Kronos File

User Guide

Version History

Date	Version	Release by	Reason for Changes
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13/09/2016	1.1	Jon Metcalf	Edit for V2.2.3.2
01/12/2016	2.0	Jon Metcalf	Edit for the new Stop/Go feature – V3.0.0.14
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1. Definitions, Acronyms and Abbreviations

Table 1: Table of Terminology

Term	Definition
API	**Application Programming Interface**. An API specifies how some software components should interact with each other
Container	A file encapsulation system where separate elements (also called 'Essence') are combined into a single file. Also known as a File-Wrapper
Destination folder	Folder where finished jobs are written to (access and authorisation required)
Drop Folder	A folder associated with a **Watch Folder Configuration**. The folder will act as a repository for files converted by the associated Watch Folder Configuration
EOTF	**Electro-Optical Transfer Function.** This describes how to turn digital code words into visible light
File Wrapper	A file encapsulation system where separate elements (also called **Essence**) are combined into a single file. Also known as a **Container**
Filmic	Any video content that has a refresh rate of 30Hz, or less.
FIMS	**Framework for Interoperable Media Services**. A framework of service definitions for implementing media related operations using a Service Orientated Architecture (SOA)
GPU	**Graphical Processing Unit**. Very efficient, highly parallel compute engine for advanced image processing techniques.
GV File	The Snell OD name has been rebranded to GV File. There is no functional difference between GV File and Snell OD.
GV File Browser	The User Interface for the GV File framework.
GV File Node	Service which executes the jobs within the job queue. It performs all data processing (image/audio/metadata). The Node hardware is represented by the GPU.
GV File Client	The User Interface for the GV File framework.
GV File Server	The Service that orchestrates all GV File processes.
GV File Watcher	Service which monitors User specified Watch Folder and automatically adds them to the job queue. The User specifies a profile to be applied to each asset which is copied to Watch Folder and then drops the output into the specified Drop Folder.
HDR	**High Dynamic Range.** Is a representation that allows extended dynamic range (darker darks, brighter whites) by means of new transfer functions (EOTF/OETF) and Wide Color Gamut (WCG), which replaces the traditional CRT gamma curve and BT709 colour space.
License file	Defines the quantity of products available

Term	Definition
License Server	Manages product licenses
Locking code	Lock code based on specific locking criteria. GV File products are locked to host machine the sentinel service is installed on
LUT	**Look Up Table:** LUT is a term used to describe a predetermined configuration for a specific HDR/Colorspace transform.
OETF	**Opto-Electronic Transfer Function.** Inverse function of EOTF, describes how to turn visible light into digital code words
OOTF	**Opto-Optical Transfer Function.** End-to-end, camera-to-display non-linearity, intentionally introduced to the signal. Its purpose is to make the image perceptually as close as possible to the real world. Can be referred to as **Rendering Intent**.
Profile	A Profile defines how a piece of media is transformed / converted. **Default** profiles and **User** profiles are available
REST	**Representational state transfer**. Rest is a simple way of sending and receiving data between client and server. A RESTful web service is a web API implemented using HTTP and REST principles. Request methods include GET, POST, PUT, DELETE
SDR	**Standard Dynamic range:** traditional CRT gamma curve defined by BT709 colour space in HD and by REC601 in SD.
Source file	Location of the source file. Path can be entered explicitly or via the **browse** feature (access and authorisation is required)
Stop/Go	Where a Kronos File job may be defined with segments that are protected from the Kronos File duration change process.
TCC	NVIDIA Tesla Compute Cluster Mode. Professional NVIDIA GPUs which offer a graphics output need to have TCC mode enabled if they are to be used as a compute engine. Enabling TCC will disable the graphical output
Watch Folder	A repository folder for source files, where the action of moving a file to the folder, will initiate an automated conversion process
Watch Folder Configuration	The process that is initiated when a source folder is placed in the associated Watch Folder. The **Watch Folder Configuration** will convert the source file using the associated Profile and will place the converted file into an associated Drop Folder
WCG	Wide Color Gamut. ITU-R BT.2020 works together with the HDR functionality to offer a much wider color gamut than the traditional BT.709.
Wrapper	Alternative name for a Container (see above). A file encapsulation system where separate elements (also called 'Essence') are combined into a single file.

2. Overview

Our GV File Client offers simple system configuration and management with intuitive and clear control of the job queue. At a glance you can track which jobs are in progress, see estimated completion times, view source file metadata and interrogate both source and destination paths. Job creation is simplified through the use of an integrated browser which offers seamless access to assets on both local and remote shares.

Choose from a selection of preconfigured default Profiles or create your own user Profile to be applied to a job. Our Profile creation widget offers intelligence to help the user generate their desired Profile quickly and easily.

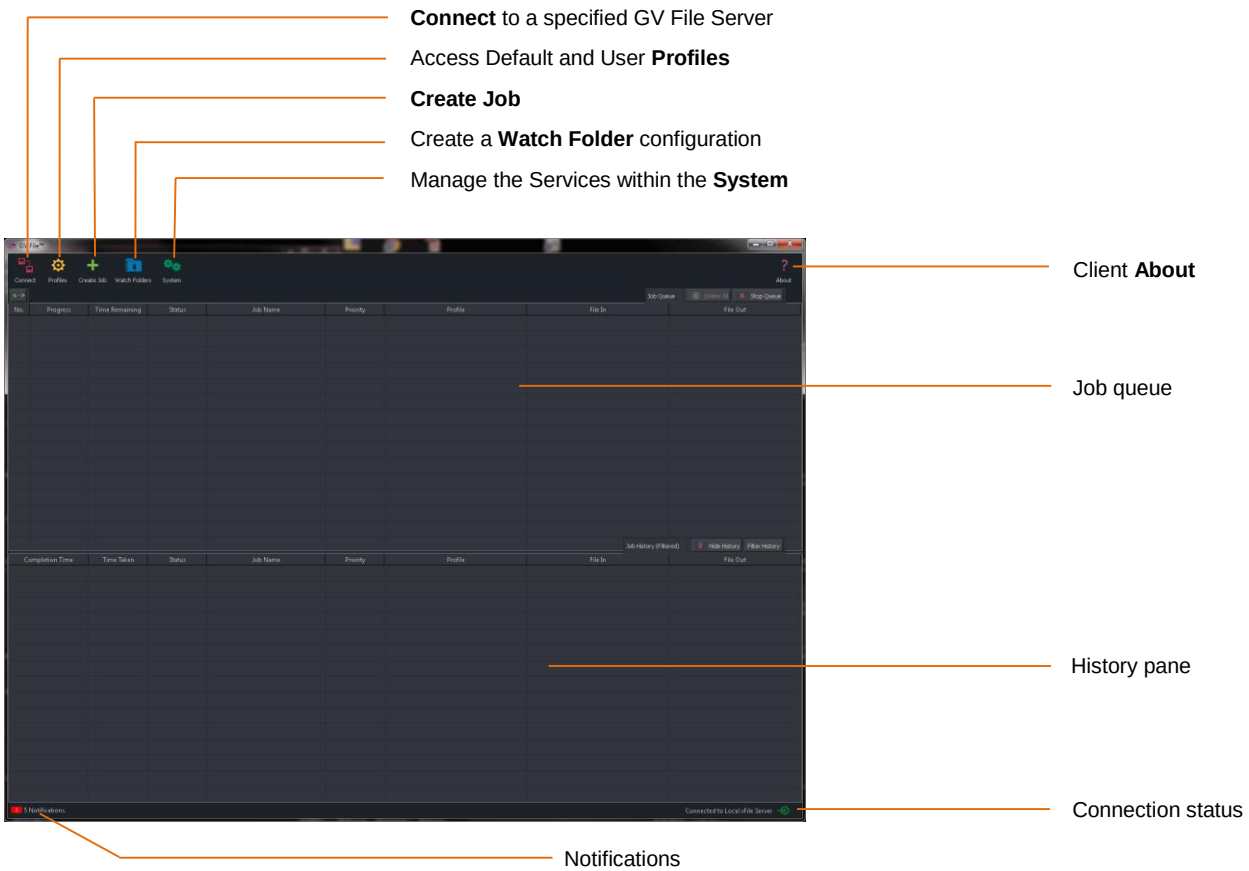
Included is a notification system which keeps you up to date with the state of the various framework services and a watch folder configuration widget to quickly and effectively automate the population of your job queue.

Note: Installation guides can be found here:

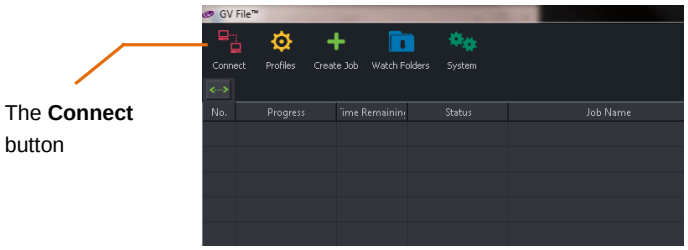
GV File - Installation Guide Windows

GV File Installation Guide - Linux

The GV File Client is easily launched via the desktop icon, which is created as part of the installation process.

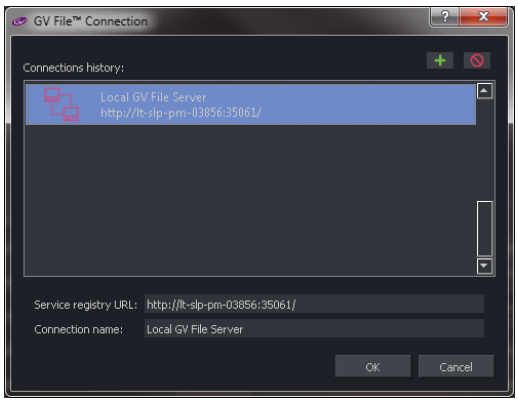


Connect is used to configure a connection to a specified GV File Server.



Selecting the Connect button will open the **GV File Connection** window. Only one Server can be connected to, at any one time, but multiple Server configurations can be stored.

Note that multiple Clients may be run on a single work station and each may connect to different GV File Server.



Confirmation that the GV File Client has successfully connected to the GV File Server, is shown at the bottom of the Client GUI:

3. Profile Management

3.1 Introduction

Profiles are used to control the conversion/transformation applied to a job.

The Kronos File system is supplied with a number of pre-configured conversion Profiles. These pre-configured Profiles are identified by a **Default** prefix and these Profiles cannot be edited or deleted.

However, because there are potentially a huge number of video format, video standard, codec and file wrapper combinations, it would be impractical to try and include all combinations as Default Profiles. Therefore, Kronos File offers the ability to create custom Profiles.

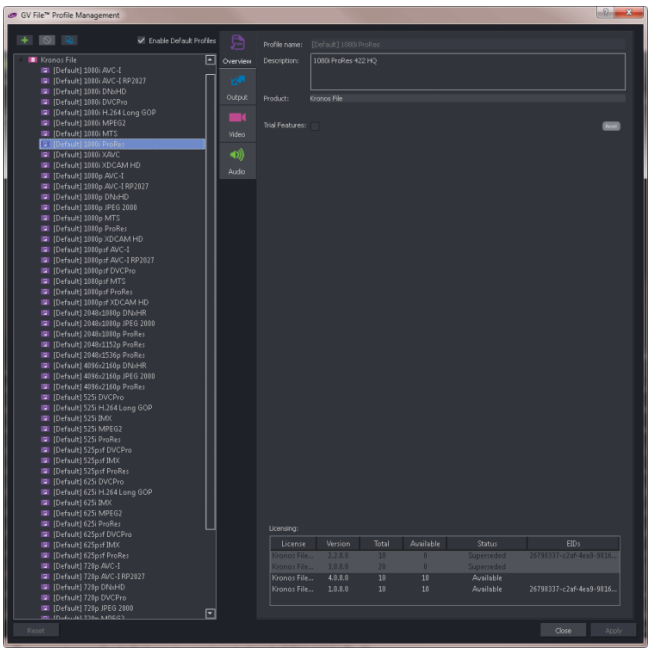
The Default Profiles can be used as a basis for a User Profile. A User Profile is a Profile that has been custom made by the User.

Once custom Profiles are configured, they will appear alongside the Default Profiles, in the list of available Profiles.

There are two methods that can be employed when building a new Profile:

Create a new Profile	This will create a Profile based on the default settings of the Kronos File. The user can then modify the Profile so that it complies with their specific requirements.
Copy and edit an existing Profile	This method allows the user to duplicate an existing Profile that best matches the requirements of the new Profile. This can then be modified so that it complies exactly with the requirements.

The **Copy** method usually offers the fastest approach, since it requires less parameters to be modified.

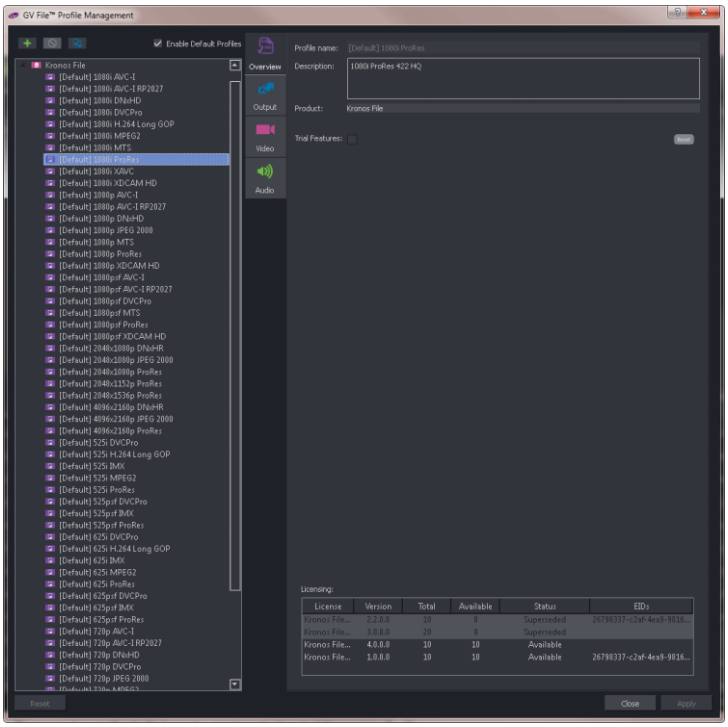


3.2 Create a New Profile

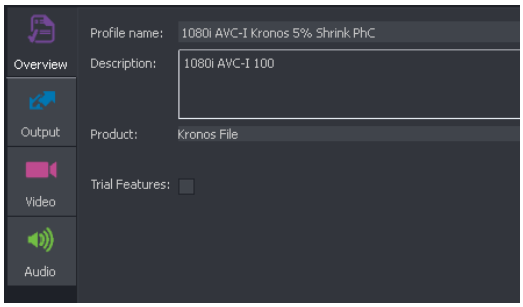
1. Select the Kronos File product, in the left-hand pane of the **Profile Management** window

2. Select the **New Profile** icon.

The **Profile Management** window will now be in a mode where it can be edited. All parameters will be at their default value.

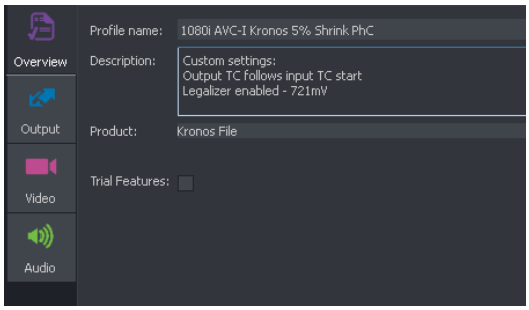


The User will be prompted to give the new Profile a name. This can be anything the User chooses, but it is often useful for the Profile name to describe the properties of the Profile.

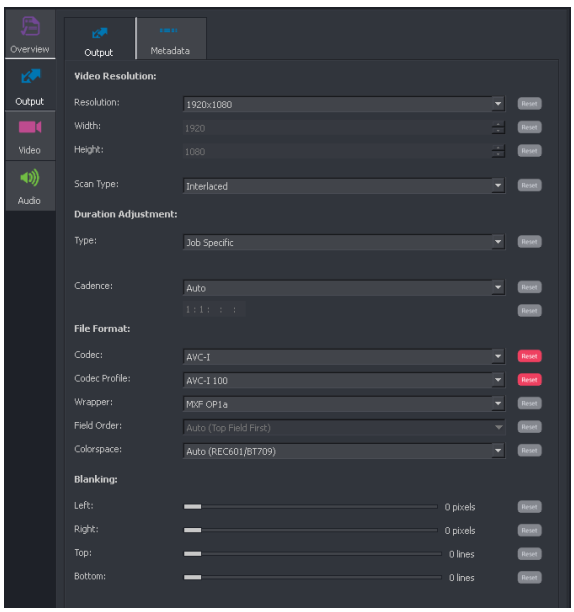


In this example, the output video standard, the video codec, and a description of the Kronos process, have all been incorporated into the Profile name. This practice is useful, but not essential. Alternatively, the user could choose to name the Profile by its relevance to a particular customer, or maybe to a particular series of programs.

3. A description may be added if desired. This is useful for future reference.

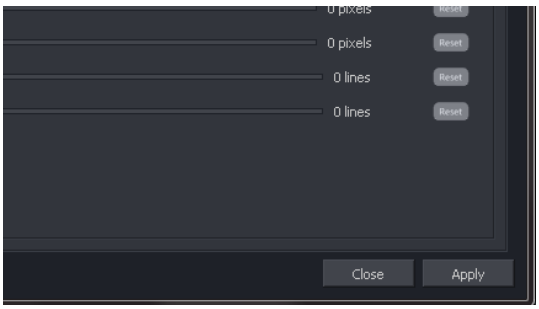


4. Now the parameters of the new Profile can be edited as per the requirements.

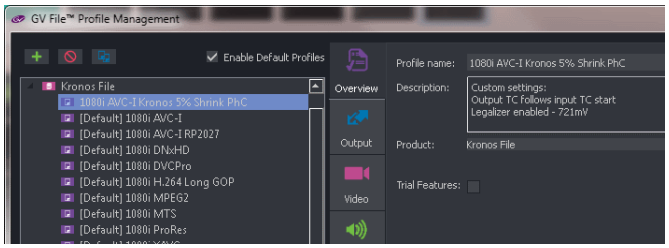


Note: Any parameter adjusted from its default value will set the associated **Reset** button to orange. An orange **Reset** button means that it is active and when selected will return the particular parameter to its default value. Upon setting a parameter to default value, the associated **Reset** button will return to grey.

5. When editing is complete, click **Apply** to save the new Profile.



The new Profile will now appear alongside the default Profiles.

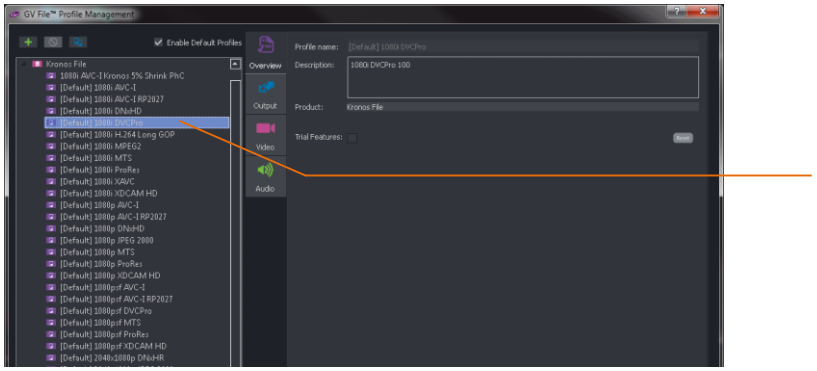


The new Profile is now available for any future job. It will remain so until such time as it is deleted.

3.3 Copy and Edit an Existing Profile

As an alternative to building a new Profile from scratch, the **Copy** feature may be used. This is usually a quicker method of producing the required Profile.

1. Choose an existing profile that most closely matches the requirements of the required Profile. Click once on the Profile to highlight it.

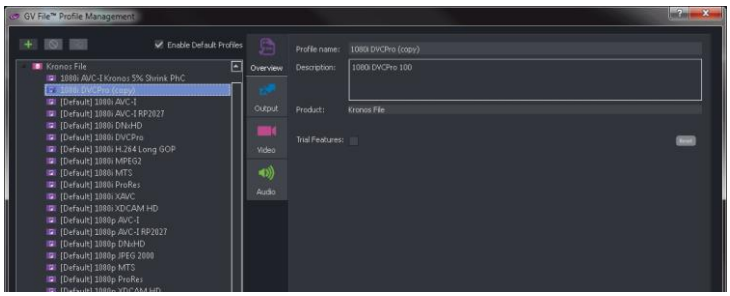


In this example, one of the Default Profiles has been chosen. However, it is also possible to copy a custom Profile if required.

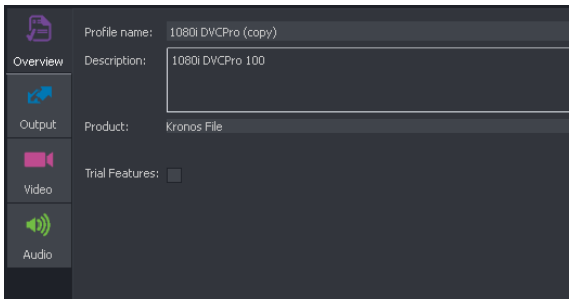
Note: The adjustable parameters of the Profile will currently be greyed-out. This is because the current Profile is a Default Profile and as such, cannot be edited.

2. Click on the **copy** symbol

This will make a copy of the selected Profile. Note that the name of the Profile will now be appended with the word **copy** in brackets. Also, note that the parameters within the Profile, that the text is now white and can now be edited.

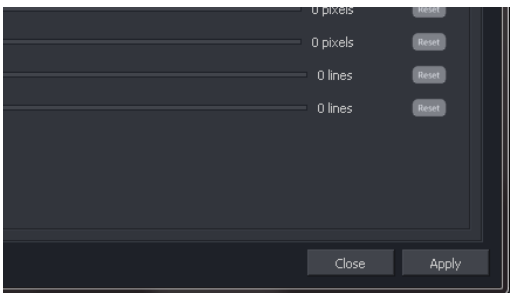


3. Now the copied Profile can be edited as required.

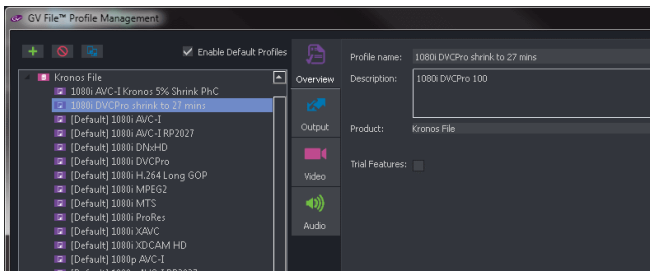


In this example, the name has been edited to something meaningful.

4. When editing is complete, select **Apply** to save the new Profile.



5. The new user Profile will now appear alongside the default Profiles.

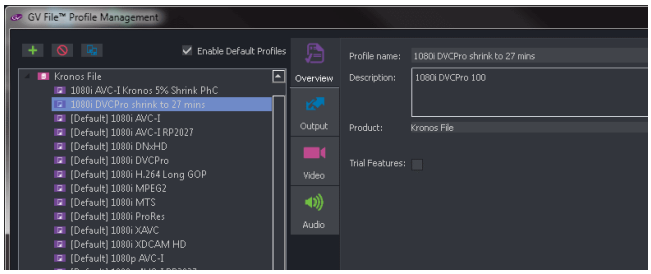


The new Profile is now available for any future job. It will remain so until such time as it is deleted.

3.4 Deleting Profiles

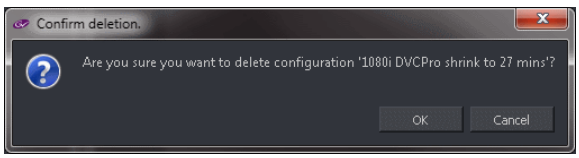
Only custom made Profiles can be deleted. Default Profiles cannot be deleted.

1. Click on the Profile that you wish to delete.



2. Click on the **Delete** symbol.

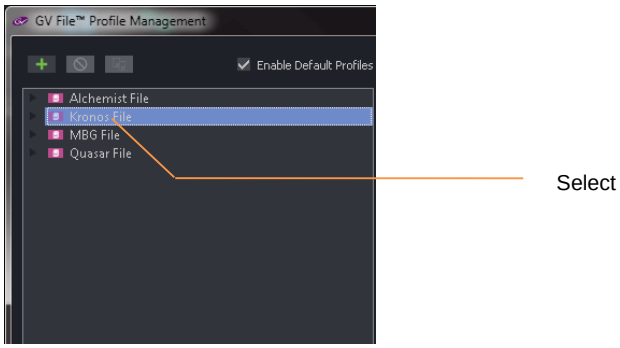
A **Confirm deletion** message will appear



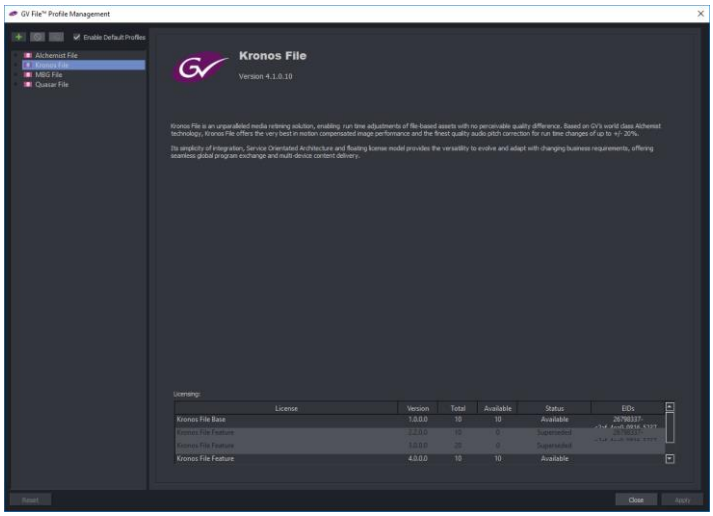
Click **OK** to complete the deletion.

3.5 Licensing Check

Click on the Product to view the License details.



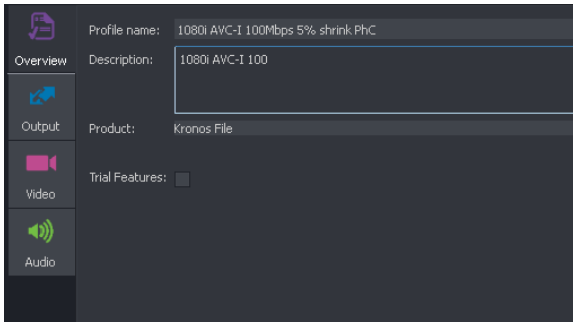
The Product overview window will inform the user of the license type, quantity, status and entitlement ID.



3.6 Overview Tab

3.6.1 Profile Name

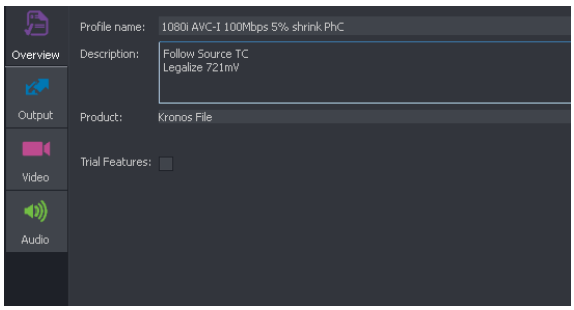
In the Overview tab, you will be prompted to give the new Profile a name. This can be anything the User chooses, but it is often useful for the Profile name to describe the properties of the Profile. The Profile name may contain the video standard, the codec, the codec bit-rate, etc.



In this example, the output video resolution, the video codec, the bit-rate and a description of the Kronos File process, are all incorporated into the Profile name. This practice is useful, but not essential. Alternatively, the User could choose to name the Profile by its relevance to a particular customer, or maybe to a particular series of programs.

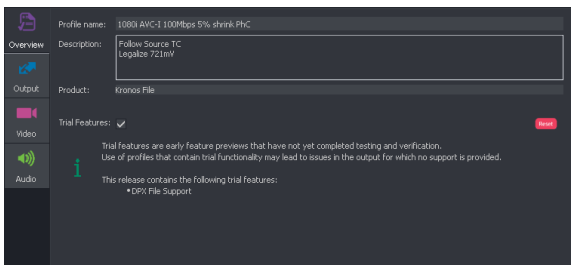
3.6.2 Profile Description

A description can be entered if required. This is often useful for future reference. This field is optional.



3.6.3 Trial Feature

Trial features may be enabled or disabled. A **Trial feature** is one which may not have been fully developed or validated. The user can use and experience the feature prior to it becoming a released feature.



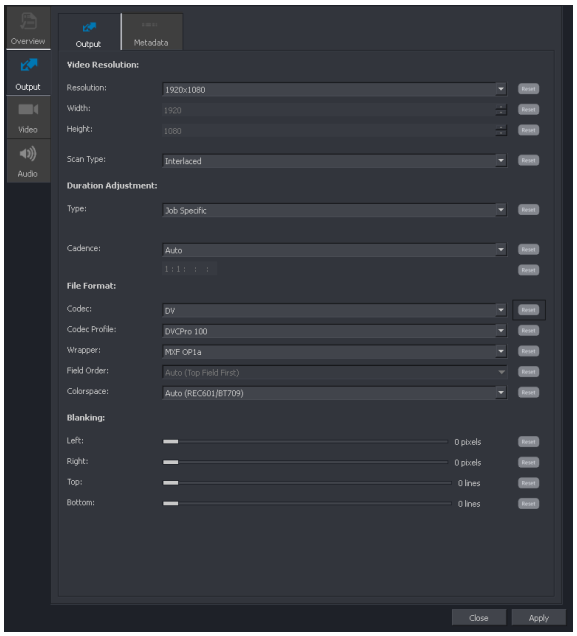
Note: **Trial features** should not be confused with the trial version of Kronos File. These are completely different things!

4. Profile Configuration

This section describes the parameters available to configure a user profile.

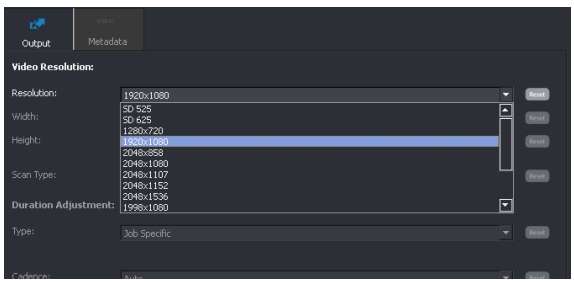
4.1 Output/Output Tab

Here the User can configure the video parameters of the output file.



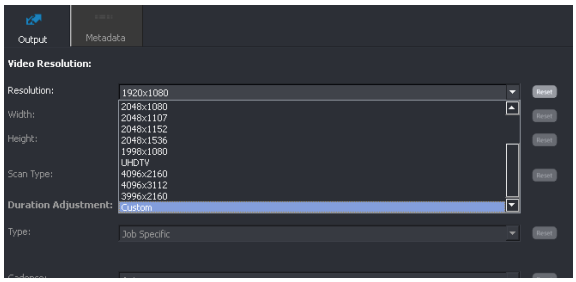
4.1.1 Output/Output/Video Resolution/Resolution: Various

A drop down menu allows the User to choose the desired output video resolution.



4.1.2 Output/Output/ Video Resolution/Resolution: Custom

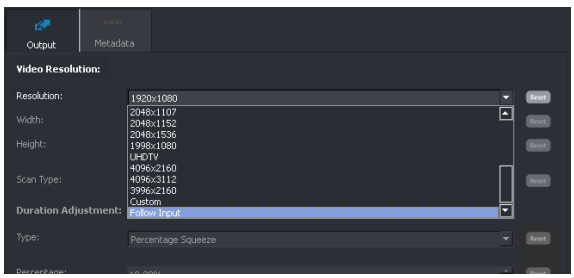
From the **Resolution** drop down menu, the User may select the **Custom** setting.



Note: this feature is only available for file types that allow custom resolutions.

These include: ProRes, Uncompressed mov, and DPX.

4.1.3 Output/Output/ Video Resolution/Resolution: Follow Input



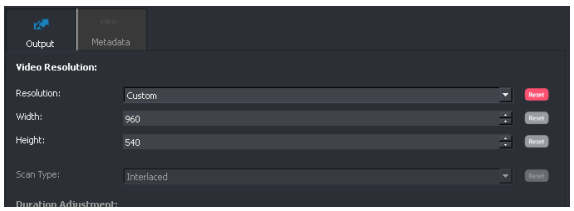
When **Resolution** is set to **Follow Input** the output resolution will be set to be the same as the input file.

