

AVID GUIDE for  
AMA Workflow

# XDCAM and XDCAM-EX

Media Composer 6  
Symphony 6  
NewsCutter 10

# Avid Editing Systems

# AMA for XDCAM

# And XDCAM-EX

Features in Media Composer 6.5,  
Symphony 6.5, NewsCutter 10.5 and later.

## ACKNOWLEDGEMENTS

I wish to acknowledge the advice, feedback and support of the following people who have given freely of their time and advice. I am responsible for the accuracy of the content, and any errors or omissions are mine alone.

Calvin Judges  
Sony, Canada

Robert Russo  
Avid, Burlington, US

---

## CORRECTIONS AND SUGGESTIONS

Feedback, advice and corrections are always appreciated.  
AMA@paul-sampson.ca

---

Be sure to visit  
[WWW.AVID.COM/AMA](http://WWW.AVID.COM/AMA)

Version 4,  
**COPYRIGHT**  
© 2013

all rights reserved, including the right of  
reproduction in whole or in part in any form

## Contents

INTRODUCTION .....	4
AVID XDCAM AND XDCAM-EX PLUGIN SUPPORT .....	5
SONY FORMATS .....	6
XDCAM PRODISCS .....	8
PROAV FOLDER .....	10
LINKING TO A PRODISC .....	12
USING RELINK WITH AVID MEDIA ACCESS .....	14
UPDATING METADATA ON EXISTING CLIPS .....	15
XDCAM WORKFLOWS .....	17
XDCAM-EX FORMAT .....	20
OUTPUTTING .....	21
SONY PRODUCTION SOFTWARE .....	23
REFERENCES .....	24

# INTRODUCTION

AMA (Avid Media Access) is the Avid architecture for linking to file based media rather than ingesting it. This document is specifically about linking to Sony XDCAM and XDCAM-EX files in your Avid Editing Environment.

This is the *second* Workflow guide you should consult. AMA is described and its workflows and features explored in the AMA Master Guide. This current document assumes you have read that guide, which contains most of the detail about how to perform AMA operations. The Guide you are reading now covers the specifics of XDCAM and XDCAM-EX within the AMA architecture.

This is not a full XDCAM or XDCAM-EX workflow guide, it explores the feature of AMA which itself is a part of many complete Sony workflows.

## OTHER AMA RESOURCES

You have many other resources for AMA information. Apart from the AMA Master Guide and this document, you may consult:

- **XDCAM PLUGIN GUIDE**  
The PLUGIN, which you must install, has an accompanying guide with details for its use.
- **Avid Editing Guide for your Editing System**  
This came with your editing system, or can be downloaded from the Avid Knowledgebase, [www.avid.com/support](http://www.avid.com/support)
- **Avid Editing Application HELP**  
This is, in effect, the Avid Application manual online at your editing computer. The HELP contains all the information in the official manual, and is easily accessible to answer your questions.

## WHO AM I?

I am Paul Sampson, a freelance trainer, an Avid Certified Instructor (ACI) and an Avid Certified Support Rep (ACSR) living in Canada. I have experience with many clients, different environments and a variety of hardware. Every week I am at a different facility assisting with training and workflow within the Avid environment.

## AVID XDCAM and XDCAM-EX PLUGIN SUPPORT

Avid has been supporting the file-based XDCAM and XDCAM-EX formats for many years. It has a well-established, well-integrated workflow that has changed and become easier over the years.

Avid supports *native* XDCAM and EXCAM-EX support. This means that the files can be read directly by Avid editing products. You could insert an XDCAM or XDCAM-EX device into an Avid editing system, and begin editing with its contents immediately. For many workflows, such as News with XDCAM-EX, there may be no need to actually copy the files onto an Avid storage device - you can edit directly off the SxS card.

XDCAM and XDCAM-EX are fully supported through the installation of an external codec supplied by Sony. This is added to your system by installing the AMA Plugin, available from Sony or through the link at [www.avid.com/AMA](http://www.avid.com/AMA).

You may link to XDCAM material using `Link To AMA Volume` or `Link To AMA File(s)...` Linking to a VOLUME is more flexible than linking to a File, as we will discuss.

You may link to XDCAM-EX material by using `Link To AMA Volume` only. Since XDCAM-EX shows as separate Video and Audio files when mounted on your computer, linking to a single file is ineffective.

You may Consolidate, Render, Import and Transcode in both XDCAM and XDCAM-EX.

There is a full set of features for working with XDCAM which are not described in this document. This Legacy support is activated by disabling AMA, which turns on several items in the FILE menus which allow you to work with XDCAM by copying it or its proxies into Avid storage. AMA is seen to be a faster, easier method of working with XDCAM for most people.

