

# Glue Tools

Cineon/DPX Pro  
for Final Cut Studio

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## System Requirements

### Minimum Hardware and Software Configuration

- Intel Macintosh
- Mac OS X 10.5.8
- QuickTime 7.6.6 (or later)
- 1280 x 1024 display
- Final Cut Studio 3

### Recommended Hardware and Software Configuration

- 8-Core Mac Pro
- Mac OS X 10.6.4 (or later)
- QuickTime 7.6.6 (or later)
- Dual 1920 x 1200 displays
- SAS, SATA or Fiber-Channel RAID or SAN
- Final Cut Studio 3

### Playback Requirements:

Cineon/DPX Images are uncompressed. As a result, film resolution Cineon and DPX files are roughly 12.5 Megs. High Def resolution Cineon or DPX images are typically less than 8.5 Megs. Sequences that run at 24 FPS will need a considerable amount of bandwidth for real time playback. You will want to make sure that you have a machine that is up to the task.

Proxy Cineon or DPX frames are just as reliable at playback on slower systems. This benefits an Editor who has to pass their EDL off to DI or some other system that needs Cineon or DPX frames. Proxy frames will reduce the amount of confusion when trying to re-connect the edited materials back to the source Cineon or DPX frames.

However, with the lower costs of high speed storage, it is really recommended that a RAID of some sort is used.

### Supported DPX payload types:

Unlike the Cineon file format, DPX can support several different types of "payloads". Here is a list of the currently supported image encodings:

#### DPX Import:

- 16-bit RGB
- 16-bit RGBA
- 10-bit RGB
- 10-bit RGBA
- 8-bit RGB
- 8-bit RGBA
- 10-bit Alpha
- 8-bit Alpha
- 1-bit Alpha
- 10-bit 422 YCbCr
- 8-bit 422 YCbCr

#### DPX Export:

- 10-bit RGB
- 10-bit RGBA
- 16-bit RGB
- 16-bit RGBA



## Overview

The CineonDPX Pro for Final Cut Studio package is a collection of plugins and small utilities. These tools turn Final Cut Studio into a powerful online editing solution. Through out this guide, you will be introduced to each of these components, and see how they individually work.

### QuickTime Components

The Cineon and DPX QuickTime Components perform all of the imaging, playback, metadata, importing and exporting functions of the package. This is the heart of the software package. All applications that use Apple's QuickTime can access all aspects of the Cineon and DPX files. Applications ranging from Final Cut Pro, Adobe AfterEffects, and Motion can read and write these digital film file formats.

There are no direct "controls" or programs to launch and run in order to use these components. Simply single-clicking on a Cineon or DPX frame in Finder, allows you to see a thumbnail of the image.

### System Preferences

The Cineon/DPX Preference Pane is where you pre-set all of the settings that the components use. These settings include LOG/LIN conversions, Alpha Channel activation, Licensing information, Time Code support, etc.

### Final Cut Pro Plugins

With a purchased license, you will see the Final Cut Pro plugins in the File->Import menu. They will be labeled: "Glue Tools Cineon Sequence Import" and "Glue Tools DPX Sequence Import." You will select either of these to import a Cineon or DPX sequence into Final Cut Pro as if it were a regular QuickTime movie clip. Shift Selecting folders containing a number of Cineon or DPX sequences, will let you load a number of clips at once.

### Compressor Plugins

A new feature of this software is full Compressor support. Included is a set of Compressor Encoder plugins. Compressor can now receive sequences from Final Cut Pro and process them. This is a much better solution when dealing with a significant amount of footage. Shots can be queued, and Compressor can work its way through them. If you have multiple systems, you can even have the jobs distributed amongst the machines, to speed up the rendering process.

### Spotlight Plugins

The Spotlight Plugins enable your system to see inside the Cineon and DPX frames. Finder can extract specific information from the Cineon or DPX files when it does a "Get Info." You can search for Time Code numbers, reel names, or encoding characteristics from the Finder's Spotlight panel. Simple shell scripts can also take advantage of the spotlight services and sift through frames for specific data.

### QuickLook Plugins for MacOSX 10.5 Leopard and 10.6 Snow Leopard

Starting with MacOSX 10.5, a new API was made available to developers to intelligently create thumbnail views and previews. When opening a directory of frames in Finder, you can either view the imagery using a thumbnail view, or Cover Flow. If you need a better look at the frames, you can click on the Finder's preview button, to get a closer look.

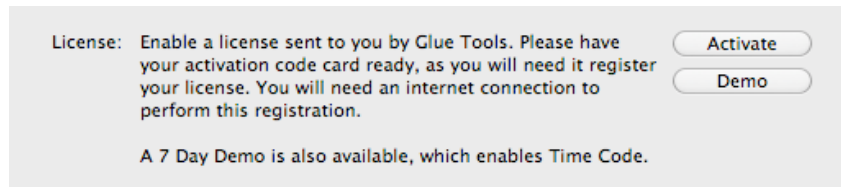
## Installation, Licensing and Demo Mode

### Installation

Installation is as simple as double-clicking on the installer package, then selecting the hard disk that you want to install the software onto. Once installed, you will need to reboot your machine.

Note: If the system does not contain the proper version of Final Cut Studio, various parts of the CineonDPX Package will not install. If after the installation, parts of this product do not show up, please double-check that you meet the minimum requirements.

### IMPORTANT – Demo Mode



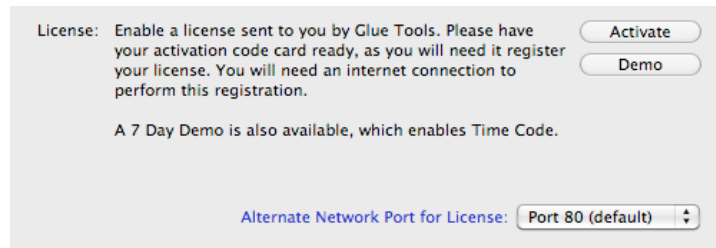
By default, the software needs to be placed into "Demo Mode". If the demo mode is not activated, the software will not work. To activate the "Demo Mode", open your Mac's System Preferences. Look for the "CineonDPX" Preference Pane. You should see an Info tab along the top edge of the window. Click on it to get to the licensing section. Near the bottom, you will see the "Activate" and "Demo" button. Click on the "Demo" button to get a 7 day temporary license.