This feature has certain restrictions:

- The output file made will be ProRes/mov.
- The output file scan rate will be Progressive.

4.1.4 Output/Output/ Video Resolution/ Width & Height: Various

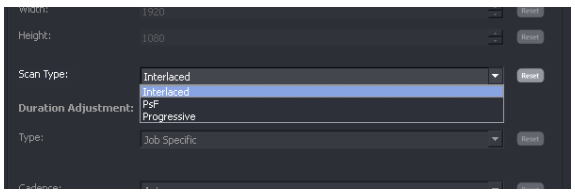
The **Custom width** and **Custom height** controls will only become active when **Resolution** is set to **Custom.** These controls allow the User to set any desired resolution.



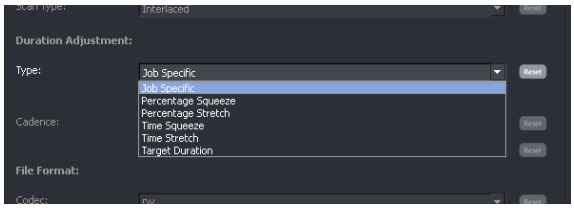
Both controls may be set anywhere between 32 and 8192. Custom settings can either be set by use of the **up/down** arrows, or by simply typing a value in.

4.1.5 Output/ Output/ Video Scan/Scan Type: Interlaced / PsF / Progressive

This control is only active when the **Scan Rate** control is set to **Custom.** Here the User can define the output scan type as Interlaced, psf, or Progressive, using the drop down menu.



4.1.6 Duration Adjustment/Various



Here the User can define the required duration change. The duration maybe increased or decreased. Various methods are available with which to achieve the desired duration change:

Duration Adjustment/Type

- **Job specific**
- **Percentage Squeeze**
- **Percentage Stretch**
- **Time Squeeze**
- **Time Stretch**
- **Target Duration**

Job specific — Where a duration changed is to be applied only to specific segments of a source file. Note that the **Job Specific** procedure is explained in Appendix E (page 138).

Percentage Squeeze: A duration decrease is defined as a percentage of the source program duration.
(to a maximum of -20%)

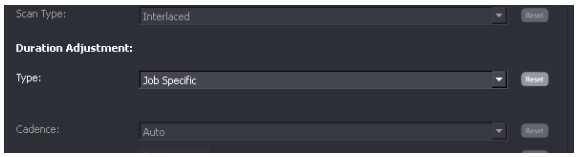
Percentage Stretch: A duration increase is defined as a percentage of the source program duration.
(to a maximum of +20%)

Time Squeeze: A duration decrease is defined, by timecode, as aspecific time duration to decrease the source program by. Note that the specified time configured cannot result is a squeeze of more than 20% of the source duration.

Time Stretch: A duration increase is defined, by timecode, as aspecific time duration to extend the source program by. Note that the specified time configured cannot result is a stretch of more than 20% of the source duration.

Target Duration: The User defines the desired duration of the output program. This may result in either a squeeze, or a stretch. The target duration is defined in Timecode. Note that the specified duration configured cannot result is a squeeze, or stretch, of more than 20% of the source duration.

Job specific:



When the **Duration Adjustment** mode is set to **Job Specific**, the view in the **Create a new job window** will be modified:

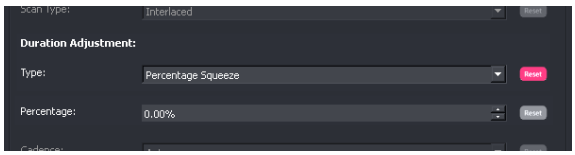
Two new fields will appear:

- **Target Duration**
- **Marker File**

Note that the process of configuring a **Job Specific** process is described in **Appendix E** below.

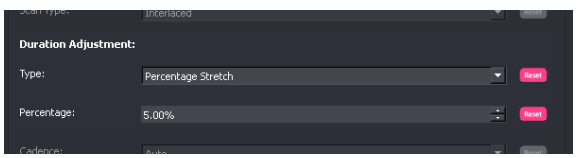
Duration Adjustment/Percentage:

When either **Percentage Squeeze**, or **Percentage Stretch** is selected as the **Duration Adjustment Type,** the **Percentage** control will appear:



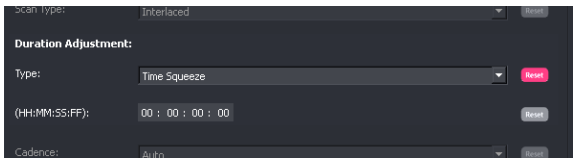
A setting is entered that relates to the desired increase/decrease.

In the following example a value of 5% Percentage Stretch has been entered:



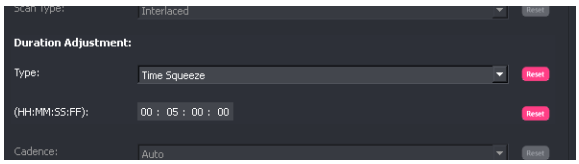
(HH:MM:SS:FF)

When either **Time Squeeze**, **Time Stretch**, or **Target Duration** is the selected method for duration adjustment, the menu will change to display a Timecode entry field.



When **Time Squeeze** or **Time Stretch** is the defined duration adjustment type, a specific time is entered (as a timecode value) to either reduce or extend the source duration by.

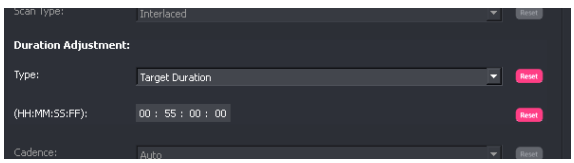
For example if a 1 hour program is desired to be reduced to 55 mins, a value of 5 minutes should be entered.



Target Duration

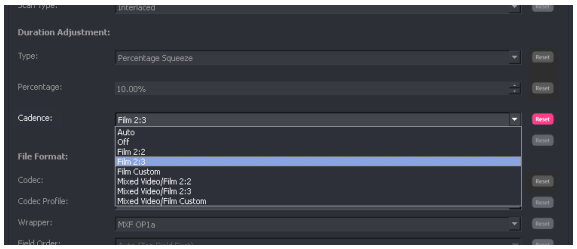
In this mode the User can define the exact duration of the output program, be this a *squeeze* or a *stretch*.

In the following example, the duration of the output program has been defined to be 55 minutes.



In such a scenario, a source file of 1 hour duration would be squeezed to 55 minutes.

Duration Adjustment/Cadence



This control allows a User to configure the desired output cadence. The combined use of this control, and the input Cadence Detector, enables Kronos File processes to maintain any cadence associated with the input file.

The control has several settings:

Auto

Note; the default is **Auto**. In this mode, the output will maintain the video, or filmic, quality of the source file. This process is dynamic hence sources that have mixed filmic and high frame rate video content, will maintain the video look of the input.

Off

When the Output Cadence control is set to **Off,** the output scan rate will be dictated by the setting of the **Scan Rate** control (see 4.1.4).

In scenarios where a job configuration would require a frame rate conversion to achieve, the job will fail and the job queue will move on to the next job. An example of this would be if the output **Scan Type** is set to Interlace, and the source is low frame rate (23p, 24p, 25p etc). Kronos File cannot create either 50i, or 59i from a low frame rate source (Kronos File is not a frame-rate converter).

Film 2:2

This setting will force output content to contain a 2:2 cadence. If the output is interlaced, the output will have a 2:2 F1/2 (PsF) cadence. If the output is progressive, the output will be 2:2 progressive.

Note – depending on the parameters of the source file, a Kronos File process defined to have a 2:2 cadence, may require a frame rate change and hence be illegal. In such a scenario Kronos File will fail the job and move on to the next job in the job queue.

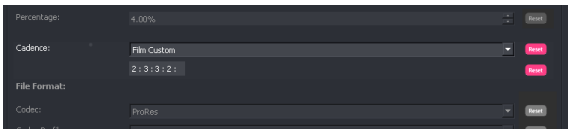
Film 2:3

This setting will force output content to contain a 2:3 cadence. If the output is interlaced, the output will have a 2:3 F1/2 (PsF) cadence. If the output is progressive, the output will be 2:3 progressive.

Note – depending on the parameters of the source file, a Kronos File process defined to have a 2:3 cadence, may require a frame rate change and hence be illegal. In such a scenario Kronos File will fail the job and move on to the next job in the job queue.

Film Custom

Custom cadences can also be configured.



In this example, the output has been defined to be 2:3:3:2.

Note – depending on the parameters of the source file, a Kronos File process defined to have a custom cadence, may require a frame rate change and hence be illegal. In such a scenario Kronos File will fail the job and move on to the next job in the job queue.

Mixed Video/Film 2:2

This control setting should be used when encountering source content containing a mixture of video and filmic content, when it is desired to maintain the source cadence in the output file.

Note that when **Output Cadence** control is set to **Mixed Video/Film 2:2**, the **Input/Source Cadence – Cadence** control (see section 4.3.6) will automatically be set to **Detect Sharp.** This is because the detector must be switched on for this conversion process to work.

When set, where the source is low frame rate filmic content, the output will have a 2:2 cadence applied. So for example if the transport of the output file was 50i, the content would be 25psf.

When the source is high frame rate, the output will correspondingly be high frame rate i.e. 50i 1:1.

Mixed Video/Film 2:3

This control setting should be used when encountering source content containing a mixture of video and filmic content, when it is desired to maintain the source cadence in the output file. This would normally apply to a 59.94Hz output file.

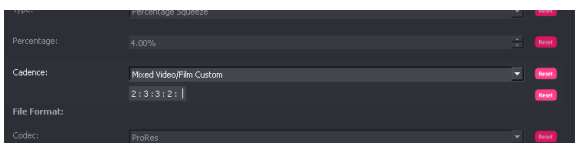
Note that when **Output Cadence** control is set to **Mixed Video/Film 2:3**, the **Input/Source Cadence – Cadence** control (see section 4.**) will automatically be set to **Detect Sharp.** This is because the detector must be switched on for this conversion process to work.

When set, where the source is low frame rate filmic content, the corresponding output will have a 2:3 cadence applied. So for example if the output file was 59i, the content would have be 59.94i 2:3.

When the source is high frame rate, the corresponding output will be high frame rate. i.e. 59i 1:1.

Mixed Video/Film Custom

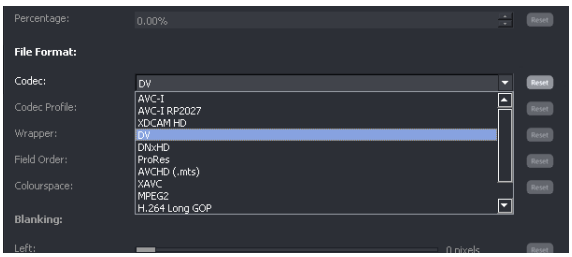
This control setting should be used when encountering source content containing a mixture of video and filmic content, when it is desired to maintain the source cadence in the output file. This would normally apply to a 59.94Hz output file and where an alternative cadence type is desired. The alternative cadence should be entered in the appropriate box:



In this example, an alternative cadence of 2:3:3:2 has been configured.

4.1.7 Output/ Output/ File Format/ Codec: Various

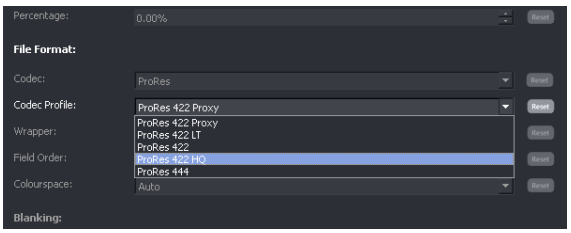
A drop down menu allows the User to choose the desired output video codec.



Note that some codecs are not available with certain file type configurations (i.e. JPEG is not offered when interlaced scan rates are configured). At such times, the codec will not be offered as a selectable item.

4.1.8 Output/ Output/ File Format/ Codec Profile: Various

A drop down menu allows the User to set the desired bit-rate and bit-depth, of the codec used in the output file.



Note that the dropdown menu for this parameter will be dependent upon the chosen Codec. In this example the various ProRes profiles are shown.

4.1.9 Output/ Output/ File Format/ Wrapper: various

A drop down menu allows the user to set the desired file wrapper. The client will only offer wrappers which are valid for the format, codec and codec profile selected.

Note that the dropdown menu for this parameter will be dependent upon the chosen **Codec**.

In this example the JPEG profiles has been selected and so the choice is given to wrap the file as: **.MOV**, **.MJ2** or **.MXF OP1a**.

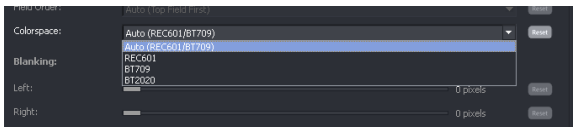
4.1.10 Output/Output/ File Format/ Field Order: Various

This control is only active when the output file type is interlaced ProRes, DPX or Uncompressed MOV. A User may choose to define the output field order as either TFF (Top Field First), or BFF (Bottom Field First), by use of the drop down menu.

Note: When the output is HD, the Auto mode is TFF. When the output is SD, the Auto mode is BFF.

4.1.11 Output/Output/Colorspace: Auto/REC601/BT709/BT2020

A drop down menu allows the User to set the desired colorspace setting. The default value is **Auto.** In **Auto** mode the system will choose the appropriate colorspace function for the chosen output file type. Alternatively the User can choose to manually select the required colorspace.



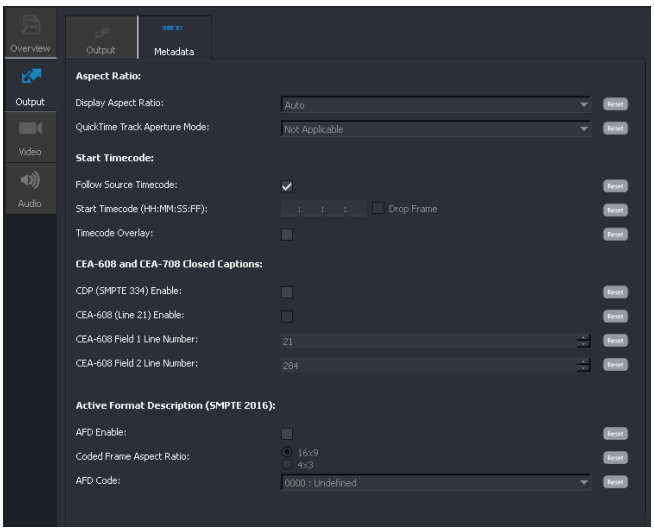
When set to **Auto** output colour space will be set to the appropriate SDR colour space (when the output is HD, or 4K, output colorspace will comply with BT709. When the output is SD output colorspace will comply with REC601).

BT2020 may be manually configured.

4.1.12 Output/Output/Blanking: Left/Right/Top/Bottom

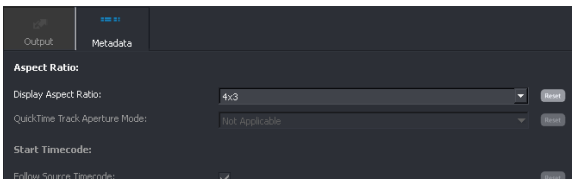
The **Blanking** slider controls allow the user to blank areas of the output image. Blanked areas will appear black in the output image.

4.2 Output/Metadata



4.2.1 Output/Metadata/Display Aspect Ratio: 4x3 / 16x9 / 4x3 Full / 16x9 Full

This control is only active when an SD output format is configured*. It allows the User to define the metadata parameter **Display Aspect Ratio**. The default setting is **4x3**.



If an HD, 2K or 4K standard is configured; this control is disabled (greyed out).

*In the event that a custom output resolution is configured in the **Output** menu, then the **Display Aspect Ratio** control will be active. This is because an SD custom resolution could be configured and the User may want to tag the output file as either 4x3 or 16x9. In this case, the default setting of the control **Display Aspect Ratio** is 16x9.

The control has four possible settings, selectable from a drop down menu:

4x3 This setting is applicable for when the output program is to be displayed on a 4x3 video monitor. This setting uses the default values dictated by the specific file format being employed by the output file.

Note that when the output file type utilizes a MOV file wrapper, that default values are based on analogue blanking (625: 702x576 / 525: 702x486). This error is inherent in the MOV file wrapper. All other file types will scale correctly in the digital domain (625: 720x576, 525: 720x486).

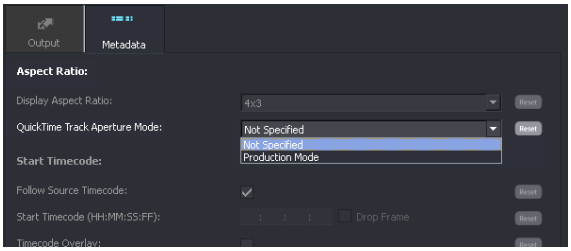
16x9 This setting is used if the SD output program is to be displayed on a 16x9 video monitor. When **16x9** is selected, the spatial scaling will be dictated by the specific file format being employed in the output file.

Note that when the output file type utilizes a MOV file wrapper, that default values are based on analogue blanking values (625: 702x576, 525: 702x486). This will affect scaling to 16x9, where the actual aspect ratio created will be 1.85:1 (true 16x9 = 1.77:1). This error is inherent in the MOV file wrapper. All other file types will scale correctly to 16x9.

4x3 Full This setting is only available when the output file format utilizes a MOV file wrapper. When selected, the output file will be scaled using digital blanking values (625: 720x576), (525: 720x486), so ensuring the output is exactly 4:3.

16x9 Full This setting is only available when the output file format utilizes a MOV file wrapper. This setting is used if the output program is to be displayed on a 16x9 video monitor. Unlike the **16x9** setting**,** the **16x9 Full** setting will set spatial scaling values to make the output file display exactly to 16x9.

4.2.2 QuickTime Track Aperture Mode



This control is only active when the output standard is SD, and the output file container is Quicktime.

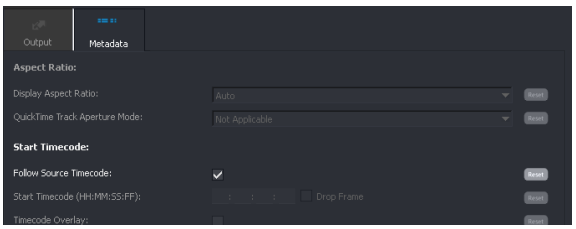
The **Track Aperture Mode** is an optional MOV container atom that stores information for video correction by describing the dimensions of the clean aperture, the production aperture and the encoded pixels.

When MOV files are played in Apple QuickTime player, the DAR setting is ignored unless the Track Aperture Mode is set to **Production Mode**.

4.2.3 Output/Metadata/Start Timecode

This control allows the User to define the output timecode count.

The default setting is: **Follow Source Timecode.**



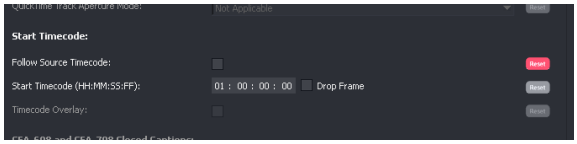
In this mode, output timecode will follow source timecode by preloading the output timecode generator with the start timecode value extracted from the source. The output generator will then free run.

Note: Drop frame timecode is designed to faithfully represent real time as shown on a clock on the wall. It achieves this by dropping 2 frame counts every minute, except every tenth minute. For this reason a drop frame conversion doesn't contain all the time code frame counts which were present in a non-drop frame source. Whereas, non-drop frame timecode includes all timecode counts, but a consequence to this is that *timecode time* does not represent *real time*.

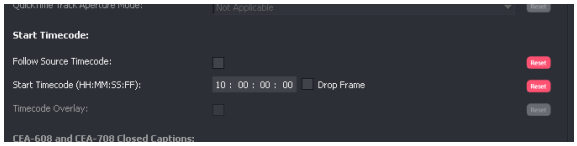
In circumstances where the input has no timecode and **Follow source timecode** is enabled, output timecode will use the default value as a starting point i.e. 01:00:00:00

Note that if the output scan rate is set to 59fps, when **Follow source timecode** is enabled, the output timecode will be, by definition: Drop Frame.

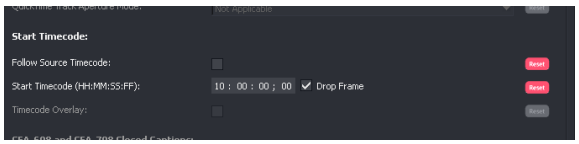
Alternatively, the User can choose to start output timecode from a specific value. Un-checking the **Follow source timecode** control will make the **Start timecode (hh.mm.ss.ff)** control active. The default timecode value of 1 hour (01:00:00:00) will be displayed.



The **Start timecode (hh.mm.ss.ff)** value may be configured to be any timecode value the User chooses, by simply typing a numerical value:

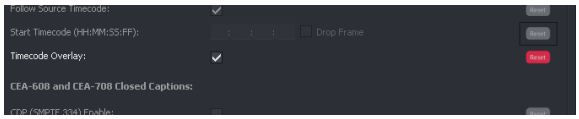


Note that if a 29.97 or 59.94 fps output format is selected in the **Output** menu, the **Drop Frame** control will now become active, allowing the User to define the output timecode as either drop frame, or non-drop frame.



The default setting is **Drop Frame**.

Timecode Overlay



When enabled, a timecode overlay will appear within the active picture area (upper left), of the output video content.

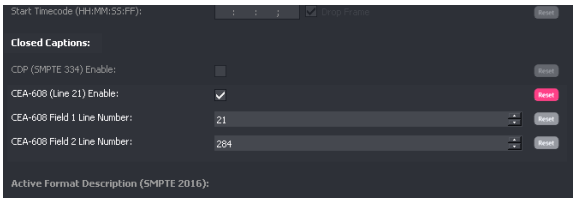
4.2.4 Output/Metadata/CDP (SMPTE 334) Enable

When enabled, the **CDP (SMPTE 334) enable** control will allow any Closed Captions in the input to be inserted in the output as SMPTE 436M ancillary data.

Note – this control is only active when certain output file types are configured. Where the feature is not supported, the control will be unavailable (greyed out).

4.2.5 Output/Metadata/CEA-608 (Line 21) Enable

The **CEA-608 (Line 21) enable** control set is only active when **SD 525** is set as the output format, and the IMX/D10 codec, or DPX, is configured. In all other cases the control is inactive.



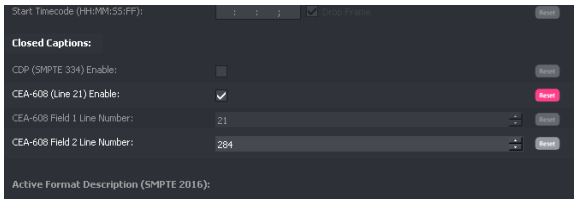
The control **CEA-608 (Line 21) enable,** when enabled will allow input Closed Captions conforming to CEA 608 to pass to the output, or CEA 708 CB (compatibility byte) to be transposed into the output as CEA608.

4.2.6 Output/Metadata/CEA-608 Field 1 Line Number

The control **CEA-608 field 1 line number** allows the User to configure an alternative output line to carry the CEA-608 caption. This can be on any line between line 10 and line 25. Default is line 21.

4.2.7 Output/Metadata/CEA-608 Field 2 Line Number

Similarly, the control **CEA-608 field 2 line number** allows the User to configure an alternative output line to carry the CEA-608 caption. This can be on any line between line 274 and line 288. Default is line 284.



Note – Kronos File only offers output Closed Captions support of CEA608 (line 21) when the output format is either D10/IMX MXF OP1a, or DPX. Whenever an output file type is configured that is not D10/IMX MXF OP1a, or DPX, the **CEA-608 (Line 21) enable** control will be disabled.

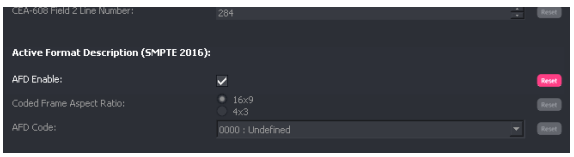
4.2.8 Output/Metadata/Active Format Description (SMPTE 2016)

The User can choose to add SMPTE 2016 signalling information to the output file. AFD codes can be selected from a drop down menu. However, this feature is limited to certain output file formats. When the feature is not supported by the chosen output format, the **AFD enable control** will be unavailable (greyed out).

4.2.9 Output/Metadata/AFD Enable

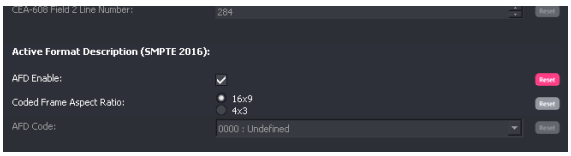
If an output codec is selected that supports the insertion of SMPTE 2016 AFD codes, the User may choose to enable the feature using the AFD enable checkbox.

The **AFD enable** control is default off (unchecked).



4.2.10 Output/Metadata/Coded Frame Aspect Ratio

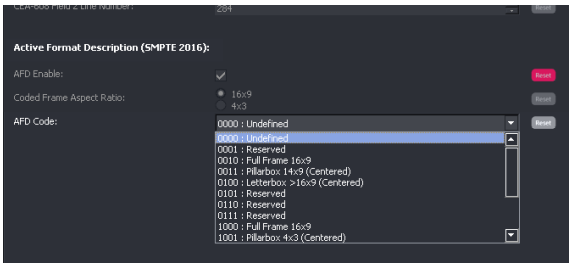
When enabled, the **Coded frame aspect ratio,** and the **AFD code** controls become active.



The coded frame may be set to either 16x9, or 4x3, by selecting the appropriate check box.

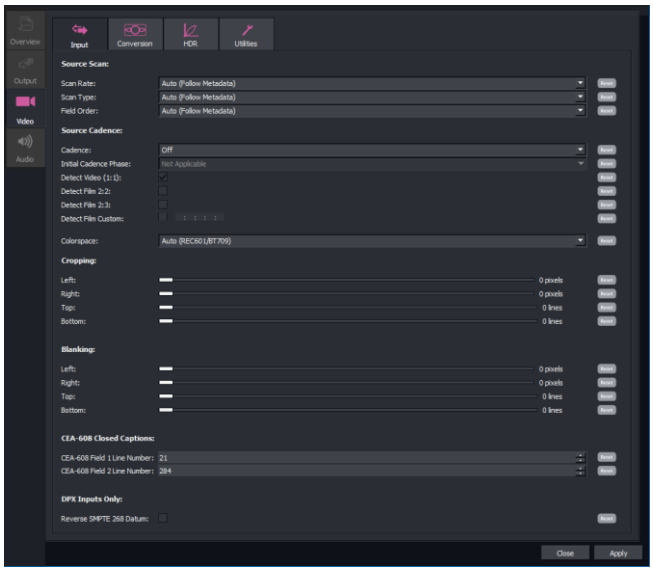
4.2.11 Output/Metadata/AFD Code

A specific AFD code may be selected from the drop down menu.



4.3 Video/Input

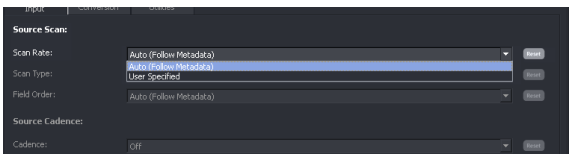
The video menu contains four sub menus: **Input**, **Conversion, HDR** and **Utilities**.



4.3.1 Video/Input/Source Scan/Scan Rate

This control has two possible settings:

- Auto (Follow Metadata)
- User Specified

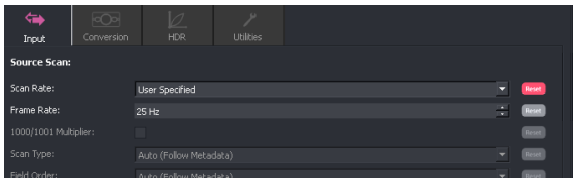


When set to **Auto**, the source frame rate will be determined from the source file metadata.

In circumstances where the metadata in the source file is deemed to be incorrect with respect to frame rate, a User can choose to over-ride the metadata and process the file, manually defining the correct source frame rate. Setting this control to **User Specified** will make the **Frame Rate** control (below) active.

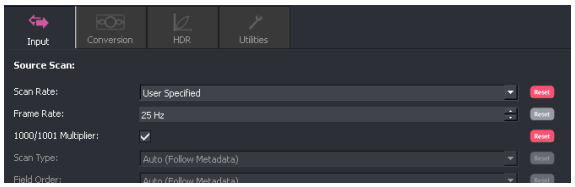
4.3.2 Video/Input/Source Scan/Frame rate

This control is only visible when the **Scan Rate** control (above) is set to **User Specified**. Once active, the User can manually set the source frame rate.



4.3.3 Video/Input/Source Scan/1000/1001 Multiplier

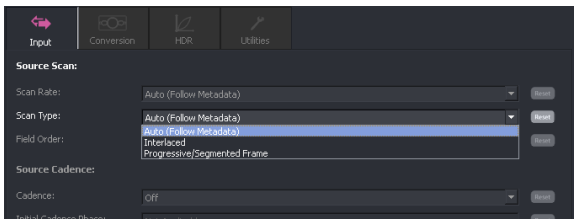
This control is only visible when the **Scan Rate** control (above) is set to **User Specified**. Once active, the User can use this control to define a frame rate that uses the 1000/1001 multiplier (i.e. 59.94 – set 60Hz and enable multiplier).



4.3.4 Video/Input/Source Scan/Scan Type

This control has three possible settings:

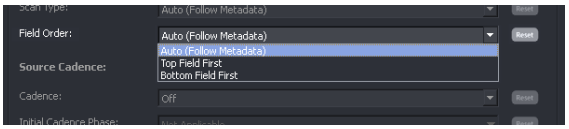
- **Auto (Follow Metadata)**
- **Interlaced**
- **Progressive/Segmented Frame**



In **Auto**, the system will automatically determine input scan rate from the metadata. This is the default setting.

Alternatively, the User can choose to force the **Scan type** control to either **Interlaced**, or to **Progressive/PsF.** This is useful if the associated metadata incorrectly describes the actual video essence.

4.3.5 Video/Input/Source Scan/Field order: Auto/Top Field First/Bottom Field First



The purpose of this control is to allow the User to force the field order. This is useful if the associated metadata incorrectly describes the actual video essence.

The control has three settings:

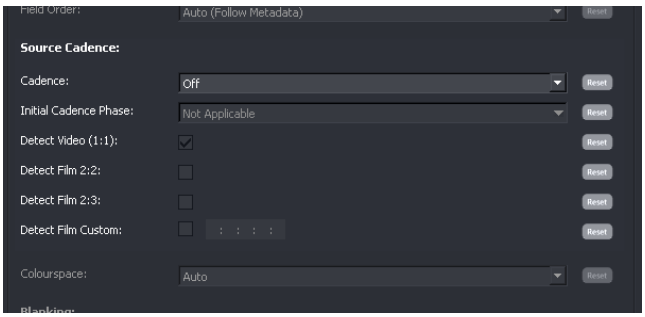
- **Auto (Follow Metadata)**
- **Top Field First (TFF)**
- **Bottom Field First (BFF)**

When set to **Auto (Follow Metadata)** the field order will be treated as described by the metadata.

The setting **Top Field First** will process the file as **Top Field First** and will ignore the metadata (with respect to this parameter).

The setting **Bottom Field First** will process the file as **Bottom Field First** and will ignore the metadata (with respect to this parameter).

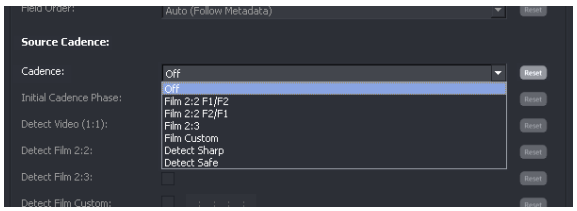
4.3.6 Source Cadence



Any source file with a predictable cadence, when subjected to a Kronos File process, the associated cadence will be effectively broken (with the exception of psf) if the source cadence is not considered.

From V3 onwards, Kronos File offers a cadence handling feature. This effectively first removes the associate cadence, gaining the native frame rate of the content. The Kronos File is then applied to achieve the desired duration change, then cadence can be re-introduce at the output.

Input/Source Cadence/Cadence



The **Source Cadence** control allows the User to either define the source cadence or detect the source cadence.

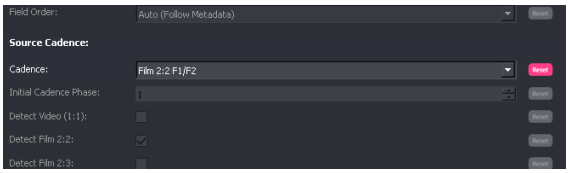
The default setting is **Off**. When **Off**, it is assumed the cadence in the source matches the format defined in the associated metadata:

Example:

720 50p would contain a new temporal sample every frame.