## SONY FORMATS

The Sony XDCAM AMA Plugin for Avid editing systems supports Sony XDCAM formats (SD, HD, 422) as well XDCAM-EX. Using this plugin, you can link to the following XDCAM format files:

	Video Compression	Record Media	Frame Sizes (w x h)	File Container	Date Rate
<b>XDCAM SD</b>	DV	ProDisc	720 x 480, 720 x 576	MXF	25 Mb
	IMX MPEG 30	ProDisc	720 x 480, 720 x 576	MXF	30 Mb
	IMX MPEG 40	ProDisc	720 x 480, 720 x 576	MXF	40 Mb
	IMX MPEG 50	ProDisc	720 x 480, 720 x 576	MXF	50 Mb
<b>XDCAM HD</b>	LP MPEG-2	ProDisc	1440 x 1080	MXF	18 Mb
	SP MPEG-2	ProDisc	1440 x 1080	MXF	25 Mb
	HQ MPEG-2	ProDisc	1440 x 1080	MXF	35 Mb
	MPEG-2 Progressive	ProDisc	1280 x 720	MXF	35 Mb
<b>XDCAM HD 422</b>	MPEG-2	ProDisc	1920 x 1080	MXF	50 Mb
	MPEG-2 Progressive	ProDisc	1280 x 720	MXF	50 Mb
<b>XDCAM-EX</b>	HQ MPEG-2	SxS Card	1920 x 1080	MP4	35 Mb
	SP MPEG-2	SxS Card	1440 x 1080	MP4	25 Mb
	MPEG-2 Progressive	SxS Card	1280 x 720	MP4	35 Mb
	SD DV	SxS Card	720 x 480, 720 x 576	DV-AVI	25 Mb
<b>XDCAM PROXY</b>	MPEG 4	ProDisc	352 x 240	MP4	1.5 Mb

\* There are exceptions and overlaps with some of the newer cameras. For example the PMW-500 can now record XDCAM on an SxS card. Please see Sony specs for more detail if required.

### NOT SUPPORTED

Notice that some Sony formats require a different plugin. Specifically, HDCAM SR HQ, SQ and Lite use a separate plugin covered in a separate AMA guide.

## RECORD MEDIA

### Professional Discs

Professional Discs come in three sizes: 23, 50 and 128 GB. The largest disc is Write once. Other discs are Read/Write. These discs record only MXF files in the formats indicated on the previous page. There exist two USB ProDisc readers (PDW-U1 and PDW-U2) and many Firewire connected decks (such as PDW-1500 / PDWF 1600) for AMA linking to these discs. We cannot AMA link to an Ethernet connected XDCAM device, USB or FIREWIRE with the proper drivers on the computer are required.



### SxS Cards

These are ExpressCard and can be plugged into an express card slot on any MAC or PC if the proper drivers are installed. Currently, these cards can contain XDCAM recordings when formatted as FAT, or MXF (XDCAM) recordings with proxies when formatted as UDF. **The PMW-500 is the only camera currently able to record in XDCAM mode on these cards.**



	ProDisc	SxS card
Record Format	XDCAM only	XDCAM XDCAM-EX
File Format	MXF	XDCAM – MXF XDCAM-EX - MP4 or AVI
PROXIES available	YES	YES in XDCAM NO in XDCAM-EX
Format Media	Sony Proprietary	For XDCAM use <b>UDF format</b> For XDCAM-EX use <b>FAT format</b>

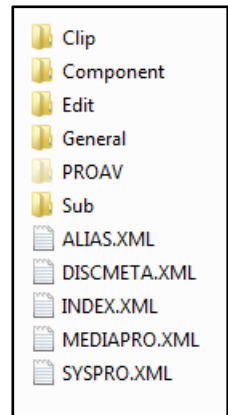
# XDCAM PRODISCS

XDCAM ProDiscs contain the high resolution recording, as well as a Proxy (low resolution) recording of each clip. This allows for a High Resolution or a Low Resolution workflow. There are also multiple folders and files for other purposes. Note that now, SxS cards have a very similar structure when UDF formatted to record MXF files.

## XDCAM RECORDING STRUCTURE

Regardless of the format you record, the apparent file structure on an XDCAM disc is quite straight forward as shown here. The material we want to use is in the SUB (proxies) or the CLIP (High Resolution) folders. Here is a folder summary:

<b>Clip</b>	Contains the high resolution MXF files, as well as a data file (XML) for each recording. We will edit and work with the MXF files here.
<b>Component</b>	Used by some Sony products, like the HR-1, to store voice recordings and other data
<b>Edit</b>	Stores ClipLists / Storyboards (edit lists) created on Sony Cameras and software such as the Sony Browser.
<b>General</b>	The only folder on the disc in which you can store files of your own such as scripts, spreadsheets, word documents and others to compliment disc data.
<b>PROAV</b>	Discussed in a separate section
<b>Sub</b>	The proxy files are located here.