If no license is purchased, the Cineon and DPX Images will be drawn or exported with a large colored bar through the center of the image. Once a license has been purchased, the time limit will be removed and all of the imagery will be rendered properly.

## Licensing

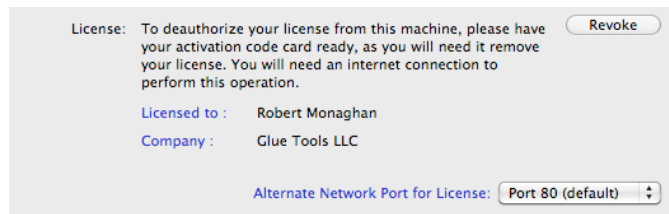
### License Activation

**Licensing must be done while connected to the Internet.** If you do not have an internet connection, you will not be able to activate the license. In many cases any type of network connection will get you up and running. Once activated, you will not be required to have a network connection, **unless you want to move the license to another Macintosh.**



To activate the license, you will need the Registration Code that was emailed to you. Open the System Preferences, and click on the CineonDPX preference pane. Click on the “Activate” button which will then open the panel for the Registration Code. You can then cut and paste the encryption string from the email, into the “Activation Code:” field. Once you click on the “Activate” button, the software will verify the license with our server and create a permanent license for you. Until you decide to move the license, this will be the only time that the internet is used for licensing.

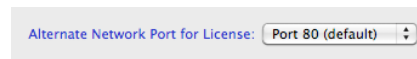
### Revoking/De-authorizing a License



If you need to move a license to another machine, you can use the same license code to “Revoke” the license from the machine that you are on. Just as you had done with the license activation, Open the System Preferences->CineonDPX preference pane. Open the Info tab and click on the “Revoke” button. You can now cut and paste the same activation code into the “Acivation Code:” field. Then click on the “Revoke” button. Once deactivated, the license will be free so that another machine can be used.

### License Troubleshooting

If you encounter a problem with your licensing because of network issues, consult with your IT Dept. The most common cause of problems is a blocked internet port or a Firewall Proxy system. The licensing can be modified to use one of 2 internet ports: Port 80, which is the default port or Port 44333 (an alternate port). Select either of these ports to try to perform a license authorization.



If the problem persists, email [support@gluetools.com](mailto:support@gluetools.com) for further assistance.

## Quick Start Guide

### Importing a Cineon or DPX Image Sequence – The Correct Way

Just about everyone has used QuickTime to load a range of individual frames and convert them into a single movie. Normally, this is done by using an “Import Image Sequence” command inside the QuickTime application. Typically these images are a series of TIFF files or JPEGs with sequential frame numbers. Under normal circumstances, this works just fine. The sequences of picture files are just what they are . . . a series of still images with no other useful data.

However, this is not true for Cineon and DPX files. The Cineon and DPX sequences are in fact a single movie. The difference between a Cineon or DPX “Movie” and a regular “.mov” file, is that each frame is a separate file. A “.mov” file has all of its frames inside a single file. A feature that makes Cineon or DPX frames different from other Image formats, is that the Cineon and DPX frames contain “metadata” that is specific to the film and HD broadcast industry. Time Code, slate information, colorimetric information etc, is stored in the image header.

So, what does this ultimately mean? It means that to properly load a Cineon or DPX sequence into you favorite application, use the “Open->File...” menu, and select A SINGLE frame from your sequence, and then click on “Load” or “Ok.” The entire movie will load shortly. DO NOT use “Import Image Sequence” to load the frames.

Glue Tools has custom technology to treat these image types as a “virtual movie file” rather than a set of individual image files. This means that all of the frames in the sequence are really just a single “Movie.” It also means that when you are selecting any one Cineon or DPX file from a sequence, it is the same as opening all of the frames in the sequence.

Because of this, you no longer need to shift-select all of the frames to load them. As a result of the way this works, you are able to load metadata, Time Code and other information that would normally be associated with a QuickTime movie.

But what about the “Import Image Sequence” menu command?

Using this method of loading frames, you loose the ability to import metadata, Time Code, etc. You also loose the Playback ability, too. When importing Cineon or DPX frames as an Image Sequence, QuickTime believes the sequence is just a bunch of still images, not a series of frames in a movie.

If you still aren’t clear on the difference, drop a note in the Glue Tools support forum. More examples can be posted. (<http://www.gluetools.com/support.html>)

### Importing a Sequence into QuickTime Player

One of the most basic ways of using the Cineon/DPX Pro Components is to take one of the frames from your sequence, drag it over top of the QuickTime icon, and let go. Doing this will open the entire sequence inside QuickTime Player. It is as simple as that.

### Exporting a Sequence from QuickTime Player

Exporting Cineon or DPX frames are just as easy as importing. Open a movie file that you want to convert to a DPX sequence, and then select “File->Export...” from the menu.

Next, change the “Export” Pop-up menu to read “Movie to DPX Image Sequence.” After that, you can click on the “Save” button to start saving a range of frames.

If you wish to alter the export a bit, (i.e.. you need to change the start frame number to 0020 instead of 0001), you can click on the “Options” button to customize the export.

### Importing a Sequence into Final Cut Pro

Final Cut Pro has a specially built interface to work with Cineon and DPX frames. To import the frames, select the “File->Import->Glue Tools Cineon Sequence Import...” (or for DPX frames, “File->Import->Glue Tools DPX Sequence Import...”). Locate your sequence, click on a single frame, and click “Ok.” Your sequence will now appear in the browser, complete with the file’s metadata.

That’s it!

You can now drag the sequence onto the timeline to edit.

### Exporting a Sequence from Final Cut Pro

Exporting is now handled by Compressor. Refer to the Compressor section of this manual, to learn to how create a settings preset, and export your frames.

Exporting a Cineon or DPX Sequence from Final Cut Pro is fairly easy. In the browser, you can either click on a single clip or the entire sequence. Then, right-click (or control-click) and select “Export->Using Compressor...” This will open Compressor, and allow you to create a new sequence of Cineon or DPX frames.

## Cineon/DPX Reference

This Package consists of several parts that make up the whole. The Cineon and DPX Components themselves, a System Preferences Pane, Spotlight Plugins, and set of Plugins for Final Cut Studio. Each of these pieces are briefly described in turn.

### Preference Pane



The Cineon/DPX Preferences Pane is where you can change the settings used by Cineon and DPX QuickTime Components. If you want of change the LOG/LIN settings, use a 3D LUT, or override the frame numbering, you can do it in the System Preferences.

