



AVID® EDITING SYSTEMS & **IKEGAMI GFcAM™**

Procedures and Workflow for using the
Ikegami GFPAK Flash RAM with Avid Editing Products



www.avid.com/ama

Avid Editing Systems and Ikegami GFCAM™

Features in Media Composer® 4.0 and later, Symphony™ 4.0 and later, NewsCutter® 8.0 and later.

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CORRECTIONS AND SUGGESTIONS

Feedback, advice and corrections are always appreciated. Include the word GFCAM in the subject heading GFCAM@paul-sampson.ca

Be sure to visit www.avid.com/ama

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INTRODUCTION

With the introduction of Avid media Access (AMA) support for GFCAM I felt that a document was required which would guide people through the process of using GFCAM in the Avid environment. Within these pages you will learn how to screen, import, edit and output programs starting with GFCAM recordings.

The features described here were introduced in the following versions of Avid products:

- Media Composer 4.0
- Symphony 4.0
- NewsCutter 8.0

As always, remember to check the ReadMe or Help for each version of Avid editing system software for the most complete and up to date information!

I am an Avid user, an Avid Certified Instructor (ACI) and Avid Certified Support Representative (ACSR). I regularly perform training on Avid products. I visit a lot of different sites, and have an opportunity to see many different ways of working.

Paul Sampson
October, 2009

GFCAM Product Line

History

Avid and Ikegami have a long history together. In 1995 they pioneered the idea of tapeless recording. The first product was called the EditCam and it recorded in the camera on portable hard drives. This evolved into another product called the CamCutter. The GF Series of products you see today have been available since 2008, and continue Ikegami's growth in this area.

GF stands for "Giga Flash", and refers to the fact that the recordings are being done on flash RAM.



CamCutter cartridge and docking station, 1990's

Products

The GF Series includes a Camera, a Media Station deck, a smaller Media Station portable deck, and a portable player. This line of products is being produced in cooperation with Toshiba. One of the things which Toshiba brings is experience with flash RAM. Recordings on this new line of products are done on custom chips embedded in a carrier called a GFPAK.

The GF Series of decks come with both a USB and a Gigabit Ethernet connector built-in. The USB connector is not for connection to your Avid editing system. Unlike the devices of some other manufacturers where their decks can be mounted as external hard drives, the GF line is not designed to do this. Instead, the intention is that you would use the GFPAK's directly, or download the material from the various decks using Gigabit Ethernet, and then work with these *copies* of the media. For many people in a server environment a Gigabit Ethernet connection does provide an accessible method of getting media from a GFPAK into the server. For standalone editing systems, most users will connect the GFPAK's directly to their Avid editing systems.



GF Series Media Station Studio Deck

For example, the GFSTATION deck is designed for use in a studio environment. It contains 128 GB of internal RAM on which it can record. For an Avid editing system to access the content recorded on its internal RAM, the material will be moved off the deck via Gigabit Ethernet or by copying it to a GFPAK. It is this copy of the media which Media Composer would access.

GFPAK



GF Series GFPAK

GFPAK's are currently available in 16, 32 and 64 GB. A 128 GB GFPAK is expected soon. Record capacity of course depends on the format chosen, a 64 GB Pak will record from 2 to 4 hours of High Definition footage.

When using the GFPAK on its own with your Avid, no special docking station is required. The GFPAK itself contains both a USB connector and a Serial ATA connector. Currently the USB connection is recommended. The Serial ATA connector is a nonstandard connector, more robust than regular Serial ATA and easier to clean. There is however no stock cable available for connecting the

GFPAK using this method. If you acquire a cable, Serial ATA connection of the GFPAK for faster transfers will work.

Formats

When you receive a GFPAK in the edit suite it can contain either SD or HD recordings in several different formats. In fact you can mix different formats on the same GFPAK, although this is of course not necessarily good practice from an operational point of view.

In standard definition, GFCAM can record MPEG 30, MPEG 40 and MPEG 50 at standard (non-film) frame rates (similar to similarly named Sony codecs).

There are two high definition codecs. A 50 Mb MPEG 2 LongGOP codec (similar to XDCAM 50Mb) and a 100 Mb I frame only MPEG 2 codec.

The 50 Mb codec is intended to deliver a quality equivalent to HDV, but at half the bit rate. The 100 Mb codec is of course higher quality. Both of these codecs will record 720 P and 1080i at the standard frame rates. Both film frame rates and SD-DV recording are available as options.

Within Media Composer we can of course mix all of these different frame sizes in the same timeline- including SD with HD content. You can also mix frame rates in the same timeline if you are using Media Composer 4.0 / Symphony 4.0 / NewsCutter 8.0 or above.

Format compatibility

Avid editing products provide an end to end solution supporting GFCAM media. Specifically you could acquire on a GFPAK, edit using Avid products either standalone or in an Interplay environment, and then output to an Avid Airspeed® playback server.

This functionality is available with GFCAM MPEG 30, MPEG 40, and MPEG 50 in Standard Definition resolutions. It is also available for the MPEG 50 High Definition GFCAM codec

Avid editing products provide full editing support for the HD 100 Mb codec, but Interplay support or this codec has not yet been established.

SCREENING AND ORGANIZATION

Returning From the Shoot

The GFPAK is not intended to be used as long-term storage. In a news operation you might edit directly off of the GFPAK and immediately recycle it the next day. For longer-term production it will be necessary to plan to make copies of the files on the GFPAK for longer-term storage.

If you're on an Avid Interplay system, you might ingest the GFPAK into shared storage. On a standalone system, you might copy the GFPAK contents onto an external hard drive or an IT server.

When backing up or copying your GFPAK's, it's important to copy the entire GFPAK into a single folder. Do not alter or change the directory structure. This copy can be done directly at the level of the operating system, or it can be done through the Ikegami Media Manager software using the appropriate menu options.

Your Avid editing system using the Avid Media Access (AMA) method will be able to work directly with these copies of the GFPAK which you make. We discuss AMA later in this document.

Screening in Avid

Like all tapeless systems, GF Series equipment provides us with new ways to screen our recordings before the edit session. We can of course screen in the editing system- your GFPAK can be mounted on an Avid editing system and the content can be screened there.

Ikegami Media Manager

Ikegami also provides software to allow screening to take place outside the edit suite. You can purchase Ikegami Media Manager for the PC, a program which provides a variety of functions, including:

- View and manipulate both the GFCAM recordings and their metadata
- Move material from a GFPAK to an external drive. (This can also be done manually as a copy at the OS level).
- Move GFPAK content to LTO Tape
- Reformat the GFPAK. This cannot be done at the OS level, but must be done in Media Manager or in a GF camera or deck.