## What kind of Recording is it?

In the root of every XDCAM disc are a number of XML files. These contain information about the disc and its contents. When you receive a disk with an unknown recording these files can help you identify the disc contents. If you double click on an XML file it will open on many computers in a web browser. If not you can open the file in any text editor. While you can explore many of these files on your own, here is an excerpt from

MEDIAPRO.XML:

```
- <Material type="MXF" umid="060A2B340101010501010D4313000000C1AD16009647058008004602012605BF" offset="0"
aspectRatio="16:9" ch="4" dur="872" fps="59.94i" audioType="LPCM16" videoType="MPEG2HD35_1440_1080_MP@HL"
uri="/Clip/C0001.MXF">
  <Proxy type="MXF" umid="060A2B340101010501010D4313FF0000C1AD16009647058008004602012605BF"
  audioType="A-Law" videoType="PD_Proxy_Video" uri="/Sub/C0001S01.MXF"/>
  <RelevantInfo type="XML" uri="/Clip/C0001M01.XML"/>
```



While things are a little jammed up, you can determine from this that this is a 16:9, 4 audio channel, 59.94 interlaced recording, at 35 Megabits and a pixel size of 1440 x 1080, and proxies are present.

## **MAKING A VIRTUAL VOLUME**

You may copy the contents of an XDCAM disc to a hard drive and then AMA link to the copy. It is recommended you always copy every file and folder on the disc to the hard drive which will become your virtual volume – the only exception being the PROAV folder discussed shortly.

## **XDCAM METADATA IN AVID EDITING SYSTEMS**

An AMA link to an XDCAM disc creates a clip which contains a lot of extra columns of text information (metadata). Some of this is technical information, like the camera used, its software versions and serial number which are potentially useful for troubleshooting.

For Production, the text fields supported in the Sony Cameras, Sony Browser Software and PDZ-1 Software are of interest. The COMMENTS, TITLE 1, TITLE 2, CREATOR, STATUS, ESSENCE MARKS (as Avid Markers) and others can be used to carry information from screening desktop to the edit suite.

If the original disc is available, a producer can screen using the Sony Software and write the changes back to the disc before ingest.

## **EJECTING YOUR DISC**

If the ACCESS light is illuminated on your XDCAM device, you will not be able to eject your disc. If a clip is loaded into either monitor on the Avid editing system you will also not be able to eject the disc. Unload any clips from the Source or Record monitors (Select `Clear Monitor` from the appropriate Monitor Menu). If you still cannot eject your disc, quit the project (not the application) and it will release the device.

## **AUDIO WAVEFORMS MISSING ON AMA CLIPS**

When screening an AMA clip in the Source monitor or in a Timeline, there will be no Waveform display available for those clips. The time to draw the waveform on a long clip would be excessive, so it has been disabled.

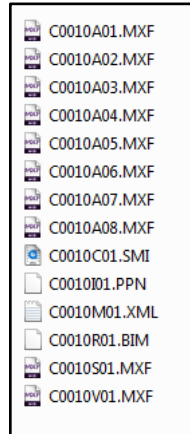
## PROAV Folder

What you see on your computer when you look at the contents of a ProDisc is not reality. In fact, the recordings on the disc are 'atomic' in that the actual disc records the video and all the audio tracks as separate files.

A single XDCAM 50Mb recording is stored in a folder on its own which contains 1 high resolution video file, 8 high resolution audio files and a single Proxy Video and audio file for a total of 10 files (plus 4 data files) per clip (as shown at the right)!

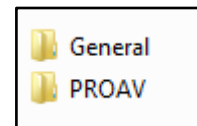
The Sony driver virtualizes these files so you see and interact with a single, discrete file for High Resolution and a single discrete file for low resolution. These virtual files are in the CLIP and SUB folders.

The PROAV folder allows us to view and access the individual files from which the XDCAM we work with are composed. On U1 and U2 disc players, this folder can be hidden. On firewire decks this folder can be totally disabled – so it does not even appear as a hidden folder.



While we usually do not interact with these folders, there are three major issues related to the PROAV folder you should know about.

1. If you COPY an XDCAM disc, and you copy the PROAV folder, you are copying everything twice! If you copy 23 Gb of recorded material and include the PROAV folder, the final copy will be 46 Gb in size. Sometimes, this may be required (see below)
2. Some AVID features, such as Linking and Consolidating to low resolution video require access to the PROAV folder. If it has been disabled, these features will not work. If you want to use these features with Virtual Volumes, you DO need to copy all the disc media as well as the PROAV folder, swelling your Virtual Volume to 200 percent its original size
3. If your Sony Drivers are not properly installed, when you insert an XDCAM disc you may not see the normal folder structure but only the General and PROAV folders. If you copy these to a Virtual Volume the Virtual Volume is useless. Not only can the Avid editing software not link to or import this media, even Sony software will be unable to access it.



