XML from the master XML list to meet the specification of the ASC CDL XML format.

The ASC CDL brings further efficiencies to the postproduction process by enabling color corrections to be preserved from offline editing to DI—eliminating the need for re-work and focusing DI on additional look creation or correction. It also helps to ensure quality and consistency of vision by carrying creative choices from production through to final mastering. Avid's support for this specification ensures that consistency is maintained across both processes and project quality as users continue to move to file-based workflows.

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