Commercial MXF Viewers

Several companies sell MXF viewers which can be used to screen your GFFAK recordings. Ikegami has been working with one of them, Calibrated Software (www.calibratedsoftware.com) to support the GF formats. The Calibrated Software viewer will allow you to screen GFFAK contents directly on a computer using the QuickTime player.

Their products are available for both Windows and the Mac. They offer direct screening support for not just Ikegami GF formats, but also Avid Codecs, XDCAM, P2 and a host of other MXF formats.

The advantage of this software over the Ikegami Media Manager is simply that it will allow you to play more formats at lower cost. The disadvantage is that it will not allow you to view and edit metadata.

GFCAM Ethernet connectivity

The GF decks come with Gigabit Ethernet connectors in them. This allows the decks to become network appliances. Through Ethernet, a single deck can be available to many users. In a networked environment Ethernet connectivity is very flexible.

Through Ethernet the deck appears as an FTP server. Material can be uploaded and downloaded from the deck via FTP. Note however that you cannot work with the content on the deck directly through Ethernet connectivity. You cannot mount an FTP device on a computer as a hard drive. Because of this your Avid editing system cannot use a Gigabit Ethernet connection as a source for Avid Media Access (AMA).

Stated more simply you cannot edit through an Ethernet connection. You must first perform an FTP copy of the material off the deck into local or shared storage.

GFCAM Proxies

Proxies will be supported as an option on GFCAM products. They will be made available through the installation of a new board as well as a software upgrade to the camera. The proxies will be MPEG-4, and will be recorded internally on the optional card which will hold up to four hours worth of recording.

After the shoot is complete, the proxies will be downloaded via a USB port to the storage device of your choice. Proxies will contain timecode and other information (UMID's- Universal Media Identifiers).

Avid does not support Batch Importing from GFCAM. This means several common online / offline workflows are not available.

PREPARING FOR THE EDIT

Support for GFCAM SHOT MARKS



GF Station thumbnail with ShotMark highlighted

A clip may have one or more markers called ShotMarks applied to it. ShotMarks can be created at the time the recording is being made by hitting the RET button on the camera lens. They can also be added on the GF Series decks after the recording has been made.

ShotMarks can be used to indicate important points within the recording. You can create as many ShotMarks as you wish within each clip. When your clip appears in your AMA bin each of the ShotMarks will show up as a separate Avid locator within the clip.

Support for GFCAM CHECK MARKS



GF Station thumbnail with Check Mark highlighted

A check mark is essentially a status flag for the entire clip. There can only be one checkmark per clip. The clip is marked as either checked (true) or not checked (false). You can set this flag in the camera or on one of the GF Series decks. You can use this flag to mark clips for any purpose you wish. For example you could flag clips for archiving.

The GFCAM checkmark appears in the Media Composer bin as metadata attached to the clip. To see the Check Marks status of your clips you must set your bin display to show the user column named “CheckMark”. To do this:

- Choose the bin which contains your clips
- Go to the menus and choose `BIN > HEADINGS`
- From the list of available columns scroll to the bottom to see the user columns
- Choose the column named *checkmark* and press `OK`

You will now be able to see in your bin a column which will show you the text “true” if the check mark was set on that clip, or the word “false” if it was not. Within the bin you can now Sort or Custom Sift based on the check marks.

GFCAM Spanned Clips

While recording on a GFCAM it is possible to switch GFPAK's without stopping recording. This allows the operator to be involved in extended recording sessions of events such as meetings and performances.

In this case the recording is completed on the GFPAK which has been removed, and a new recording is initiated on the new GFPAK. Even though a swap occurred at the time of recording, the recording is not seen as continuous between the two GFPAK's. This is not a problem – simply edit from the end of one GFPAK to the start of the next.

Support for GFCAM PLAYLISTS

While it is possible to create playlists on some of the GF Series products, these cannot be imported into Media Composer. The playlists are stored as XML files which cannot be converted into Avid timelines.

Connectivity

Connecting to a GFPAK

USB: A GFPAK is most commonly connected to an Avid with its USB connector. This connection will allow transfers at up to a maximum of 4x real-time, depending on the record format. Simply connect the GFPAK to your computer using a standard, commercially available USB cable. The GFPAK will mount as an external hard drive. Now your material can be accessed through Avid Media Access (AMA).

Serial ATA: GFPAK's also contain a custom connector for its docking with GF cameras and decks. This connector is in fact a Serial ATA connection. A custom connector is used because it is more robust and easier to clean than a commercial Serial ATA connector. While there are no commercially available cables from Ikegami, if you can have one made the GFPAK can be connected via Serial ATA to a laptop or a desktop computer. This will provide transfers at up to 10 x normal speed, again depending on the record format.



Using a CF Adaptor



Ikegami has a GF Series product called a *CF Adapter*. It looks much like a GFPAK, but is in fact a carrier for commercially available CF (CompactFlash) media. It costs about one fifth the price of a GFPAK, but of course does not offer the performance of the GFPAK. It is intended as a fallback device for crews on the road should they lose or damage their GFPAK.

The CF adaptor requires the use of the highest speed CompactFlash media available. Anything less than 40 MB per second read / write speed is not acceptable. Even then, in High Definition only 50 Mb HD is supported. Remember as well that commercial CF media is only rated for 10,000 read / write cycles. The Ikegami GFPAK is rated for 100,000 read / write cycles.

Connecting and working with the CF adaptor is identical to working with the GFPAK described above.

Disconnecting a GFPAK

A GFPAK should only be removed from your computer if it's not in use. To remove a GFPAK follow these steps;

- Ensure that no media from the GFPAK is currently in use. From the monitor menus above the source and record monitors, choose `CLEAR MONITOR`.
- On a PC, use the *safely remove hardware* button in the system tray at the bottom right of your monitor screen to unmount the drive from Windows.
- On a Macintosh computer, drag the GFPAK icon into the trashcan to unmount it.
- Disconnect the USB cable and remove the GFPAK

Re-Connect a GFPAK

All you need to do is plug the GF into your computer again. AMA will mount the GFPAK automatically, ready for you to begin editing.