To enable the PROAV folder:

- In a FAM (firewire) deck go to Maintenance Menu: Shift/Page-Up/Menu > M33 > ProAV Enable.
- On the PDW-U1 and the PDW-U2 set this in the U1 Utility > Setup > User Settings and uncheck "Hide PROAV folder."

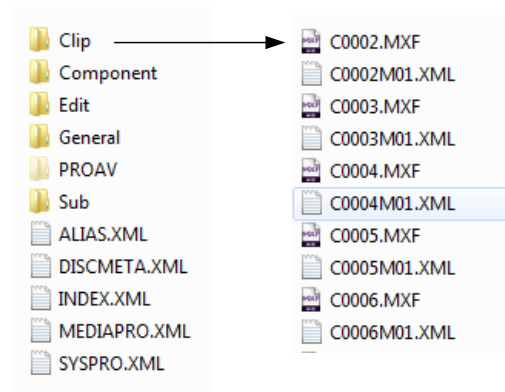
## LINKING TO A ProDisc

We may link to a XDCAM using either method - **Link to AMA Volume...** and **Link to AMA File(s)...**. We can link to the original disc, or a copy of that disc (a Virtual Volume).

Linking to AMA Volume is the best way to proceed. Linking to a File you lose any benefits of working with the whole disc. For example, if you link to a file the **AMA Resolution Quality** settings, discussed next, will not work. If you link to a File, you do not get all the extra XDCAM Metadata (TITLES, COMMENTS and more) which is available when you link to a Volume. XDCAM AMA works best when the full disc is linked, not individual files!

### LINKING TO A SINGLE XDCAM FILE

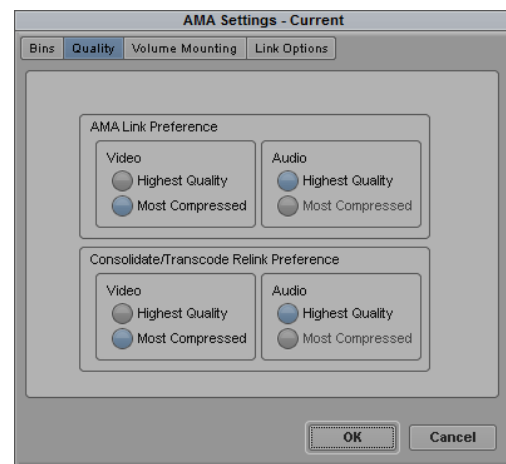
As already mentioned linking to a Volume, when possible, offers access to all the benefits the plugin offers. If you wish to link to a single MXF file on XDCAM media (ProDisc or SxS card) your MXF files are found in the directory labeled **CLIP**. In here are the MXF files, as well as an XML which contain details about each recording. These XML files cannot be imported of course, and if you select any for AMA linking an error will occur. Use the AMA dialogue **FILTER** option to only see MXF files when linking so you don't select any XML files by mistake.



### High Resolution or Low Resolution?

Since the ProDisc contains both high and low resolution media, we need to be able to select which version of the Video and audio we wish to link to. This is done in your AMA settings, on the second tab labeled **QUALITY**.

At the top of this dialogue we select if we want to link to **HIGH** quality video, or **MOST COMPRESSED** video. We have the same choice for Audio. Make your selection and click **OK**. This does not affect clips which are already linked.



## Changing Linked Clip Quality

Once you have linked to a clip, you can still change your mind about which Video and Audio quality you want to use. It is possible to select one or more clips and modify their AMA Resolution Quality after the original link has been done.

This is useful if you're doing a low resolution edit, and need to see a particular shot at full quality- you can temporarily link to the high quality video and audio for that clip, then link back to the low resolution.

To modify the Quality of a linked clip, select the clip (or clips) and then right click on its icon. From the context menu, choose **Modify AMA Resolutions...** to see this dialogue. Select your desired resolution and click OK.



NOTE: The Quality option will only work if the PROAV folder is available. This folder is a hidden folder. If it was not copied over to the Virtual Volume, or has been disabled using a menu item on some decks, then the low resolution video it contains will not be available for any proxy workflow.

	Name	Video	Audio SR	Audio Bit D
	C0013	MPEG-4 525	48000	16
	C0012	MPEG-4 525	48000	16
	C0011	MPEG-4 525	48000	16
	C0010	MPEG-4 525	48000	16
	C0009	MPEG-4 525	48000	16
	C0008	MPEG-4 525	48000	16
	C0007	MPEG-4 525	48000	16
	C0006	MPEG-4 525	48000	16
	C0005	MPEG-4 525	48000	16
	C0004	MPEG-4 525	48000	16
	C0003	MPEG-4 525	48000	16
	C0002	MPEG-4 525	48000	16
	C0001	MPEG-4 525	48000	16

