PRIME User Guide

Version 5.3

January 2026

SINCE DAY ONE.

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Overview

Please note that the PRIME User Guide is always in progress.

PRIME is ChyronHego's advanced graphics playout and authoring system. It is based on ChyronHego's fast and powerful dedicated PRIME Engine (previously known as as GS2)

PRIME allows for both design and playout in a single application. This fully featured application is designed as a multi-purpose platform that is dedicated to Advanced Systems Integration.

PRIME's "Event Driven" architectural model allows users to utilize an array of capabilities for connecting and reacting to scene changes. Binding objects and Data is quick, easy and intuitive.

The "Point & Click" user interface enables advanced functionality without the usually required advanced scripting.

The power of PRIME's "Advanced Data Object," along with the Expression builder, ensures simplicity and ease of use for both Point & Click Acquisitions and the Parsing and Playout of data. PRIME also supports VB and Jscript for more advanced and complicated workflows. C# scripting is also available for an integrated development environment.

Automation for PRIME includes:

- gRPC
- ChyronHego's Intelligent Interface, along with an accompanying powerful Pattern matching Rules Engine
- VDCP
- PBus
- UDP server to receive broadcast requests

"Warp Technology," an advanced and unique feature in the PRIME Render Engine, allows users to create and import animated clip effects created in After Effects, 3D Studio and other 3D design tools. Additionally, PRIME Render Engine can map real time updateable content into the effect in design or during runtime.

PRIME First Time Startup

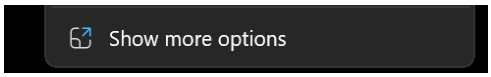
Prime Application Security Warning

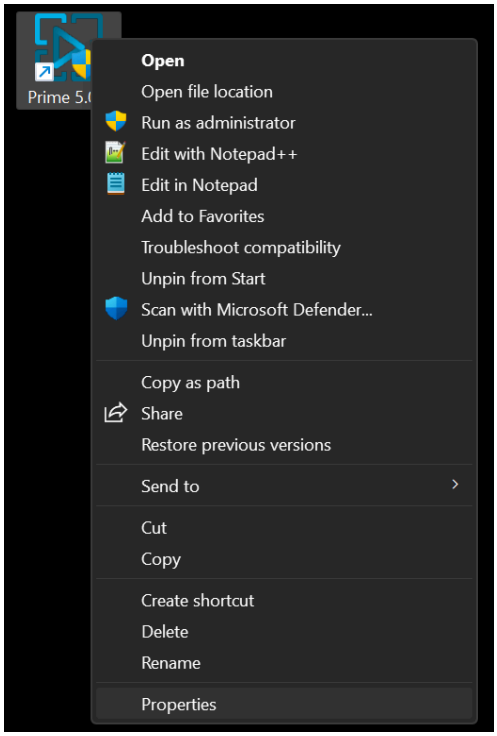
After installation Prime, the Prime application can be found at C:\Program Files\Chyron\Prime 5.0.0\Chyron.Prime.Application.exe if not available on your Desktop.

Chyron Prime's full functionality requires running the software with full administrative privileges.