Let's begin by opening the System Preferences, and clicking on the CineonDPX preference pane icon.

Once opened you will be presented with a series of tabs, dividing the controls up into a couple of different categorize.

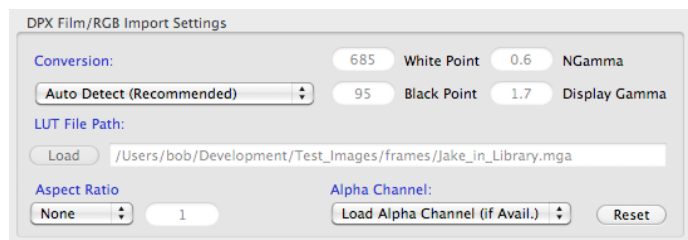
### DPX Import Tab

You will notice that the DPX Import Tab is divided into three sections. A "DPX Film Import Settings" section, "DPX Video Import Settings" section, and "DPX Time Code Settings" sections.

#### DPX Film/RGB Import Settings:

##### Conversion

This pop-up menu is used to select your conversion method. You can leave it on Automatic, which uses the built-in defaults, and Cineon or DPX headers to figure out how to display the image. Often, however, you will want to change these settings. Please select from "Standard LOG/LIN," "Raw Image Data" and "Linear (adjustable W & B Points)." These settings will allow you to override the defaults and display the image the way you want.



##### LOG/LIN Settings – (DGamma, Display Gamma, White Point, and Black Point)

These text fields are where you enter your LOG/LIN conversion parameters. These parameters can radically change the way your image appears on the screen. While it is fun to play with the values to see what effects you can get, you will want to use established settings to see how your image would look on your target screen. (i.e.: movie big screen, or High Def monitor.)

**Note:** The LOG/LIN defaults that are provided are just arbitrary settings. You will really want to consult with your DP or film IO house to get the correct settings.

### Aspect Ratio

This pop-up menu allows you to choose between a number of different Aspect Ratios, that the image will be displayed as. For instance, if your imagery is shot with a Thomson Grass/Valley Viper, you can choose to shoot your images with a 2.35 Aspect Ratio. However, the frames will be saved as an Anamorphic image with a 1.778 Aspect Ratio. When loading the Images, you can select the 2.35 Aspect Ratio, and the images will be automatically re-sized, without any data loss.



The example below illustrates the concept. The DPX frame is an Anamorphic Image, and the left is an uncorrected 1.778, while the right image has been corrected for 2.35.

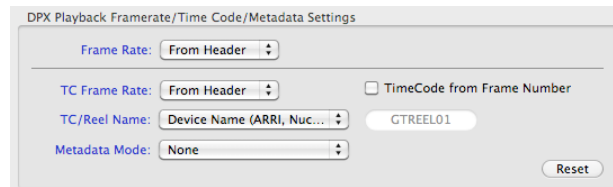
### Alpha Channel

This pop-up menu will cause the QuickTime component to load an Alpha Channel, if present. Otherwise any alpha channel that is available in the file, is ignored.

### DPX Playback / Time Code / Metadata Settings:

#### Frame Rate

This lets you override the frame rate found inside the DPX files, and forces your Application to use the value that you choose.



#### TC Frame Rate

This lets you override the time scale that the Time Code track uses. This can be different from the Real Frame Rate. This control, combined with the Real Frame Rate pop-up can let you simulate a Telecine operation. i.e.: selecting a 24 FPS for the Real Frame Rate and a 25 (or 29.97) for the Time Code.

#### TC/Reel Name

By default, if the DPX frames contain a valid Time Code entry, a track is created. The controls affect the way the track is seen and identified. The "TC Source Labeling" Pop-up menu determines how QuickTime identifies the Time Code track. "User Defined" allows you to type your own description into the text field below. When selected, you are able to type in up to 12 characters, which will be used as the Reel Name. You can also select from different fields in the DPX header itself. By selecting either the SMPTE User Bits, Project ID or Image Desc, you can grab the raw data and use that, as the Reel Name. If there is no usable data in the header, you can now use either the "Root" file name from the first frame, or you can use the parent directory that the frames are stored in, as the reel name.

Another feature is available if the frames came from S.two or Codex Digital Hardware. These products create DPX frames with a set detailed metadata. You can select either product, which will in turn extract the appropriate Reel (or Roll) Name from the DPX header.

#### Time Code from Frame Number

This check box enables the Cineon or DPX QuickTime Components to use a Sequence's frame numbers as the Time Code source, rather than the Time Code that is embedded inside the header. In the Case of Cineon files, this provides a way to allow you to apply a Time Code track to a Cineon sequence. Cineon doesn't not provide a way to embed Time Code information into its header.

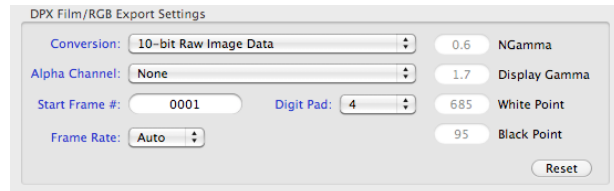
## DPX Export Tab

This tab controls the output characteristics for DPX files. From here you can control the way the DPX images look, and what information is contained inside the files.

### DPX Film Export Settings:

#### Conversion

This pop-up menu is similar to the Import Popup menu. It allows you to select the type of export color space conversion. This panel doesn't have an "automatic" setting, however.



Some as well as setting the conversion type, you can choose the bitdepth of the file that will be created. For instance, you can select one of the 10-bit options, or one of the new 16-bit options as well.

#### Alpha Channel

This pop-up menu allows you to instruct the export component to save an Alpha Channel along with the rest of the image data.

#### LOG/LIN Settings – (DGamma, Display Gamma, White Point, and Black Point)

These text fields are where you enter your LOG/LIN conversion parameters. These parameters can radically change the way your image appears when exported. While it is fun to play with the values to see what effects you can get, you will want to use established settings to see how your image would look on your target screen. (i.e.: Film-out, or High Def Tape.)

#### Frame Digit Pad

This popup menu lets you select how many digits are to be used in your frame's filename. Selecting "6" for instance, sets your file name to have a 6 digit range in the frame number part of the file name. i.e.: my\_image.000001.dpx

#### Start Frame #

This text field lets you type in the starting frame number that you want to use. The default is set to use frame 1.