	Name	Video	Audio SR	Audio Bit D
	C0013	MPEG-4 525	48000	16
	C0012	MPEG-4 525	48000	16
	C0011	MPEG-4 525	48000	16
	C0010	MPEG-4 525	48000	16
	C0009	MPEG-4 525	48000	16
	C0008	MPEG-4 525	48000	16
	C0007	MPEG-4 525	48000	16
	C0006	MPEG-4 525	48000	16
	C0005	XDCAM HD 35Mbps (1080i/60)	48000	16
	C0004	MPEG-4 525	48000	16
	C0003	MPEG-4 525	48000	16
	C0002	MPEG-4 525	48000	16
	C0001	MPEG-4 525	48000	16

**(left) Clip 5 originally linked to Proxy video. (right) Using the context menu item **Modify AMA Resolutions...** Clip 5 has be linked to high resolution video**

## Using RELINK with Avid Media Access

RELINK allows you to assign different media to a particular clip. You can RELINK an AMA clip to media which has been copied to Avid storage. This includes media imported via FAM, or media consolidated or transcoded from the original AMA clip. After you successfully re-link, the clip will no longer show the AMA 'chain link' as part of its icon. As well, the drive text column in your bin will now report the new media drive rather than the original AMA drive.

If you try to re-link to a mounted AMA volume, it does not appear as a drive in the Re-link dialogue. However, if you re-link to "all Available Drives" it will re-link to a mounted AMA volume, *even if the media is present on a local drive*. To force a re-link to media in Avid storage, you must explicitly link to the drive containing that media.

## Updating Metadata on Existing Clips

In some situations, media is ingested while a Producer or Reporter is still screening content. The Production staff could add annotations to the original recording (Essence Marks/Markers, new clip names, text in the Sony fields such as TITLE 1, DESCRIPTION and so on). This updating would most likely be done using the Sony Browser software, described shortly in this document. It is then desirable to be able to update the clips already created by Import / Consolidate / Transcode so they have this new metadata.

In a small production, this is possible. We need to force the creation of NEW AMA clips, and then relink these new AMA clips to the existing media. If you then want these clips to link to an already created timeline, a RELINK to the sequence is the final step.

### 1. Force the creation of new AMA Clips

- In your AMA settings, first tab, set AMA naming to `USE ACTIVE BIN`.
- Close all Bins.
- Create and name a new bin.
- With this new bin Bin selected, insert the first disc and let it AMA mount and create new clips in this bin. These new clips contain the updated Metadata added since your media was originally moved into Avid storage.

### 2. Relink the new clips to Online Media

- Select all the clips in the bin.
- Choose the menu item `CLIP > RELINK`. Be sure to point the dialogue to the specific drive containing your online media. Check the option “Allow relinking of imported/AMA clips by source file name”. Choose Video Parameters as appropriate – often this means choosing Highest Quality video.

Your Metadata laden AMA clips should no longer show the AMA link, and they should be linked to the online media of your choosing.

For safety, now open the original bin with these clips in it so that the earlier copy of the clips in that bin will automatically update with these changes.

### 3. Relink these clips to an existing Sequence

If an edit has been done or is in progress, you may need to relink these new clips with their updated metadata to the existing Sequence. Select the Sequence and choose `RELINK` again. This time, be sure to choose the drive containing the media you just relinked to as the source for the relink. Your timeline will link to these new clips with the updated metadata.

This procedure is a little tricky. In particular, if you open an OLD bin, it may rewrite the clip metadata on the NEW clips! That's why I recommend opening the older bins *after* opening the new ones. If done in this order, the newly opened bin (old clips) takes its updates from the already open bin (updated clips).



## XDCAM Workflows

There are three main ways of working with XDCAM footage.

1. **Non-AMA:** IMPORT XDCAM
2. **AMA Hi Res:** Link and Edit
3. **AMA Low Res:** Link and Consolidate/Transcode

### 1. Non-AMA

Originally, AMA was not used with XDCAM. We simply imported the XDCAM footage and performed our editing. We could import the proxy or the high resolution footage, but we were missing a method of conforming proxy to high resolution.

Later a new menu option appeared. `Import XDCAM proxy` did more than just import the proxies. It remembered information about the disc from which they came. This allowed us perform a batch import of the high resolution video after performing a proxy edit. This is the only situation in which batch import can remember which disc media has actually come from, and ask for it by name. Often, batch import needs to be told where every individual file is located. In this specific workflow the Avid software is written so that it remembers this for us.

One of the problems with this approach originally was that you always got the low resolution video and audio. The audio, at 8 kHz, was often judged to be unacceptable for editing. With current versions of the Avid software this is no longer the case. `Import XDCAM proxy` . . now brings in the low resolution video with the high resolution audio.

This workflow is still available, just by turning off the AMA. The basic steps are:

- Use `FILE > IMPORT XDCAM PROXY...` to ingest the proxy video
- Perform your editing
- Select your final sequence and choose the menu item `CLIP > BATCH CAPTURE` and insert your original discs one by one as they are requested.