Disconnect a GFPAK Virtual Volume

As we will discuss later, you could be editing from a copy of a GFPAK – a Virtual Volume. To remove a Virtual Volume follow these steps:

- Ensure that no media from the GFPAK is currently in use. From the monitor menus above the source and record monitors, choose `CLEAR MONITOR`.
- Unmount the virtual volume. Choose the menu item `FILE > UNMOUNT`, choose the drive which represents the virtual volume, and press the button labeled `UNMOUNT`. Your media will now go off-line.

If your Virtual Media is on a removable drive, continue with these steps:

- On a PC, use the *safely remove hardware* button in the system tray at the bottom right of your monitor screen to unmount the drive from Windows.
- On a Macintosh computer, drag the GFPAK icon into the trashcan to unmount it.
- You may now physically remove the device (drive) holding the Virtual Volume from your computer

Re-Connect a GFPAK Virtual Volume

Your Virtual Volume could be on a removable drive or a fixed drive. It could also either be at the root of the drive, or buried deeper in the drives folder structure. Remounting a Virtual Volume will differ based on these two variables.

For all fixed drives, whether the Virtual Volume (copy of the GFPAK) is at the root or stored inside a subfolder, you will mount the GFPAK virtual volume manually. Choose `FILE > LINK TO AMA VOLUME` and select the drive and the directory whose contents you want to AMA link to.

For a removable drive with the Virtual Volume at the root of the drive, just connect the drive and AMA will detect the new device and mount the Virtual Volume automatically.

For a removable drive with the Virtual Volume stored inside a subfolder, you will AMA link manually. Choose `FILE > LINK TO AMA VOLUME` and select the drive and the directory you want to AMA link to.

Accessing content on a GFSTATION / GFPLAYER

Ikegami offers a range of deck type devices which can be used with the GFPAK. These are:



GFSTATION
GFS-V10



GF STATION PORTABLE
GFS-P10



GFPLAYER
GFS-V10PL

While all of these devices have USB connectors on them, they are not designed to mount a GFPAK as an external drive. This means none of these decks can be used as AMA sources for direct editing within Avid. Connect the GFPAK directly to your Avid system instead.

If you don't or can't use the GFPAK, you can use the Gigabit Ethernet connections each deck contains (except the GF Player). The system is designed so that media can be downloaded via Ethernet and then Media Composer will access these copies. In many installations there's tremendous value in having Ethernet access so that many clients can access the one machine. For server-based systems, Ethernet can be used to ingest GFPAK's into Avid Interplay.

Accessing the media on standalone editing systems is a two-step process-you must first offload the media via Ethernet, and then access it via AMA. For smaller installations, it makes sense to mount the GFPAK directly on your Avid rather than try to access it through the deck. In an Avid Interplay environment it may make sense to transfer the GFPAK contents via Ethernet into shared storage.

ACCESSING GFCAM WITH AN AVID EDITOR

The first step of course is to get the GFCAM content accessible on your Avid editing system.

Avid Media Access (AMA)

GFCAM is designed to be used on an Avid editing system using a feature called **Avid Media Access**. With AMA you connect the GFPAK to your Avid and it may automatically create a new bin populated with the clips which are recorded on the GFPAK. You can now edit directly with this footage, or choose selected clips and consolidate them into Avid storage. Working with AMA will be discussed in detail later in this paper.

Tape Style Ingest

Videotape style linear ingest into Media Composer is possible. All of the GF Series decks provide both SD and HD output and have RS 422 connectors. This means it's possible to treat the GFCAM recordings as if they were coming off of videotape. If you're going to treat GFCAM as if it were tape, you won't be able to take advantage of many of the tapeless workflow advantages the GFPAK and Avid Media Access (AMA) offer. For example, in a tapeless workflow you can begin editing directly off the GFPAK without ingesting at all.

The rest of this paper assumes tape style Ingest is *not* the way you're going to proceed. We are going to cover how to work with the GF recordings in a tapeless environment.

The IMPORT dialogue and the MEDIA TOOL with GFCAM

Import: GFCAM content cannot be *imported* into a bin in the traditional manner. If you select `FILE > IMPORT` you will be able to see the GFPAK and navigate to its folders, but you will not be able to import either the video or the audio files directly.

Media Tool: With a connected GFPAK if you open the Media Tool it will show the GFPAK as an available drive, but there will be no media readable on the drive. The GFPAK does not store its media in a traditional Avid media files folder, so its media is effectively invisible to the Media Tool.

The way to work with GFCAM media is to use the Avid Media Access (AMA) method.

What is Avid Media Access (AMA)?

This is, at its root, a feature which allows you to connect a GFCAM / XDCAM / P2 / XDCAM-EX device to your Avid editing system, and screen and edit directly off that device without first transferring any media to your Avid storage. It is editing without capturing!

AMA has some other bonuses as well. An AMA-connected device displays clips with more associated metadata, such as GFCAM Check Marks and other Ikegami specific metadata.

AMA is a feature which uses plug-ins to support various media formats directly. Currently GFCAM, P2, XDCAM and XDCAM-EX are supported, but other formats will be added over time.

Every time you connect a storage device to your Avid editing system, it will be scanned to see if it contains media (at the root of the drive) supported by one of the AMA plug-ins. If it does, and if AMA is active and your settings allow it, a new bin may be created automatically and the bin will populate with clips that link to the original high resolution media on your media device. You can begin viewing, editing and consolidating immediately.

Can my Avid read from a GFCAM device?

The GFCAM Plugin is a recent addition to Avid products. If you have a current Avid editing system GFCAM support may be available with an optional installation of the plug-in. This will support Media Composer 3.5.4 / NewsCutter 7.5.4 / Symphony 3.5.4 Avid editing products.

To find out if the GFCAM plug-in is installed on your editing system proceed as follows:

- Start your Avid editing application.
- Open the console by going to the **TOOLS** menu and choosing **CONSOLE**
- At the bottom of the console in the text area provided type `AMA_ListPlugins`.

```
AMA_ListPlugins
-----
PLUGIN_NAME          VENDOR_NAME          VERSION
-----
MSP_IkegamiGFCamMXF  Avid Technology, Inc. Version 1.0
MSP_PanasonicP2MXF   Avid Technology, Inc. Version 1.0
MSP_SonyXDCAM        Avid Technology, Inc. Version 1.2
MSP_SonyXDCAMEXMP4   Sony Corporation     Version 1.1003
MVP_IkegamiGFCam     Avid Technology, Inc. Version 1.0
MVP_PanasonicP2      Avid Technology, Inc. Version 1.0
MVP_SonyXDCAM        Avid Technology, Inc. Version 1.0
MVP_SonyXDCAMEX      Sony Corporation     Version 1.1003
```

This will display a list as shown above of the installed AMA plug-ins. You'll notice references

This will display a list as shown above of the installed AMA plug-ins. You'll notice references to Sony for XDCAM support, and Panasonic for P2 support. If you see a reference to Ikegami, as shown at the top of this list, then you know support for GFCAM has been installed.