1080 59i would contain a new temporal sample every field.

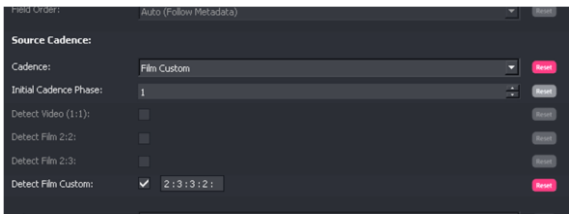
In circumstances where the User is confident that their source content conforms to a particular cadence, then the appropriate cadence type can be selected from the drop-down menu.



If the source encountered has a 2:3 cadence associated with it and the User chooses to define the input cadence as **Film 2:3**, the **Initial cadence phase** control will become active.

This control allows the User to define the phase of the source 2:3 cadence. In this particular scenario, it is essential that the source content has a continuous, unbroken 2:3 cadence associated with it and that the User correctly configures the **Initial Cadence Phase** of the source content. In circumstances where these parameters are unknown, the User should configure the mode to be **Detect.**

The **Cadence** option **Film Custom,** allows the User to define an input cadence that is not available as a preset. There are many different cadence types in use today, usually associated with the 29.97 frame rate. In the following example a custom cadence of 2:3:3:2 has been configured. Where the cadence type configured has a phase sequence, the User must correctly define the phase sequence.



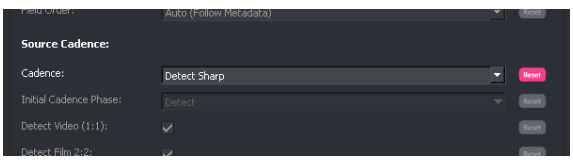
Cadence Detect

Probably the most useful setting for the **Cadence** control is **Detect.** In this mode it is not necessary for the User to define the source cadence. The system will adaptively detect the source cadence and process the content accordingly. When the **Cadence** control is set to one of the **Detect modes**, the controls **Detect video (1:1), Detect video 2:2,** and **Detect video 2:3** all become active.

Kronos File offers two detect modes:

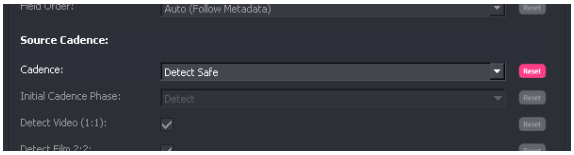
- Detect Sharp
- Detect Safe

Detect Sharp



The **Detect Sharp** mode allows maximum possible vertical resolution. However, this mode is less tolerant of film sequence detection errors.

Detect Safe



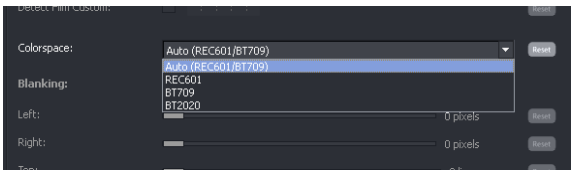
The **Detect Safe** mode is more more tolerant to film sequence detection errors. This mode is useful for filmic content that contains mixed cadence regions and also broken cadence regions. Note that this mode does compromise verticle resolution, so results maybe slightly softer than when using the **Detect Sharp** mode.

When either **Detect** mode is selected, the controls **Detect video (1:1), Detect video 2:2,** and **Detect video 2:3** will all be enabled. However, the User can choose to disable any or all of these controls and so configure the detector appropriately for the source content being processed.

Note; in the file-based domain, it is not uncommon for source files to have mixed and non-standard cadences. It is possible that source content containing multiple cadence types is encountered. For example, 1:1, 2:2 and 2:3 cadences may be present, all within the same program. For such content, the **Detect** mode should be configured.

The control **Detect Film Custom** allows the User to define a source cadence type that is not 1:1, 2:2 or 2:3. Common alternative cadences include 2:2:2:4, 2:3:3:2, 2:2:3:2:3 or 5:5 (5:5 is usually associated with animation).

4.3.7 Video/Input/Colorspace: Auto / REC601 / BT709 / BT2020



Where input files contain SDR colorspace, the Input **Colorspace** control can be set to **Auto**.

Where input files contain HDR colorspace and gamma transfer function, it is important to define the HDR specification from the drop-down menu.

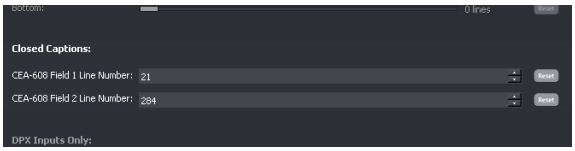
Note that currently, file metadata does not describe HDR colorspace or gamma transfer function so manual configuration is essential when HDR source files are encountered.

4.3.8 Video/Input/Input Blanking: Left/Right/Top/Bottom

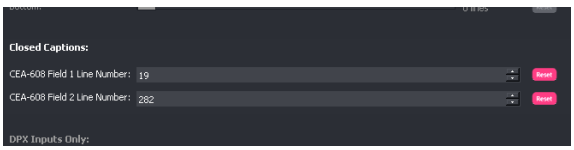
Blanking controls would normally be left in their default settings, but if required, input blanking can be manually configured. Blanked areas will appear black in the output image.

4.3.9 Video/Input/Closed Captions

This control is only applicable when the input format is SD. This control allows the User to define the input line that Closed Captions are present on. This is usually line 21 of field 1, and line 284 of field 2, which are the default values of these controls.



In circumstances where source CEA-608 closed captions are carried on an alternative input line, these controls allow the User to define these alternative lines:



4.3.10 Video/Input/DPX Inputs Only/Reverse SMPTE 268 Datum

This control will be disabled unless **Trial features** are enabled (see section 3.6.3, page 18).

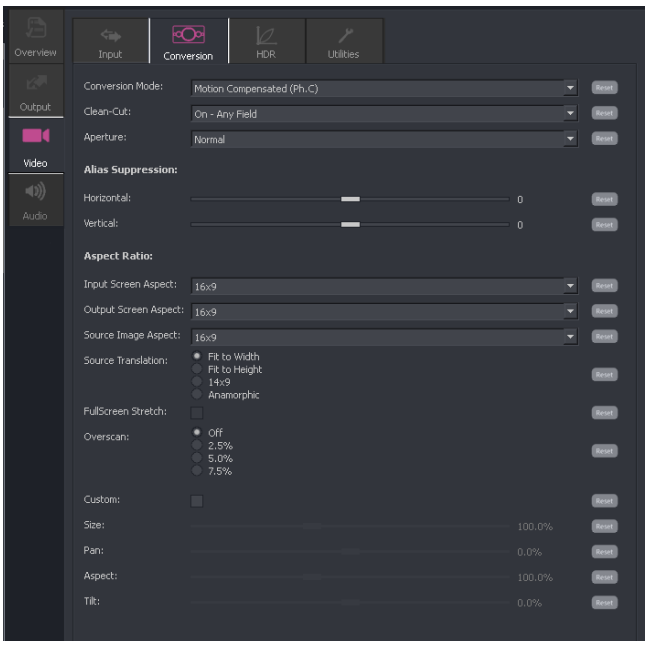
DPX files are not wrapped into a file wrapper which offers metadata describing the frame rate. For this reason the User must specify the input frame rate (part 4.3.1, 4.3.2 above).

DPX files can either conform the SMPTE268, or to an alternative specification, DVS. The control **Reverse SMPTE 268 datum** should be selected when source DPX files conform the DVS specification.

For additional information regarding DPX support, see Appendix D at the end of this document.

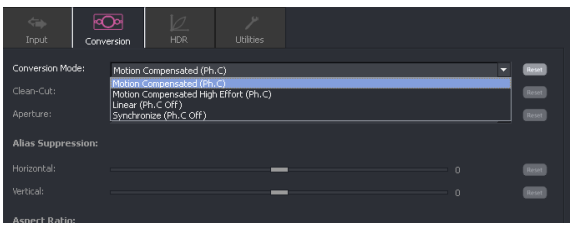
4.4 Video/Conversion Tab

The second **Video** tab relates to **Conversion** parameters.



4.4.1 Video/Conversion/Conversion Mode: Various

The conversion mode may be selected from a drop down menu.

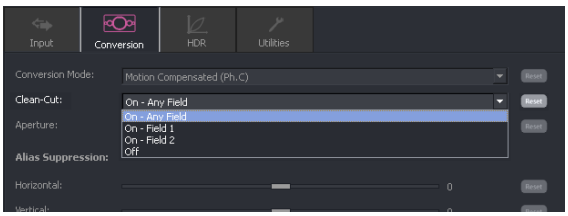


This control offers a choice of several modes of operation:

- Motion Compensated (Ph.C)
- Motion Compensated High Effort (PhC)
- Linear (Ph.C off)
- Synchronise (Ph.C off)

Motion Compensated (Ph.C)	Is the default and applies Motion Compensated Interpolation to the conversion process.
Motion Compensated High Effort (Ph.C)	Enables a 'high effort' motion compensation mode. In many cases the conversion performance is near indistinguishable from **Motion Compensated (Ph.C**), however it can be beneficial when converting: ▪ complex moving, small objects (particularly at low frame rates). ▪ moving images which contain burnt in captions. This mode will never result in an inferior quality of conversion [when compared to the default **Motion Compensated (Ph.C**)], but it does require more processing resources and hence conversion durations are significantly extended.
Linear (Ph.C off)	Disables the Motion Compensation, and employs a linear interpolation to the conversion process.
Synchronise (Ph.C off)	Achieves the conversion process by dropping or repeating input pictures as required. Depending on the conversion requested field or frame based synchronise events could occur.

4.4.2 Video/Conversion/Clean-cut: On – Any field / On - Field 1/ On - Field 2/ Off



This control allows the User to configure the Clean-cut feature. The default setting is **On - Any field**.

Selecting the dropdown menu will offer four options for the Clean-cut feature.

On - Any field:	Cuts are output on the closest output field boundary to the detected input cut.
On - Field 1:	Cuts are restricted such that the first field of a new scene always begins on a field 1.
On - Field 2:	Cuts are restricted such that the first field of a new scene always begins on a field 2.
Off:	The Clean-cut feature will be disabled.

4.4.3 Video/Conversion/Aperture: Sharp/Normal/Anti-Alias

This control can be used to set the appropriate conversion aperture.

Available settings are **Normal**, **Sharp** & **Anti-alias**. The default setting is **Normal**.

Sharp	preserves the most vertical resolution from the input picture.
Normal	provides the best compromise for typical input pictures.
Anti-alias	is designed to prevent objectionable aliases in the output pictures. Aliasing refers to an artefact associated with sampled signals. This undesirable effect is caused by sampling frequencies being too low to faithfully reproduce the frequencies present in the original source.

4.4.4 Video/Conversion/Alias Suppression

The **Alias Suppression** feature allows the user to manually increase or decrease the magnitude of alias suppression.

Separate horizontal and vertical slider controls are available.

Positive settings increase alias suppression.

Negative settings decrease suppression.

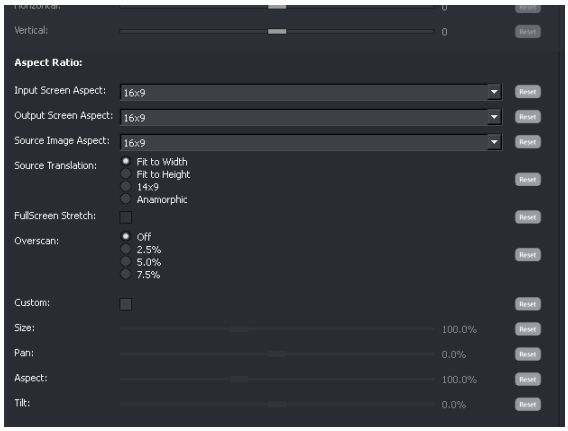
Default setting is zero.

Alias suppression should be used to balance perceived resolution against unwanted aliasing.

4.4.5 Video/Conversion/Aspect Ratio: Various

Note: a more comprehensive document is available for the Kronos File ARC feature. Please refer to the Application Note: **Kronos File - How to configure the ARC** (available from the GV Website).

The user can specify aspect ratio translations using either the drop down fields or the custom fields.

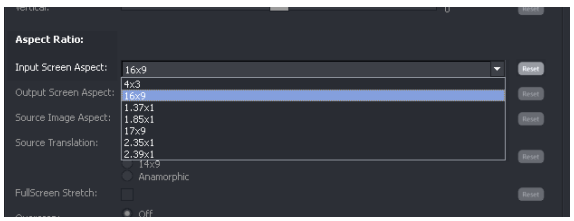


ARC controls include:

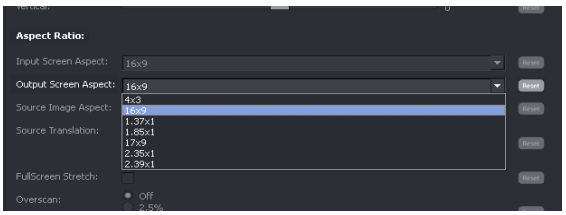
- Input screen aspect
- Output screen aspect
- Source image aspect
- Source to output translation

Input screen aspect:

This control is used to describe the source screen input aspect ratio by selecting the relevant setting from the drop down list:

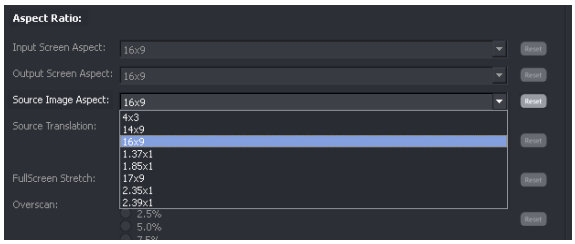


Output screen aspect is used to describe the destination screen aspect ratio from the drop down list.



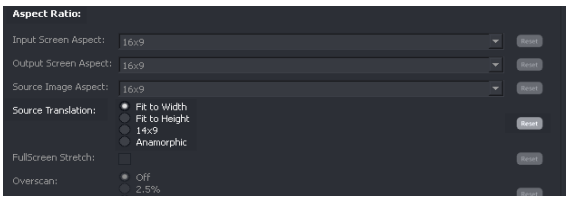
Source Image Aspect

This control is used to define the aspect ratio of the active image within the input screen aspect.



Source Translation

This control is used to describe the translation required from source to output image.



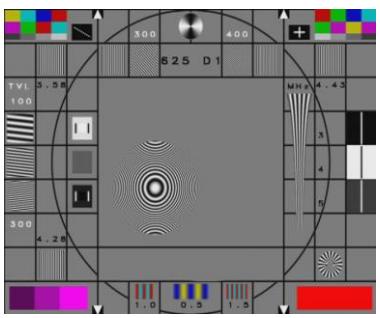
Full Screen Stretch

This feature is normally associated with a 4x3 to 16x9 translation.

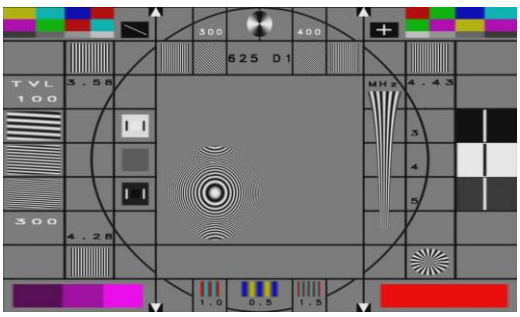
It allows a non-linear aspect ratio conversion to be configured. In such a conversion, the picture content towards the left and right sides is stretched more than the content at the centre.

Example:

Source



Output



Note that the **FullScreen Stretch** tick box is only active with certain ARC configurations exist:

- The source aspect ratio must be narrower than the output aspect ratio.
- Source Translation must not be set to: **Fit to Width.**

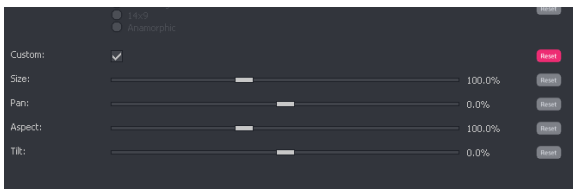
Overscan:

The **Overscan** control allows the picture to be overscanned by:

- 2.5%
- 5%
- 7.5%

Custom

Custom controls can be enabled to activate the custom display setting sliders.



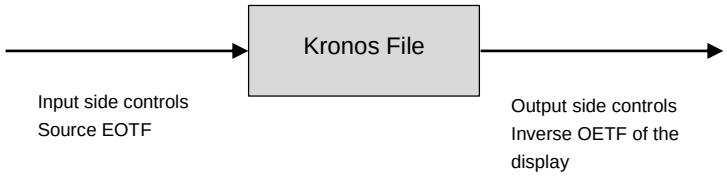
The controls: **Size**, **Pan**, **Asp** and **Tilt** can now be used set any desired **display** settings.

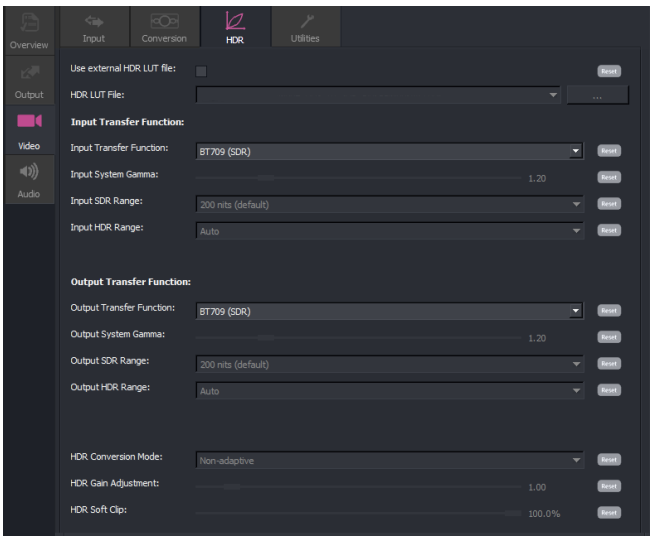
4.5 Video/HDR

Introduction

Kronos File now includes a full suite of HDR processing tools.

When dealing with HDR from a conversion perspective, the input side controls dictate how the input signal is interpreted (Source EOTF) and the output side controls provides control of the output configuration (Inverse OETF of the display).





Kronos File supports:

- Up mapping of SDR to HDR.
- Down mapping of HDR to SDR.
- Cross mapping of HDR to other HDR formats.
- Retention of HDR, source to output.
- Custom LUTs

Two down mapping modes are available:

- Adaptive Tone Mapping
- Non-adaptive.

GV File products, now include an HDR control suite.

- A basic control surface may be employed, allowing conversions based on the defined parameters for each HDR standard supported.
- Alternatively, an advanced Custom mode may be used to customize the transfer curve allowing the User to adjust the look and feel of the content.
- The Adaptive Tone Mapping employs a more complex conversion algorithm. The process adapts to the levels in the source content and aims to provide an optimized output range during the down mapping process. In this mode, the user is less likely to need to manually set the HDR Gain or SDR Range output.

Supported HDR formats are:

- PQ
- S-Log 3
- HLG

Note: the HDR format HDR10 does not appear as a selectable option. For content compliant to HDR10, the setting PQ can be configured, as PQ and HDR10 have the same HDR curve.

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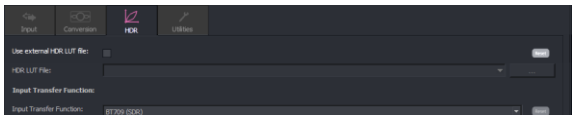
4.5.1 Use external HDR LUT File



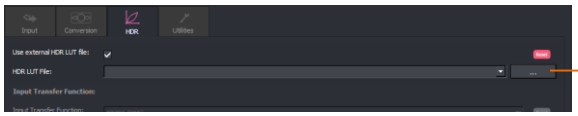
Version V4.1.0.10 introduces the new ‘External LUT’ feature.

Custom LUTs may be imported into a GV File process.

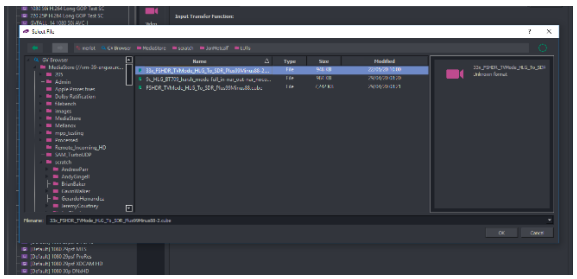
LUT files should be in the form of:

- **.cube**

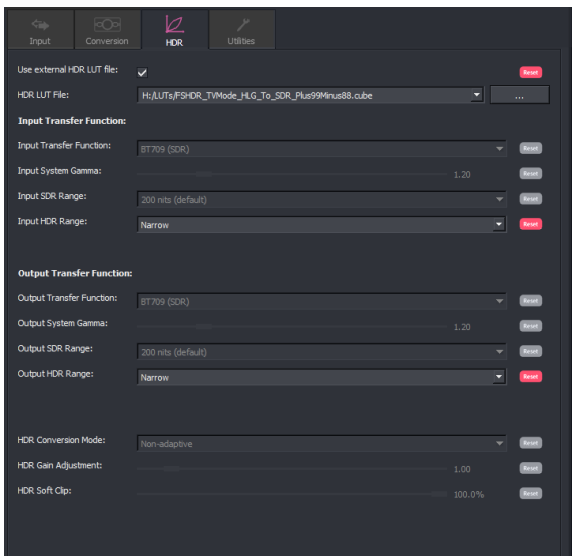
The feature is enabled using the check box. Once enabled, the menu will display the **HDR LUT File** control:



Using the associated Browser, the required LUT file can be selected:

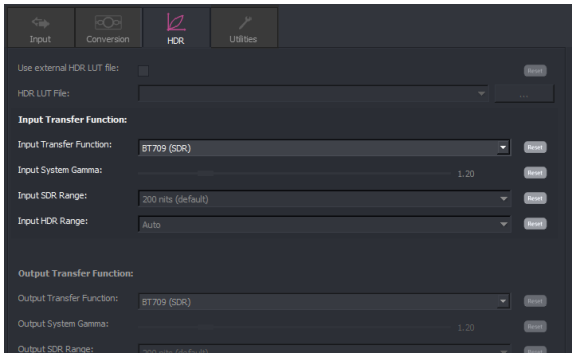


Note that the LUT will control the conversion process hence, with the exception of the HDR Range controls, all the HDR Controls will be greyed out (unavailable) when a LUT process is enabled:



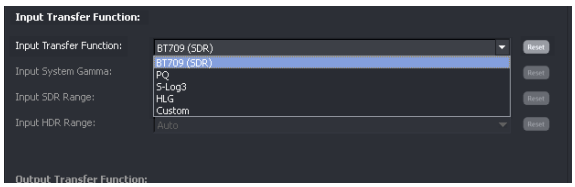
The parameters **Input HDR Range** and **Output HDR Range** are not defined by the LUT, hence these controls should be manually configured.

4.5.2 Video/HDR/Input Transfer Function



This set of controls allow the User to define the input with respect to HDR parameters.

Input Transfer Function



The **Input Transfer Function** control allows the User to define the input with respect to SDR/HDR.
The default value is: **BT709 (SDR)**

The input maybe defined to be:

- PQ
- S-Log3
- HLG
- Custom

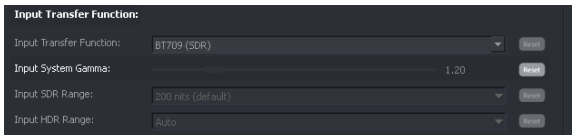
Note that, currently Metadata in the source file cannot be relied upon, with respect to the HDR format. When HDR input files are encountered it is necessary to manually define the source with respect to HDR.

Input System Gamma

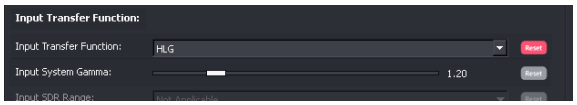
System Gamma, is the overall transformation, also known as the opto-optical transfer function (OOTF), from the light captured by the camera to the light emitted by the display.

Note that control of Input System Gamma is not required when the input conforms the PQ specification. System Gamma is effectively included within the transfer function, hence control is not required.

When the Input is PQ, the Input System Gamma control is disabled.



The **Input System Gamma** control only becomes active when the **Input Transfer Function** control is set to either **HLG** or **S-Log3.**



The **Input System Gamma** control allows the User to define the input with respect to System Gamma.

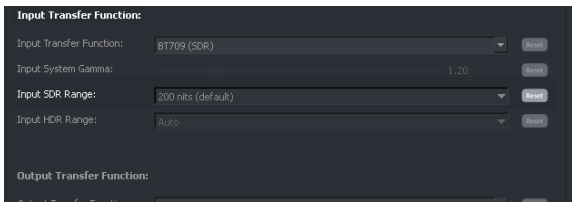
The range of this control is:

- 1.0 to 2.0

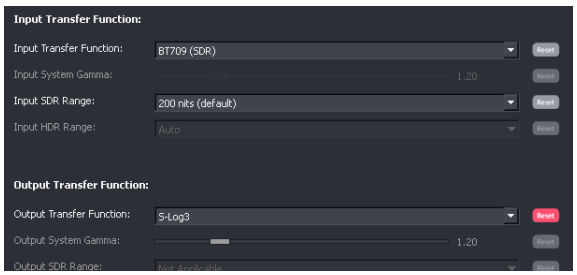
The default value is:

- 1.2

Input SDR range



The Input SDR range control is only active if the **Input Transfer Function** is configured to be BT709 (SDR) and the **Output Transfer Function** is configured to be HDR (PQ, S-Log3, HLG, or Custom).



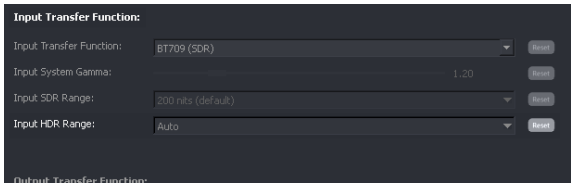
When active, the **Input SDR Range** control may be used to define the input brightness of the input picture, in terms of nits, that is to be mapped into the HDR output.

The range of the control is: **20** to **3000 nits.**

Default value is: **200 nits**

Note: This is an *input* control. The higher the value configured, the darker the output picture will be.

Input HDR Range

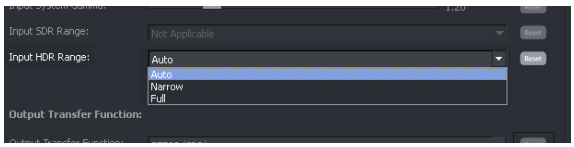


Input HDR Range control maybe used to define the bit range of the 10-bit HDR signal presented at the input.

Full range: 0 to 1023

Narrow: 64 to 940

The **Input HDR Range** control is only active when the **Input Transfer Function** is configured to be HDR (PQ, S-Log3, HLG, or Custom).



The **Input HDR Range** control maybe set to:

- **Auto**
- **Narrow**
- **Full**

When in **Auto** mode, if the input is:

- HLG then the auto setting will be: **Narrow**
- PQ then the auto setting will be: **Full**
- S-Log3 then the auto setting will be: **Narrow**

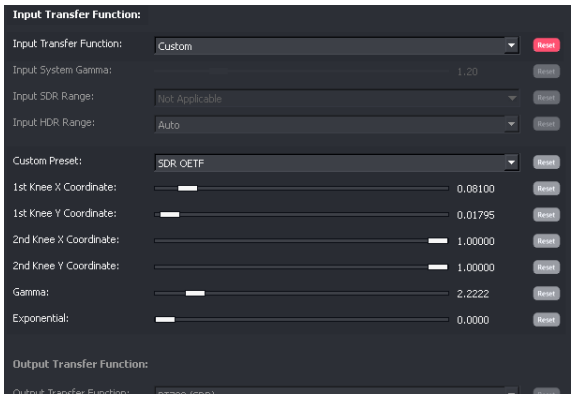
Custom

The Custom control set allow the User to modify the accepted specifications of the various HDR curves, in order to obtain the desired output.

The Input side custom controls are provided as a solution for when an input file is encountered that does not conform to any of the supported formats, with respect to SDR or HDR transfer functions. This maybe as a consequence of one of the supported formats having been modified in some way, or maybe because the input format is not a supported type.

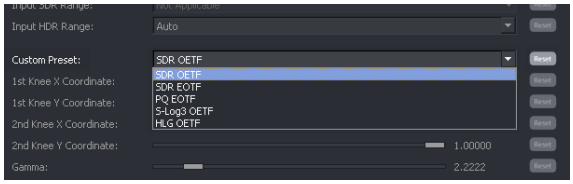
In circumstances where it is desired to use the custom controls as an aid to creativity, it is recommended that the input side is left in default and the output side custom controls are used for this purpose (see section 4.5.2).

When the **Input Transfer Function** control is set to **Custom**, a new suite of controls will appear.



The **Custom** controls allow the User to define a custom HDR curve.

Custom Preset



The **Custom Preset** control allow a starting point to be configured that the custom HDR curve is based on. The options are:

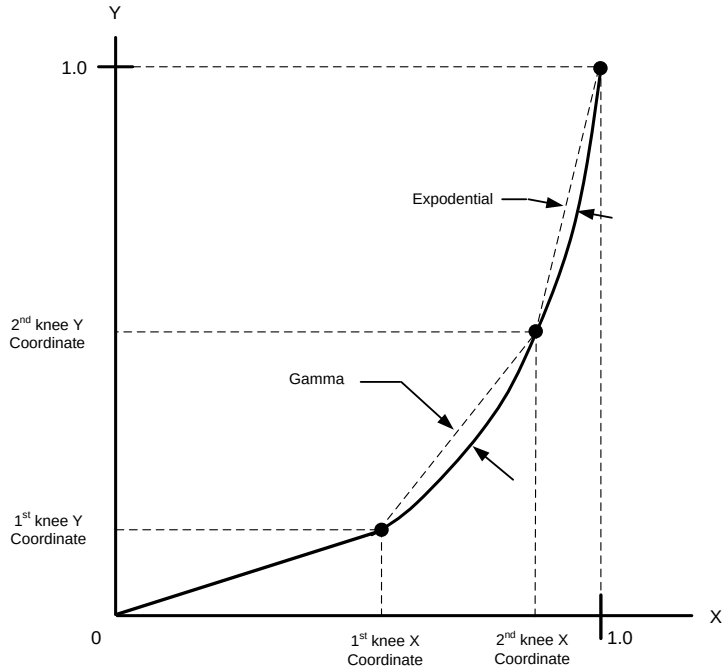
- SDR OETF (the starting point for the custom curve will be the inverse of this function)
- SDR EOTF
- PQ EOTF
- S-Log3 OETF (the starting point for the custom curve will be the inverse of this function)
- HLG OETF (the starting point for the custom curve will be the inverse of this function)

Note:

OETF is an acronym of: Optical Electrical Transfer (Linear Light to Coded representation).
EOTF is an acronym of: Electrical Optical Transfer (Coded to Linear Light representation).

The following controls allow the HDR curve to be defined:

- 1st Knee X Coordinate
- 1st Knee Y Coordinate
- 2nd Knee X Coordinate
- 2nd Knee Y Coordinate
- Gamma
- Exponential

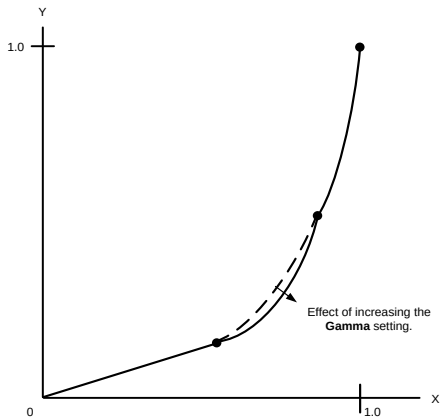


Using the control set, a custom HDR curve can be defined.

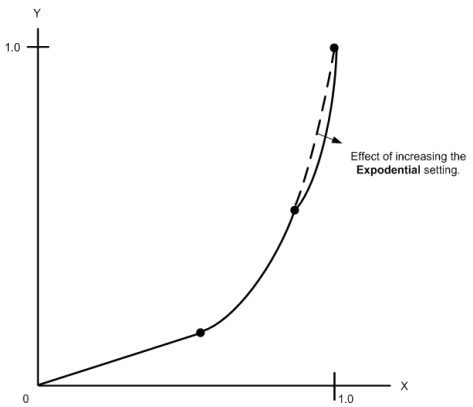
Notes

1. The curve from the Origin to the 1st knee coordinate is linear (straight line)
2. The Gamma control defines the curve between the 1st and 2nd knee coordinates.
3. The Exponential control defines the HDR curve between the 2nd knee & peak white.
4. The curve is designed to have a continuous gradient across the knee points.

