

**AVID GUIDE for  
AMA Workflow**

# **GFCAM**

Media Composer 6.5  
Symphony 6.5  
NewsCutter 10.5

# Avid Editing Systems

## IKEGAMI GFCAM

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

### ACKNOWLEDGEMENTS

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### CORRECTIONS AND SUGGESTIONS

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**Be sure to visit**  
**WWW.AVID.COM/AMA**

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# 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 Ikegami GFCAM 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 GFCAM within the AMA architecture.

This is not a full GFCAM workflow guide, it explores the feature of Avid Media Access which itself is a part of many complete Ikegami GFCAM workflows.

## OTHER AMA RESOURCES

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

- **IKEGAMI GFCAM 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.

# IKEGAMI GFCAM PLUGIN SUPPORT

## HISTORY

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



CamCutter cartridge and docking station, 1990's

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

GFCAM is supported on your editing system through the installation of an external plugin supplied by Ikegami. The Ikegami GFCAM AMA software is available from the link to the Ikegami site at [www.avid.com/AMA](http://www.avid.com/AMA).

You may link to GFCAM material using `Link To AMA Volume` but not using `Link To AMA File(s)...`, as we shall describe shortly. You may Consolidate and Transcode GFCAM material, but you may not Import it.

<b>AMA Link to Volume...</b>	✓
<b>AMA Link to File(s)...</b>	✗
<b>Import</b>	✗
<b>Consolidate</b>	✓
<b>Transcode</b>	✓

## GFCAM FORMATS

GFCAM recordings can be one of 5 formats, as shown below. The AMA Plugin for GFCAM will support all these formats from Ikegami:

CODEC	CODEC DETAILS	RECORD TIME (approx)
SD MPEG 30	30 Mb	3 minute / Gig
SD MPEG 40	40 Mb	2.3 minute / Gig
SD MPEG 50	50 Mb	1.9 min / Gig
HD MPEG 50	50 Mb LongGOP	1.9 min / Gig
HD MPEG 100	100 Mb I Frame	.9 minutes / Gig

The SD MPEG codecs are comparable to the equivalent Sony Codecs. The HD MPEG 50 codec is equivalent to the Sony XDCAM 50 Mb HD 422 codec. While editing with GFCAM in these formats you can render and transcode into these equivalent Sony codecs to maintain the same codec throughout production.

The HD MPEG 100 Codec is specific to Ikegami in the Avid realm. The GFCAM 100 Mb HD codec is not available as a transcoding, rendering or mixdown target.

## GFCAM 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 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. 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 via a USB connection, 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.



GFSTATION  
GFS-V10



GF STATION PORTABLE  
GFS-P10



GFPLAYER  
GFS-V10PL

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, 64 GB and 128 GB. Record capacity of course depends on the format chosen, a 64 GB Pak will record 2 hours of 50 Mb High Definition footage.

When using the GFPAK on its own with your Avid, no special docking station is required. The GFPAK has a USB connector and will mount as a drive. There is also a Serial ATA connector on the GFPAK for connecting to other Ikegami devices.

If you require faster transfer speeds, an eSATA Dock is available for computers with a free SATA connector. This 5 ½ inch dock uses the Serial ATA connector on the GFPAK. The GFPAK can then be docked directly to a PC.

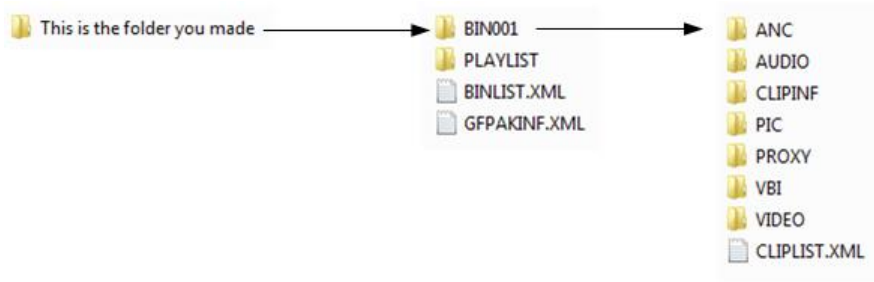




## WHATS ON YOUR GFPAK

You will be linking to the GFPAK using `FILE > LINK TO AMA VOLUME`. You will not be using `Link To AMA File(s)...` This means you will not normally be navigating the GFPAK file structure.

Remember when you copy the contents of a GFPAK to another storage medium (making a virtual volume) you must copy all the files and folders on the GFPAK into a folder which you should name uniquely for your own easy identification. This is the folder you would link to.



Notice that on a GFPAK the AUDIO and the VIDEO are in separate folders. This is why Link to AMA File will not work- the recordings are stored seperately.

There is a PROXY folder. GFCAM proxy support can be purchased as an option. In that case, proxies as QuickTime .mov files will be found here. The proxy video file contains UMID, Timecode and more in MOV file. Avid dos not currently support a QuickTime proxy workflow with GFCAM.

Your clips will appear in your bin after linking with a default naming form of *MyBin001 MyClip0038*. You may set metadata at the camera to apply a new, more specific default clip name, or of course rename clips in the editing application. Renaming clips will not affect the ability of the editor to link to them.