If you do not see Ikegami in this list, and you have an Avid Media Composer version 3.5.4 / Avid Symphony 3.5.4 / Avid NewsCutter 7.5.4 or later you may download and install Ikegami GFCAM support from the Avid website. Go to www.avid.com/AMA and follow the instructions you will find there.

What if there is a problem reading from the GFCAM Device?

If your Avid editing system runs into a problem when trying to read clips from a mounted AMA device, it writes to an error log file that might be useful in trying to figure out what went wrong. The log is named `AMALoggerMM_DD_YY.log` and can be found in the following directories:

PC: `drive:\Users\Public\Documents\Avid Media Composer\Avid FatalErrorReports`

MAC: `volume/Users/Shared/AvidMediaComposer/Avid FatalError Reports`

It may also be useful to Avid in helping you diagnose your problem.

Real and Virtual Volumes

Avid can mount as an AMA device the actual GFPAK connected via USB or Serial ATA.

You may not always be working with the original recording on the GFPAK however. This is why Avid AMA also supports the concept of a "Virtual Volume." A Virtual Volume is a copy of your GFPAK stored in a directory on a hard drive or on a server. If you have a virtual volume, you can have Avid Media Access (AMA) recognize that hard drive copy of your media as if it were the original GFPAK. You will be able to access this media, edit with it and perform any other functions on the media that you would be able to do with the original GFPAK.

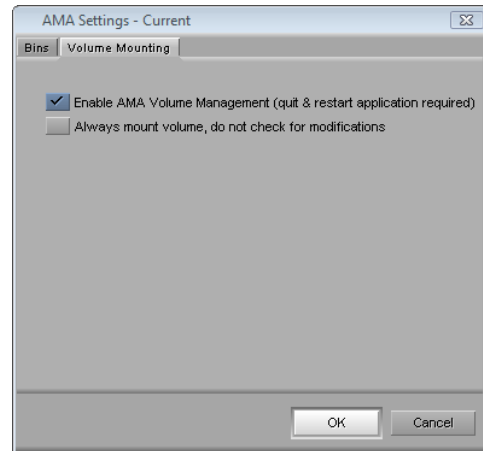
Avid Media Access on a Standalone Editing System

AMA is ON by default

The new versions of Avid editing software ship with Avid Media Access (AMA) turned on. This means you have access to the new AMA features automatically. Since it is possible to turn this feature OFF, you need to keep in mind when working with GFCAM that you do need to have AMA turned ON. You will not otherwise be able to access GFPAK contents.

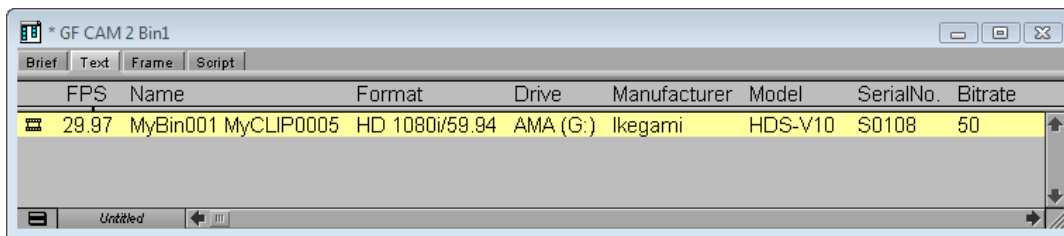
Turning AMA ON and OFF

There is a setting for controlling Avid Media Access. Open the AMA settings, and choose the second tab, shown here. Select or deselect the check mark beside “Enable AMA Volume Management.” You must then close and re-launch the Avid application for your changes to take effect. Remember AMA must be turned on to work with GF media.



Using Avid Media Access

When AMA is active, simply connect a compatible external media device (GFPAK, CFADAPTER). The Avid system will detect the new volume as it mounts in the operating system, and will create and populate a new bin with the high resolution clips representing the media on that device. (Depending on your settings, it may also populate an existing bin rather than creating a new one)



The clips in the bin will look different – they will be highlighted yellow to indicate they reference media on removable storage. They will also be different in that they will contain more metadata than previous versions.

You can work with these clips as you would normally. If you're working directly off the media device, you may find the speed is slower than if you were working from Avid storage.

What is the new Bin named?

When Avid Media Access scans a GFPAK it may automatically create a new bin. This bin will be named according to your current AMA settings. In this first tab (right) you can see the options for bin naming.

The top option (`Use active bin`) lets you scan AMA clips into the currently selected bin. The bottom option (`Create a new bin`) will scan them into a new bin with one of three naming options.

If you choose to scan AMA clips into a new bin your choices are:

DEFAULT BIN NAME: The bin receives the name of your project with a number appended to it. This is the same convention for default bin naming that is used when you create a new bin manually.

VOLUME NAME: The name stored on the GFPAK is used as the bin, or the name of the containing drive is used as the bin name for a copy of a single GFPAK or Virtual Volume. (Opening multiple Virtual Volumes at once presents a different dialogue which allows bins to be named for the containing folder). If you don't name your GFPAK's, you could end up with a lot of bins named using the default name.

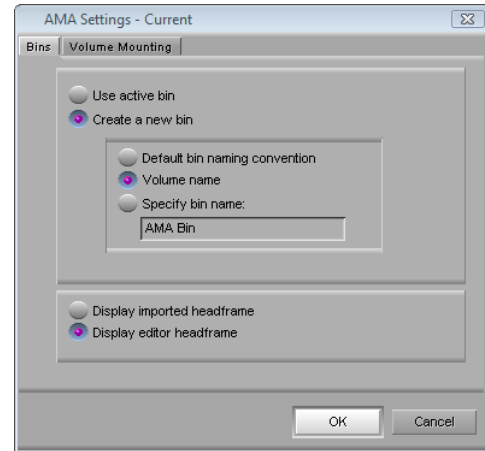
SPECIFY BIN NAME: You get to type in (ahead of time) the name for your target bin. If a bin with this name does not exist, it will be created for you. If a bin with this name does exist, the new AMA clips will be placed into that existing bin. Even if the bin is closed, it will be opened and the new AMA clips placed in there.