This process only works if you have the original XDCAM disks, it did not support disc copies on a hard drive - virtual volumes.

## 2. AMA HIGH RESOLUTION: LINK and EDIT

Editing with AMA linked high resolution footage has already been covered in the AMA Master Guide. There is nothing particularly unique about linking to high resolution XDCAM, and then editing with it or transcoding / consolidating its footage into Avid storage. You just need to be sure the AMA Resolution Quality settings are properly set.

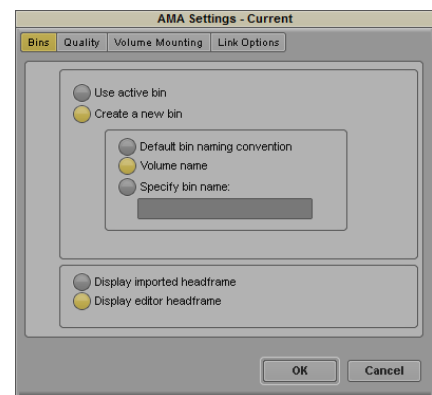
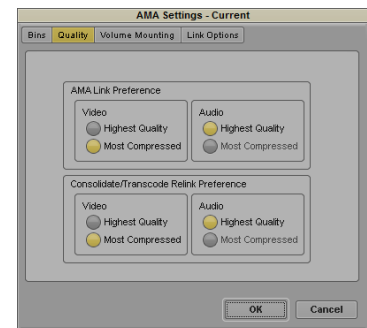
## 3. AMA LOW RESOLUTION WORKFLOW

An Offline Proxy workflow is not what we once thought- for example the proxies today could be High Definition DNxHD 36 created by a Transcode, or they could be the classic on-disc MPEG 4 MXF files from Sony. One of the big benefits this has over the non-AMA proxy workflow is it does not require the original discs, but will work with Virtual Volumes.

We will start with the Sony Proxy workflow, then look at how a DNxHD 36 Transcode workflow might differ.

### *Preparing for and Performing the Offline Edit*

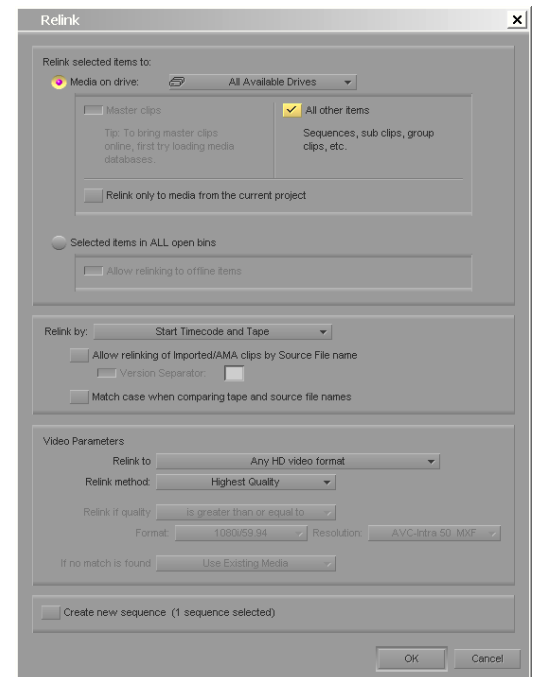
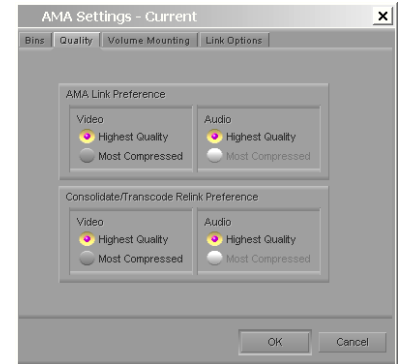
- Check your AMA **QUALITY** settings tab. Ensure your Video **CONSOLIDATE** / **TRANSCODE** settings are set for **MOST COMPRESSED** so you will get the Proxy video when you Consolidate (right).
- Check your AMA **BINS** Setting. Set to **CREATE A NEW BIN** based on **VOLUME NAME**. This will create a new bin for each disc which is named after the disc itself. Be sure your discs have unique names so you will be able to find everything later on!
- AMA Link to a Disc
- Select all the clips you and use **CLIP > CONSOLIDATE** to copy them to local storage. When asked this question **ALWAYS CHOOSE THE TOP OPTION “Keep master clips linked to Original...”**. **Relinking will fail if you choose “Relink to target”!**



- Move the consolidated (.new) clips into another bin and name it appropriately. Close the AMA (linked clips) bin for later use. Hide this bin in a folder in the PROJECT WINDOW until needed later.
- EDIT using the proxy clips