The effect of increasing the Gamma setting is shown in the following graph:

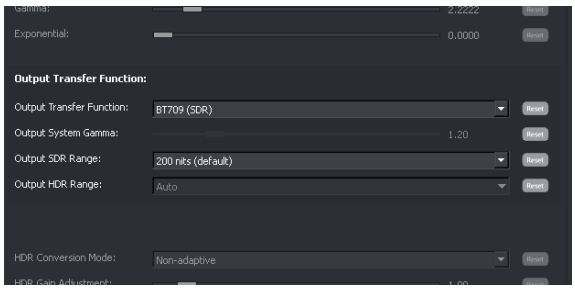


As the setting of the **Gamma** control is increased, the curve between the two knee points is adjusted.



As the setting of the **Exponential** control is increased, the curve above the 2nd knee is adjusted.

4.5.3 Video/HDR/Output Transfer Function



This set of controls allow the User to define the Output with respect to HDR parameters.

Output Transfer Function

The **Output Transfer Function** control allows the User to define the output with respect to SDR/HDR.

The default value is: **BT709 (SDR)**

The input maybe defined to be:

- PQ
- S-Log3
- HLG
- Custom

Output System Gamma

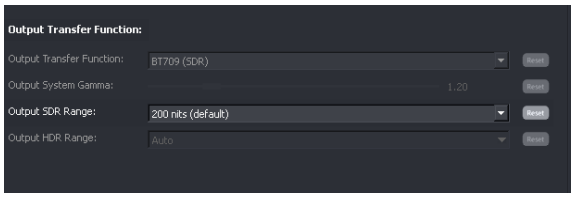
The **Output System Gamma** control is only active when the **Output Transfer Function** control is set to either: HLG or S-Log3.

When active, the **Output System Gamma** control may be set to a value between 1.0 & 2.0.

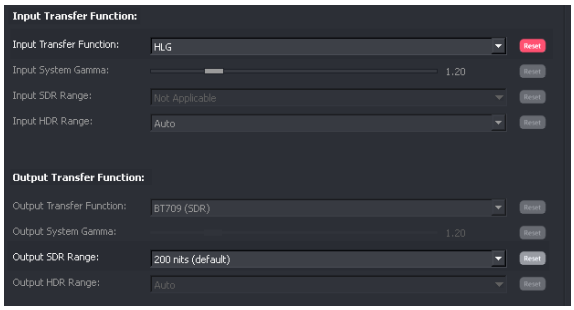
The default value is: 1.2

Note that the gamma curve applied to the signal is the inverse of the output system gamma specified, because the control is intended to compensate for the system gamma curve that will be applied in the display.

Output SDR Range



The **Output SDR Range** control is only active when the **Input Transfer Function** is configured to be HDR (PQ, HLG, S-Log 3, or Custom), and the **Output Transfer Function** is configured to be BT709 (SDR).



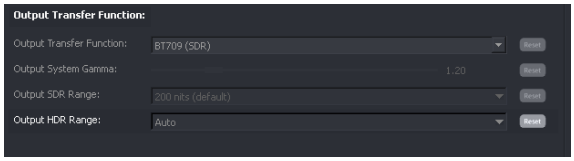
When active, the **Output SDR Range** control may be used to define the brightness of the output picture, in terms of nits, when derived from an HDR source.

The range of the control is: 20 to 3000 nits.

Default value is: 200 nits

Note: this is an *output* control. The higher the value configured, the brighter the output picture will be.

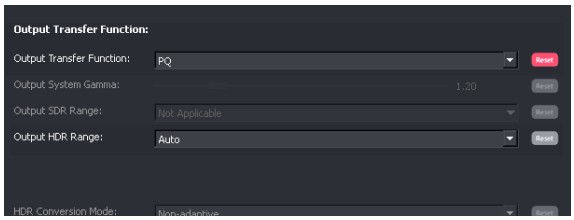
Output HDR Range



The **Output HDR Range** control is used to define the bit range of the 10-bit HDR signal at the output.

Full range: 0 to 1023

Narrow: 64 to 940



The options for the **Output HDR Range** are:

- **Auto**
- **Narrow**
- **Full**

When in Auto mode, if the input is:

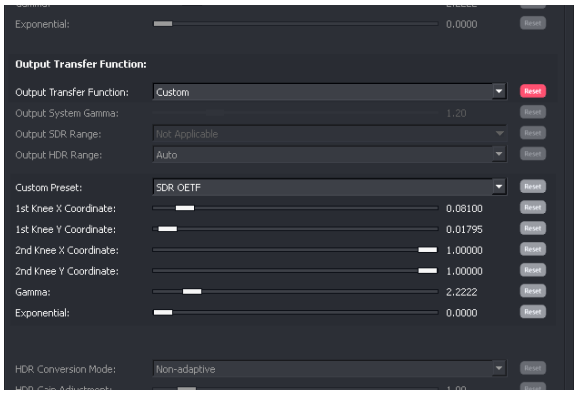
- PQ then the **Auto** setting will be: **Full**
- S-Log3 then the **Auto** setting will be: **Narrow**
- HLG then the **Auto** setting will be: **Narrow**

Custom

The output side custom controls provide an aid to creativity by allowing the various transfer curves to be customised, in order to obtain a transfer that may not be offered by the rigid use of the accepted HDR specifications.

The Custom control set allow the User to modify the accepted specifications of the various SDR/HDR curves, in order to obtain the desired output.

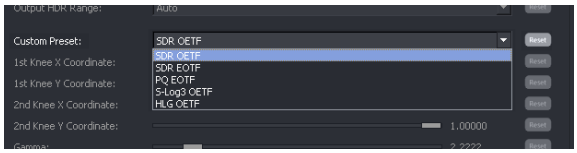
When the **Output Transfer Function** control is set to **Custom**, a new suite of controls will appear.



Output Transfer Functions control set

The **Custom** controls allow the User to define a custom HDR curve.

Custom Preset



The **Custom Preset** control allow a starting point to be configured that the custom HDR curve is based on. The default settings of each option represents the accepted specification of the relevant setting.

Note that, with respect to the HDR formats (PQ, HLG, S-Log3):

- The specification of PQ Curve is defined as EOTF, hence the PQ starting point is: PQ EOTF
- The specification of HLG Curve is defined as OETF, hence the HLG starting point is: HLG OETF
- The specification of S-Log3 Curve is defined as OETF, hence the HLG starting point is: S-Log3 OETF

The options are:

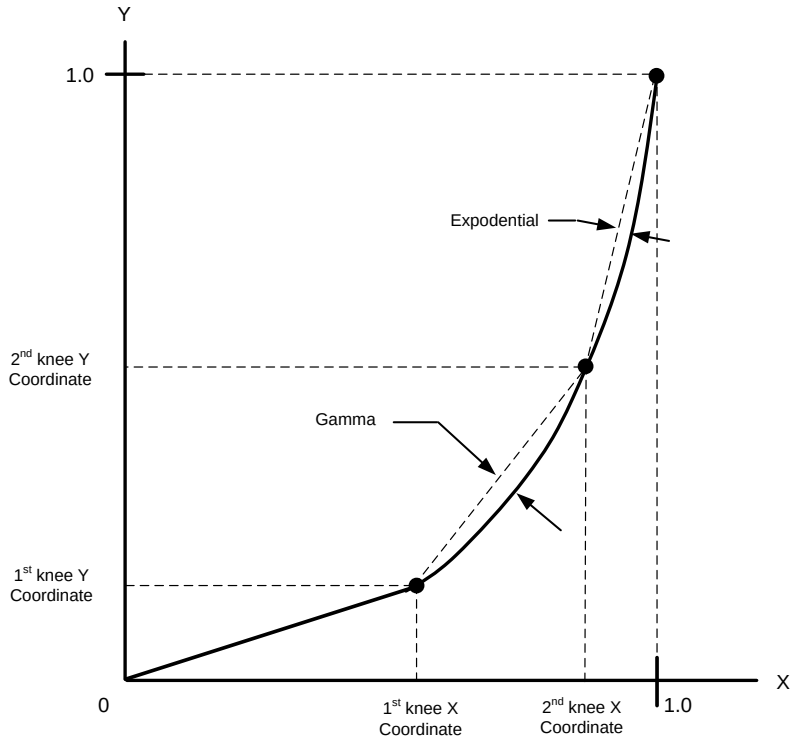
- SDR OETF (the starting point for the custom curve will be the inverse of this function)
- SDR EOTF
- PQ EOTF
- S-Log3 OETF (the starting point for the custom curve will be the inverse of this function)
- HLG OETF (the starting point for the custom curve will be the inverse of this function)

Options also allow an SDR curve to be defined. Because SDR is not usually defined with respect to OEFT, or EOFT, both options are available as a starting point.

Note

OETF is an acronym of: Optical Electrical Transfer (Linear Light to Coded representation).
EOTF is an acronym of: Electrical Optical Transfer (Coded to Linear Light representation).
Note that, as this is an output transfer function, the curve applied will be the inverse of the curve specified.
The following controls allow the HDR curve to be defined:

- 1st Knee X Coordinate
- 1st Knee Y Coordinate
- 2nd Knee X Coordinate
- 2nd Knee Y Coordinate
- Gamma
- Exponential

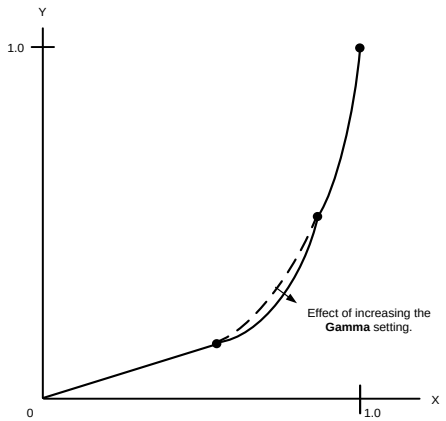


Using the control set, a custom HDR curve can be defined.

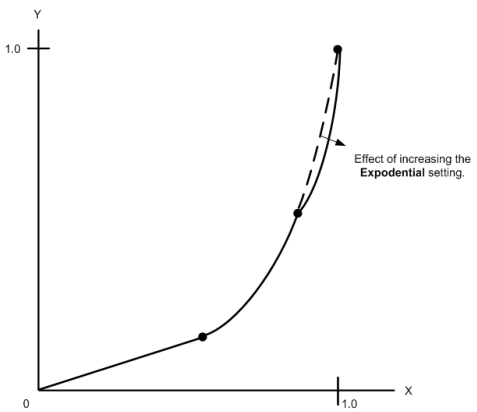
Notes

1. The curve from the Origin to the 1st knee coordinate is linear (straight line).
2. The Gamma control defines the curve between the 1st and 2nd knee coordinates.
3. The Exponential control defines the HDR curve between the 2nd knee & peak white.
4. The curve is designed to have a continuous gradient across the knee points

The effect of increasing the Gamma setting is shown in the following graph:

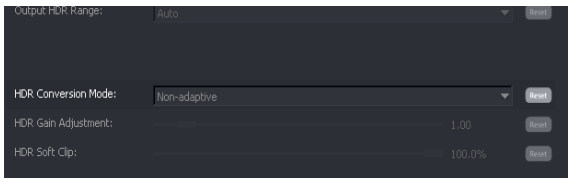


As the setting of the **Gamma** control is increased, the curve between the two knee points is adjusted.



As the setting of the **Exponential** control is increased, the curve above the 2nd knee is adjusted.

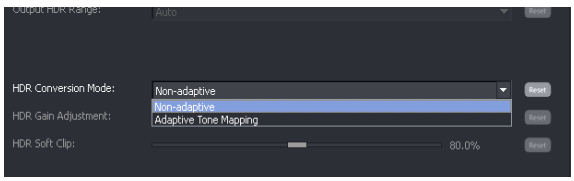
4.5.4 HDR Conversion Mode



The **HDR Conversion Mode** control is only active when an HDR to SDR process is configured.

When down-mapping from HDR to SDR, there are two options for the **HDR Conversion Mode:**

- Non-adaptive
- Adaptive Tone Mapping

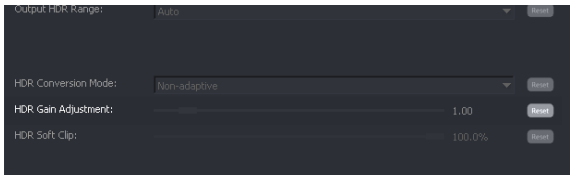


In all other modes, Adaptive Tone Mapping is not applicable and the option is not offered.

Non-adaptive: A conversion method employing a more simplistic approach for HDR to SDR conversion. Input picture content is not considered as part of the conversion process.

Adaptive Tone Mapping: The **Adaptive Tone Mapping** employs a more complex conversion algorithm. The process adapts to source content and aims to retain the look and feel of the HDR qualities in the source, within the parameters of the SDR output.

4.5.5 HDR Gain Adjustment



The **HDR Gain Adjustment** control is active when:

- The input is configured to be HDR (PQ, S-Log3, HLG or Custom).
- The output is configured to be HDR (PQ, S-Log3, HLG or Custom).

When active, the output HDR Gain many be adjusted.

The range of the control is: 0.10 to 10

The default setting is dependent upon the HDR process configured.

4.5.6 HDR Soft Clip

The Soft Clipping enables the peak white to be reduced in areas of the picture which may otherwise be clipped.

In practical terms, this control can be used to add back in detail in the whites which may have been lost as a consequence of applying an HDR curve. Note that this does come at the expense of detail in the blacks.

The **HDR Soft Clip** control is active either when:

- The input is configured to be HDR (PQ, S-Log3, HLG or Custom).
- The output is configured to be HDR (PQ, S-Log3, HLG or Custom).

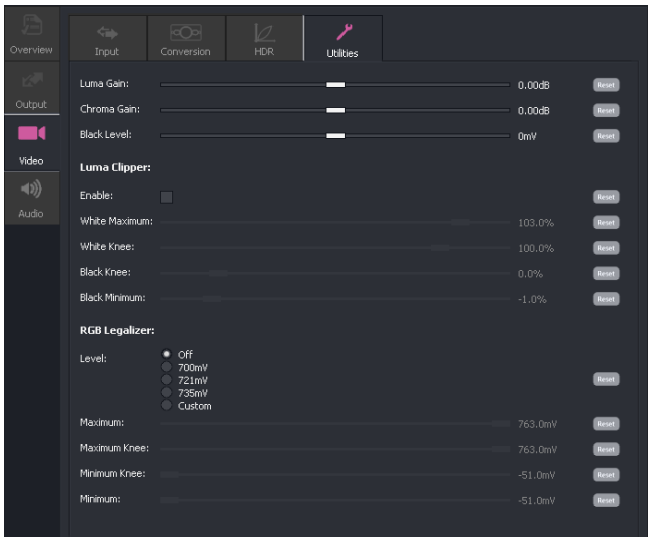
When active, the output HDR Soft Clip many be adjusted.

The range of the control is: 60% to 100%

Note that the default setting is dependent upon the HDR process configured.

4.6 Video/Utilities Tab

The forth **Video** tab relates to the **Utilities** features.



4.6.1 Video/Utilities/Luma Gain: +/- 6dB

The **Luma gain** may be adjusted using the slider control. The range is +/- 6dB.

4.6.2 Video/Utilities/Chroma Gain: +/- 6dB

The **Chroma gain** may be adjusted using the slider control. The range is +/- 6dB.

4.6.3 Video/Utilities/Black Level: +/- 80mV

The **black level** may be adjusted using the slider control. The range is +/- 80mV.

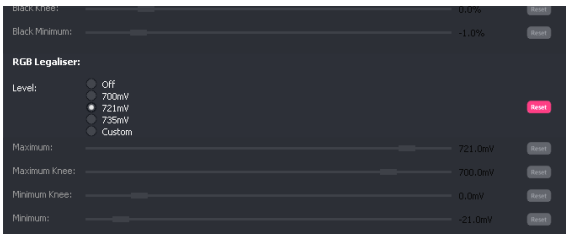
4.6.4 Video/Utilities/Luma Clipper: Various

The Luma Clipper feature is enabled with the tick box. Note that the default setting is **disabled**. When **enabled** the controls: **White Max**, **White Knee**, **Black Min** and **Black Knee** all become active and may be configured by the User.

4.6.5 Video/Utilities/RGB Legalizer: Off/700mV/721mV/735mV/Custom

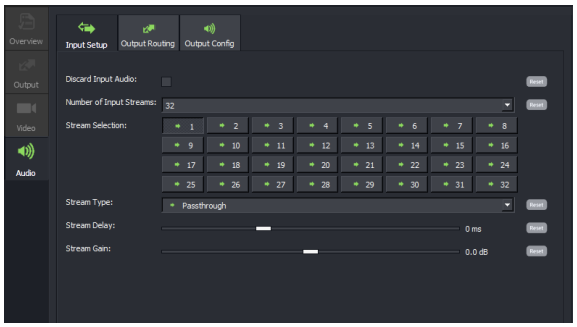
The RGB Legalizer is default **off.**

Three preset settings are offered for the RGB Legalizer **Level** control: 700mV, 721mV or 735mV.



Alternatively, a **Custom** setting can be configured. When set to **Custom,** the custom controls become active allowing the User to set any combination of values

4.7 Audio



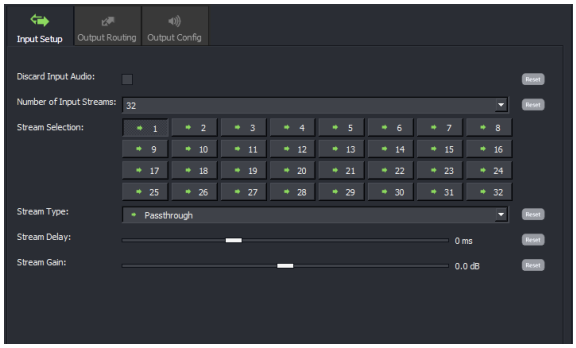
The GV File Client offers the follow audio modes of operation:

- Audio pass through
- Routing of audio channels within an audio stream.
- Routing of audio channels between audio streams
- Routing of audio streams
- Audio pitch-shifting (as part of a video off-speeding process).
- Audio re-sampling (as part of a video off-speeding process).
- Audio tone generation
- Audio delay.
- Audio stripping/discarding

The Audio menus are split across three separate tabs.

- Input Setup
- Output Routing
- Output Config

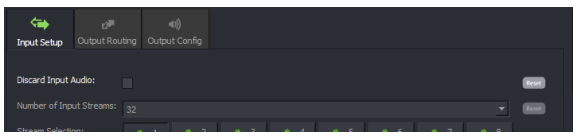
4.7.1 Audio/Input Setup



The **Input Setup** menu is used to describe the audio distribution of the source file.

In circumstances where it is desired to remap the audio distribution as part of a GV File conversion process, it will be necessary to manually describe the input audio distribution. This '**describing'** process is performed in the **Input Setup** tab.

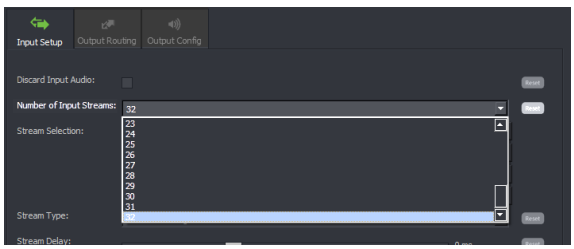
Discard Input Audio



Enabling the **Discard Input Audio** will effectively strip all audio channels, resulting in the output file only containing video essence.

Number of Input Streams

This control allows the User to define the number of audio streams that are present in the input file.



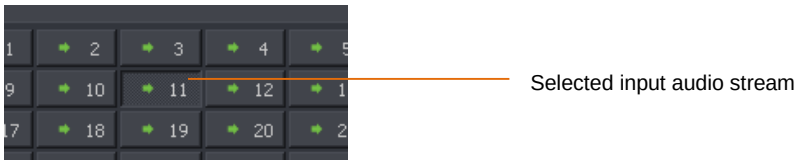
The number of input audio streams maybe defined using the dropdown menu. Up to 32 audio streams is supported.

Stream Selection

This menu allows the User to describe each stream of the input file.

Each stream can be selected from the **Stream Selection** field.

The selected stream will appear with an indented symbol:



In this example, Input Audio Stream 11 has been selected.

The default setting for each stream is **Passthrough**.

The audio stream type applied here will influence how the User can route audio channels later.

Stream Type: Various

The **Stream Type** drop down menu can be used to define the audio parameters of any selected stream.

The audio type is defined by specific icons:

Passthrough

Mono

Stereo

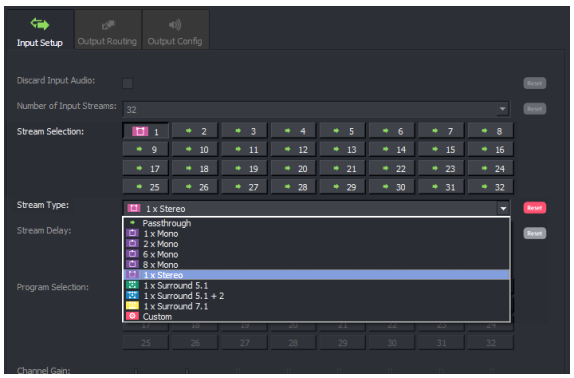
Surround 5.1

Surround 5.1+2

Surround 7.1

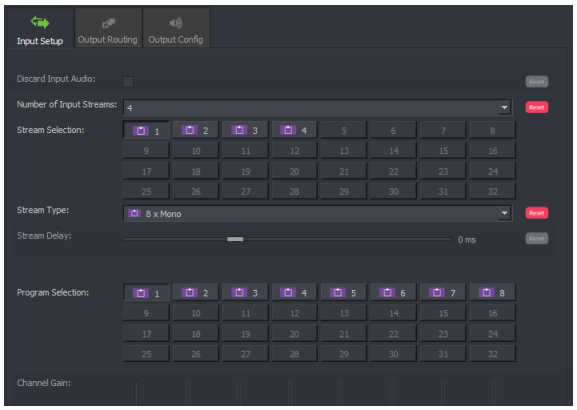
Custom

In this example, Stream 1 is selected and has been defined as a **1 x Stereo** pair.

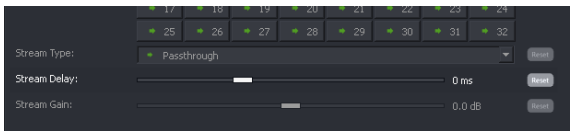


Each input stream will need to be defined to match the audio distribution of the source file.

In the following example, a source file with 4 audio streams has been defined. Each audio stream has been defined to have 8x audio mono channels



Stream Delay



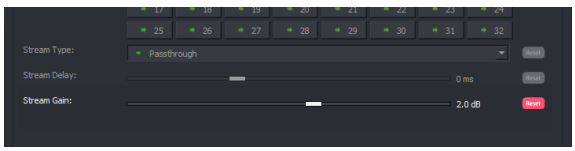
An audio delay may be applied to each input audio stream. Audio is delayed relative to the associated video in the source.

All audio channels within the particular audio stream will have the same audio delay applied.

The range of the control is: -250ms to 500ms

Stream Gain

This control is only visible when the selected input stream is set to **Passthrough.** This control allows a global gain setting to be applied to all audio channels carried with the selected stream.

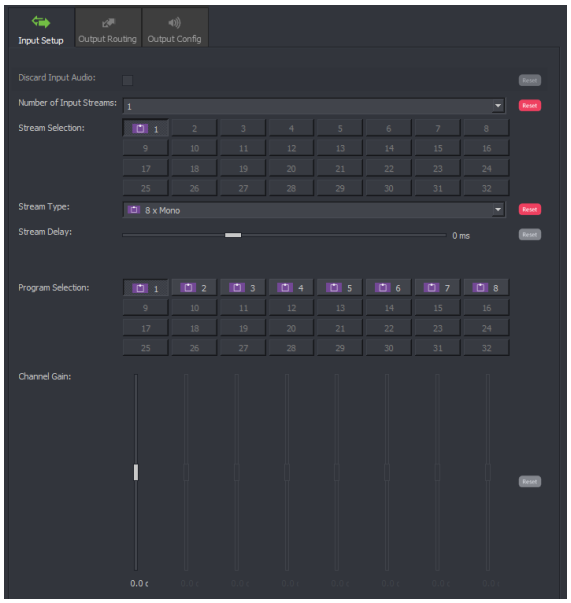


The gain may be adjusted: +/- 12dB

Program Selection & Channel Gain

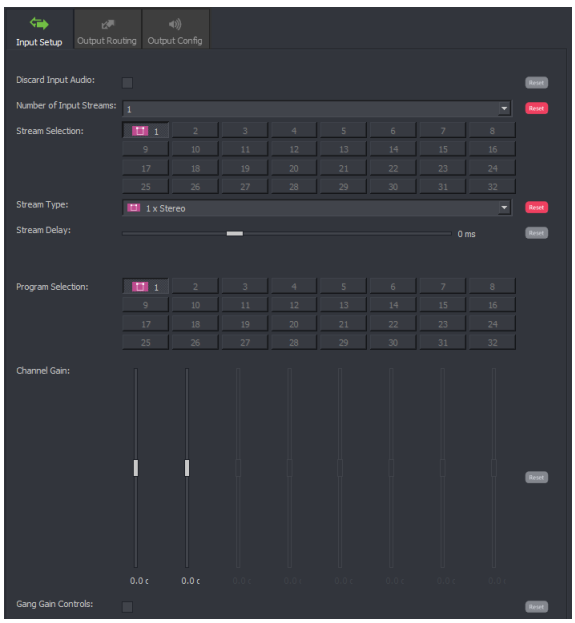
When an input stream is defined as anything other than **Passthrough**, a new set of controls will appear. The actual controls seen will depend upon what the stream is defined as.

Some examples are shown below:



Input Audio stream
defined as: **8 x Mono**

Each channel may be selected using the **Program Selection** matrix and the gain of each channel may be configured using the **Channel Gain** control

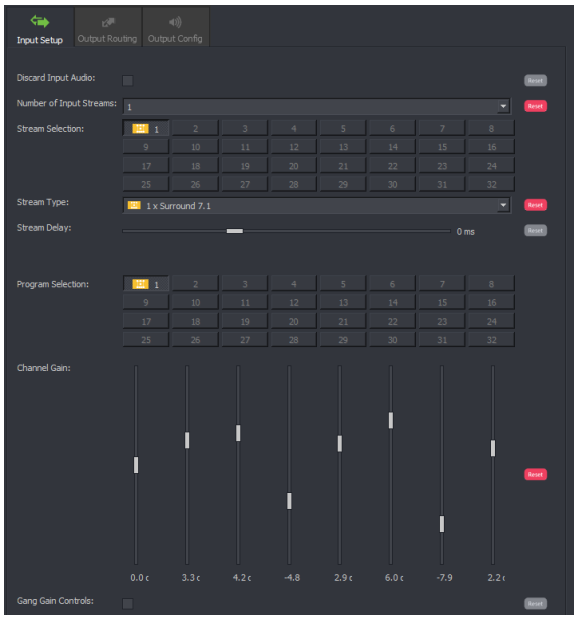


Input Audio stream defined as:

1 x Stereo

The stereo program may be selected using the **Program Selection** matrix and the gain of each channel may be configured using the **Channel Gain** control. The Gain maybe adjusted: +/- 12dB

The **Gang Gain Controls** feature may be selected so any gain setting is applied equally to both channels.

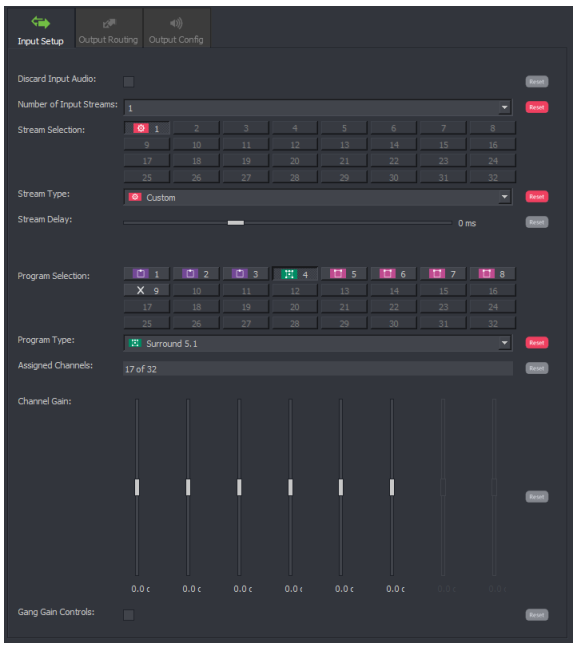


Input Audio stream defined as:

1 x Surround 7.1

The program may be selected using the **Program Selection** matrix and the gain of each channel may be configured using the **Channel Gain** control. The Gain maybe adjusted: +/- 12dB

The **Gang gain controls** feature may be selected so any gain setting is applied equally to all the channels of the surround sound program.



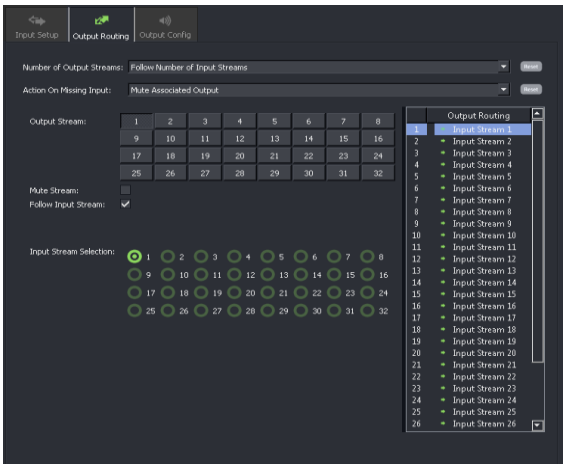
Input Audio stream defined as:

Custom

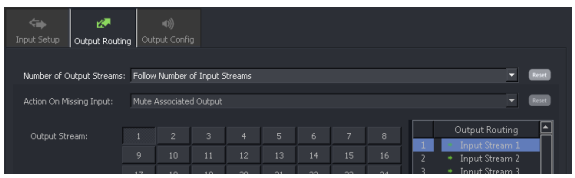
Each program within the selected stream may be selected using the **Program Selection** matrix and defined using the **Program Type** drop down menu.

The gain of each channel may be configured using the **Channel Gain** control. The range is: +/- 12dB

4.7.2 Audio/Output Routing



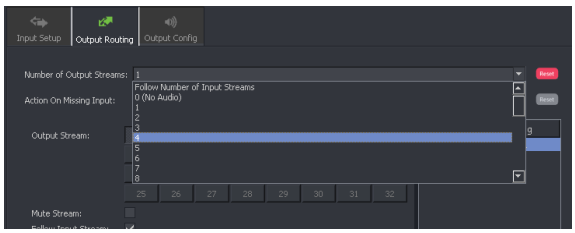
Number of Output Streams



Here the number of output audio streams may be defined.

The default setting is **Follow Number of Input streams.** When selected, the number of output audio streams will be defined by the number of audio streams present in the input file.

Alternatively, the number of output audio streams can be selected using the drop-down menu:



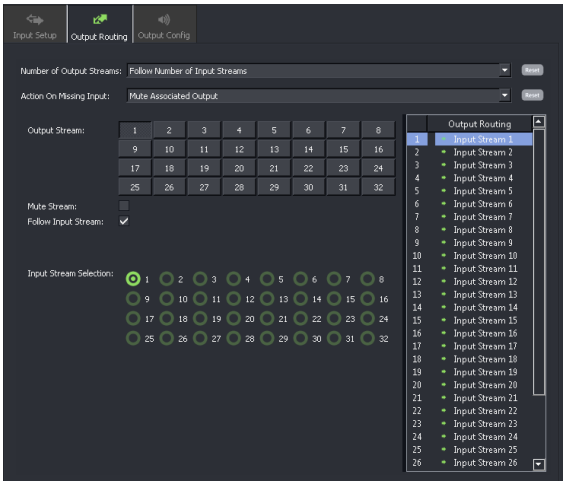
Most video codecs allow up to 32 audio streams to be configured, although the actual number depends on the codec of choice. In the above example the output has been configured to have 4 output audio streams.

Note that the ability to define the number of output streams will depend on the particular output file format of choice. This can be any number up to 32. However there are exceptions to this.

Please refer to Table 4, **Supported File Types** (Appendix A, below) for details of audio support by codec.

Note that if the **Number of Output Streams** is set to: 0 (no audio), all audio from the input will be stripped.