#### Frame Rate

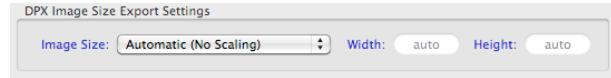
This popup menu lets you override the default frame rate of the source movie. When set to "Auto" the source movie's frame rate is used as the default playback speed. Choosing a speed from the pop-up menu overrides the source playback speed.

### DPX Image Size Export Settings:

#### Image Size

This pop-up menu lets you select a size to which you can scale the exported frames to.

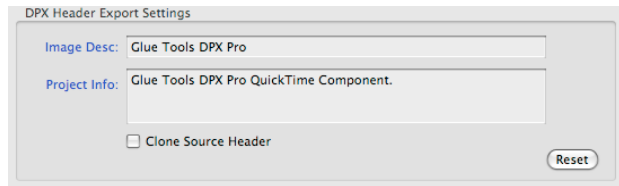
The Default is to use the native size of the incoming image. This occurs when the pop-up menu is set to “Automatic (No Scaling),” To scale the imagery to a new size, you can select one of the following sizes: 2k (2048x1556), 1k (1024 x 778), 1080p (1920x1080), 720p (1280x720), or 720x405 (roughly one third of the size of a 1920x1080 frame).



### DPX Header Export Settings:

#### Image Desc & Project Info

Each text field can hold up to 200 characters of information. Ideally, one of these fields can be used for shot identification, and the other, readable notes about the shot. Following such a convention would allow you to use your "shot id" to act as the Time Code label, and the other field, to be text about the shot, when read back by other applications. (See DPX Time Code settings in the Import Tab.)



#### Clone Source Header

Cloning DPX headers only works if your source footage is a sequence of DPX frames, as well. Otherwise, this will not work. By clicking on the “Clone Source Header” checkbox, your newly created DPX frames will have a copy of the source sequence’s header “cloned” into the new frames’ header. This is not a complete duplicate. Fields that are needed for width, height, colorimetric and other settings will be set according to your export controls. Time Code, frame rate, and other Metadata will be copied, however.

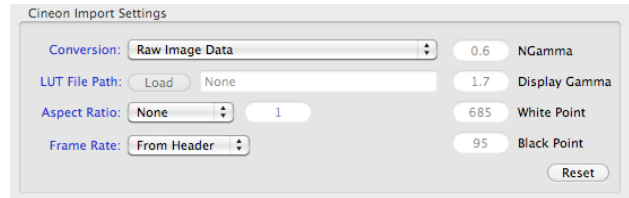
### Cineon Tab

This tab contains all of the settings, specific to the Cineon QuickTime components.

#### Cineon Film Import Settings:

##### Conversion

This pop-up menu is used to select your conversion method. You select from "Standard LOG/LIN," "Raw Image Data" and "Linear (adjustable W & B Points)." These settings will allow you to override the defaults, and display the image the way you want. As Cineon is a film-only format, you should leave it set to "Standard LOG/LIN."

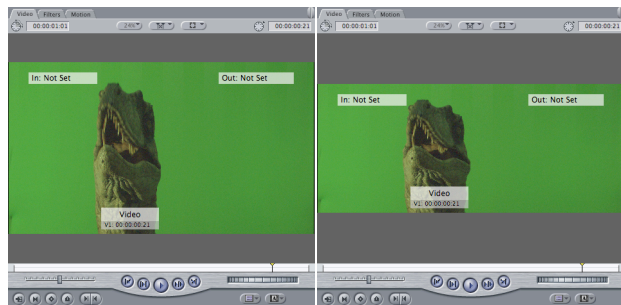


##### DGamma, Display Gamma, White Point, and Black Point

These text fields are where you enter your LOG/LIN conversion parameters. These parameters can radically change the way your image appears on the screen. While it is fun to play with the values to see what effects you can get, you will want to use established settings to see how your image would look on your target screen. (i.e.: movie big screen, or High Def monitor.)

##### Aspect Ratio

This pop-up menu allows you to choose between a number of different Aspect Ratios that the image will be displayed as. For instance, if your imagery is shot with a Thomson Grass/Valley Viper, you can choose to shoot your images with a 2.37 Aspect Ratio. However, the frames will be saved as an Anamorphic image with a 1.778 Aspect Ratio. When loading the images, you can select the 2.37 Aspect Ratio, and the images will be automatically re-sized, without any data loss. The example below illustrates the concept. The DPX frame is an Anamorphic Image, and the left is an uncorrected 1.778, while the right image has been corrected for 2.37.



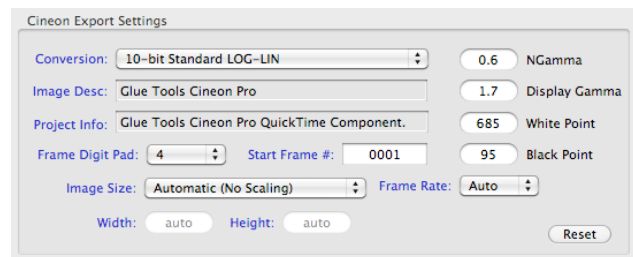
##### Frame Rate

This lets you override the frame rate that your Cineon frame specifies. Your Application will then use frame rate that you select.

#### Cineon Film Export Settings:

##### Conversion

This pop-up menu is similar to the Import Popup. It allows you to select the type of export color space conversion. LOG/LIN is the default when exporting, with the option to do a RAW export (no conversion) and a linear export.



#### DGamma, Display Gamma, White Point, and Black Point

These text fields are where you enter your LOG/LIN conversion parameters. These parameters can radically change the way your image appears when exported. While it is fun to play with the values to see what effects you can get, you will want to use established settings to see how your image would look on your target screen. (IE; Film-out, or High Def Tape.)

#### Frame Digit Pad

This popup menu lets you select how many digits are to be used in your frame's filename. Selecting "6" for instance, sets your file name to have a 6 digit range in the frame number part of the file name. i.e.: my\_image.000001.cin

#### Start Frame #

This text field lets you type in the starting frame number that you want to use. The default is set to use frame 1.

#### Frame Rate

This lets you override the frame rate that your Application has specified. When set to "Auto" the Application's frame rate is used as the default playback speed. Choosing a speed from the pop-up menu overrides the overrides the frame rate that will be inserted into the Cineon file.