### *Conforming from the Proxy Sequence*

- Adjust your Avid AMA Quality Setting, on the 2<sup>nd</sup> AMA settings tab. Setup for Consolidate/Transcode with HIGH quality Video and Audio.
- For safety, make a duplicate of the sequence in a new bin
- You may want to see which discs you need for the conform. Right click in the bin, and choose SET BIN DISPLAY. Select Show Reference Clips. Using BIN > CHOOSE COLUMNS to show the UserDiscID column. Sort by this column to see Discs required in order. Repeat the following steps for all discs.
- Insert a disc. The disc will mount, open the original AMA bin on its own, and populate the AMA clips with High Resolution Video.
- Run RELINK on the Sequence (CLIP > RELINK) with settings like those shown here to relink the Sequence shots from this disc at High Resolution.
- Consolidate the Sequence to copy the currently linked HIGH RESOLUTION video into local storage. Be sure to Consolidate to the same drive each time, and to have the option SKIP MEDIA FILES ALREADY ON THE TARGET DRIVE turned ON. This ensures you copy only the high resolution video linked to the current XDCAM disc into your Avid local storage.

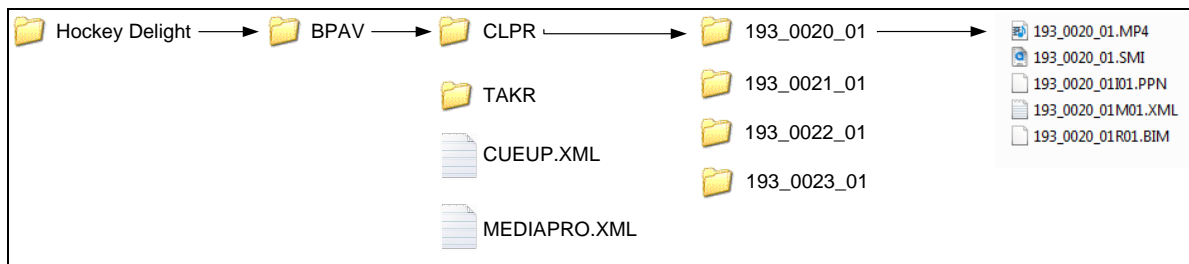


## XDCAM-EX FORMAT

XDCAM-EX began its life as a Prosumer format, as a cost effective way to get into High Definition video recording. It has evolved from there to be a contender in many situations for its big brother, XDCAM. Some XDCAM-EX products are configured and sold as Film style production tools (PMW F3).

XDCAM-EX records on SxS cards. The illustration below shows the file structure on the FAT formatted SxS cards. All recordings are in the BPAV folder. When copying SxS cards to make Virtual Volumes, this is the lowest level folder which should be copied to your hard drive and placed inside a named folder.

All recordings are clustered together in the folder named CLPR, in which each recording appears in its own folder as a collection of separate files. Because of this, *we do not use* `FILE > Link To AMA File(s)...` with XDCAM-EX, we only link to Volumes using `FILE > Link to AMA Volume...` The MP4 file you see is essence only, and cannot be linked to or normally even played on your computer on its own.



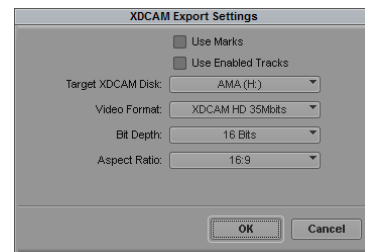
## Outputting

XDCAM-EX can be exported in all the normal ways – as a Digital cut or a File Export. You cannot write back XDCAM-EX to SxS cards.

XDCAM offers two other options beyond these two. You can write an XDCAM file back to an XDCAM disc, and you can export an XDCAM file as an MXF OP1a file. These files are often suitable for playback to air servers or simply for convenient exchange of program material.

### WRITEBACK to XDCAM MEDIA

This option outputs your selected clips or Sequences to a connected XDCAM disc. Simply select the objects you want to send to disc in your bin, and choose the menu item **OUTPUT > EXPORT TO DEVICE > XDCAM** to see this dialogue. Fill in as appropriate and click OK. The selected items will be output to your connected XDCAM disc as separate clips.



The timecode on your clips is determined by the recording device.

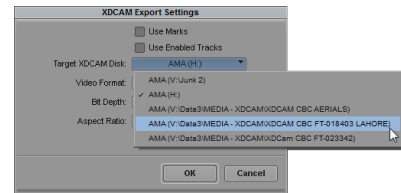
**U1 or U2 USB Disc Reader:** Use the SONY XDCAM DRIVE utility to choose **SETUP > USER SETTINGS**. Here you can choose to **REUSE TIMECODE IN THE SOURCE MXF** or **GENERATE CONTIGUPOUS TC**.