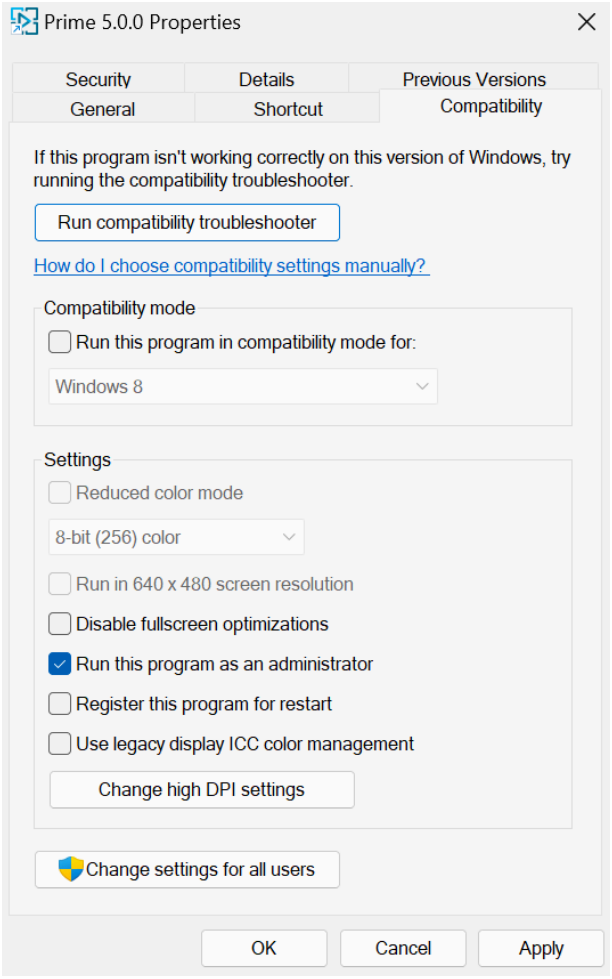
In order to permanently run Prime with administrative privileges, please do the following:

- Windows 10: Right click on the Chyron Prime executable shortcut and go to properties
- Windows 11: Right click on the Chyron Prime executable shortcut and select more options, then Properties



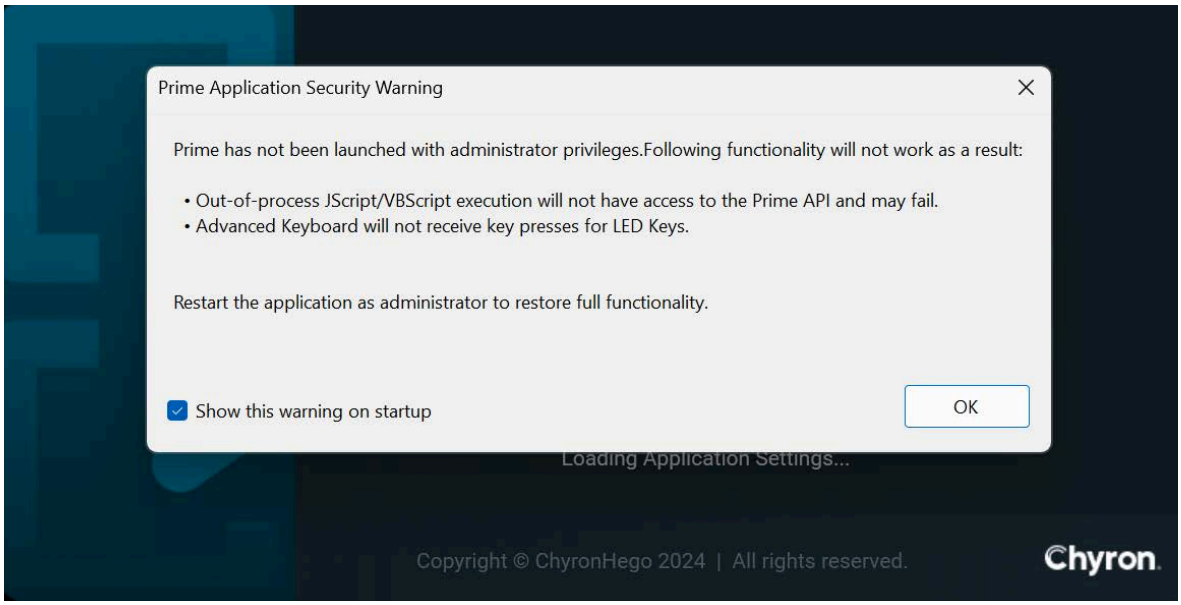


- Navigate to the Compatibility tab
- Under Settings, turn on Run this program as an administrator
- On the bottom right - Select Apply and then OK to exit