#### Image Size

This pop-up menu lets you select a size to which you can scale the exported frames to. The Default is to use the native size of the incoming image. This occurs when the pop-up menu is set to "Automatic (No Scaling)," To scale the imagery to a new size, you can select one of the following sizes: 2k (2048x1556), 1k (1024 x 778), 1080p (1920x1080), 720p (1280x720), or 720x405 (roughly one third of the size of a 1920x1080 frame).

#### Image Desc & Project Info

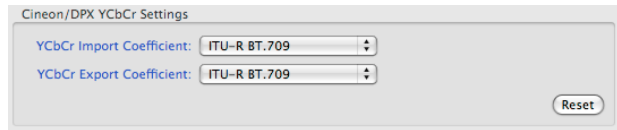
Each text field can hold up to 200 characters of information. Ideally, one of these fields can be used for shot identification, or used as human readable notes about the shot. These fields also would allow you to use your "shot id" to act as a Time Code "Reel Name" in Final Cut Pro, even though the Cineon format doesn't support Time Code.

## Codec Settings

The Codec settings tab contains settings that affect the behavior of both the Cineon and DPX components.

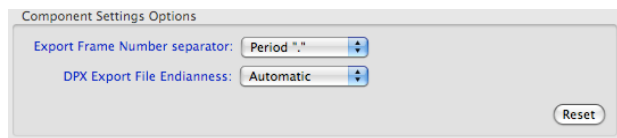
### YCbCr Import & Export Coefficient:

By clicking on the “Import” or “Export” popup menus, you can force the use of specific YCbCr coefficients. These coefficients determine how YCbCr pixels are converted, to and from RGB pixels. While QuickTime does a reasonable job at determining which coefficients should be used, sometimes the Applications miss that information, and use a “default” that is wrong. Here, you can force QuickTime to use what you specify, correcting the problem.



### Component Settings Options

This panel has two options to change the behavior of the export components. The first option “Export Frame Number separator” lets you specify a period “.” or an underscore “\_” character to separate the root part of the filename from the frame numbers.



The second option “DPX Export File Endianness” lets you force the DPX file’s endianness to be either Big Endian (ideal for PowerPC Macs) or Little Endian (ideal for Intel Macs). When in Automatic mode, the native endianness of the source machine is used.

## InfoTab

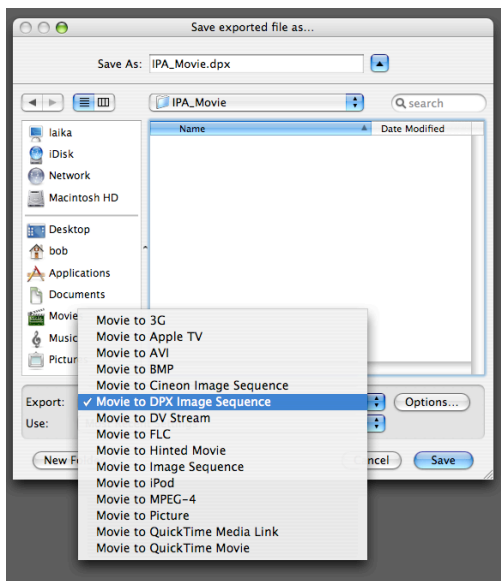
In the “Info” tab, you can click on links to the Glue Tools website, as well as direct links to the Support/FAQ pages, and the Registration pages. If you wish to purchase a license for the CineonDPX Package, visit [www.gluetools.com](http://www.gluetools.com), go to the “purchase” page and follow the instructions there.

## QuickTime Export Options

Any QuickTime aware application can easily export Cineon or DPX frames. When you want to convert your movie to a sequence of frames, you will want to choose the “Export QuickTime Movie” feature of your application. This will be different for each application. For instance, QuickTime Player and Final Cut Pro uses “File->Export...,” other apps may use another menu item.

We’ll use QuickTime Player to export a sequence of DPX frames, for this example.

Open a movie with QuickTime Player. This can be any kind of movie. You can even use a range of Cineon or DPX frames. (This is ideal for converting Cineon to DPX frames, if you want.) We will use this as the source movie. Choose “File->Export...” from the QuickTime Player menu. Once the “Export” panel is open, create a folder to save the files into, and give the files a name. Lets use “test” for now.



Click on the “Export:” Pop-up menu to select the “Movie to DPX Image Sequence” (or “Movie to Cineon Image Sequence”) export mode. If you need to change some settings for this particular export job, you can click on the “Options” button to alter the way Cineon or DPX frames are saved. But for now, just click on “Save” to create a sequence of frame.

That is all there is to it! From the Finder, you can open up the folder where the new frames are, and check them out. You can even click on a frame, select “Command-I” and perform a “Get Info” to see how the file was formatted.

### Cineon Export Panel

Continuing with the example, above, open the source movie once again. Before saving, click on the “Options” button to open the Cineon Export Options Panel. Briefly, here is a description of the features.

#### Sequence Settings

##### Start Frame #

– allows you to adjust the starting frame number that files will use.

##### Frame Number Pad

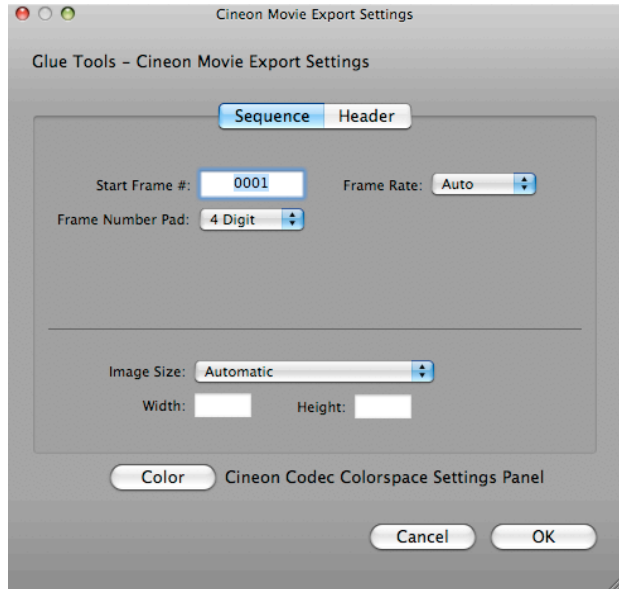
– sets the number of digits used in the frame numbering. The default is 4 digits. (i.e: myframe.0001.dpx). You can set the pad to be up to 7 digits in size. (myframe.0000001.dpx)

##### Frame Rate

– allows you to override the frame rate that will be saved into the Cineon (or DPX) header.