**Sony Firewire Decks:** The various timcode settings on the deck determine how the timecode on the items is handled. As an example, here are the settings for the Sony PDW-1500:

- To **pick up** from where the last XDCAM recording left off the decks Timecode generator (front panel menu 5) is set as **INTERNAL / TC / REC RUN**
- To have the XDCAM disc **record the original Sequence or Clip timecode** on the XDCAM, ensure your XDCAM decks Timecode generator (front panel menu 5) is set as **EXT / PRESET / REC RUN**

## WRITEBACK TO XDCAM VIRTUAL VOLUME

If you want to export to a mounted Virtual Volume, this is possible although the copy is incomplete. Every XDCAM volume that you link to using **FILE > LINK TO AMA VOLUME...** will appear as a destination in your XDCAM EXPORT dialogue. In the example shown here, there is only one physical XDCAM device, the other four destinations are all mounted Virtual Volumes.



After exporting to one of these devices, the resulting file resides in the appropriate CLIP folder. There is however no accompanying XML file, and this new clip is not added to the Sony metadata in the XML files.

This method offers a quick and simple way to export to specific hard drive destinations. You could create several empty XDCAM disc images as WATCH folders for transcoding or delivery, mount these empty volumes, and then export your final product directly into these folders when done.

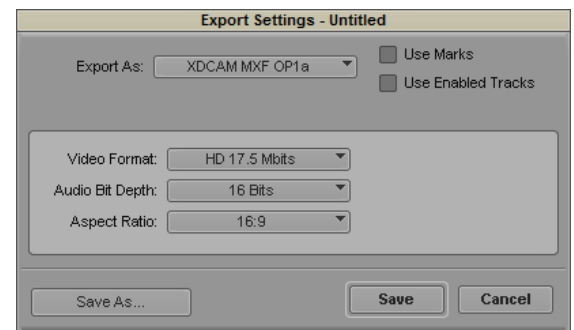
So while **EXPORT TO DEVICE > XDCAM** would not be a normal way to output an item into the Sony XDCAM environment, it does have potential for custom applications. In most cases exporting to XDCAM OP1a (next) is a more common solution.

## EXPORTING XDCAM OP1a FILE

If you need an MXF file in this format, it is available as a direct export from your Avid editing system. Select one or more items in the Bin and choose **FILE > EXPORT**. Choose **XDCAM MXF OP1a** as the type to see this dialogue.

When you export, your MXF file will have the number of tracks supported by that Sony format. For example, XDCAM 35 Mb will have 4 audio tracks, a Sony XDCAM 50 Mb (Sony XDCAM HD 422) MXF file will have 8 audio tracks. If you have more than the maximum number of tracks allowed, an error message will remind you to reduce the number of tracks. If you have too few, empty tracks will be created for you in the target file.

Your export is not affected by your Stereo / Mono settings or your pan adjustments. Audio level adjustments (Clip Gain and Auto Gain) are reflected in the output. The result is the same as a DIRECT OUT transfer, with each track going directly to disc on a separate channel.



# Sony Production Software

Sony offers a number of products for working with XDCAM and XDCAM-EX.

## PDZ-1

PDZ-1 was Sony's original software for working with XDCAM disks. This software has now reached the end of its life. While it is no longer in development there are still some things you can only do with PDZ-1. Specifically, PDC one is the only software which will currently allow you to rename clips on an XDCAM disc, and generate an AAF file from a Sony storyboard. Apart from these two features the new Sony browser software is more flexible and more superior in virtually every other area.



## SONY XDCAM BROWSER

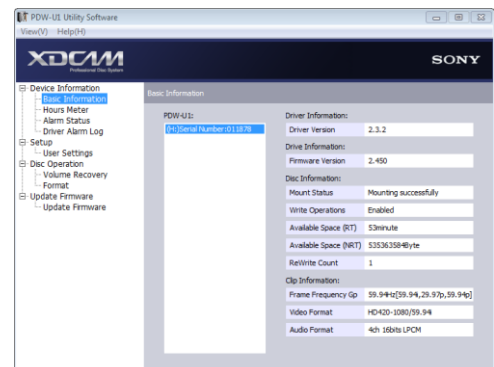
This is the current software for screening and working with both XDCAM and XDCAM-EX recordings. It allows you to screen, annotate, copy and delete media, format media. It works with both the original media and copies of the media in folders on your hard drives.



## USB UTILITIES

For Sony's USB connected devices, the PDW-U1 and the PDW-U2, there is a *piece of software called the Sony XDCAM Drive Utility*. It is used to update firmware in these units, monitor their performance, configure the devices, and format media. Of particular interest:

- You can hide and show the PROAV folder
- Switch the units between C0000 naming and free naming,
- Enable and disable mixed-media recording
- Choose TC mode for writeback



## REFERENCES

Sony XDCAM Website	<a href="http://www.Sony.com/xdcam">http://www.Sony.com/xdcam</a>
Sony XDCAM-EX Website	<a href="http://www.Sony.com/xdcamex">http://www.Sony.com/xdcamex</a>