Number of Output Streams: Follow Number of Input Streams



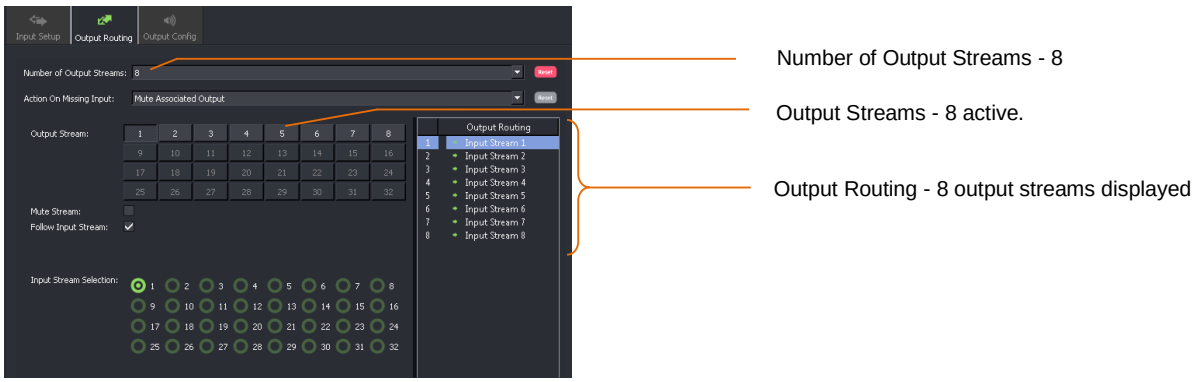
When the **Number of Output Streams** is configured to be **Follow Number of Input Streams**, the number of output streams will be defined by the input.

The menu will display routing options for the full complement of 32 audio streams.

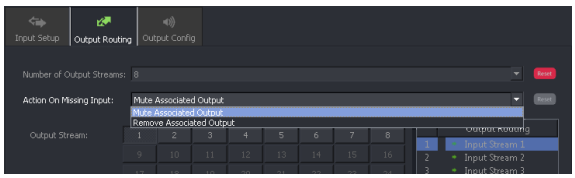
Number of Output Streams: 1 to 32

If the number of output streams is defined (1 to 32), the routing option menu will be modified to reflect the new setting:

In this example: The output has been defined to have 8 audio channels



Action On Missing Input:



This menu has two possible setting:

- Mute Associated Output
- Remove Associated Output

In circumstances where the output has been configured to have more audio streams than the input, the setting of the control **Action On Missing Input** will define what happens to the additional audio streams configured in the output.

Mute Associated Output streams: Any missing input streams defined by the profile will result in corresponding muted audio streams in the output.

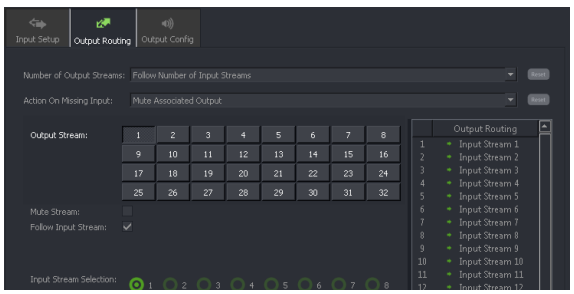
Remove Associated Output Streams: Any missing input streams defined by the Profile, will result in the corresponding audio streams in the output being removed.

Once the number of output streams has been set, an audio routing process can now be configured.

Note: this control is ineffective when the output file type is XDCam.

The setting will effectively be ‘Mute Associated Output’ (although this setting is ‘greyed out’ it is still the enforced behaviour).

Output Stream

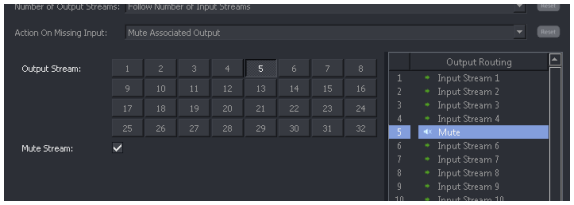


The **Output Stream** matrix allows specific output to be selected as part of an audio routing process.

The selected output stream will be indented to identify that it has been selected:

Output Stream 3 selected

Mute Stream

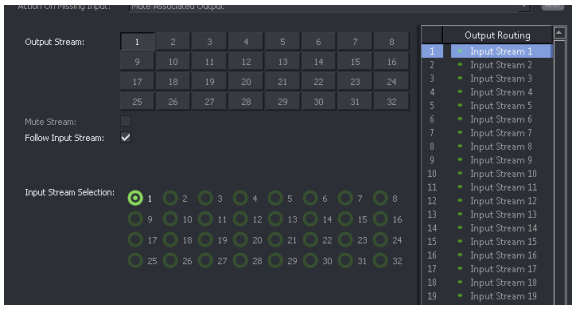


When the **Mute Stream** control is activated, the selected output stream will be muted (no active audio) but the stream will still be present in the output.

Note that the **Output Routing** pane will confirm the selected stream is muted.

Follow Input Stream

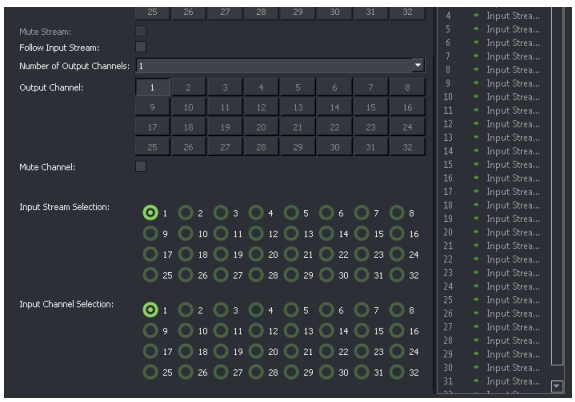
When **Follow Input Stream** is selected, each output stream, by definition, will be derived from the corresponding input stream. This is the default setting.



As each output stream is selected, the corresponding input stream will be highlighted to indicate the associated routing.

The **Output Routing** pane will confirm the configured routing.

When the **Follow Input Stream** is deactivated, a full routing menu will be exposed.

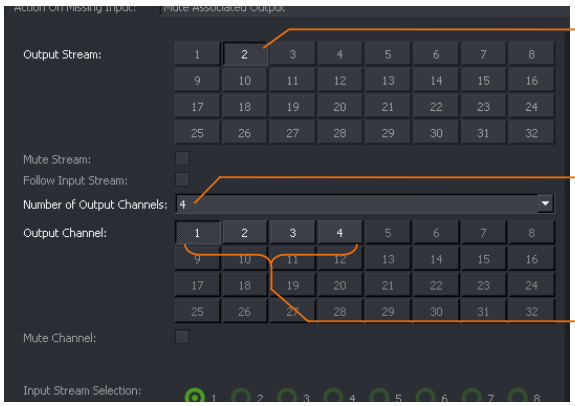


Number of Output Channels

Note - this control is only exposed when the control **Follow Input Stream** is deactivated (unchecked).

This control allows the number of output channels, of a particular output stream, to be defined.

In this example, output stream 2 has been defined to carry 4 output channels:



Output Stream 2 selected

Number of Output Channels, carried by Output Stream 2 defined to be 4

Output channel matrix; with four active channels enabled

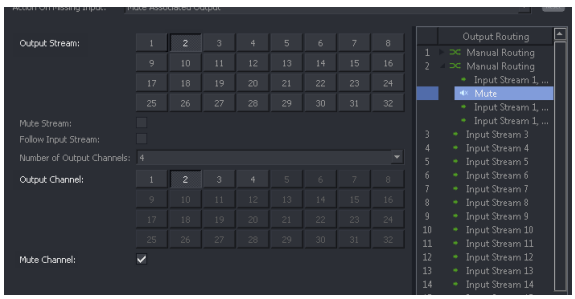
Mute Channel

Note - this control is only exposed when the control **Follow Input Stream** is deactivated (unchecked).

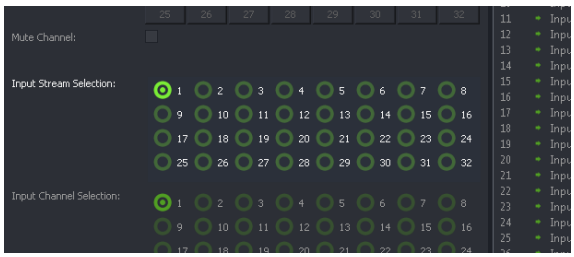
The **Mute Channel** control enables the User to mute any particular output channel, within an output stream.

In the following example, output stream 2, channel 2 has been muted.

Note that the **Output Routing** panel is modified to confirm the muted channel.



Input Stream Selection



The **Input Stream Selection** matrix allows the User to define the particular input audio stream that an input channel is to be routed from, as part of a channel routing process.

Input Channel Selection

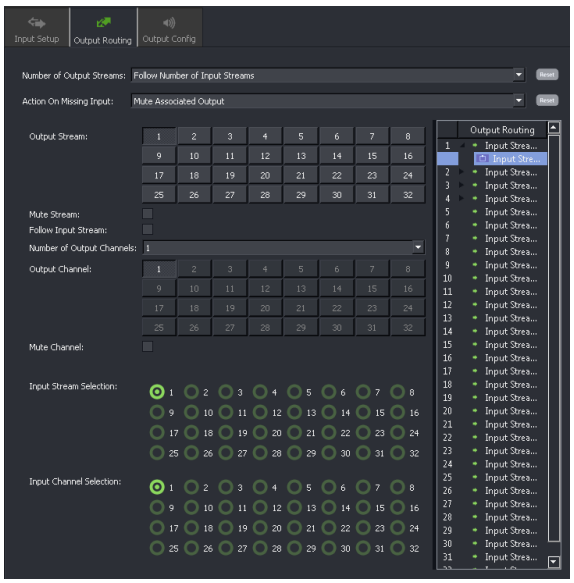
Note - this control is only exposed when the control **Follow Input Stream** is deactivated (unchecked).

The **Input Channel Selection** matrix allows the User to define the particular input audio channel that an input channel is to be routed from, as part of a channel routing process.

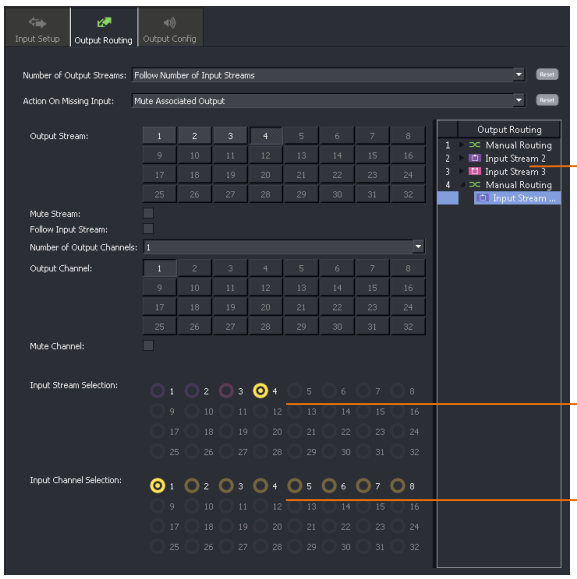
Audio Channel Routing

Using the **Audio Channel Matrix**, any input audio channel, from any input audio stream may be routed to any output audio channel, in any output audio stream.

Where the **Input Setup** has not been defined (i.e. set to pass-through), the icons within the **Input Stream Selection** matrix, the **Input Channel Selection** matrix and the **Output routing** pane, will all be colored green:



Where the input audio distribution has been defined in the **Input Setup** menu, the **Output Routing** menu will be color coded accordingly:

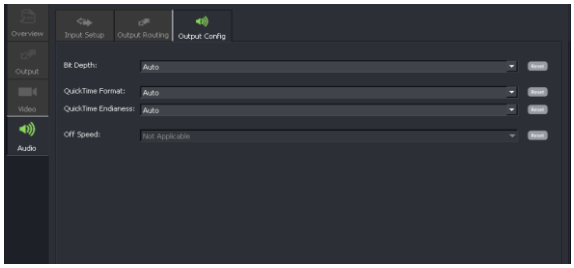


Output Routing pane reflects **Input Setup**

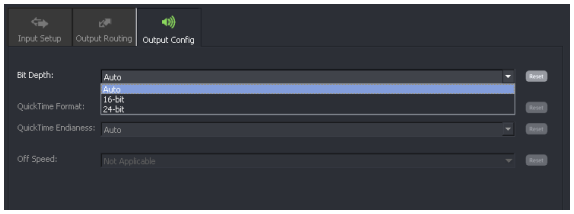
Input Stream Selection matrix modified to reflect defined **Input Setup**

Input Channel Selection matrix modified to reflect defined **Input Setup**

4.7.3 Audio / Output Config



Bit Depth



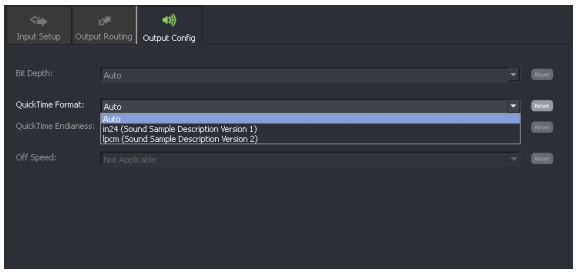
This control allows the User to apply a global setting for the bit depth of the audio in the output file. Three settings are available:

- **Auto**
- **16 bit**
- **24 bit**

When set to Auto, the bit depth of the output audio will faithfully follow that of the input. However, the User may choose to make all output audio channels either **16** or **24** bit. These settings will apply to all output audio streams.

QuickTime Format

This control is only active when the output file format is QuickTime (.mov).



Three settings are available:

- **Auto**
- **in24 (Sound Sample Description Version 1)**
- **ipcm (Sound Sample Description Version 2)**

The User can manually choose the QuickTime audio version that will be associated with the output file.

When this setting is left in **Auto** mode, if the input file being processed is a QuickTime format, then the QuickTime audio format employed in the output file will be matched to the input.

In circumstances where the input file is not a QuickTime file format and the **QuickTime format** is set to **Auto**, then the output file will default to the more recent **ipcm** QuickTime format.

QuickTime Endianess

This menu item is only seen when the output file format is set to QuickTime (.mov).

When the output file container is QuickTime, the User can choose the **QuickTime Endianess** from a dropdown menu.

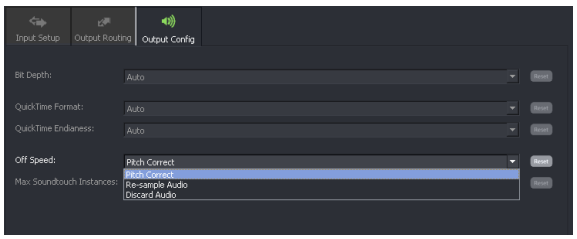
Three settings are available:

- **Auto**
- **Little Endian**
- **Big Endian**

When this setting is left in **Auto** mode, if the input file being processed is a QuickTime format, then the QuickTime Endianess format employed in the output file will be matched to the input.

In circumstances where the input file is not a QuickTime file format and the **QuickTime format** is set to **Auto**, then the output file will default to the **Big Endian** format.

Off Speed



The **Off Speed** control allows a User to configure what happens to the audio as part of an off-speeding process. Three settings are offered:

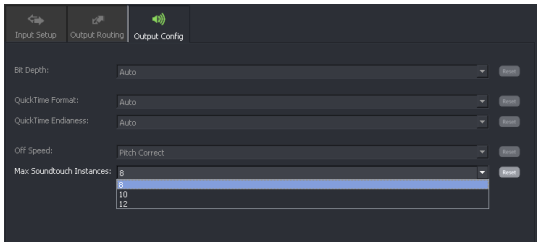
- **Re-sample audio**
- **Pitch Correct**
- **Discard Audio**

Re-sample Audio: This mode mimics what happens to the audio when doing a VTR verispeed process. As the video is played at a different rate, the pitch of the audio will be affected. For example a 24 fps to 25 fps off-speed process will make the duration of the program 4% shorter and this will have the effect of lifting the pitch of the audio by a proportional amount.

Pitch Correct: In this mode, the pitch-shifting of the audio that is associated with the Re-sample method explained above, is pitch shifted back to the pitch level of the source. The output audio, sounds exactly the same as the source.

Discard Audio: A User can choose to remove the audio track altogether. This may be desirable if the associated audio is not pcm, and will be compromised by the off-speeding process.

Max Soundtouch Instances



This menu is only active when the conversion mode is set to **Off-Speed.**

In circumstances where groups of audio channels are carried in separate streams (like stereo pairs, or Dolby surround sound programs) it is important that any audio processing maintains the relative audio phase of the audio channels within the group.

This control enables the User to define the grouping of audio channels. The relative phase of all audio channels within the defied group will be maintained.

The **Max Soundtouch Instances** menu has three possible settings: 8, 10 or 12.

5. Browser Configuration

5.1 Introduction

The GV File framework benefits from a Service Orientated Architecture (SOA) which has been engineered to support a wide range of deployments from a single node through to a cluster of nodes within a data centre.

One of the services in the framework is called the **GV File Browser** and this enables the user to **browse** both local and remote shares. Whilst not a mandatory service, the Browser alleviates the need for the User to type explicit file paths, making job creation a simple and quick process.

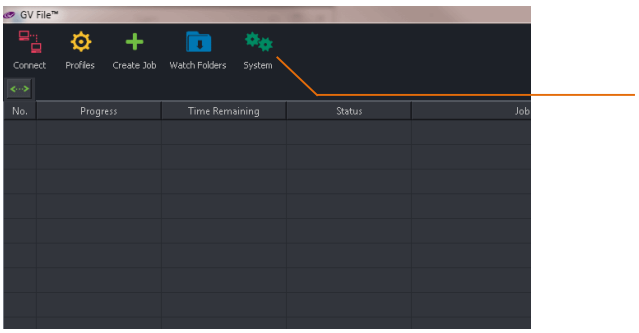
Before the Browser can be used, it must first be configured. It is assumed that the GV File Browser has been successfully installed using the Installation Guide.

The following procedure describes how to add a **Shared** location to the **Browser**. This location may then easily be used as a repository for source, or converted files.

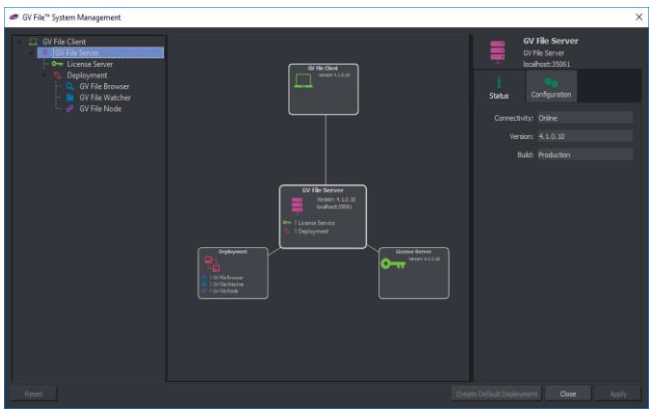
Note that a share location may be remote from the server. In such circumstances the location must be identified by a complete URL path. A remote share cannot be identified as a **mapped** drive on the host machine.

5.1.1 Browser Configuration

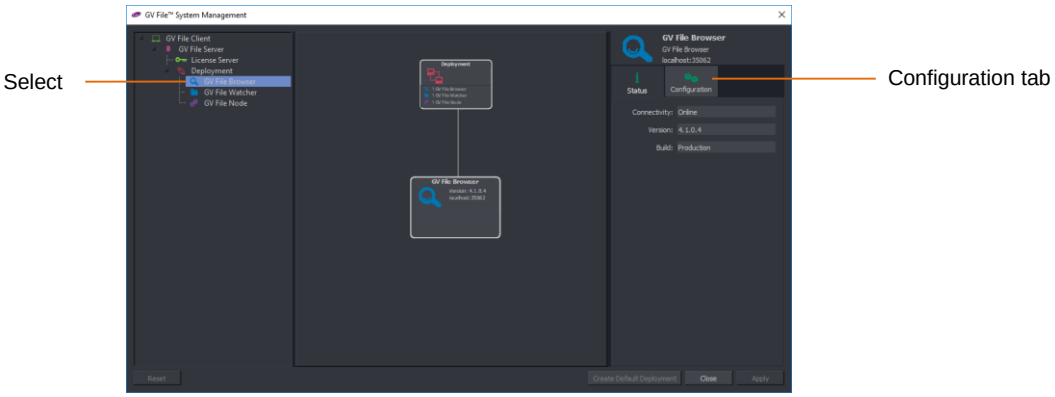
1. In the GV File Client click on the **System** icon.



This will open the **System Management** window.



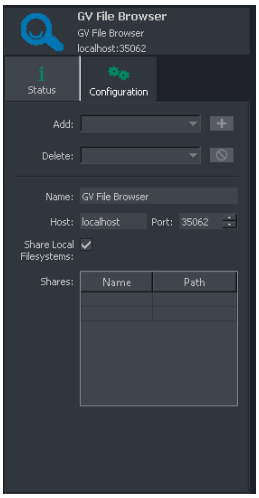
2. In the pane on the left hand side, click on the **Local Browser**. This will bring up the **GV File Browser** on the right hand side:



Note: If the **GV File Browser** has been installed as per the **Installation Guide**, it will appear in the **System Management** window as **Local Browser**. However, an alternative name could have been used in which case the **GV File Browser** will appear by that alternative name in the **System Management** window.

3. In the **GV File Browser** pane, select **Configuration.**

The view will change:



4. To add share locations:

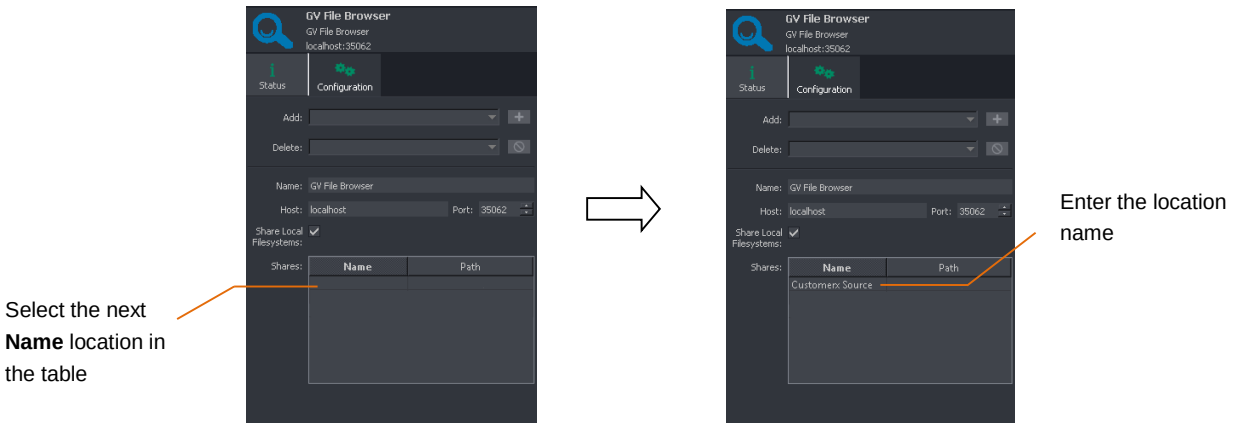
Consider that two folders have been created on the *C: Drive* of the Kronos File Server, called:

- *CustomerX-Source*
- *CustomerX-Destination*

It is desired that these folders can be accessed via the **GV File Browser**.

Note: The C: Drive mentioned above is the C: Drive of the Kronos File server. If a **GV File Client** is running on a remote work station, this work station will have its own C: drive. It is important to understand that these are different locations.

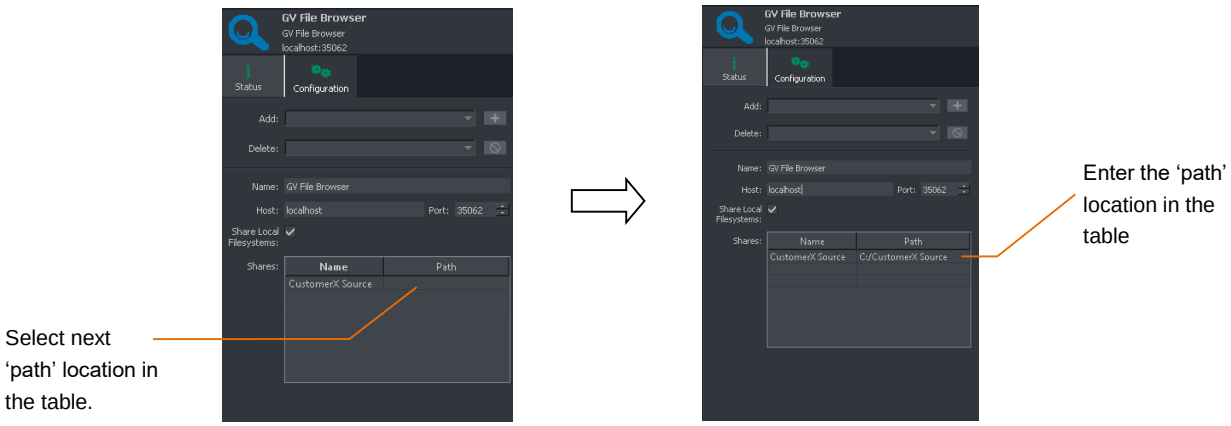
5. In the Browser **Configuration** tab, select the next **name** location in the table:



Enter the name of the new share location. In this example: *CustomerX Source*

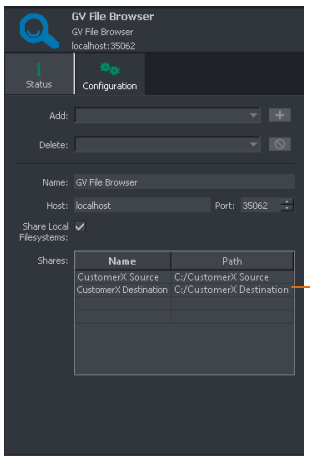
Note: The name entered must not contain special characters such as: - , . ( ) # ; : / < >

6. In the **Path** location, enter the path to the folder being added, in this example: *C:/CustomerX-Source*



7. Repeat the process for the second folder:

   In this example: *C:/CustomerX-Destination*



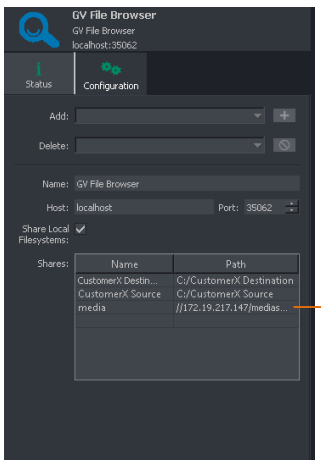
Name and **Path** entered for the second folder.

8. Click **Apply** to update the Browser.

   Now, when creating new jobs, the locations *CustomerX-Source* and *CustomerX-Destination* will be available from the Browser tool in the **Create job** window.

   Note: To access remote shares the service must be configured with the correct logon credentials otherwise it will not have permission to browse and serve the directory structure to the Client.

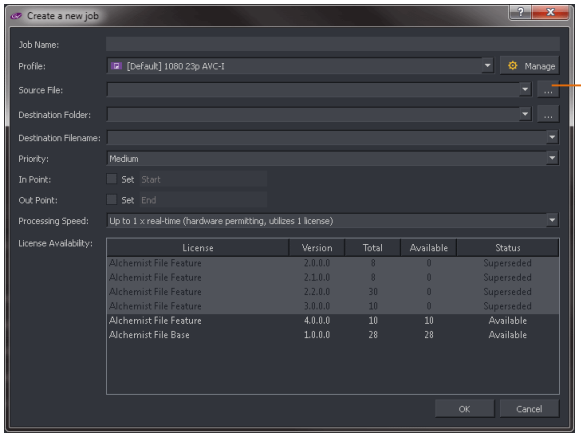
9. To add a remote **share** where logon credentials have been configured, the full URL path must be entered:



Name and **path** entered for the remote **share**.

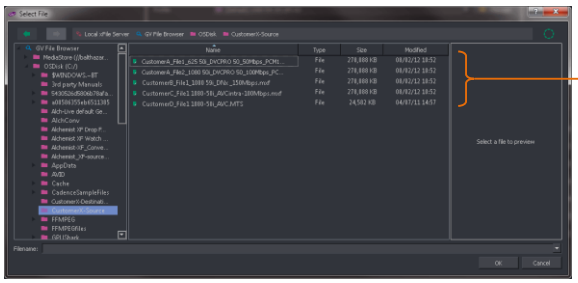
5.1.2 Using the Browser to Select a Source File

1. In the **Create a new job** window, click the **Source file** browse button to search for files.



Select

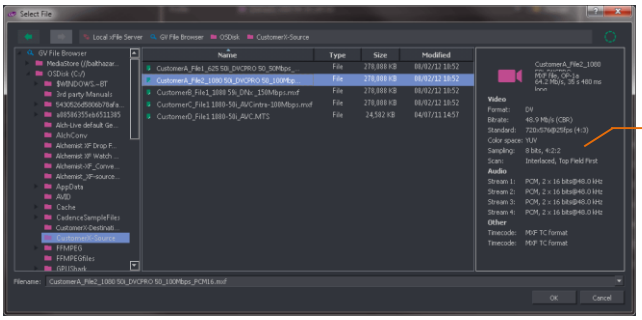
The Browser will list the files located in the chosen directory.



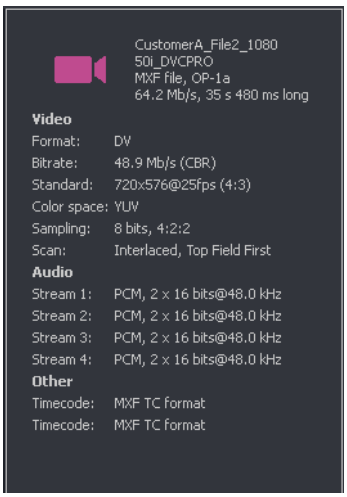
Source files available via the Browser

Note: The Browser may be used like Windows Explorer. Sub-folders below the directory configured in the Browser may be accessed via the Browser.

2. To select a file, click on it to highlight it.



Note that the metadata of the source file will be displayed in the right-hand pane of the **Select File** window.

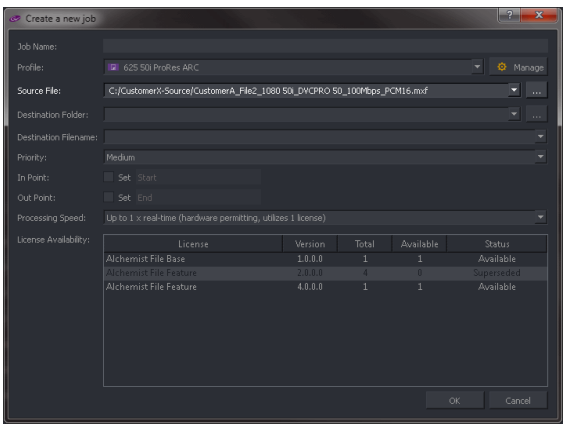


From the metadata, important parameters of the source file such as: video standard, codec, file wrapper, bit rate, etc. can be seen. This metadata can be compared to the table of supported file types (Table 3, Appendix A, below) to confirm compatibility with Kronos File.

Note: DPX files do not contain metadata and when selected as a source file, this pane will not populate.

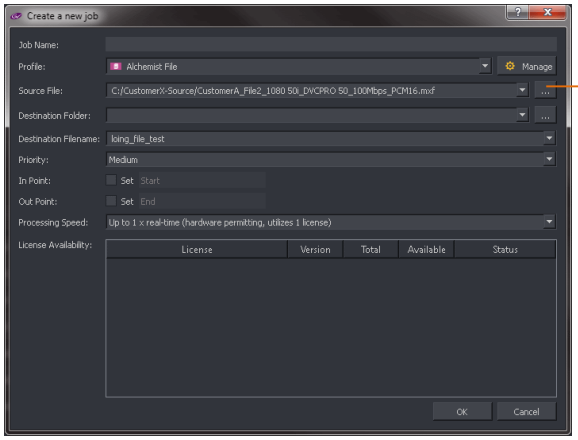
Click **OK** to select the file.