#### Cineon Header Settings

The Image Description and Project Info Text Fields, allows you type up to 100 characters that will be embedded into the Cineon or DPX frames. These fields can be indexed and searched by Spotlight.

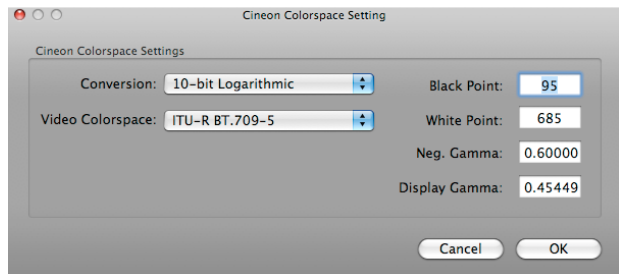


### Cineon Codec Color Space Panel

Color space settings for the Cineon Codec are accessed by clicking on the “Color” button in the “Cineon Movie Export Settings” panel.

#### Cineon Color Space Settings

These controls work the same way as the controls in the System Preferences. The conversion pop-up menu allows you choose between the LOG/LIN, RAW, or Linear with adjustable White and Black Point controls. The Gamma, Display Gamma, White and Black controls are also available as expected. Also, you can force the YCbCr Coefficients for YCbCr to RGB conversion, if the automatic detection doesn’t work.



## DPX Export Panel

The DPX Export Panel is very similar to the Cineon Panel but has additional features that work with Time Code.

### Override Time Code & Start Time

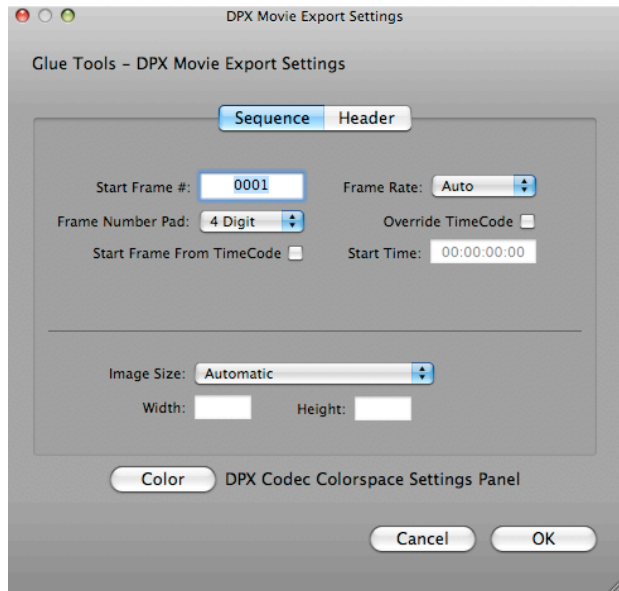
By clicking on the “Override Time Code” button, you can specify your own start time. Time Code override only supports non-drop frame (NDF) values, and must be typed in using the “hours : minutes : seconds: frames” format. Frame numbers, and negative values are currently not supported.

Keep in mind that the frame rate determines how the Time Code should be entered. If the frame rate is set to 24, then the frame rate should be set accordingly.

### Start Frame from Time Code

Also included is a check box that lets you set the frame number in the file name, to match the numerical frame count as the Time Code. So, turning this feature on, not only saves the Time Code into the DPX header, but also starts the frame number at the same start time.

For example, if your start time is 00:00:01:00 at 24 FPS, the start time would be myframe.0000024.dpx

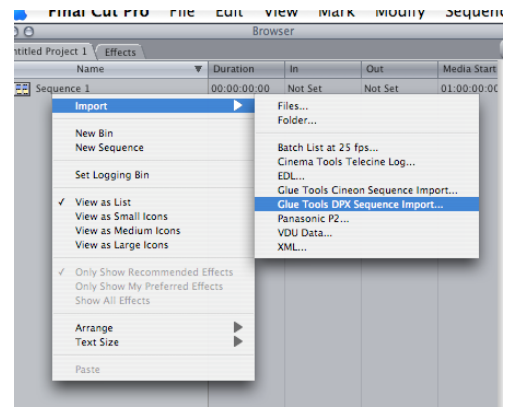


## Final Cut Pro Plugins

Final Cut Pro users can now import Cineon or DPX sequences with the Import Panels. These panels can easily be accessed by selecting the “File->Import...” menu. In this menu you will see two items, “Glue Tools Cineon Sequence Import...” and “Glue Tools DPX Sequence Import...”

The Cineon and DPX Panels are largely identical, with the exception of Metadata and Time Code related features.

Also included is an FxPlug Filter which will allow you to add a 1D, 3x1D or a 3DLUT to any of your clips. This works specifically inside Final Cut Pro and allows you to attach a LUT on a clip by clip basis.



### Cineon and DPX Sequence Import Panels

The Cineon and DPX Sequence Import panels for Final Cut Pro provide most of the same controls that the Cineon/DPX Preference Pane does. However, the panel adds the ability to extract metadata right out of the Cineon and DPX frames, and place the information right into your FCP project. Shot notes, color information, and other information is extracted and available in the XML that FCP generates.

To import a sequence, all that is needed is to select ONE frame from the sequence in order to load the entire shot. Once imported, the extracted metadata from the sequence is placed into Final Cut Pro’s XML system.

### Cineon and DPX Sequence Presets

Final Cut Pro provides a set of “Sequence Presets” which allows you to quickly configure your system for different editing scenarios. Included with the package is a set of Cineon and DPX Sequence presets. These are generic presets for standard frame rates, and image sizes. As with the other Sequence Presets that Apple provides, you can duplicate and customize these to suit your needs.

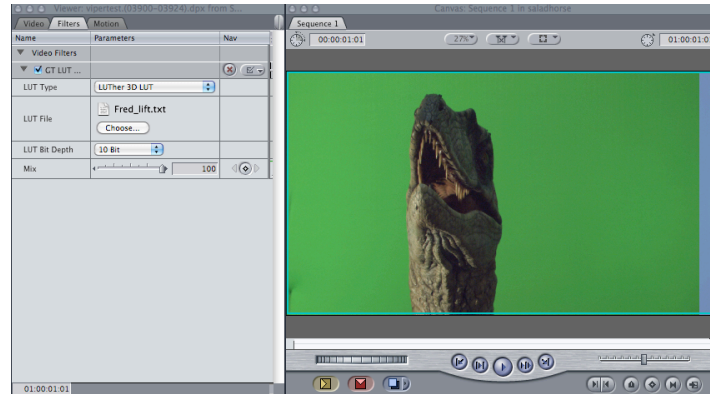
### LUT FxPlug Filter

Final Cut Studio provides developers with a plugin technology for manipulating your image. We have developed plugins to let you attach a LUT to your footage. You can attach a 1D, 3x1D or a 3DLUT file.