For most people, "`Create a new bin`" option with "`Volume name`" selected is a good choice. This conveniently places the contents of each GFPAK in its own bin with the name of the GFPAK (assuming it has been given a name) as the bin name. This makes it easy to find and reinsert the GFPAK again, if required. If you are working with Virtual Volumes (copies of your GFPAK recordings on hard drives) you may find value in placing the contents of several Virtual Volumes which are together on the hard disc into a single bin. We discuss Virtual Volumes later.

Can I rename the Bin?

Your bin can be renamed, and AMA will still find and re-link to the clips when you insert the original media. With certain AMA settings however, if you re-insert that disc it will not be able to find a bin with the name of the GFPAK, and so will create a new bin which could be a duplicate of a renamed bin you already have. We discuss this issue, and how to control it in a following section.

You may rename the clips without causing any problems.



What happens when I remove my GFPAK?

When the AMA device is removed, your clips go offline. In your bin, the drive column may still indicate the original AMA drive letter, but of course there is nothing there to play.

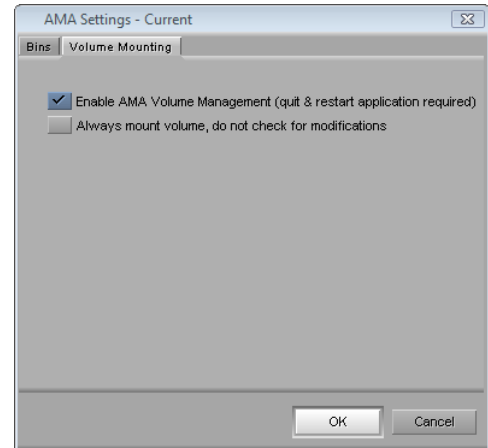
If you have copied (consolidated) any media from a GFPAK to Avid storage, you can re-link to use the copies on the Avid drives.

What happens when I reinsert my GFPAK?

That depends on an AMA setting named “Always mount volume, do not check for modifications”.

Setting Deselected: If “Always Mount Volume...” is deselected, the modification date of the GFPAK is checked, and if it has changed since the last time the GFPAK was used in this project the GFPAK is scanned again. If the modification date has not changed, the GFPAK is not scanned again but the clips on the GFPAK are linked to any existing AMA clips which are present in the project.

Setting Selected: The re-inserted GFPAK is re-scanned. What happens next depends on your choice for Bin Names in the AMA settings.



- **BIN NAMED WITH DEFAULT NAMING CONVENTION:** A new bin is created each time the GFPAK is inserted, and given the next available default bin name.
- **BIN NAMED AFTER VOLUME:** If there is a bin with the same name as the GFPAK, the bin is opened. The contents of the GFPAK are compared with this bin. If the disc contents have changed the bin is updated. Newly recorded clips are added to the bin for example. If there is no bin with the same name as the GFPAK (either the GFPAK or the bin have been renamed) then a new bin is created.
- **BIN NAME SPECIFIED:** If there is a bin with the user specified bin name, this bin is opened. The contents of the GFPAK are compared with this bin. If the GFPAK contents have changed the bin is updated. Newly recorded clips are added to the bin for example. If there is no bin with the user specified bin name (the bin has been renamed) then a new bin is created.

As you can see, renaming a bin or a GFPAK after the initial AMA scan has consequences. When that GFPAK is mounted it may not be able to find the originally named AMA bin containing its clips, and so will create a new bin and place new copies of the AMA clips there again.

When re-inserting a GFPAK, wait for the system to scan the GFPAK. It may take a few seconds for it to be read and to re-link to the AMA clips in your bins. If you move too quickly your clips may still report offline media.

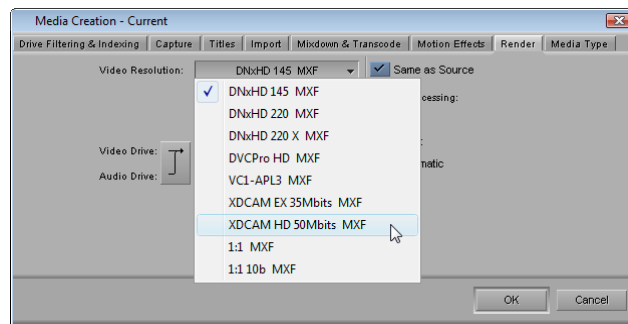
GFCAM Codec Support

While editing with the GFCAM media, you are able to create a timeline which is all the same format. That is to say, it is possible to mix down, transcode and render using GFCAM media into GFCAM media. This may be required if you are trying to create a single format timeline to be sent to an on-air server. If you're rendering for output to tape feel free to mix different codecs in your timeline.

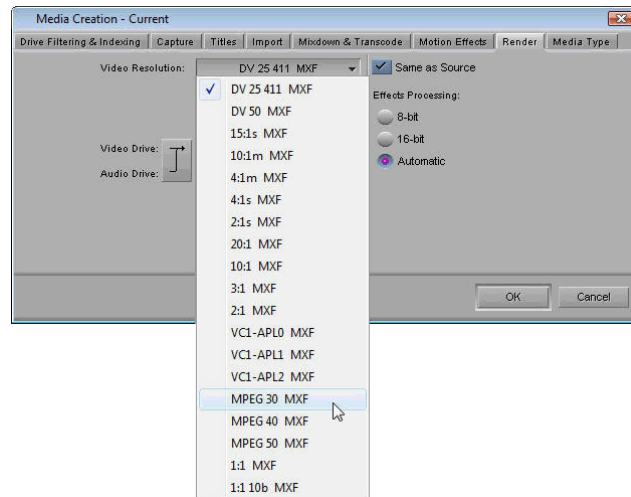
The GFCAM compatible formats may not be apparent at first because the dialog boxes for mixdown, render and transcode do not contain a reference to GFCAM media. We mentioned earlier that this media is very similar to the Sony XDCAM format. In SD or in HD select the compatible Sony format to render into.

In HD, you may render into XDCAM 50 Mb when using the GFCAM 50 Mb codec. For higher-quality effects however consider rendering into the Avid DNx codecs if your timeline does not have to be all the same kind of media.

The GFCAM 100 Mb HD codec is not available for transcoding, rendering or mixdowns.



In SD, while there is no specific option listed for GFCAM media it will be the same as rendering into the MPEG 30, MPEG 40 and MPEG 50 codecs which are available.