3. Now in the **Create a new job** window**,** the **Source File** field will be populated.

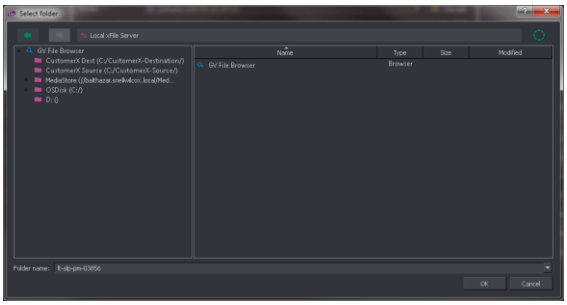


5.1.3 Using the Browser to Select a Destination Folder

1. In the **Create a new job** window, click the **Destination Folder** Browse button to search for files.

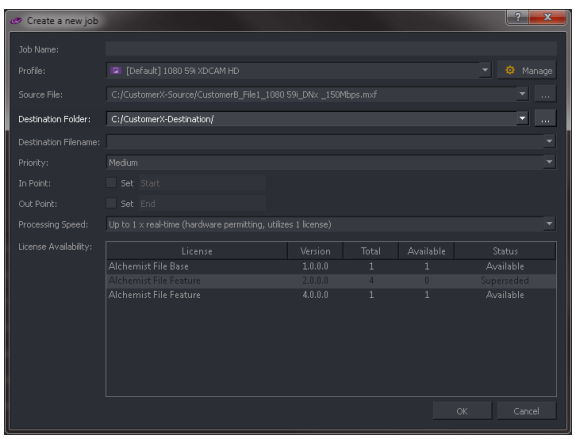


The Browser will list the configured folders.



2. To select the desired destination folder, double-click on it.

   The **Destination folder** field will now be populated:



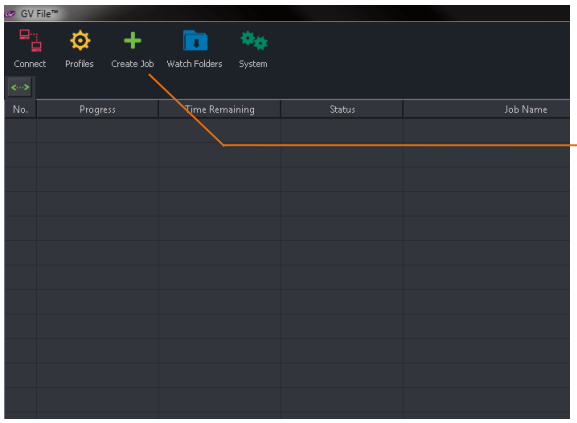
6. Creating a Job

6.1 Introduction

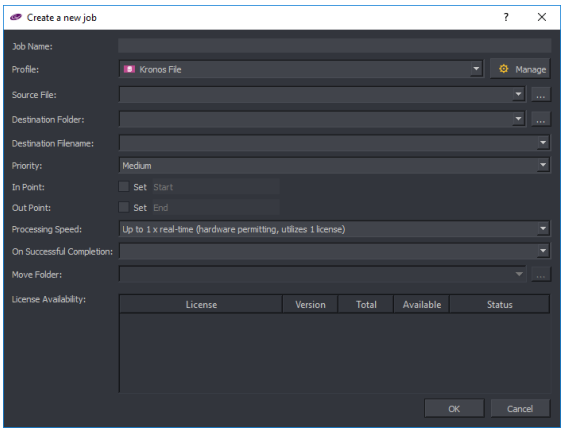
The procedure described below, explains the simple process to manually add a job to the job queue. The procedure assumes that the Browser has been configured (as described above in section 5) and that the source file exists in a location configured in the Browser.

6.2 Create Job Procedure

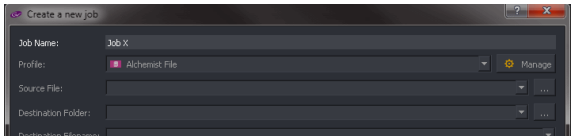
1. In the GV File Client, click on the **Create job** icon**.**



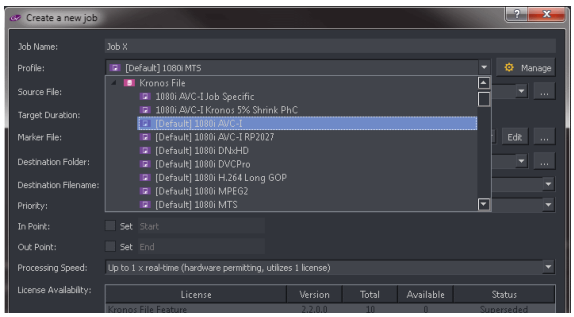
The **Create a new job** window will now open.



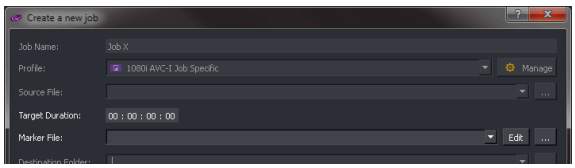
2. **Job name:** Enter an appropriate job name. This name will appear when the job is added to the job queue and is useful for future reference.



3. Profile: A Profile is selected from the list of available Profiles.



If the Profile has been configured with a **Duration Adjustment Type** set to **Job Specific**, the **Target Duration** and **Marker File fields** will become visible.

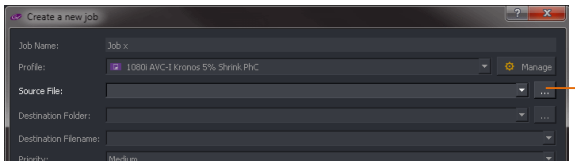


The process of setting up a **Job Specific** process is described in **Appendix E** below.

4. **Source file:** The name and path of the source file needs to be entered into the **Source File** field. The easiest method to do this is via the Browser. See section 5 above.

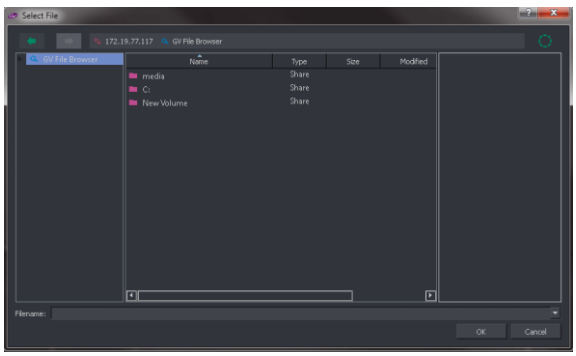
   Alternatively, the source file can be selected by entering the full URL path and file name.

   Click on the Source File **Browse** icon:

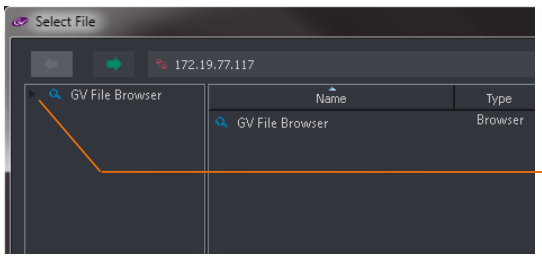


Select to initiate source file **Browse** feature

   The Browser will now open.

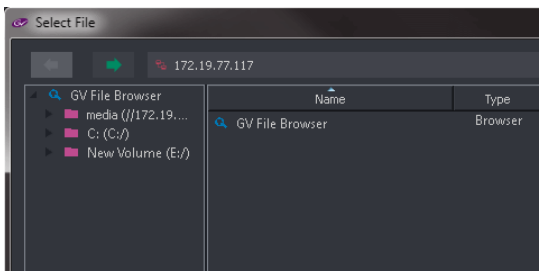


5. Click on the Browser to reveal the configured folders.

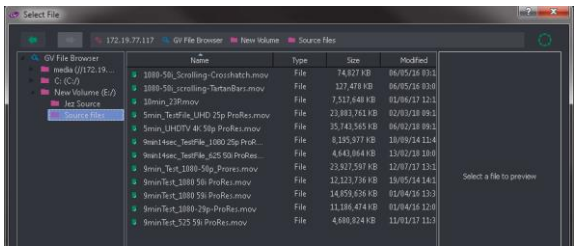


Select the Browser

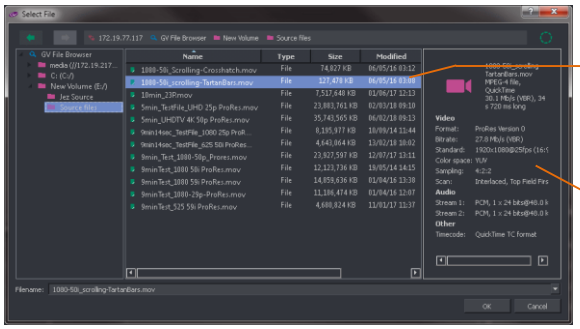
   The configured source folders will now be visible.



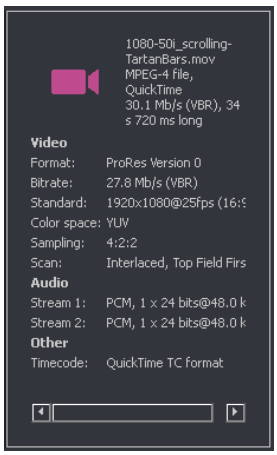
6. Double click on the appropriate folder to reveal the files within.



7. Select the appropriate source file.



Note that upon selecting the source file, the right hand pane will populate with selected metadata from the source file.

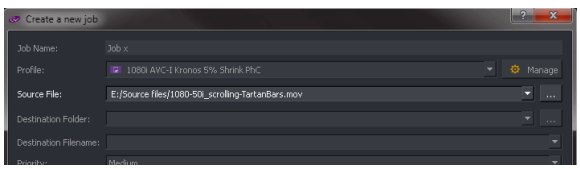


From the metadata we can see important parameters of the source file such as: video standard, codec, file-wrapper, bit rate, etc.

This metadata can be compared to the table of supported file types (section 5.1 above) to confirm compatibility with Kronos File.

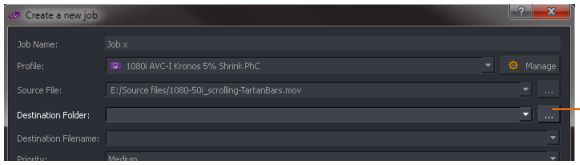
Note: DPX file metadata is not read by GV File and, when selected as a source file, this pane will not be populated.

The Source file field will now be configured.



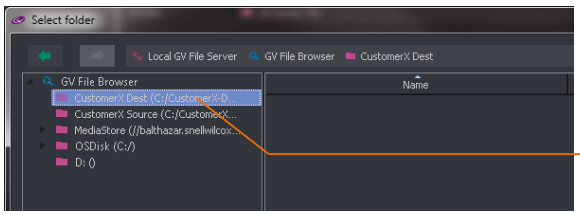
8. **Destination folder:** The destination folder needs to be defined. As with the source file, the easiest method of doing this is to use the Browser.

   Click on the **Destination folder** browse icon.



   The Browser window will now open.

9. Select the appropriate destination folder.



   Click **OK.**

   The **Create a new job** window will now be populated with the destination folder configured.

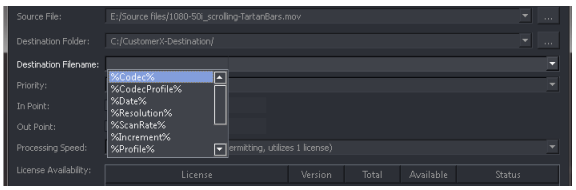
10. **Destination filename:** Either explicitly add a **Destination filename** (by simply typing the desired filename in) or use output filename patterns to automatically label the destination filename.

    The various output filenames can be seen in the following table. These can be concatenated or mixed with explicit characters:

    Example 1: %Source%_%Profile%

    Example 2: CustomerX_%Format%_%Codec%

    Filename patterns are chosen by typing '%' in the **Destination filename** field. A list of available filename patterns will appear.



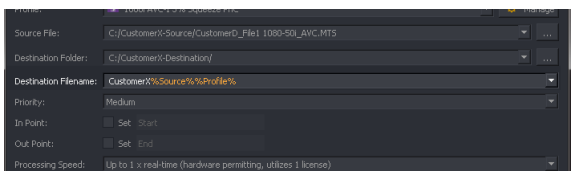
    GV File offers a number of preset file name options; see Table 2 below:

Table 2: Output Filename Patterns

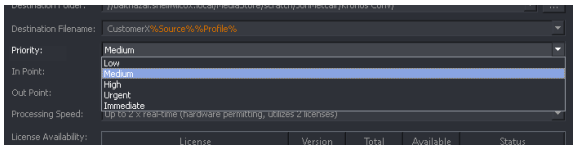
Filename Type	Description
%Codec%	The output **Codec type** will be added to the filename, e.g. DNxHD
%CodecProfile%	The output **Codec Profile** will be added to the filename, e.g DNxHD 185Mbit 10Bit
%Date%	The **Date** of the completed conversion will be added to the filename
%Format%	The output **Format** will be added to the filename, e.g. 1080 50i
%Increment%	The unique Job ID will be added to the filename
%Profile%	The **Profile name** will be added to the filename
%Source%	The **Source** filename will be added to the filename
%Wrapper%	The output **Wrapper** type will be added to the filename, e.g. MXF OP1a

    In this example, the User has typed the word *CustomerX*, and added two filename patterns:

    Source and *Profile.*



11. The **Priority** of the job can be selected from a drop-down menu.



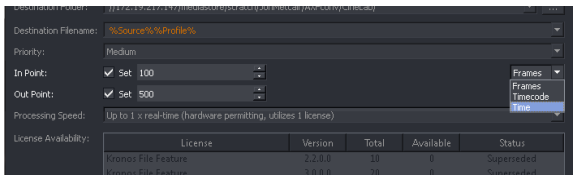
Setting a higher priority will promote the job up the job queue. Setting a priority of **High** will ensure that the job is processed before all **Medium**, and **Low** priority jobs currently in the queue. Similarly, a job given a priority of **Urgent** will be processed before all **High**, **Medium** and **Low** jobs currently in the job queue.

Any job that is not critical with regard to availability can be given a **low** priority.

The default value is **Medium.**

12. **In Point / Out Point**

In normal circumstances any job configured will process the source file from start to finish. However, Kronos File offers the ability to define an **In Point** and **Out Point,** so enabling a User to process just part of a source file:

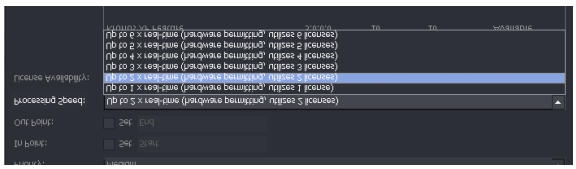


In this example, an **In Point** of 100 frames, and an **Out Point** of 500 frames, has been configured. So the output file will start 100 frames into the source file and will have duration of 400 frames.

The User can choose to define the **In Point** and **Out Point** by: **Frame** count, **Timecode** or **Time.**

This is useful for testing a conversion process without having to process the entire source file. For example setting up an ARC process can be a process of trial and error, so just converting a few frames can mean this process is far more efficient.

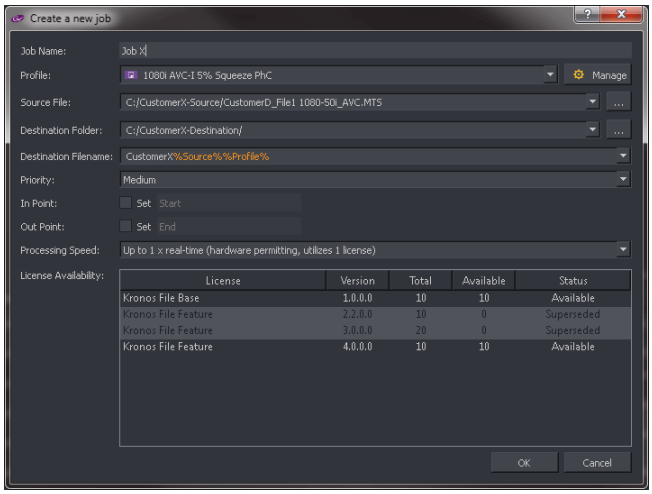
13. **Processing Speed:** where multiple licenses are available, licenses may be aggregated to allow faster than run-time duration.



Example; if two Kronos File licenses are available, processing speed can be up to twice as fast (i.e. a one hour duration program can be processed in 30 minutes).

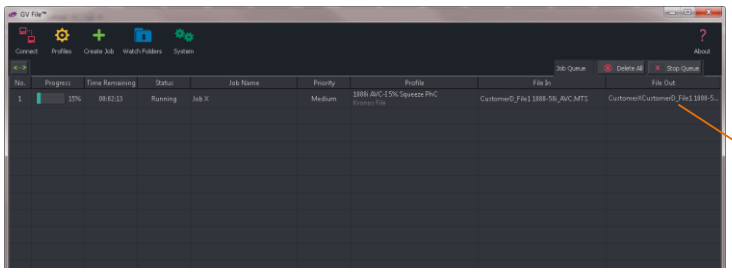
Note – actual processing time will be dependent upon the resources of the host machine.

14. The **Create a new job** window has now been configured.



Note: Confirmation of available licensing is displayed in the **License availability** field.

Click on **OK** and the job will now be added to the job queue in the GV File Client.



The job will process automatically when it reaches the top of the job queue.

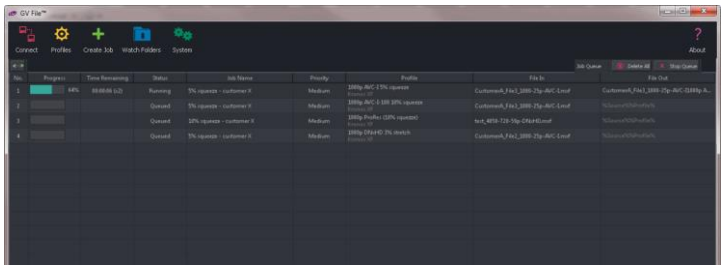
7. The Job Queue

7.1 Description

Jobs can be added to the job queue either via manual configuration (described in section 5), or via a Watch Folder Configuration (see section 8 below). There is no limit to the number of jobs that can be added to the job queue.

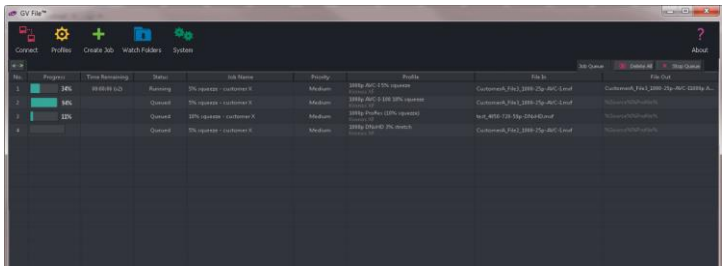
Jobs may be prioritised, cancelled, resubmitted and the job queue may be stopped at any time.

The following example depicts a GV File Client connected to a Kronos File system with a single license.



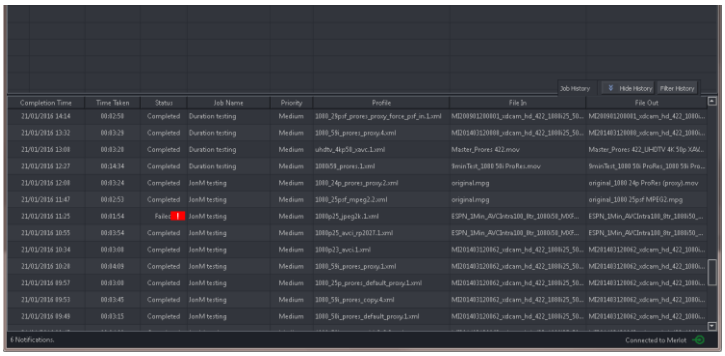
When only a single license is available, Kronos File will process the job queue, one job at a time.

However, if multiple licensed Nodes are available, then Kronos File can simultaneously process multiple jobs. In the following example, three licensed Nodes are available and so three jobs are processed simultaneously.



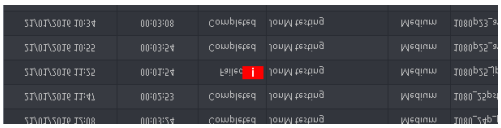
7.2 History Pane

All processed, jobs will appear in the History pane, in the bottom half of the **GV File Client**.

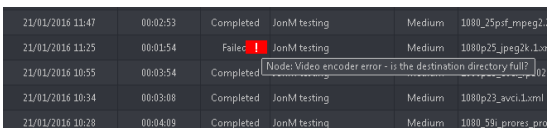


7.3 Failed Jobs

Any failed job will also appear. Failed jobs will be tagged with status **Failed** and will be associated with a red exclamation mark.



Hovering the mouse over the red exclamation mark will cause a *reason for failure* message to pop-up.

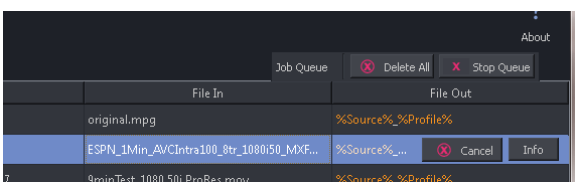


Note: a list of failure messages and their respective meanings in available in Appendix B below.

Any aborted job will also appear in the History pane, tagged with a **Cancelled** status.

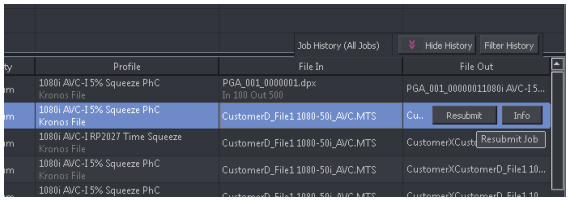
7.4 Cancelling a Job

A job in progress or one in the queue waiting to be processed can be cancelled anytime by clicking on the job **Cancel** button.



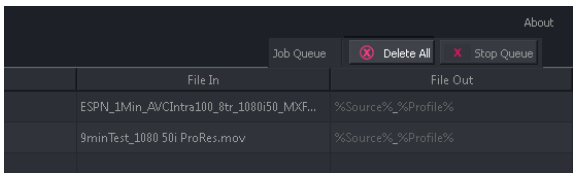
7.5 Resubmit a Job

Any Job in the History pane can be submitted to the queue but clicking on the job followed by the **Resubmit** button. Profiles may be modified during the resubmit process.



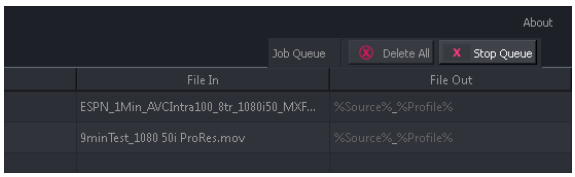
7.6 Delete the Job Queue

The entire current job queue can be deleted by clicking on the **Delete All** button.



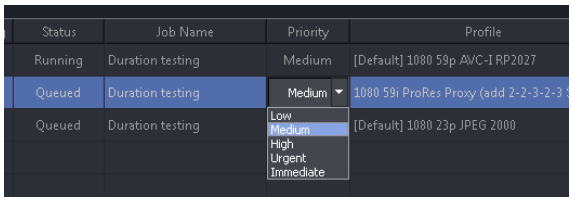
7.7 Stop the Job Queue

The entire job queue can be stopped by clicking on **Stop Queue**.



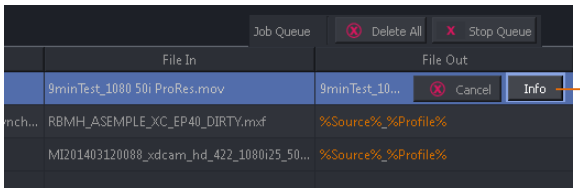
7.8 Reprioritise a Job

Jobs which are queued may have their priority modified by clicking on the **Priority** cell of the relevant job.



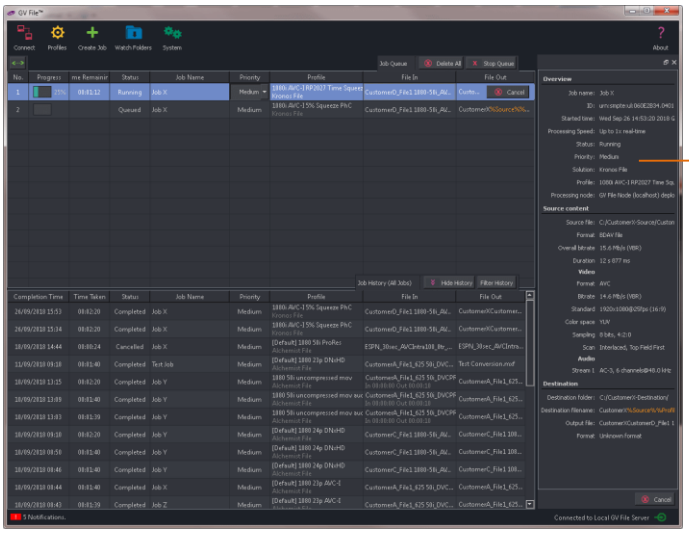
7.9 Job Info/Overview

A job overview of any job can accessed by selected a particular job and clicking on the **Info** button.



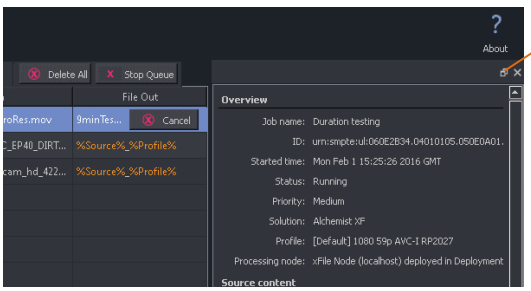
Select

Upon clicking **Info,** an **Overview** pane will open.



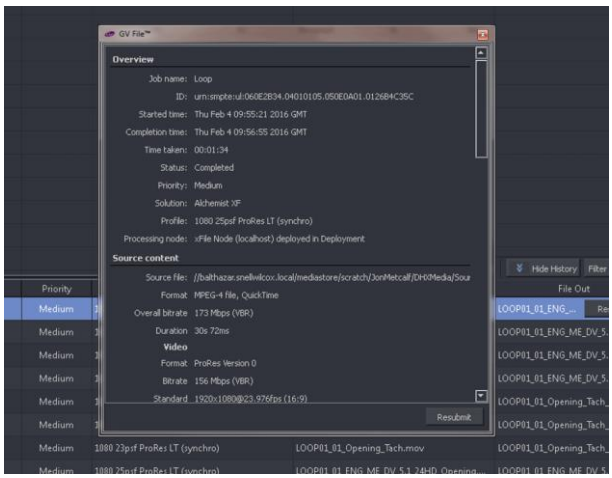
Job Overview pane

The job overview window may be placed anywhere on the User's desktop by clicking the **Undock** button.

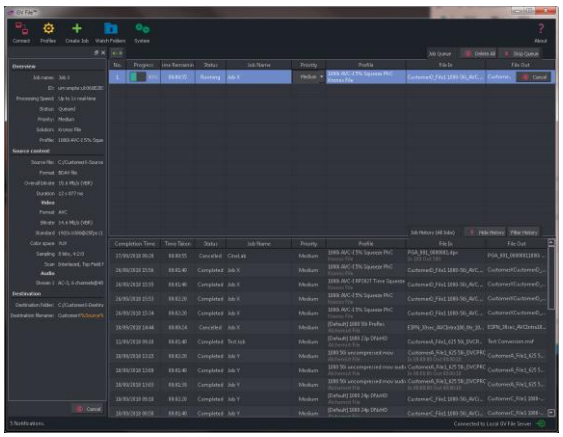


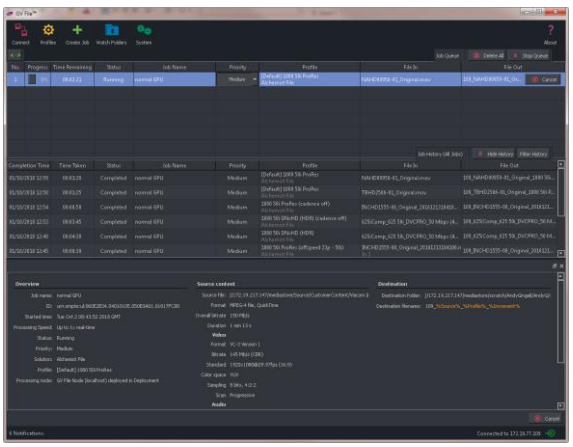
Undock

Example of an undocked info window:



The job overview can also be docked at either side of the client or at the bottom as shown. This is achieved by clicking the cursor on the top of the info window and dragging to either side, or to the bottom of the Client GUI.





8. Watch Folders

8.1 Introduction

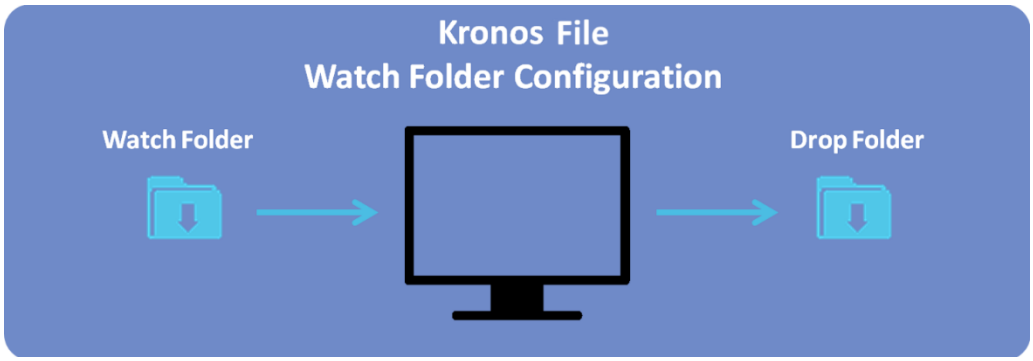
There is another optional service in the framework called the GV File Watcher. This enables automatic population of the job queue using specified Watch Folders and associated Drop Folders.

Before the Watcher can be used, it must first be configured. It is assumed the **GV File Watcher** has been successfully installed using the Installation Guide.

The term **Watch Folder** refers to a specified folder which is watched or monitored. The term Drop Folder defines where the output file is placed.

A **Watch Folder Configuration** describes the combination of associated Watch Folder, the associated **Drop Folder** and the associated Profile defining the conversion required.

Once the **Watch Folder Configuration** is complete, any media file placed in the Watch Folder will automatically create a job and add it to the queue. When the job reaches the top of the queue, it will be converted in accordance with the associated Profile.



Note: currently the Watch Folder feature does not support DPX file types.

8.2 Watch Folder Configuration Example

Example: A Watch Folder Configuration has the following parameters associated with it:

- Watch Folder: C:\Kronos File Watch Folder
- Conversion Profile: [Default] 1080i AVCI 100
- Drop Folder: C:\Kronos File Drop Folder

Transferring any file into the Watch Folder **Kronos File Watch Folder** will automatically create a job and add it to the queue. When the job reaches the top of the queue, it will be converted in accordance with the associated Profile (in this case: *[Default] 1080i AVCI 100*) as defined by the Watch Folder Configuration).

The converted file will be written to the Drop Folder: *C:\Kronos File Drop Folder*

For customers who frequently deliver content of a specific file format and video standard, the Watch Folder functionality offers a simple and convenient method of automated file conversion via Kronos File.

8.3 How to Setup a Watch Folder Configuration

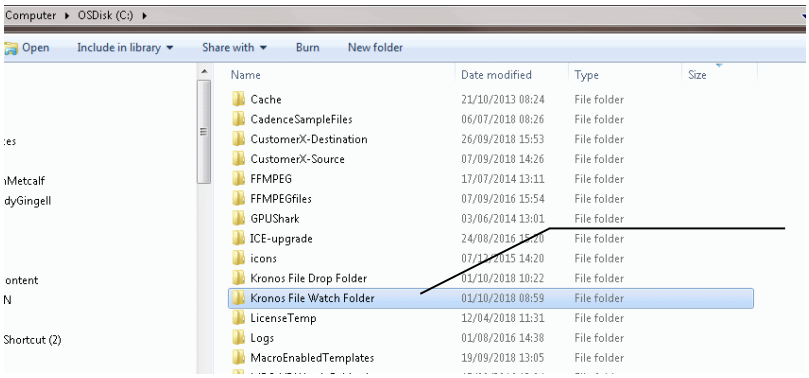
The following procedure explains how to setup a Watch Folder Configuration with Watch and Drop Folders existing on the local server.