In order for the LUT to be read, the LUT file needs to be set up a specific way. We support a couple of different 3DLUT formats, and have devised a simple system for 1D and 3x1D LUT files. Please refer to the LUT Appendix at the end of this document for more information on the LUT file specific.

To get started, import any clip into Final Cut Pro. This can be a DPX sequence or any type of MOV file that you have on hand.

Drag your clip onto the timeline and double click on it. Then select the “Filter” tab from the top of the Browser:Slug window. You will be presented with a list of sliders and pop-up menus. A description of each control is provided below. The best way to learn what they do, is to try them out. As you make each adjustment, you can see its effect on the right side of the display.



A feature of these plugins is that you can duplicate the clip on the timeline several times. If you had three copies of the same clip on the timeline, each of the three could have a different LUT attached. This ideally suits Final Cut Pro for the creative color process.

The settings are as follows:

### **LUT Type**

– This pop-up menu is where you choose the type of LUT that you wish to apply. It can be a 1D, 3x1D or a 3DLUT.

### **LUT File**

– This control is used to specify the LUT file that you wish to use. Click on the “Choose” button to open an Open File panel.

### **LUT Depth**

– Some LUTs are created to support lower than 16-bit depths. This is particularly common with 3D LUTs. If your LUT only supports 10-bit values, you can use this pop-up menu to set the plugin to with the 10-bit space. The pop-up menus offer 8 bit, 10 bit, 12 bit and 16 bit ranges.

These settings are stored inside the Final Cut Pro project file. Nothing that you adjust here will affect the file that the LUT is attached to. The changes are non-destructive.

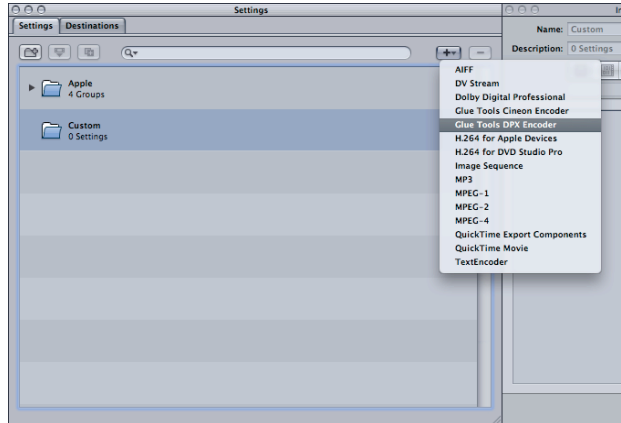
## Compressor Encoder Plugins

If you have Final Cut Studio 2 or 3 installed, the CineonDPX package will install Compressor Encoder Plugins. You must be using Compressor 3.0.3 or later, in order to get full functionality from these Plugins. Older versions of Compressor will probably not work properly.

### Creating a Cineon/DPX Encoder Setting

Here is a step by step guide to adding a DPX Encoder.

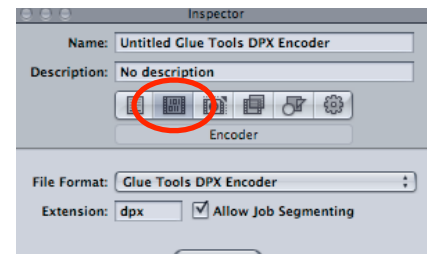
When you first open Compressor, a “Settings” window is displayed as a part of the group of windows that are opened. What you’ll want to do is to create a “DPX” custom encoder setting. This setting will let you export DPX frames. Click on the “Plus sign” button, to open up a menu. In this menu, you will see a list of encoders. Choose the “Glue Tools DPX Encoder” menu item.



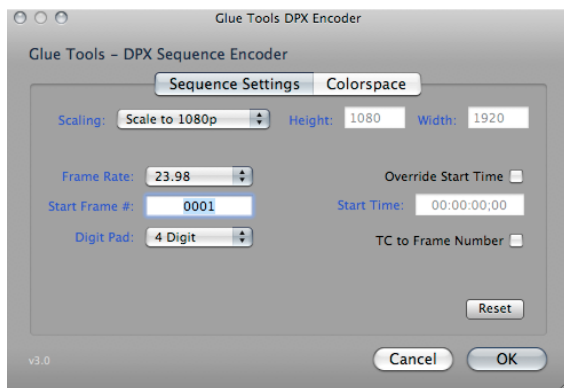
### Setting up a Cineon/DPX Encoder

Once the DPX Encoder setting is selected from the menu, it will create a settings entry in the “Custom” folder in the Settings Window. You can click on it to see its defaults. You will probably want to change these defaults, so the encoder exports the DPX frames the way that you need them.

To get to the settings, go to the “Inspector Window,” and click on the “Encoder” button (circled in red). This will show you the current settings of the DPX Encoder. Click on the “Options” button, to open the encoder’s settings window.



You will be presented with a new panel, which resembles the the settings available in the System Preferences Panel. Please refer to the previous sections of the manual, to learn what the controls do.



It is important to note, that the defaults are set to 23.98 as the frame rate, and 1080p for the size. Change each to use “auto.” Once done, click on OK. This saves the settings inside Compressor. You can now use this encoder to export DPX frames.

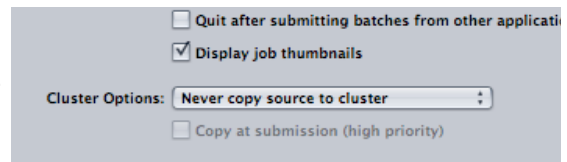
### Qmaster Setup for Compressor

Qmaster is Apples render queuing system. With it, you can harness a group of computers together, to work on a set of jobs. Ideally, you can use any of these additional computers to work on tasks that you need done, without tying up your machine. A typical job might be converting a sequence of DPX frames into a ProRes 422 movie.

Before you can use Compressor and Qmaster with the CineonDPX package, you will need to make some changes to your Compressor setup. First, here is an explanation of what some pitfalls can be:

**Problem:** Rendering a QuickTime movie on a Qmaster node fails. The movie has one or two different frames that are repeated.