Using Avid Storage

What is Avid Storage?

Here I am referring to hard drives to which you would normally digitize video and audio. These could be internal SATA drives on your workstation, or external SCSI or SAS drives. In an Avid Interplay environment, this would be the Avid Unity™ ISIS® or MediaNetwork storage.



In all cases, this Avid storage is both fast, and managed by the Avid application. Stand alone systems have the Media Tool, and Interplay users have the Interplay Window and Access. All the media is grouped in one location – the `Avid MediaFiles` folder (or folders).

Compared to playing directly from your GFPAK, this Avid storage offers faster access, more streams of video and centralized management.

Why would I copy my GFPAK media into Avid storage?

There are still many good reasons to copy media into Avid storage.

- Free up the GFPAK for reuse
- You have several USB connectors on your computer, and many GFPAK's. To access more than a few GFPAK's at a time you need to copy disc media to common storage. Avid Storage allows the consolidation of media from many sources into a single location.
- Avid storage is likely to be faster than accessing clips off a GFPAK.
- While a copy into Avid storage is being made, the media can be transcoded into an Avid codec (Avid DNxHD® 145 for example) which will stand up better to multi-pass effects processing than a lower bit rate codec.
- Avid storage is centrally managed (Media Tool or Interplay Window / Access)

How do I copy my GFPAK to Avid Storage?

There are two methods you can use:

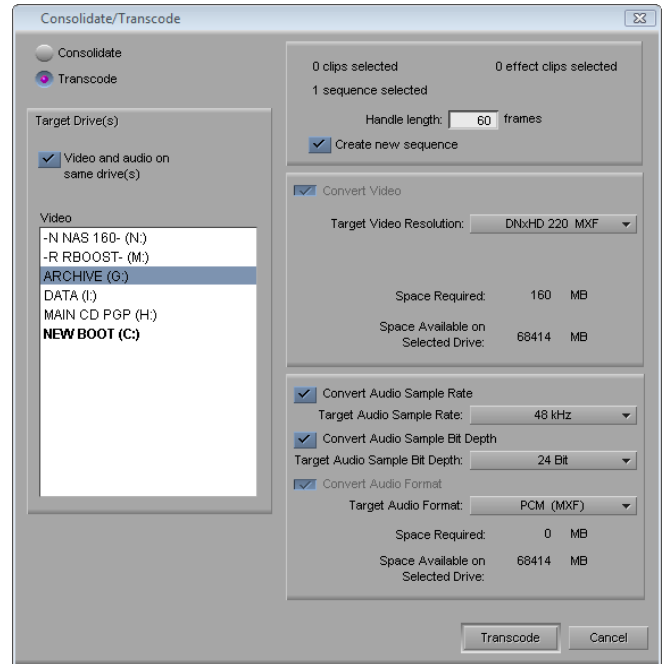
- Consolidate
- Transcode

CONSOLIDATE

Consolidate is the Avid copy command. After mounting a GfPAK you can preselect just some of the clips for transfer into Avid storage and consolidate them. You could also use AMA to pre-screen the GfPAK contents and create a sequence (let's call it a Selects Reel) containing the parts of clips you wish to transfer to Avid storage. Consolidating the sequence will then only transfer these selects from the original GfPAK.

TRANSCODE

Transcode is just like Consolidate – it is a copy command. The difference is it changes the format of the media during the transfer to turn it into something else. You could change the sample rate or bit depth of the audio, or the codec used for the video. Transcode will not convert media into the GFCAM 100Mb codec at this time.



Using Virtual Volumes

A Virtual Volume is a copy of your GFPAK placed on a hard drive and accessed directly or over a network. Specifically, you can take a GFPAK and copy it to a hard drive and access it from there. You can mount this virtual volume as if it were the original GFPAK, and view and edit with it.

How do I create a Virtual Volume?

Simply copy the contents of your GFPAK into a folder. It is easiest to simply copy the entire contents of the media into the folder, although some files or folders may not necessarily be required. The folder can be located anywhere on a drive – at the root of the drive, or as a subfolder one or more levels down from the root of the drive. You can name the folder anything you like.

When you initiate a scan of the virtual volume it appears as a bin full of clips, just as if you had mounted the original GFPAK.

How do I use a Virtual Volume?

If your Virtual Volume is at the root of a removable drive, simply connect the removable drive to your system. The new drive will be detected by the Operating System, and your editing system will automatically find and mount this volume.

If your Virtual Volume is on permanent storage, or in a subfolder on your removable drive, you point to or 'mount' each Virtual Volume as you need it. This is done with a menu item. Select **FILE > LINK TO AMA VOLUME** and navigate to the folder you created which contains the copy of your GFPAK.

The Virtual Volume is treated as if it were the original disc. It creates a bin (if necessary) and populates it with AMA (yellow) clips.

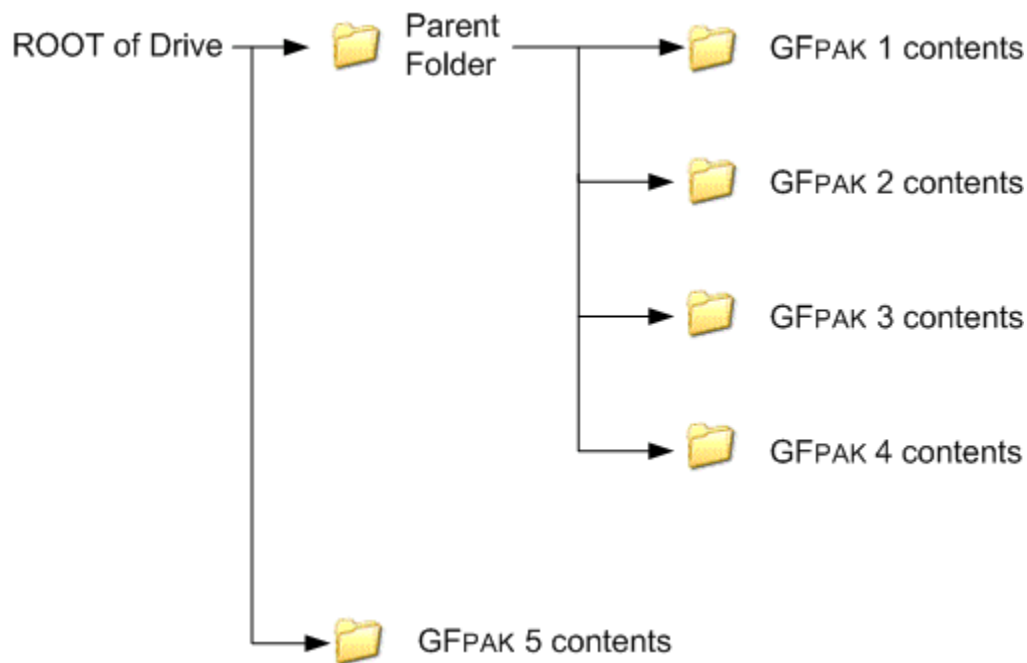
You can screen and edit now, presumably faster than if you were working off a slower USB connected GFPAK. You can mount many Virtual Volumes. There is no specific limit on the number of Virtual Volumes you can have, it is a function of system memory.