The Watch and Drop folders will reside on the local C: drive

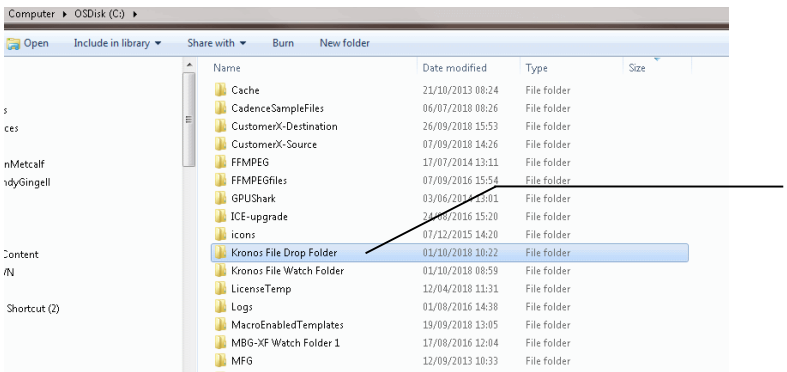
A folder will be created which will act as the Watch Folder:	*Kronos File Watch Folder 1*
A second folder will be created which will act as the Drop Folder:	*Drop Folder 1*
The **Watch Folder Configuration** will have an associated Profile of:	*1080i AVCI 100 5% shrink*

8.3.1 Create the Physical Folders

1. Make a folder on the local C: drive called: *Kronos File Watch Folder*

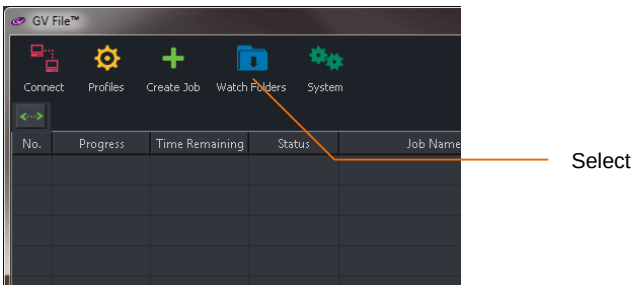


2. Make a second folder on the local C: drive called: *Drop Folder 1*

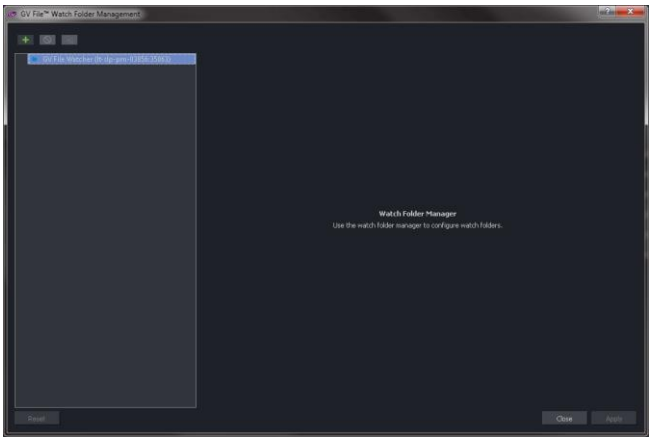


8.3.2 Create the Watch Folder Configuration

1. In the GV File Client, click on the **Watch folders** icon.



The following window will now open.

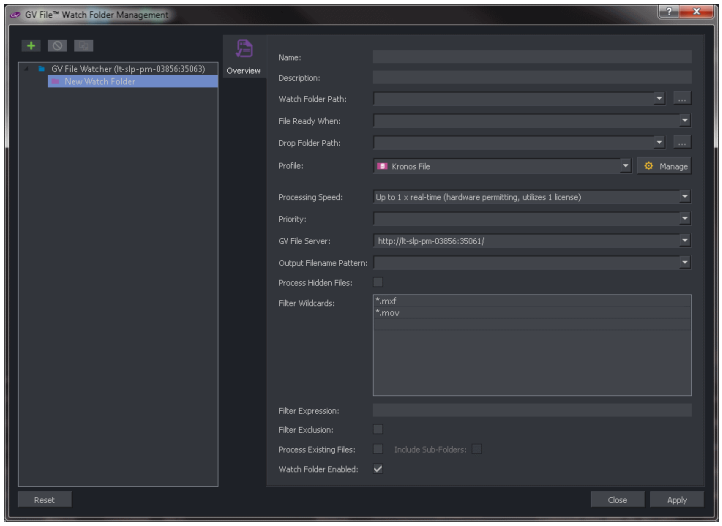


In this example there is only one Watcher called: **GV File Watcher (lt-slp-pm-03856:35063)**

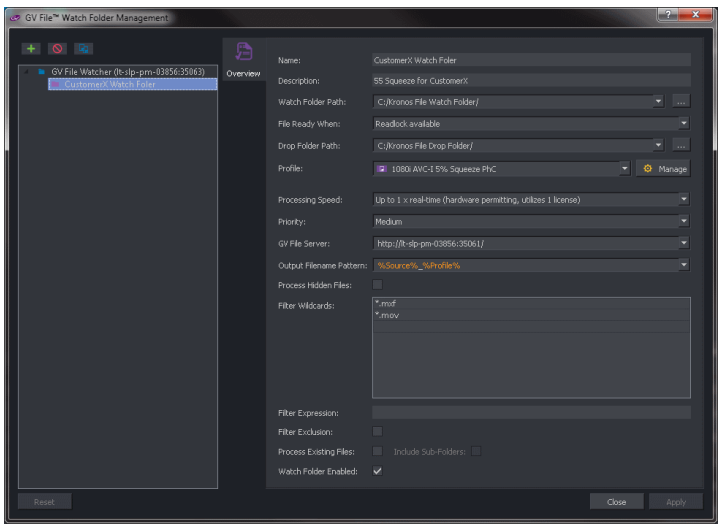
Note - **lt-slp-pm-03856** is the name of the host computer.

2. Click on the **New Watch Folder** symbol.

This will modify the window.



It is now necessary to populate this window with the parameters of the **Watch Folder Configuration**.

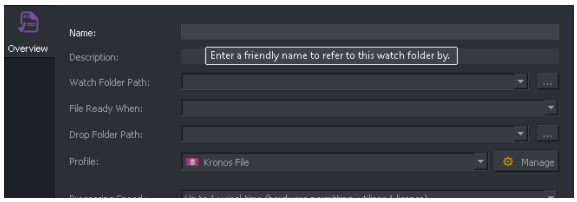


8.4 Watch Folder Configuration Parameters

8.4.1 Name

Any new Watch Folder Configuration will need a name. This can be anything the User chooses.

Note whenever the cursor is hovered over a configurable parameter, a hint will pop-up:

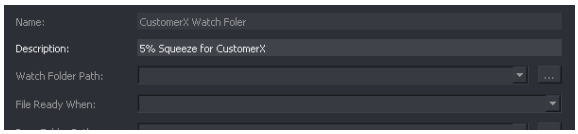


Enter a name for the Watch Folder.

Note: this does not need to be the same as the actual folder name that is being watched.

8.4.2 Description

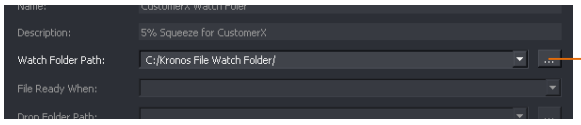
A **Description** of the Watch Folder Configuration may be entered.



This is often useful for future reference. This field is optional.

8.4.3 Watch Folder Path

Specify the URL of the Watch Folder Path. This is where the source file will be read from.

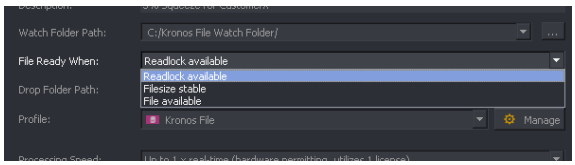


This field can easily be configured via the Browser.

8.4.4 File ready when

The **File Ready When** control is used when large files are moved into the Watch Folder. Two options are offered:

- **Readlock available**
- **Filesize stable**
- **File available**

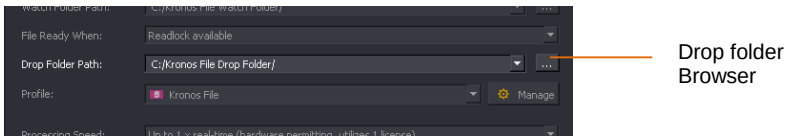


The **Readlock available** option is only applicable in a Windows environment. When selected, a conversion can commence once the **Readlock** code is available.

In a Linux system, there is no concept of a **Readlock** code, so it is recommended that one of the other options; **Filesize Stable** or **File available** is selected in a Linux environment.

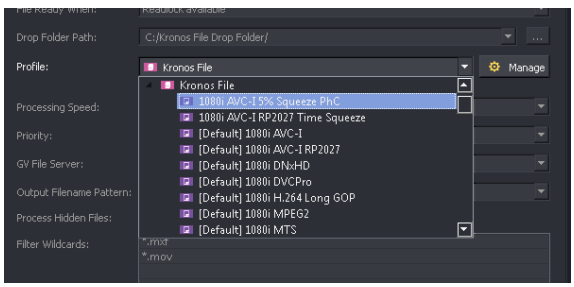
8.4.5 Drop Folder Path

Specify the URL of the **Drop Folder Path**. This is where the converted file will be written to.



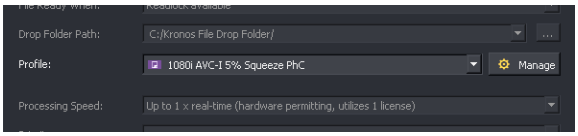
8.4.6 Profile

Specify the **Profile** to be associated with the Watch Folder Configuration.



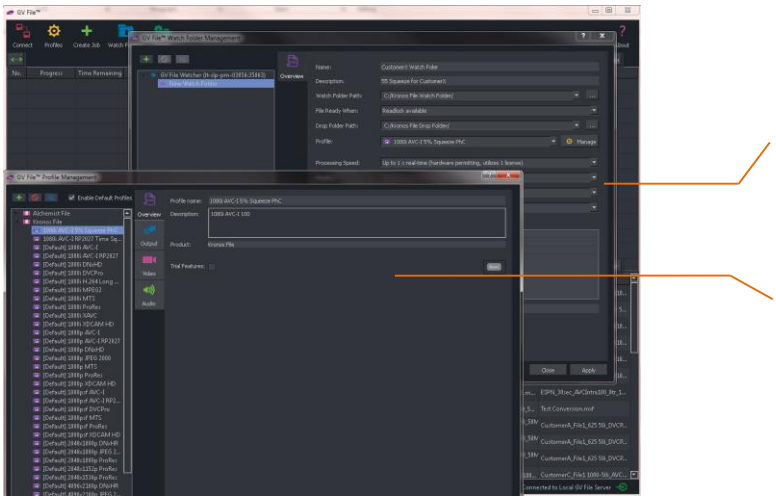
8.4.7 Manage

The Profile **Manage** feature box can be used to create or edit a Profile whilst in the middle of creating a Watch Folder Configuration.



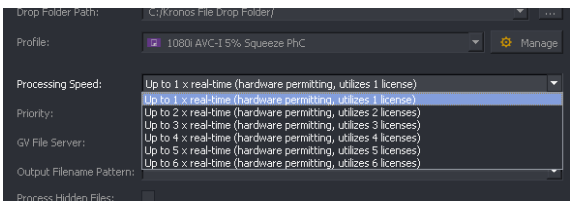
If the Watch Folder Configuration is part way through and the desired Profile does not currently exist, it is not necessary to end the Watch Folder Configuration process, build a new Profile and then start the Watch Folder Configuration from the beginning.

Selecting the **Manage** icon will bring up the **Profile Management** window, without closing the Watch Folder Management window.



8.4.8 Processing Speed

Where multiple licenses are available, licenses may be aggregated to allow faster than run-time duration.

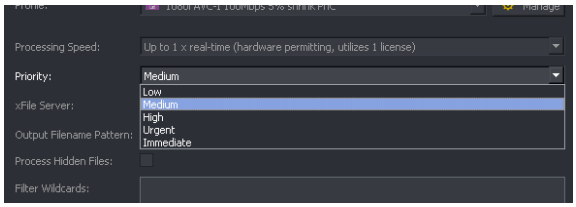


Example; if two Kronos File licenses are available, processing speed can be up to twice as fast (i.e. a one hour duration program can be processed in 30 minutes).

Note – actual processing time will be dependent upon the resources of the host machine.

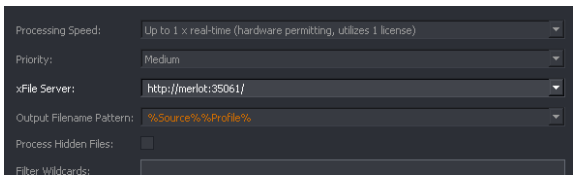
8.4.9 Priority

The priority of any job initiated via the Watch Folder Configuration can be set in this field. The default value is **Medium**. All jobs originating from this particular Watch Folder Configuration will be set to the priority as set in this field.



8.4.10 GV File Server

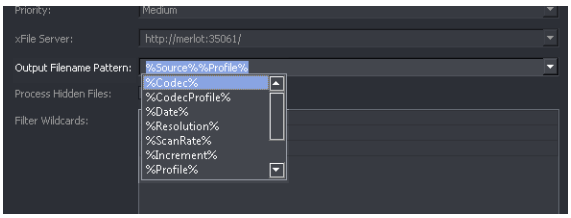
This field will be automatically populated.



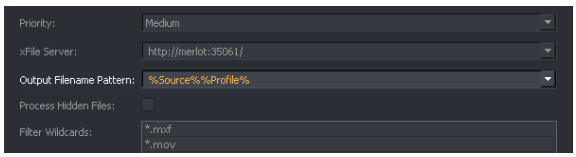
In systems where multiple GV File Servers have been configured, this control allows a specific GV File Server to be set, with respect to the Watch Folder Configuration.

8.4.11 Output Filename Pattern

Typing **%** will reveal the output filename pattern options.



File naming pattern concatenations of multiple presets may be configured:

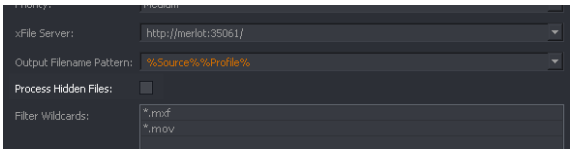


In this example, the output filename will be a concatenation of the source file name and the Profile name.

See **Table 2** above for more information on filename patterns.

8.4.12 Process Hidden Files

Some video files have hidden files associated with them. Enable this control if hidden files are to be processed through to the output.

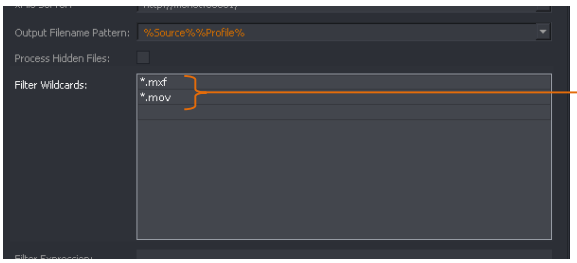


8.4.13 Filter Wildcards

Because a Watch Folder is just a folder on a PC, or server, files may be added to the folder that are not video files and it would be undesirable that such files should initiate an Kronos File conversion.

The **Filter Wildcard** feature allows the User to specify only certain file types to initiate a Kronos File process.

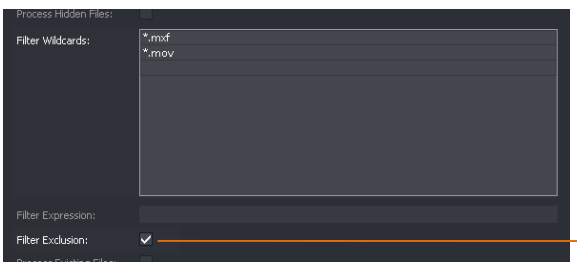
In the example below the default wildcards are depicted. Only files with the file extension .**mxf** or .**mov** moved into the Watch Folder, will initiate an automated Kronos File process.



Note: currently the Watch Folder feature does not support DPX file types. DPX files are effectively excluded by the default setting of the **Filter Wildcards** feature, meaning that if DPX files are written to an active Watch Folder, they will not initiate a Kronos File process. If the settings of the **Filter Wildcards** feature are set such that DPX files are no longer excluded, then DPX files written to the Watch Folder will initiate a Kronos File process. However, the results will be very undesirable and it's important that this scenario is avoided.

Alternatively, the Wildcard Filter may be used to exclude certain file types from initiating a Kronos File process.

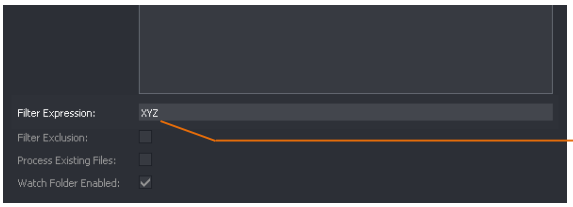
In the following example, word documents have been excluded.



To make Wildcards excluded, the **Filter Exclusion** box should be ticked.

8.4.14 Filter Expression

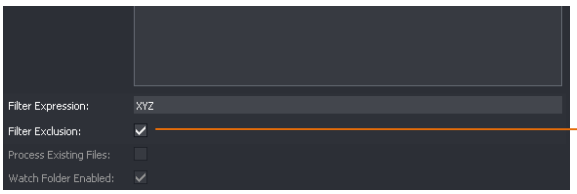
Similar to the Filter Wildcards feature, the Filter Expression feature allows the User to exclusively process only files where the file name contains a specific expression. In the following example only file names containing the word XYZ dropped into the Watch Folder will initiate a Kronos File process.



Configuring a **Filter Expression**

Alternatively, the Filter Expression feature may be used to exclude certain file names from initiating a Kronos File process.

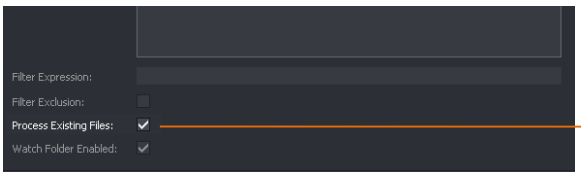
In the following example, documents with a file name containing XYZ have been excluded.



Making the **Filter Expression** exclusive.

8.4.15 Process Existing Files

The default setting of this control is **disabled**. When disabled, at the point in time that the Watch Folder is made active, any files currently residing in the Watch Folder will not initiate a Kronos File conversion. Only new files added to the Watch Folder from this time will initiate a Kronos File conversion.

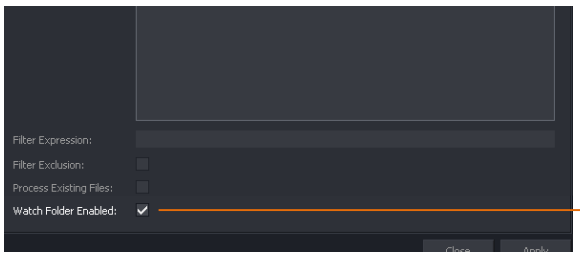


Process Existing Files enable.

If **enabled** any file currently residing in the Watch Folder will initiate a Kronos File conversion. Multiple files will initiate multiple jobs to the job queue.

8.4.16 Watch Folder Enabled

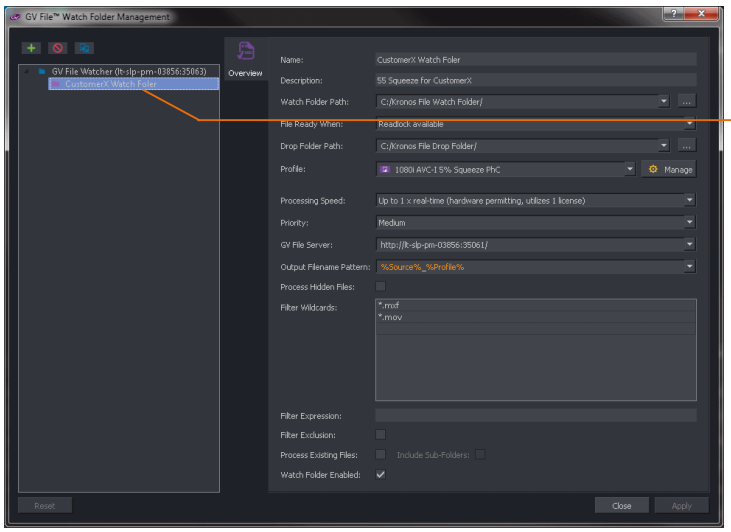
When **enabled,** the Watch Folder is active. Any file (except excluded files) written to the Watch Folder will initiate an automated Kronos File conversion. When **disabled** the Watch Folder is inactive. Any files written to the Watch Folder will not cause a Kronos File conversion event to occur.



Enabling the Watch Folder

Select **Apply** to complete the Watch Folder Configuration

The new Watch Folder will now appear in the Watch Folder Management window.



Confirmation of new Watch Folder Configuration

Once the Watch Folder Configuration has been completed and enabled, the act of moving a file into the Watch Folder will initiate the creation of a job automatically, removing the need for the user to create jobs manually.

A Kronos File system can be setup with many Watch Folder Configurations. For customers with requirements to convert large numbers of files, careful use of the Watch Folder feature can drastically reduce the need for human interaction.

8.5 Multiple Watch Folder Configurations

It should be appreciated that a single Watch Folder can be used in multiple Watch Folder Configurations.

8.5.1 Multiple Watch Folder Configurations Using Common Watch Folder

Suppose a particular Watch Folder is used in two separate Watch Folder Configurations:

Watch Folder Configuration 1

Parameters:

- Watch folder: Customer X Watch Folder
- Profile: 1080i ProRes HQ Shrink 5%
- Drop Folder: Customer X ProRes Drop

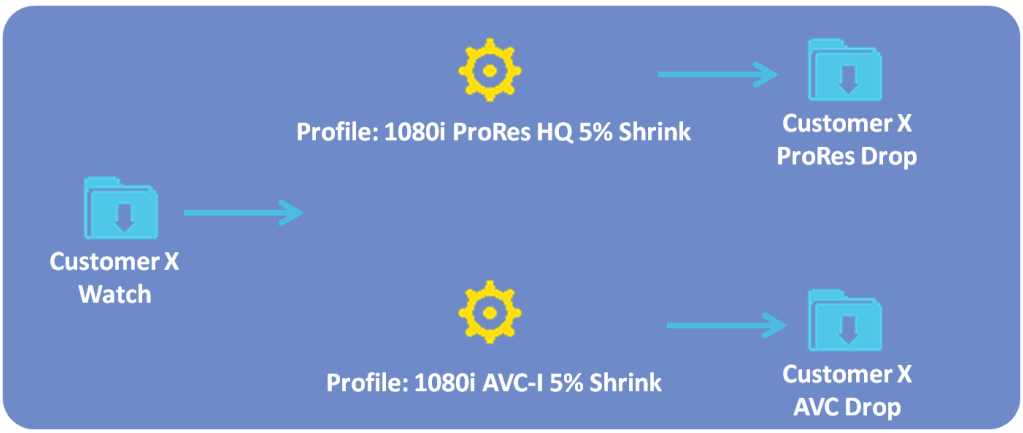
Watch Folder Configuration 2

Parameters:

- Watch folder: Customer X Watch Folder
- Profile: 1080i AVCI 100 Shrink 5%
- Drop Folder: Customer X AVC Drop

In such a scenario, the act of writing a source files into the Watch Folder *Customer X Watch Folder* will initiate two separate job configurations that will be added to the job queue.

- One process will make a 1080i ProRes HQ file, that will be placed in the folder **Customer X ProRes Drop**
- A second process will make a 1080i AVCI file, with a 5% shrink in duration, which will be placed in the folder **Customer X AVC Drop**.

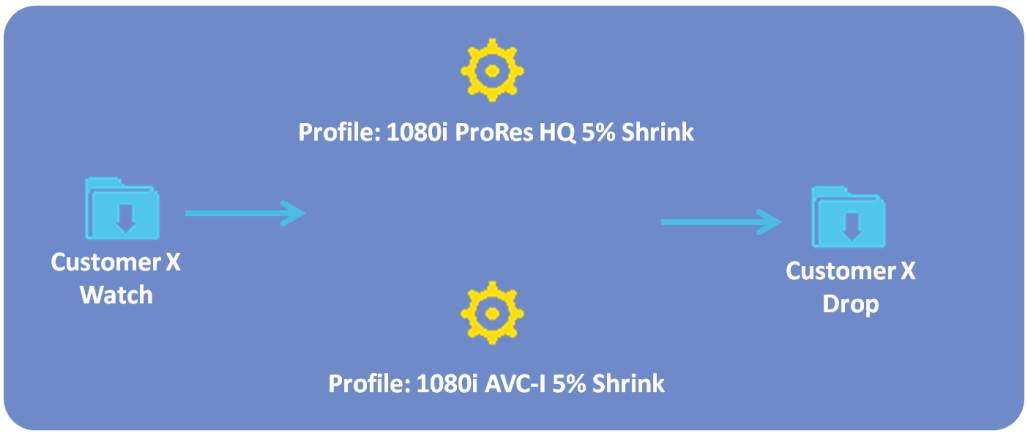


Watch Folder Configuration Using Common Watch Folder

8.5.2 Multiple Watch Folder Configurations Using Common Watch & Drop Folders

Similarly, multiple **Watch Folder Configurations** can write files to the same **Drop Folder**. In this scenario, the act of writing a file to the Watch Folder, will initiate two separate job configurations that will be added to the job queue. Both processed jobs will be written to a common Drop Folder:

- One process will make a 1080i ProRes HQ file with 5% duration shrink, which will be placed in the folder **Customer X Drop**.
- Second process will make a 1080i AVC-I 100 file, with a 5% duration shrink, that will also be placed in the folder: **Customer X Drop**.



Watch Folder Configuration Using Common Watch & Drop Folder

Appendix A. Supported File Types

A comprehensive list of supported file types is available in the document ‘GV File – Supported File Types’. This can be downloaded from the website here:

GV File - Supported File Types.pdf

Appendix B. Glossary

Table 3: Glossary of Terms

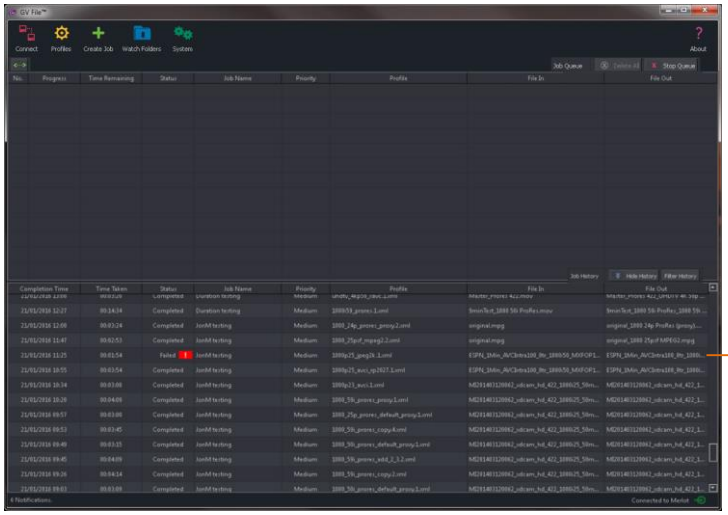
Term	Definition
Aliasing	An artefact associated with sampled signals. This undesirable effect is caused by sampling frequencies being too low to faithfully reproduce the frequencies present in the original signal.
AVC-Intra	**Advanced Video Codec - Intra:** A professional, high efficient, codec developed by Panasonic.
AVC-HD	A consumer version of the AVC codec, developed by Panasonic for consumer camcorders. Usually wrapped in an MTS container.
Bit-rate	A phrase used to describe the data density of a video or audio file. Usually expressed in Mbps (10^6 bits of data per second).
Cadence	The pattern of video fields that create a net frame rate lower than the video frame rate that carries them. Typical cadences would include 1:1, 2:2 & 2:3.
Closed Captions	**Closed captioning** is a term describing several systems developed to display text on a television or video screen to provide additional or interpretive information to viewers who wish to access it.
Codec	**Codec** is derived from the words '**Co**mpression' and '**Dec**oder'. A codec performs the task of video compression.
Color-space	**Color-space** is a system where the color of an individual pixel is defined by the percentage of its component colors. For example RGB color space defines a pixel's color by the percentages of red, green and blue contained there in.
DNxHD	**Digital Nonlinear Extensible High Definition**. DNxHD is a professional HD video codec developed by AVID. DNxHD has a maximum bit-rate of 220Mbps.
DVCPro	Is a professional video codec developed by Panasonic. DVCPro has a maximum bit-rate of 100Mbps.
EOTF	**Electro-Optical Transfer Function.** This describes how to turn digital code words into visble light.
Essence (video essence).	Essence files are the actual video and audio files contained within the video file. The essence files may be compressed using a codec, or maybe uncompressed, prior to wrapping in the container file
Fallback	A term associated with motion compensated conversion. On the rare occassion complex motion may not yield useable motion vectors. **Fallback** allows such content to fall back to a more appropriate algorithm to create output frames. Advance solutions offer adaptive fallback modes.
H.264	H.264 is a common video codec. H.264 is only ever wrapped with an MP4 container.
HDR	**High Dyncamic Range.** Is a representation that allows extended dynamic range (darker darks, brighter whites) by means of new transfer functions (EOTF/OETF) and Wide Color Gamut (WCG), which replaces the traditional CRT gamma curve and BT709 colourspace.

Term	Definition
Interlace	Interlaced video is a technique of doubling the perceived frame rate of a video signal without consuming extra bandwidth. Since the interlaced signal contains the two fields of a video frame captured at two different times, it enhances motion perception to the viewer
JPEG2000	A file compression system developed by the **Joint Photographic Experts Group** in year 2000
Linear (conversion)	Is a technique used for video standards conversion, where output field/frames are made by basic blending of input fields/frames. The technique is much simpler than motion prediction and is less demanding upon hardware, but yields inferior results
Motion Estimation	Is the process of deriving motion vectors, ususally from adjacent frames in a video sequence. For frame rate conversion these motion vectors are used during the generation of new output frames
MPEG IMX	Is an SD video codec developed by Sony. It is a development of the Sony Betacam tape format and can have a bit-rate up to 50Mbps
.mj2	Is a JPEG2000 file wrapper
.mov	Is the file extension for Apple QuickTime files
.mp4	MPEG-4 is a common video and audio container
.mts	Is a video file-wrapper (also known as a **container**) usually associated with AVC-HD. Very similar to MT2S
.mt2s	Is a video file-wrapper (also known as a **container**) usually associated with AVC-HD. Very similar to MTS
.mxf	MXF is an acronym of **Material eXchange Format**. MXF is a container format for professional digital video and audio media defined by a set of SMPTE standards
MXF OP1a	Is a specific video file-wrapper (also known as a **container**) type based on the MXF format
NAS	Is an acronym for **Network Attached Storage**. A NAS offers both storage and a file system and appears to a client OS as a file server which drives can be mapped to
Native (resolution)	The actual resolution of a video signal. If the native resolution is not supported by a display device, a form of rescaling maybe applied to make it viewable. Native resolution describes the resolution prior to any scaling
OETF	**Opto-Electronic Transfer Function.** Inverse function of EOTF, describes how to turn visible light into digital code words
OOTF	**Opto-Optical Transfer Function.** End-to-end, camera-to-display non-linearity, intentionally introduced to the signal. Its purpose is to make the image perceptually as close as possible to the real world. Can be referred to as **Rendering Intent**.
OS	An **Operating System** is the software that manages computer hardware and software resources

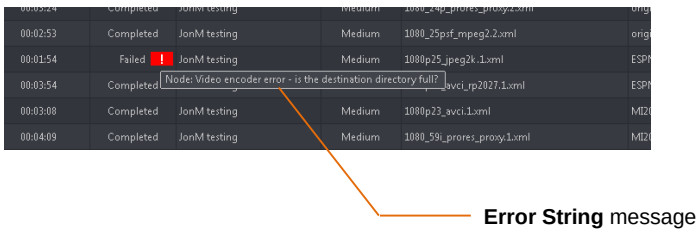
Term	Definition
Phase Correlation	An advance method of motion estimation, based on the spectral analysis of two successive fields / frames. For frame rate conversion phases correlation has proven to be the most reliable and robust technique of motion estimation ensuring the output is indistinguisable from the source
Progressive	Method of scanning a video picture where each line is scanned sequentially
Psf (progressive segmented frame)	Psf is a method of transporting a progressive video frame in an interlaced video system. Both fields of a psf frame represent the same temporal point. If the interlaced fields are merged, a perfect progressive frame can be formed. Also referred to as 2:2
SAN	Is an acronym for **Storage Area Network**. A SAN offers block based storage which appears to the client OS as a disk
SD	Acronym for **Standard Definition**. A standard definition television system usually refers to a PAL 625 or NTSC 525 interlaced systems
SDR	**Standard Dynamic range:** traditional CRT gamma curve defined by BT709 colour space in HD and by REC601 in SD.
Slow-PAL	A PAL television standard defined as having a temporal resolution of less than 25 Hz. Usually applied to film originated content of 24, or 23.98 fps
Telecine	A process that converts optical film frames into video
Teletext	Teletext is a television information retrieval service created in the UK in the early 1970s. Teletext is a means of sending text and diagrams to a properly equipped television screen. It offers a range of text-based information, typically including news, weather and TV schedules. Subtitle information is also transmitted within the television signal
XAVC	Sony’s version of the AVC codec

Appendix C. GV File Error Strings

If for any reason, a GV File system fails to process a particular job, an entry will be made in the GV File client history pane, where a **red exclamation mark** will be associated with the **failed** statement:



When a User hovers the mouse cursor over the **red exclamation mark** an **error string** will be returned, offering useful information as to the reason for the failure.