You might also be interested in the folder `CLIPINF`. This folder contains XML files, one for each clip. If you open one of these files in a web browser or a text editor it contains information about the recording, the camera which made it, the camera settings used and if entered even the names of the crew on the shoot! When you receive content from places unknown, this is a fast way to determine the format of the recording you have been given.

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<Video>
  <VideoCodec>MPEG-2</VideoCodec>
  <GOPStructure>I-ONLY</GOPStructure>
  <ChromaFormat>4:2:2</ChromaFormat>
  <Bitrate>100</Bitrate>
  <DisplaySize>1920x1080</DisplaySize>
  <AspectRatio>16:9</AspectRatio>
  <FrameRate>59.94i</FrameRate>
  - <VideoFiles count="1">
    - <File format="MXF">
      <FileName>0012V001.MXF</FileName>
      <UMID>060A2B340101010501010620130000001E1E9786113C35639C5B05D146AE7C6D</UMID>
      <FileSize>498493107</FileSize>
      <FileDuration>1195</FileDuration>
      <StartOffset>65536</StartOffset>
      <IndexOffset>498479845</IndexOffset>
    </File>
  </VideoFiles>
</Video>
<Audios>
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  <Channels>2</Channels>
  <BitsPerSample>24</BitsPerSample>
  <SamplesPerSec>48000</SamplesPerSec>
  - <Audio channel="1">
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        <IndexOffset>11549132</IndexOffset>
      </File>
    </AudioFiles>
  </Audio channel="1">
</Audios>
```

## 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

# 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 make copies of the files on the GFPAK for longer-term storage.

If you're on an Avid Interplay system, you might transfer the GFPAK contents into shared storage. On a standalone system, you might copy the GFPAK contents onto an internal or 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 [Link To AMA Volume](#) will be able to work directly with these copies of the GFPAK which you make. As already mentioned, the AMA method [Link to AMA Files...](#) does not work with GFCAM.

## SCREENING GF<sub>CAM</sub>

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

### Ikegami Media Manager

Ikegami provides free software to allow screening to take place outside the edit suite. This PC program provides a variety of functions, including:

- View and manipulate both the GF<sub>CAM</sub> recordings and their metadata
- Move material from a GF<sub>PAK</sub> to an external drive. (This can also be done manually as a copy at the OS level).
- Move GF<sub>PAK</sub> content to LTO Tape
- Reformat the GF<sub>PAK</sub>. 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 GF<sub>PAK</sub> recordings. Ikegami has been working with one of them, Calibrated Software ([WWW.CALIBRATEDSOFTWARE.COM](http://www.calibratedsoftware.com)) to support the GF formats. The Software *Calibrated{Q}* *MXF IMPORT* software will allow you to screen GF<sub>PAK</sub> contents directly on a computer using the QuickTime player. This plugin understands the GF<sub>CAM</sub> folder structure, and will combine the audio and video files for playback automatically.

This product is available for both Windows and the Mac. This MXF plugin offers 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. The disadvantage is that it will not allow you to view and edit metadata. For details, see

<http://www.calibratedsoftware.com/MXFImportFormats.asp>

## **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 this Ethernet connectivity. You cannot mount an Ikegami 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 GFCAM 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 are supported as an option on GF<sub>CAM</sub> products. They are available through the installation of a new board as well as a software upgrade to the camera. The proxies will be MPEG-4 .mov files, and will be recorded on the GFPAK inside its own *PROXY* folder. Proxies contain timecode and other information (UMID's- Universal Media Identifiers, various bin and clip ID's)

AVID does not support Batch Importing from GF<sub>CAM</sub>.

# 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 Markers 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 > CHOOSE COLUMNS`
- 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**

GFPAKs are formatted with FAT 32. This means there is a file size limit for individual files, and with a long recording several separate files may be created for the single recording. When you link to GFCAM your Avid editing system will link the spanned files into a single clip for each recording made.

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. This is how a Spanned Clip is created in GFCAM

In this case the recording is completed on the first GFPAK which has been removed, and a new recording is initiated on the second, new GFPAK. Even though a swap occurred during a continuous 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.

## CONNECTING TO A GFPAK

**USB:** A GFPAK is most commonly connected to an Avid with its USB connector. Simply connect the GFPAK to your computer using a standard, commercially available USB 2 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 Serial ATA cables from Ikegami, there is a docking station which can connect to an eSATA port on your workstation. This will provide transfers at up to 2.5 times faster than USB.



### Using a CF Adaptor



Ikegami has a GF Series product called a *CF Adaptor*. 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, where the Virtual Volume (copy of the GFPAK files) is at the root it will mount automatically when the Avid editing application starts. If the GFPAK is 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.

# OUTPUT GFCAM

## 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 a timeline.

## Output to Interplay

GFCAM SD recordings and 50Mb HD 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 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.

## Output to GFPAK

Output back to your GFPAK is not currently supported.

## Batch Import of GFCAM Media

This is not 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 GF<sub>CAM</sub> media at high resolution. You can mount each GF<sub>PAK</sub> in AMA mode to create a bin and clips for the GF<sub>PAK</sub>. You screen portions of the GF<sub>PAK</sub> 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 GF<sub>CAM</sub> 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 GF<sub>PAK</sub> 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 GF<sub>PAK</sub> 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 GF<sub>PAK</sub> 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 GF<sub>PAK</sub> copies. He creates a new folder with the slug of the story, and copies the GF<sub>PAK</sub> 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 GFPAK 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.