Can I quickly mount multiple Virtual Volumes?

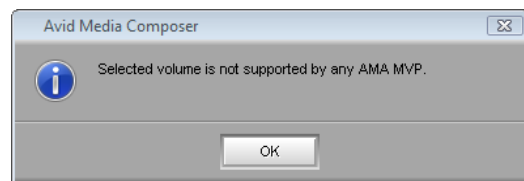
If you wish to mount multiple GFPAK's for a project at the same time then place all the disc copies in subfolders within the same folder. If you then use `FILE > LINK TO AMA VOLUME` to indicate the parent folder, all the GFPAK folders appear as bins automatically.

The diagram below may clarify the previous points. Each folder represents a location to which an image of a GFPAK has been copied. In each case, it is assumed `FILE > LINK TO AMA VOLUME` is used to point to the indicated folder:

- Access "GFPAK 1 Contents", only that single GFPAK appears.
- Access "Parent Folder" then all four GFPAK 's – GFPAK 1 to 4 – appear.
- Access "GFPAK 5", only that single GFPAK appears
- Access the "Root of Drive", only GFPAK 5 appears



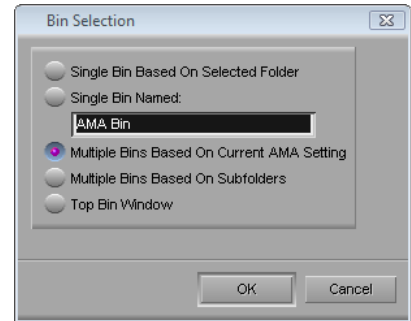
If you attempt to scan a folder which does not contains a disc image from a GFPAK this dialogue box appears. This is more a notification than an error – it just means no GFPAK images were found. The message is indicating your Avid editing system can't find any files supported by an Avid Media Volume Plug-in (MVP)



When scanning one or multiple folders of GFCAM content, this dialogue box appears, asking where you want to place the contents of this folder within the bin structure of your project.

As you look at this dialogue, keep in mind you could be bringing in multiple GFPAK's at once, and the available options would allow you to bring them all in to one bin, or separate bins based on the individual folders of GFPAK content.

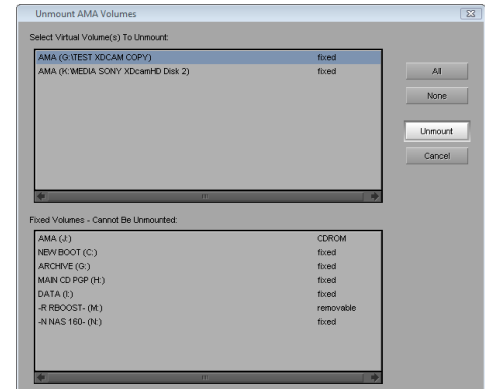
The name of the bin(s) created depends on your selection in this dialogue. While most choices are obvious, it is worth noting "Multiple Bins Based On Subfolders" names the bin the same as you named the subfolder you copied the GFPAK media into. This could be useful to track content in your projects.



Can I see what drives I am using?

If you select **FILE > UNMOUNT** in the Avid application this dialogue appears. You can use it to see which virtual volumes are mounted as AMA bins, and then select and unmount any AMA virtual volumes you no longer require. If you unmount a virtual volume its bin is still present, but the media is offline.

Only Virtual Volumes can be unmounted. Directly connected GFPAK's appear at the bottom of the dialogue with the rest of the system drives, none of which can be unmounted from here.



Using RELINK with Avid Media Access

On a standalone editing system, you can RELINK a yellow AMA clip to media which has been copied to Avid storage. This includes media consolidated or transcoded from the original AMA clip. After you successfully re-link, the clip will no longer be yellow. As well, the drive text column in your bin will now report the new media drive "D:", rather than the original AMA drive- "AMA (J:)" for example.

If you try to re-link to an AMA device, it does not appear as a drive letter 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 on a local drive*. To force a re-link to media in Avid storage, you must explicitly link to the drive containing that media.

You will come here to UNMOUNT a virtual volume before physically removing it from your system.

Avid Media Access on Interplay

AMA connected devices are local storage. Like all local storage, this media is not visible or accessible to other Avid Interplay or Avid Unity users while it resides on the original GFPAK. Still, you can edit in AMA mode, and then consolidate or transcode (as appropriate) your completed sequence (or indeed selected clips) to Interplay. Remember though that the GFCAM100 Mb codec cannot currently be used in the Interplay environment.

Using Shared Storage to hold AMA Content

You may wish to use your Avid Interplay or Avid Unity storage to hold Virtual Volumes of GFCAM media which could be shared by several edit suites.

For example, Camera or Ingest operators could copy images of GFPAK's to a folder on Interplay in preparation for the edit. The Editor would access this copied material as Virtual Volumes in AMA mode. They could edit, and then consolidate or transcode the final product to Interplay managed storage.

The only caveat here is the GFPAK Virtual Volumes must be on an Interplay workspace or in an Interplay folder that is *not* monitored by the media indexer. Native GFPAK files cannot be indexed and shared in the same manner as OP-ATOM (Avid format) files can be.

EDITING WITH GFCAM MEDIA

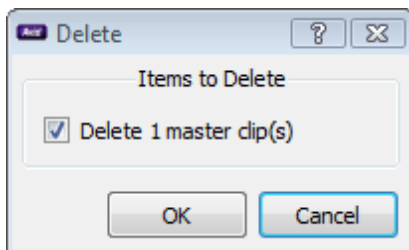
Working with only one codec

If you are working in an Interplay server environment, it's likely that you are sending your finished work to a playback to air server. Generally playback to air servers are not multiformat players. They require the timeline that you send them to be completely of a single format. If you have a timeline with mixed media in it you can transcode that timeline so that it is all the same format.