If Prime is not launched with administrative privileges, the following functionality will not work as a result:

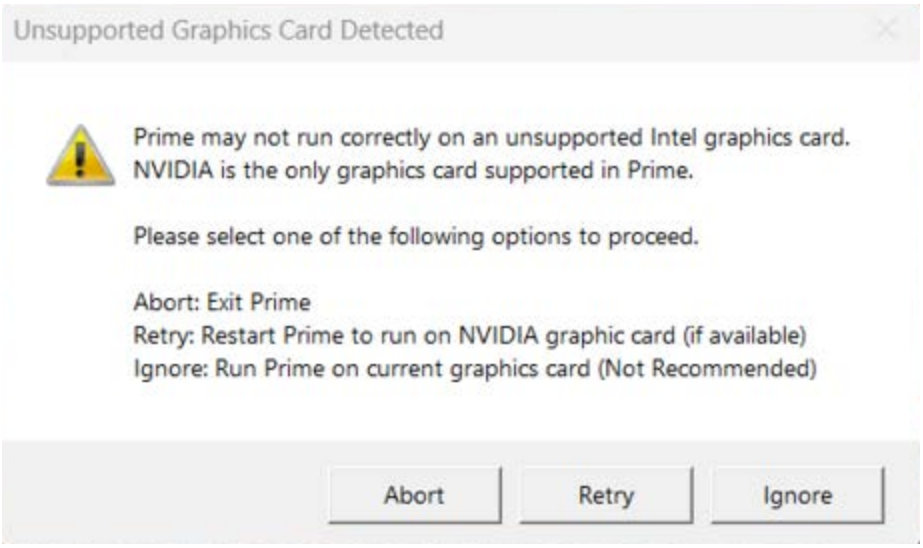
- Out-of-process JScript/VBScript execution will not have access to the Prime API and may fail.
- Advanced Keyboard will not receive key presses for LED Keys.



non-NVIDIA Warning

Chyron Prime only supports NVIDIA based graphics cards and is required to run as intended.

On Startup, Prime will automatically detect if a NVIDIA Graphic Card is running Prime.
If it detects this is not the case, PRIME will display a warning message similar to this along with the following three options.



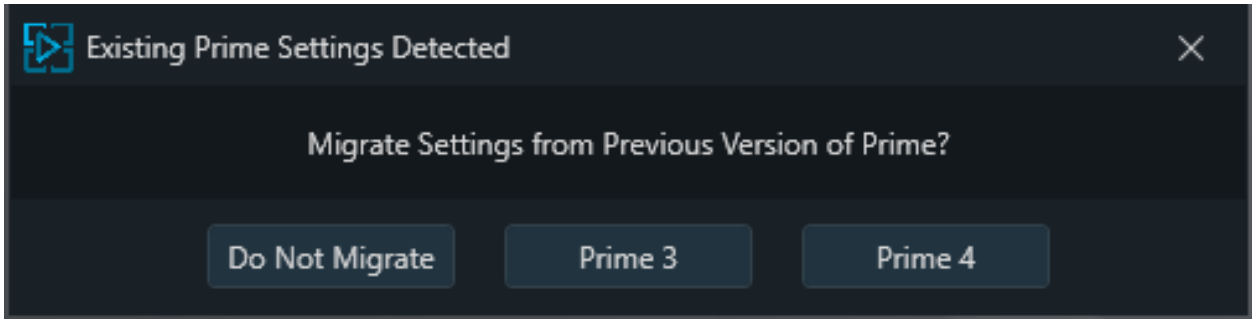
- **Abort** - Exits the Chyron Prime Application

- **Retry** - Forces Prime to run on NVIDIA GPU by applying program settings within the NVIDIA Control Panel.
    - If Retry fails to apply the settings, the following message will display:
      Failed to apply NVIDIA settings. Please check that NVIDIA GPU and drivers are installed. The application will now close.