**Fix:** Go to the “Compressor” menu and select “Preferences.” Once the panel has opened, look for the “Cluster Options” popup menu and select “Never copy source to cluster”.



This is important, as Qmaster was never designed to work with image sequences as source frames. Qmaster doesn't understand how to copy movies that are composed of several files. This is usually the cause of rendered QuickTime movies that have repeating frames. In order for Qmaster to work with the footage, the volume that holds the source frames must be mounted on each Cluster Node. When the render job is submitted, each of the Cluster Nodes will see the frames as “locally available.” So the copy step isn't required.

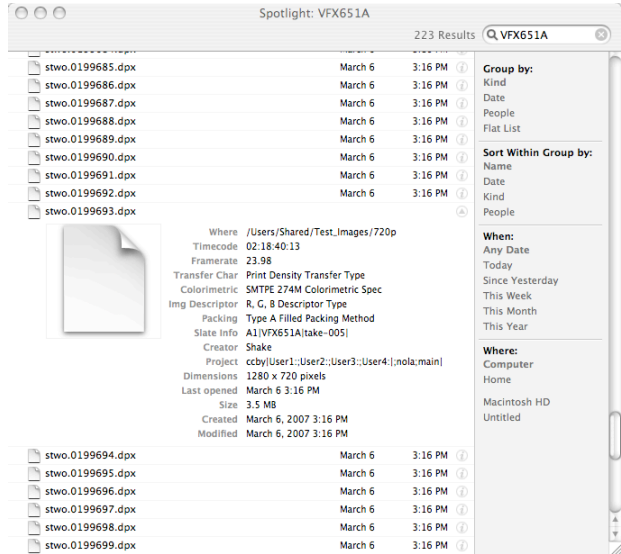
**Problem:** Exporting DPX frames from a Single Movie, using several systems, fails. (ie: have several machine export the same movie)

**Fix:** There isn't any way to use several machines to work on a single movie at this time. You will need to send a single movie to a single machine, when exporting a QuickTime movie to a DPX sequence. We hope to have this addressed in future updates.

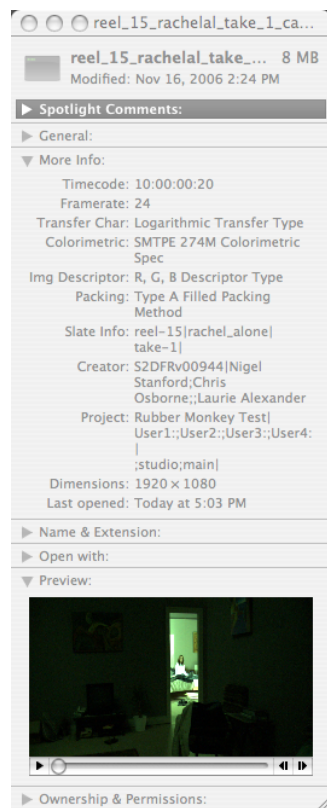
### Spotlight Plugins and Get Info

Cineon and DPX files can be indexed and searched by Spotlight. Simply typing in a relevant bit of text, into the Spotlight text field, will search all of the Cineon or DPX metadata on your system, and locate the associated frames. For instance, if you have the shot name saved inside your Cineon or DPX sequences, you can search for them by name. The screen grab, below, illustrates how this works.

The DPX frames shown, have the Slate Info field populated with the shot name. Simply searching for the shot name brings up a list of frames that belong to that shot. Other criteria can be searched for, as well, including image resolution, Colorimetric type (LOG or LIN image), Time Code, etc.



### Get Info:



Get Info (Command – I) in the Finder allows you to view the details of any Cineon or DPX file. Much like the Spotlight window, you can get info about a single file, that you happen to click on.

The Get Info panel will display DPX specific information in the Cineon or DPX files. Click on any Cineon or DPX frame on your system and perform a “Get Info.”

## LUT Support

Let me start by saying that there are hundreds of different file formats out there. I can't support them all. If the format that you want to use, isn't supported, please contact us via the support section of the [www.gluetools.com](http://www.gluetools.com) website.

### 1D and 3x1D LUT files

We have devised a simple header for loading 1D and 3x1D LUTs. At the top of the file, the a line must be added to describe the contents of the file. Here is an example:

LUT: 1 256

or

LUT: 3 65536

The first word just explains that this is a LUT file. The first number is the number of columns. It will either be a 1 or a 3. If it is a 1, then the file is a 1D LUT. If this is a 3, then it is a 3x1D LUT. The last number is the number of entries in the LUT itself. This is not necessarily the bit depth of the LUT's values.

If the LUT is a 3x1DLUT, then the columns are read in the following order: Red, Green, Blue. Each column must have exactly the same number of values. In the example line above, each column should have 65536 values.

If your LUT doesn't have this line, or, has another type of header, please create a copy of your LUT, and modify the file to have just this line, followed by the column(s) of numbers. Once saved, you can quickly and easily apply your LUT.

### 3DLUT files

Currently Thomson/Grass Valley's LUTer text file 3D LUT and Pandora's/Apple's Color 3D LUT file, and Pandora's 3D LUT file format is supported. Additional files may be supported in the future.

### Troubleshooting Other Applications – After Effects, Smoke, Combustion

Many other platforms and applications can read DPX frames. The universality of DPX is what makes it easy to move uncompressed imagery around the industry. However, not all applications can read all variations of the SMPTE DPX specification. Specifically, Adobe After Effects, and Discreet's (now Autodesk) Flame and Smoke can not read all versions of DPX files. Sadly this is true for some frames exported by the Glue Tools Cineon/DPX package.

In order to export frames that are compatible with these packages, force the imagery to be exported as "Big Endian". You do this by opening the System Preferences->CineonDPX pane. Click on the "Codec" tab, and change the "Endian" Pop-up menu.

## Technical Support

Support for these tools can be obtained by posting questions in the User Forum at [www.gluetools.com](http://www.gluetools.com).

Online support also includes an FAQ section. The User Forum is a great place to ask your own questions, if you can't find the answers. The User format is located at: <http://www.gluetools.com/FUDforum2/index.php>

Emails for help can also be sent to [support@gluetools.com](mailto:support@gluetools.com). Detailed consulting for specific features and improvements is also available on a case by case basis. Please contact us with your specific needs.

Support is available Monday – Friday, 9AM to 5PM PST/PDT.