If you're working exclusively with material from GFPAK's this may not be necessary if you make sure that any rendering or mixdowns are done using GFCAM compatible codecs. Any media which is not from GFCAM (or a compatible Sony XDCAM codec, which is similar to GFCAM) should be transcoded into GFCAM media if this is your aim.

As mentioned previously, when you go to perform a transcode, mix down or are render you won't see GFCAM as an option for the media target type. Remember instead to choose the compatible Sony codec as shown previously in this document.

Deleting an AMA connected Clip



If you select an AMA connected clip in the Media Composer bin and then press **DELETE**, you will only be given the option to delete the clip and not the media files associated with it.

Deleting media on a GFPAK is a rather complicated task. It involves not just deleting the video and audio files, but updating all the metadata files on the GFPAK as well. Your Avid Media Composer / NewsCutter / Symphony will not do this.

The practical ways to remove media from the GFPAK are:

- Place the GFPAK into a GFCAM deck and delete individual clips there
- If you have the Ikegami Media Manager software, use it to delete clips
- Reformat the GFPAK in its entirety to delete all clips

If you would like to delete media from a virtual volume, consider consolidating the media you'd like to keep from that virtual volume into Avid storage, and then deleting the entire virtual volume.

GFCAM on Symphony

Due to the design of the Avid Nitris® (classic) hardware (not to be confused with the Nitris DX hardware), playback of GFCAM media on an Avid Symphony Nitris editing system causes dropped frames. To allow for full performance playback, you should transcode the GFCAM media into Avid DNxHD media to play the video on your Avid Symphony system. Use the following workflow to play GFCAM media on your Nitris (classic) editor.

- Connect your GFPAK to the editing system and allow it to mount through AMA
- Transcode the XDCAM media into Avid DNxHD media

Please note the Avid Symphony Nitris DX does not have this requirement, and works fine with GFCAM media.

Batch Import of GFCAM Media

This is not supported.

OUTPUT

Output to tape

A digital cut to tape is possible, and it is performed in the usual manner. There are no special constraints on outputting an SD timeline, but if you're going to output in HD the type of hardware you are using will be important to consider.

Adrenaline: the Adrenaline Input/Output box will only play HD at a high quality using the Avid DNxHD codecs. This means that your timeline will have to be transcoded into Avid DNxHD before it can be played back at high resolutions for tape output.

Nitris DX / Avid Mojo® DX: Systems with the newer DX hardware will be able to play out the GFCAM timeline at high resolution. They will also support multiple real-time streams of playback.

For **Adrenaline** output of GFCAM HD to tape the simple steps are:

- Copy the sequence and place it in a new bin. Not technically required, but it keeps the GFCAM media separate from the Avid DNxHD media.
- Select the sequence, and choose the menu item BIN > CONSOLIDATE/TRANSCODE.
- Choose the TRANSCODE option, and fill out the rest of the dialogue. The target resolutions change when you switch the FORMAT tab between SD and HD. If you don't see the resolution you want (Avid DNxHD), try switching the setting of the FORMAT tab of the Project window.
- Press OK.

Any GFCAM media will be transcoded to Avid DNxHD. Only enough media to play your sequence (plus handles, if any) will be generated. If there are already some shots using Avid DNxHD, they will not be copied again. On Adrenaline, you will now render the effects and Titles using Avid DNxHD and then be ready for output to tape.

Output to Interplay

GFCAM 50Mb media can be used with Send To Playback in an Avid Interplay environment. Since the media is essentially the same MPEG format as Sony XDCAM, interplay will support it if you are setup for the compatible Sony 50Mb codec. If you look at the file format of your GFCAM media in Interplay Access or Interplay Assist it will even report, for convenience, that it is XDCAM format media. GFCAM 100 Mb media is not currently supported.

Output to GFPAK

Output back to your GFPAK is not currently supported.

Avid Media Access Workflows

Pre-Screening For Interplay

As an editor you are waiting for a script before beginning a rather large edit, but there is not time to capture all your GFCAM media at high resolution. You can mount each GFPAK in AMA mode to create a bin and clips for the GFPAK. You screen portions of the GFPAK directly to get a sense of the content. You can annotate the clips by adding columns, rename clips and also read the metadata added in the camera. As the edit progresses, you can open the prepared bins and consolidate the media that you now feel you need to move it into Avid storage and include those shots in your edited piece.

Stocks Archiving

As an Archivist you screen GFCAM media at your desk using the Ikegami Media Station player. As you screen you add CheckMarks to the clips you would like to be archived. When you're done the GFPAK goes into the edit suite where the editor manually ingests the clips which have checkmarks, annotates them and sends them into the archive.

News Edit - 1

A GFPAK is returned to the edit suite minutes before air. Using AMA mode, the editor can quickly select several shots and edit them into an AMA sequence. Press HOME and then PLAY – and the content is on air!

News Edit - 2

A camera operator returns from a shoot with a GFPAK for today's news. The contents will be needed by the Editor cutting the story, as well as by the Headlines editor. Both are busy editing at the moment and the ingest operator is also tied up.

The Camera operator goes to an Interplay-connected computer and uses Avid Client Manager to mount a workspace designated for GFPAK copies. He creates a new folder with the slug of the story, and copies the GFPAK contents into this folder.

Both editors simply mount this folder as an AMA Virtual Volume when they need it, and add material from here to their sequences. Each will then consolidate or transcode their final sequence to move the AMA linked media to shared storage, and send it off to the control room AirSpeed playout servers.

News Edit – 3

You return from attending a long meeting with a single long recording on a GFPAK. From all this material, all you need are two short clips from the meetings' Chairman. Ingesting into Interplay the entire recording to access these two short clips would be time consuming. Instead, you scan the disc using AMA, and subclip the two comments from the Chairman. These subclips are then consolidated to Avid storage and these new clips are used in your final story.

Current Affairs

All GFPAK's for a particular project are copied to a fast hard drive. At the root of the hard drive is a main folder with the name of the project being edited. Inside this folder are a set of sub folders containing the contents of numerous GFPAK's which have been shot for that item.

The editor chooses `FILE > LINK TO AMA VOLUME` and navigates to the parent folder. All the subfolders appear as bins in their project, and now all GFPAK content for this project is instantly available.

For suggested updates or to offer advice feel free to contact:

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