- **Ignore** - Runs Prime on the currently detected non-NVIDIA based graphics card. This is not recommended and could cause Prime to run incorrectly.

Migrate Settings

Prime 5.0 has a new default settings folder location. Due to this, If previous Prime 3 or 4 settings are detected, Prime will ask if the user would like to migrate those settings.



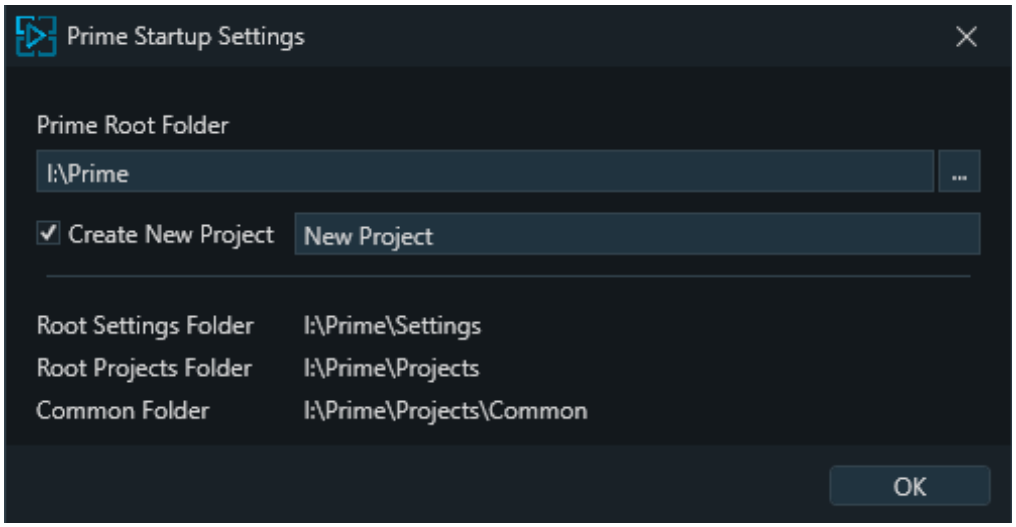
Prime settings new default location can be found in **I:\Prime\Settings**

If a user does not have an I: drive present on the system, Prime will default back to C:\Prime\Settings

I:\Prime\Settings includes the following:

- Playout Configurations
- Layouts
- Shortcuts
- Settings Files
    - ApplicationSettings
    - EditorSettings
    - PluginSettings

If you choose Do Not Migrate, the previous settings from Prime 3 or 4 will not be used and the software will ask you to create a new Prime Root Folder and Project Name.