Below, these **error strings** are listed and explained.

Table 4: GV File Error String Returns

No	Error String
1.	*GV File Node received an invalid parameter in the FIMS Transform request*
2.	*GV File Node received a request to process an unknown video format in the FIMS Transform request*
3.	*The capability of the GV File Node is unknown, cannot process FIMS Transform request*
4.	*The GV File Node does not have sufficient OpenCL resources to process the job request.*
5.	*GV File Node encountered an unexpected error when processing FIMS Transform request.*
6.	*GV File Node has encountered an unexpected error.*
7.	*GV File Node could not find the Solution Profile*
8.	*GV File Node could not find the Job Profile*
9.	*GV File Node could not find the Sink Profile*
10.	*GV File Node could not find the source file*
11.	*GV File Node could not find the destination directory*
12.	*GV File Node failed to apply job specific settings*
13.	*GV File Node Worker failed to initialise*
14.	*GV File Node service was stopped during a running job*
15.	*GV File Node was unable to retrieve all profiles from the GV File Server*
16.	*GV File Node unable to obtain all required licenses*
17.	*GV File Node detected a Licensing Error during processing*
18.	*GV File Node Worker encountered an unexpected error during processing*
19.	*GV File Node could not start GV File Node Worker*
20.	*GV File Node Worker failed.*
21.	*Instance of GV File Node Worker already running*
22.	*GV File Node failed to create the Job Profile*
23.	*GV File Node cannot process the source file because it is an unsupported format*
24.	*Internal Error. Failed to cancel*
25.	*The file extension may not be valid or the file could be corrupt*
26.	*Node: Video encoder error – is the destination directory full?*

The GV File Node returns errors as a string to the GV File Client, to enable the client to display error hints to the user.

1. **Error Message:**

   GV File Node received an invalid parameter in the FIMS Transform request

   Reason:

   This failure message should only be seen if Kronos File is being controlled via a third party application through the FIMS Transform Service API.

   While processing a FIMS Transform Request the GV File Node detected an invalid parameter and could not continue.

   Suggestions:

   i. Check the parameters of the 3rd party application **request**.

   ii. Run the same job from the GV File client to check validity.

2. **Error message:**

   GV File Node received a request to process an unknown video format in the FIMS Transform request

   Reason:

   This failure message should only be seen if Kronos File is being controlled via a third party application through the FIMS Transform Service API.

   The FIMS Transform Request contained a request to process a video format that the GV File Node does not support.

   Suggestions:

   i. Check the parameters of the 3rd party application **request**.

   ii. Run the same job from the GV File client to check validity.

3. **Error message:**

   The capability of the GV File Node is unknown, cannot process FIMS Transform request

   Reason:

   It was not possible to detect the capability of the underlying hardware. Therefore the GV File Node is unable to process the FIMS Transform request.

   It could be a problem with the permissions of the profiles directory in the GV File Node installation, which prevented the GV File Node service from writing the Node Capability XML file. Or the GV File node has encountered unsupported hardware

   Suggestions:

   i. Check log file **xFile Node Info.log** in **xFilelogs** directory.

   ii. Check the permissions of the directory **<install path>/xFile Node/nodeinfo**

   iii. Confirm the target hardware meets the target hardware specification.

4. **Error message:**

   The GV File Node does not have sufficient OpenCL resources to process the job request.

   Reason:

   The GV File Node does not have sufficient OpenCL resources to process the job request. This could be because the solution requires GPU acceleration and none were found on the GV File Node.

   Suggestions:

   i. Check that the GPU type is supported.

   ii. If the GPU is an NVIDIA Tesla or Quadro, check that it is currently configured to be in TCC mode and not WDDM (Windows Platform only).

   iii. Confirm that a GPU with sufficient resources is installed.

5. **Error message:**

   GV File Node encountered an unexpected error when processing FIMS Transform request.

   Reason:

   This failure message should only be seen if Kronos File is being controlled via a third party application through the FIMS Transform Service API.

   While processing the FIMS Transform request the GV File Node encountered an unexpected error.

   Suggestions:

   i. Check the parameters of the 3rd party application **request**.

   ii. Run the same job from the GV File client to check validity.

6. **Error Message:**

   GV File Node has encountered an unexpected error.

   Reason:

   The GV File Node encountered an expected error either before or during processing.

   Suggestions:

   i. Try running the job again.

   ii. If job persistently fails contact GV Support

7. **Error message:**

   GV File Node could not find the Solution Profile

   Reason:

   The GV File Node has not been able to load the Solution Profile from **the <install path>/xFile Node/profiles** directory. This may happen in a system where the GV File Node is running on a different PC/Server from the GV File Server and comms between the two has been lost. Or, the permissions of the **<install path>/xFile Node/profiles** directory have been modified.

   Suggestion:

   i. Check comms between GV File Server and GV File Node.

   ii. Check the permissions of the **<install path>/xFile Node/profiles directory**.

8. **Error Message**

   GV File Node could not find the Job Profile

   Reason:

   The GV File Node has not been able to load the Solution Profile from the: **<install path>/xFile Node/profiles** directory. This may happen in a system where the GV File Node is running on a different PC/Server from the GV File Server and comms between the two has been lost. Or, the permissions of the **<install path>/xFile Node/profiles** directory have been modified.

   Suggestion:

   i. Check comms between GV File Server and GV File Node.

   ii. Check the permissions of the **<install path>/xFile Node/profiles directory.**

9. **Error Message:**

   GV File Node could not find the Sink Profile

   Reason:

   The GV File Node has not been able to load the Solution Profile from the **<install path>/xFile Node/profiles** directory. This may happen in a system where the GV File Node is running on a different PC/Server from the GV File Server and comms between the two has been lost. Or, the permissions of the **<install path>/xFile Node/profiles** directory have been modified.

   Suggestion:

   i. Check comms between GV File Server and GV File Node.

   ii. Check the permissions of the **<install path>/xFile Node/profiles** directory.

10. **Error Message**

    GV File Node could not find the source file

    Reason:

    The GV File Node has not been able to find the source file defined in the FIMS Transform request.

    Suggestions:

    i. The path entered for the Source File, in the Create Job window is incorrect.

    ii. The source file has been deleted or moved between time of configuration and running the job.

    iii. The source file is on an associated share which is no longer reachable from the host PC/Server.

11. **Error Message:**

    GV File Node could not find the destination directory

    Reason:

    The GV File Node has not been able to find the configured destination directory defined in the FIMS Transform request.

    Suggestions:

    i. The path entered for the Destination Folder, in the Create Job window is incorrect.

    ii. The Destination Folder has been deleted or moved between time of configuration and running the job.

    iii. The Destination Folder is located on an associated share which is no longer reachable from the host PC/Server.

12. **Error message:**

    GV File Node failed to apply job specific settings

    Reason:

    This failure message should only be seen if Kronos File is being controlled via a third party application through the FIMS Transform Service API.

    The GV File Node has failed to set job specific settings. Providing all files are available and the job specific setting conform to our API this should not occur.

    Suggestions:

    i. Check the parameters of the 3rd party application request.

    ii. Run the same job from the GV File client to check validity.

13. **Error message:**

    GV File Node Worker failed to initialise.

    Reason:

    The GV File Node failed to initialise the GV File Node Worker. This could be due to running a solution that is not compatible with the version of the GV File Node, or the underlying hardware is not capable of supporting the desired solution.

    Suggestions:

    i. Confirm source file is a supported file type. Example; AVI file type is not supported at the present time.

14. **Error message:**

    GV File Node service was stopped during a running job

    Reason:

    The GV File Node service was stopped, by the User, during a running job. As this prevents the license from being checked, the GV File Node Worker will also be stopped and the job terminated.

15. **Error message:**

    GV File Node was unable to retrieve all profiles from the GV File Server

    Reason:

    The GV File Node was unable to retrieve all of the required profiles from the GV File Server. This may happen in a system where the GV File Node is running on a different PC/Server from the GV File Server and comms between the two has been lost.

    Suggestion:

    i. Check comms between GV File Server and GV File Node.

16. **Error message:**

    GV File Node unable to obtain all required licenses

    Reason:

    The GV File Node has not been able to check out all of the licenses defined in the Solution Profile. Or, a valid license is not present.

17. **Error Message:**

    GV File Node detected a Licensing Error during processing.

    Reason:

    The GV File Node has detected a licensing problem therefore the job will be terminated. This could be because the license server has become un-reachable, mid-job.

    Suggestion:

    i. If the license server is on a separate PC/Server, from the GV File Server, check comms link between the two.

18. **Error Message:**

    GV File Node Worker encountered an unexpected error during processing

    Reason:

    The GV File Node Worker has encountered an unexpected error. The error is written to the GV File Node log and a customer facing message is sent to the client. This is because the error message could be a low level system message such as an exception.

    Suggestion:

    i. Try running the job again.

    ii. If job persistently fails, make into Support issue.

19. **Error Message:**

    GV File Node could not start GV File Node Worker

    Reason:

    The GV File Node Worker failed to start the GV File Node Worker, maybe the program is missing or the permissions are not set correctly.

    Suggestion:

    i. Check the application **<install path>/xFile Node/SnellOD_NodeWorker.exe** exists and has the correct permissions to execute.

    ii. Check that there isn't already an **xFile NodeWorker** application running.

20. **Error Message:**

    GV File Node Worker failed.

    Reason:

    The GV File Node Worker has failed. This is most likely caused by a crash due to an unhandled exception.

    Suggestion:

    i. Try running the job again.

    ii. If job persistently fails contact Snell Support

21. **Error Message:**

    Instance of GV File Node Worker already running.

    Reason:

    The GV File Node Worker has failed to start. This is due to an instance of the GV File Node Worker already running.

    Suggestion:

    i. This shouldn't happen in the field. If seen contact GV File Support.

    ii. Check that there isn't already an **xFile_NodeWorker** application running. If there is, try to terminate the **xFile_NodeWorker** application and try to run the job again.

22. **Error Message:**

    GV File Node failed to create the Job Profile

    Reason:

    The GV File Node failed to create the Job Profile. This could be due to permissions on the profile directory in the GV File Node installation or an invalid parameter.

    Suggestion:

    i. Check the permissions of the **<install path>/xFile Node/profiles** directory

    ii. If using a third party application test the job using the GV File Client

23. **Error Message:**

GV File Node cannot process the source file because it is an unsupported format

Reason:

The GV File Node cannot process the source file because it does not have a suitable de-multiplexer available.
The GV File Node cannot process the source file as it is in a format that is not supported.

Suggestions:

i. Check if the source file is a supported file type.
ii. Check the source file is a supported combination of Codec and File Wrapper
iii. Check the source file contains a supported video format.

24. **Error Message:**

Internal Error. Failed to cancel

Reason:

Failed to cancel the job, use this error to try again.

25. **Error Message:**

The file extension may not be valid or the file could be corrupt

Reason:

The source file may not be a compatible file type, or possibly the source is corrupt.

Suggestions:

i. Check that the source file is a supported file type (see supported file types table above).
ii. If the file is a supported format, try running the file on a 3rd party application, to check the integrity of the file.

26. **Error Message:**

Node: Video encoder error – is the destination directory full?

Reason:

The Directory containing the configured destination folder does not have enough free space for the output file to be written to.

Suggestions: Change directory or make space on chosen directory.

Appendix D. DPX Support

Input DPX support:

- RGBA planar
- Y Cb Cr planar (4:2:2)
- RGB interleaved
- RGBA interleaved
- ARGB interleaved
- Cb YA Cr YA interleaved (4:2:2:4)
- Cy YCr interleaved (4:4:4)
- Cb Y Cr A (4:4:4:4)

Bit depths of 8, 10, 12, 16 and 32 are supported. Conversions from RGB to YUV assume Rec.709 colour space.

The character limit on the source file would be governed by the OS in use. For example Windows has a filename character limit of 260.

Output DPX support:

- RGB 10bit (little endian)

Other rules for DPX

- Underscores are not required. Our reader looks for the last number in the filename and uses this as the index number. For example “1080_50i_Test_0000001.dpx” the last number would be “0000001”.
- Source files do not need to start at zero, but the sequence must be sequential – a break in the sequence will stop the conversion
- At present all conversions from RGB to Rec.709 assume Rec.709 colour space

Appendix E. Job Specific configuration

Kronos File allows a user to configure a Kronos process where only specific segments are duration modified, and other segments are left unmodified. The segments that are to remain unmodified are represented by 'Markers' with specified **in** and **out** points.

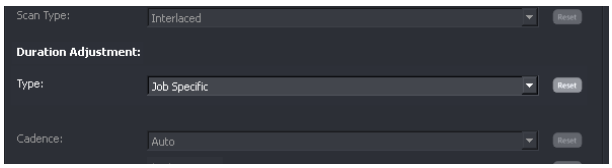
There are two approaches to creating and associating markers with a particular job:

- Creating markers via the GV File Client
- Importing a Marker file

Each approach is described below:

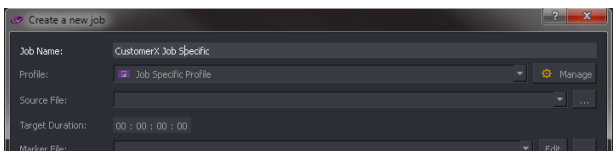
Creating markers via the GV File Client

1. First configure a Profile with the **Duration Adjustment** set to **Job specific.**



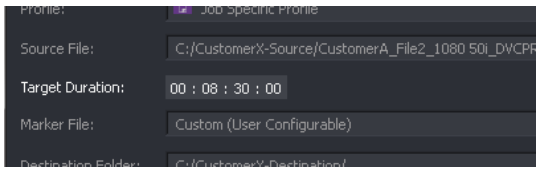
The **Create a new job** window will now display **Target Duration** and **Marker File** fields:

2. Give the job an appropriate Job Name.

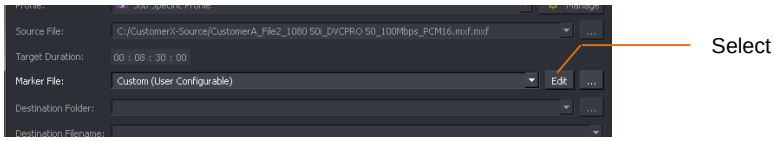


3. Configure the source file.

4. Set the desired **Target Duration**



5. It is now possible to create/edit the **Markers.** Select the **Edit** button:



The **Marker Editor** window will now appear.

Note that the Target Duration value set in the **Create a new job** window, is also displayed in this window.

The **Marker Editor** window will be populated with the following parameters:

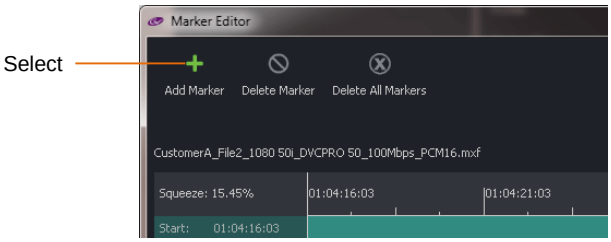
- Start Timecode (of the source file).
- End Timecode (of the source file).
- Duration (of the source file).
- Duration change as a percentage.
- Source file name.

6. The Markers may now be created/edited.

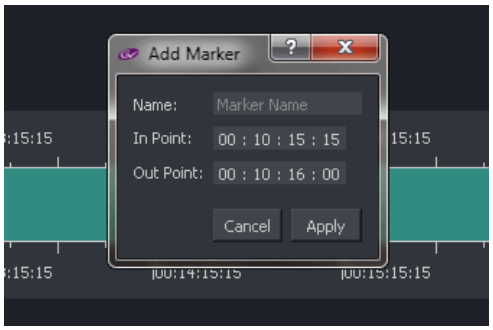
   Prior to any Marker being added, the entire file will be selected for duration change as part of a Kronos File process. Note that the timeline is entirely coloured *green*. A green timeline represents the part of the file that will be either squeezed, or stretched, as part of a Kronos File process.

   The process of configuring Markers will define segments of the source file that are to be excluded from any duration change processing. Any segments protected from the Kronos Process will appear *red* in the timeline.

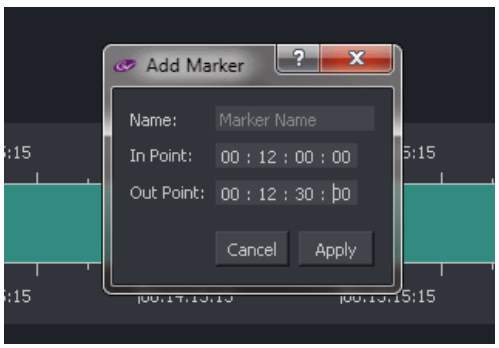
   To add a protected segment, click on the **Add Marker** icon.



   A new window will appear called **Add Marker.**

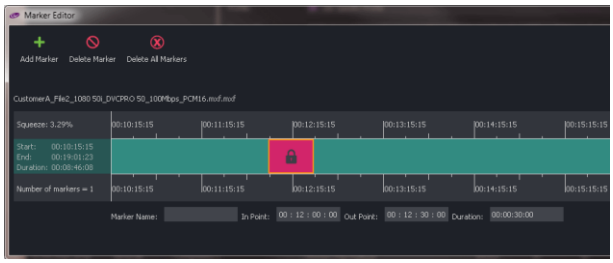


7. The protected segment can now be defined by timecode In/Out points.



   Select **Apply** to add the Marker.

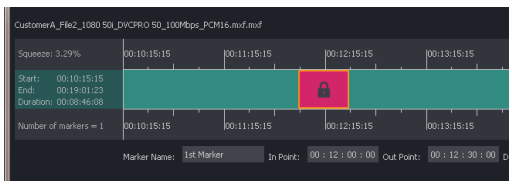
The Marker editor timeline will now be updated with the defined protected area displayed in red.



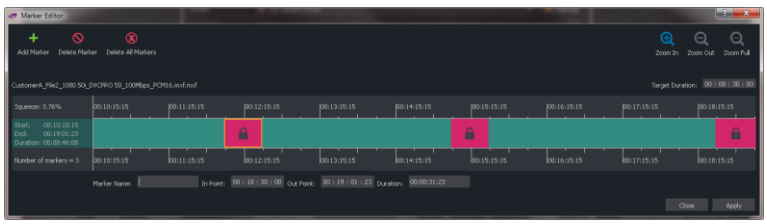
Note that if a marker is selected, its In/Out points are shown at the bottom of the **Marker Editor** window.

Note also that the **Clear Marker** control has now become active. When selected, all configured Markers will be deleted.

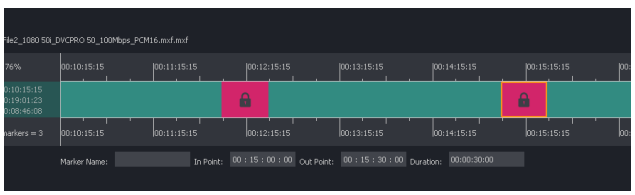
The specific Marker may be named, if required:



8. Multiple exclusion Markers can be added to the timeline.

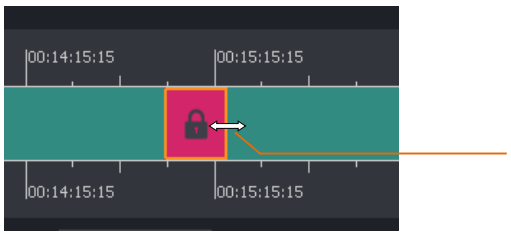


Each Marker maybe individually selected. When selected the border of the Marker will coloured orange.

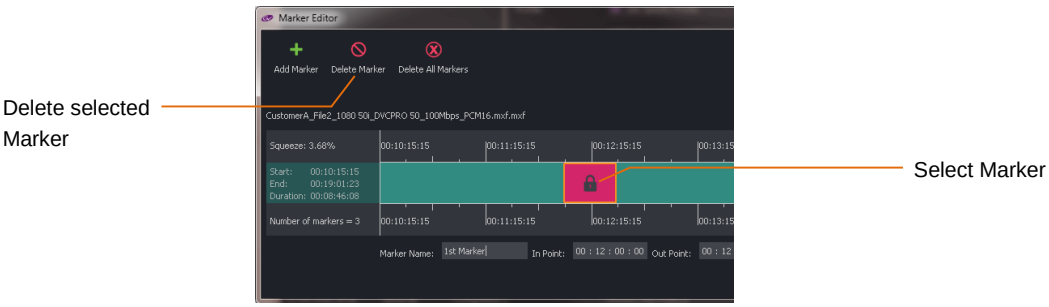


Note that the Marker details of the selected Marker will appear at the bottom of the window.

9. Any Marker may be selected and edited, either by editing the **In Point** field or the **Out Point** field, or by dragging the edge of the Marker:



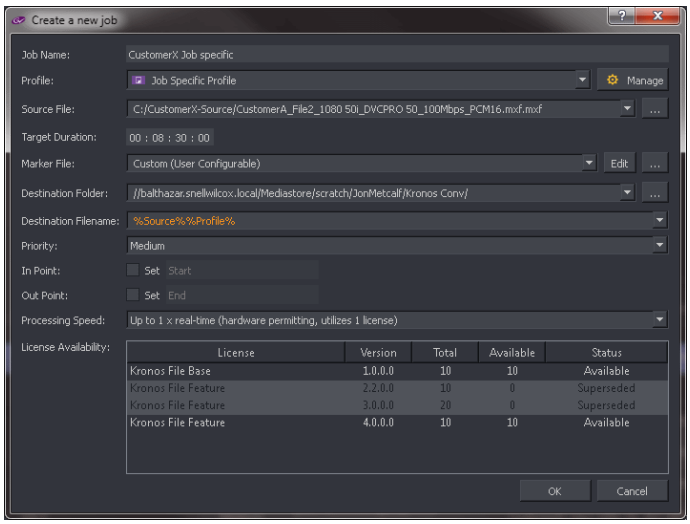
10. Any Marker may be selected and deleted by using the Delete Marker feature.



11. Once the Marker editing process is complete, click **Apply** to associate the markers with the job.

Note – Once the markers have been applied they remain for the lifetime of the job allowing resubmission of the job with the same markers applied. However, if the Marker File field is edited, the associated markers will be overwritten by the new selection.

12. Complete the configuration of the Kronos File job.

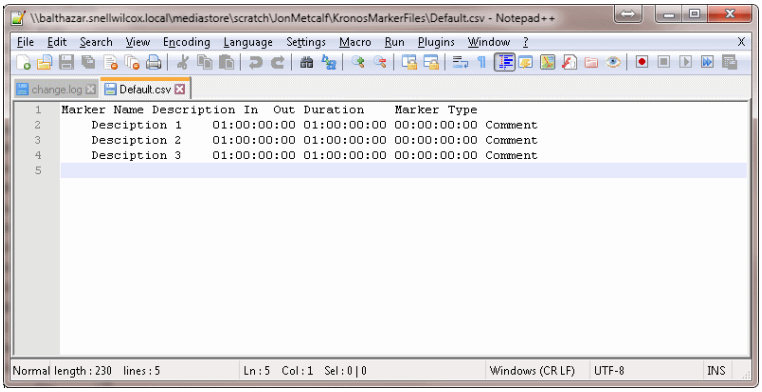


Importing a Marker File

A Maker file in the form of Adobe Premier .csv can be imported into the **Create a new job** configuration.

The .csv file can be edited using an appropriate application.

The following example has been opened using the application: **Notepad++**



Note: in the above example, the column titles (row 1) aren't aligned with the Marker data in rows 2, 3 and 4. This will not affect marker processing but is highlighted to avoid confusion.

The .csv file may be edited with respect to the **Marker Description** and the **In/Out Timecode values**.

The purpose of the Marker file is to define program segments that are to be protected from the Kronos File process i.e. segments of the source program that will not be duration modified.

Editing Process

The following procedure explains how to create a Marker file, starting with a Default Marker file.

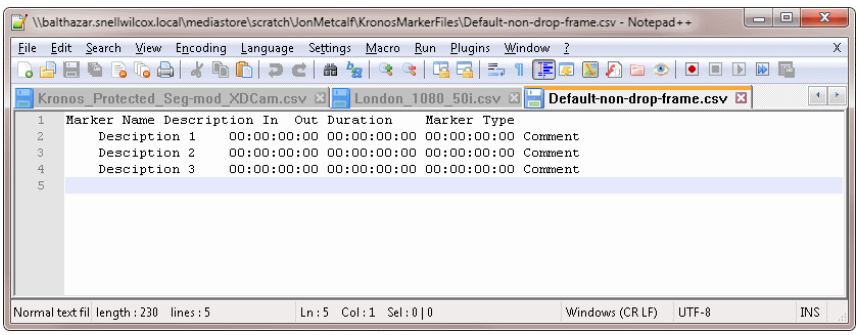
Default Marker files are available from the S-A-M website here:

https://s-a-m.com/products/Kronos File/c-24/p-592

Note – there are two Default Marker Files offered; one for source file with drop-frame timecode and one for a source file with non-drop-frame timecode.

This procedure employs the Notepad++ application, but other applications may be used.

1. Open the Default .csv file in Notpad ++.



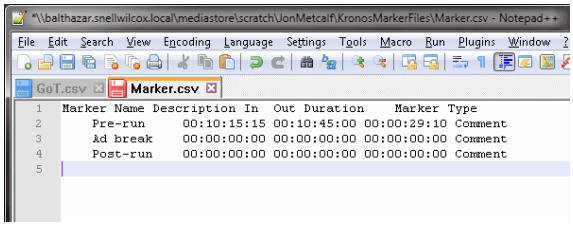
Note that:

- There is no **Marker Name** in the Default Marker file. This is not required.
- Each Maker has a **Description** (Description 1, 2, 3).
- The Marker **In Points** are defined in timecode as: 00:00:00:00
- The Marker **Out Points** are defined in timecode as: 00:00:00:00
- The Marker durations are defined in timecode as: 00:00:00:00
- The **Marker type** is defined as **Comment.**
- Note that it is normal for the column headers not to align with the Marker parameters, when viewed in Notepad.

Important: while editing the data in the Marker file it is essential to maintain the whitespace characters, as the file is actually tab separated rather than comma separated.

Compromising the ‘white space’ may result in the Marker file being unrecognised by Kronos File.

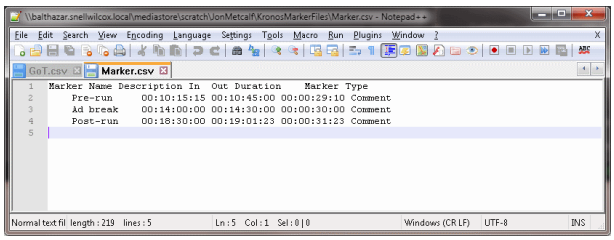
2. Enter the details for the first Marker:



In this example the first Marker has been edited.

- A **Description** has been entered (Pre-run). This is an optional field that will appear in the appropriate menu of the Kronos File Client.
- An **In-point** timecode has been entered: 00:10:15:15. This is a mandatory field.
- An **Out-point** timecode has been entered: 00:10:45:00. This is a mandatory field.
- A **Duration** for Marker 1 has been entered: 00:00:29:10. This is an optional field and this value will not be imported into the Kronos File Job configuration.

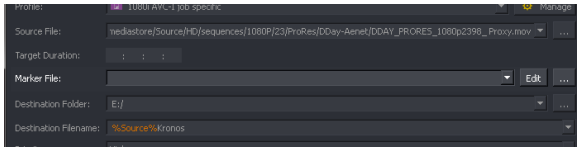
3. Repeat the process for all the required Markers:



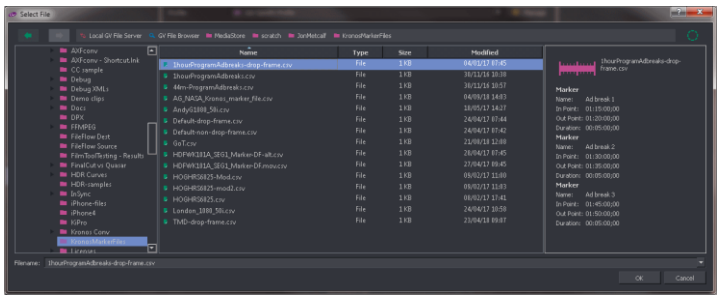
Now editing is complete, save the Marker file to an appropriate location, giving the file a unique filename, but being careful to preserve the .csv file extension.

Note – if source files contain Drop Frame TC, please refer to notes below (page 130).

4. In the GV File Client, in the **Create a new job** window, select the Marker File browse button.



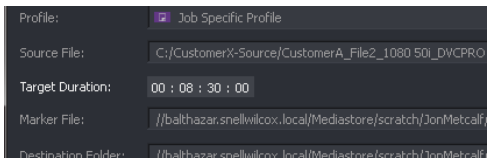
The file browser will open. Navigate to the location of the Marker file, created above.



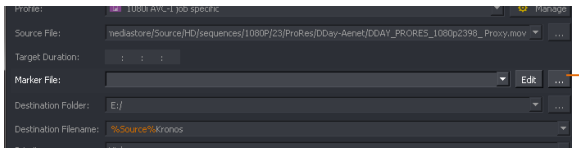
Select the appropriate Marker file.

If the marker file was modified correctly, a summary of the marker values should be displayed in the right-hand pane.

Also in the **Create a new job** window the **Target Duration** should be entered:



5. In the **Create a new job** window, click on the **Edit** button.



The Marker Editor will open displaying the properties of the marker file selected.

6. **Target Duration** may also be entered in the **Master Editor** window:

The amount of **squeeze,** or **stretch,** applied is calculated depending on the original source file length, the target duration and the marker values**.** This will be displayed in the **Marker Editor** window. In this example a 3.75 % squeeze will be applied.

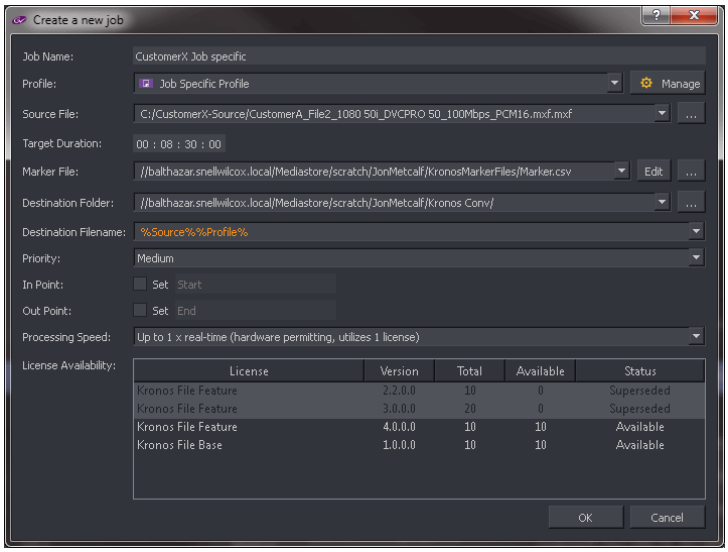
Note that a Kronos File supports a maximum duration change of 20%. If the target duration and/or marker values result in a duration change exceeding 20%, a warning will be displayed.

Click **Apply** and close the Marker editor.

7. Any Markers created can be edited.

Note that the **Revert to File** control is now active. If selected, the **Marker Editor** window will revert back to the properties of the original Marker .csv file (as part 3 above).

8. Complete the configuration of the Kronos File job.



Run the job

Notes regarding generating Marker Files:

1. **Drop-frame Timecode:**

   Where a source file has drop-frame timecode, it is important that the timecode entered in the Marker File does not contain timecode values that are not included in the drop-frame timecode standard.

   Timecode values on the minute must not include the ‘00’ or ’01’ counts (excluding 10 minute periodic).

   Illegal timecode values examples:

   01:01:00;00

   01:01:00;01

2. Where source files that have **Drop-frame timecode** are encountered, timecode values should be entered using a semi-colon separator between the *second* count and the *frame* count:

   01:00:00;00

   However, Kronos File will also accept the alternative expression of drop frame timecode, where all separators employ semi-colons. i.e.

   01;00;00;00

   Where source files that have **Non-Drop-frame timecode** are encountered, timecode values should be entered using colon separators:

   01:00:00:00