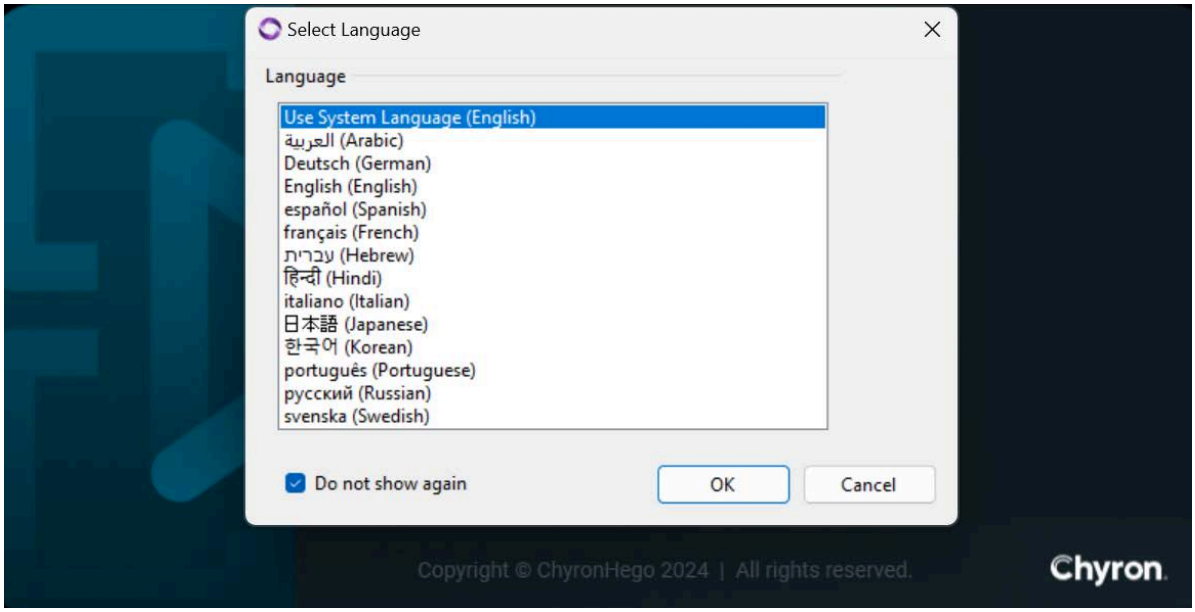


Prime Root Folder - User defined Root Folder location in which Prime will save and attempt to open all New and Existing Projects from

Create New Project - Name of the New Project you would like to create

Default Prime 5.0 Folder Locations unless redefined by the user:
Root Settings Folder - I:\Prime\Settings
Root Projects Folder - I:\Prime\Projects
Common Folder - I:\Prime\Projects\Common

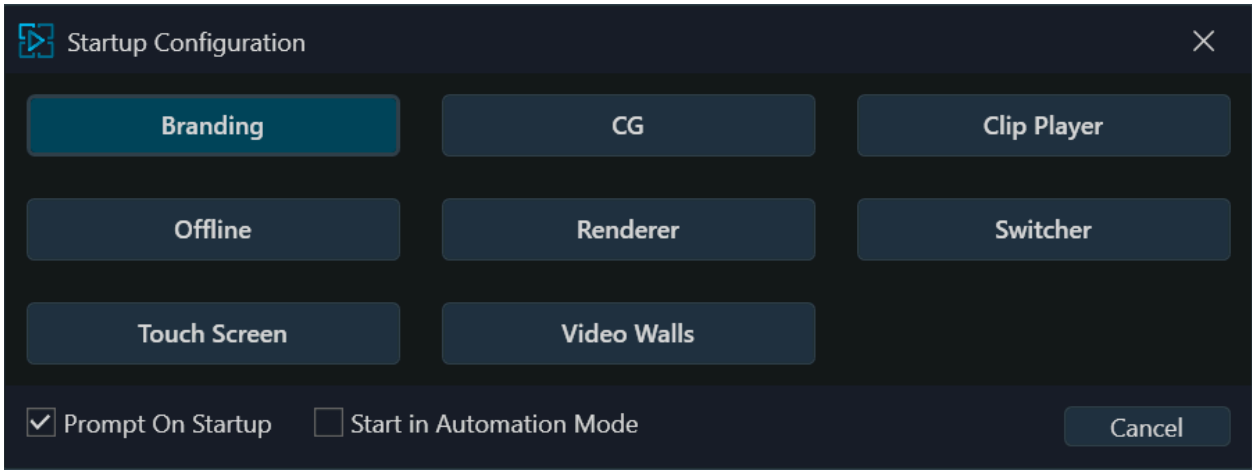
Select Language



Please select your Language of choice.

Once in the Prime software, if you should need to change your language selection, please navigate to Playout Mode > Config > Settings > Language. Please see the Language section of this document for more details.

Startup Configuration



- PRIME provides a selection of pre-configured playout configurations, with a default of 8 predefined buttons on the startup page.
- The configuration files are stored in a subfolder of the user's **"Config->Settings->Root Settings Directory."**
- Users can define their own configurations by modifying the **Playout Configuration** and saving it, which automatically adds a button to the Startup Selection screen.
- To delete a configuration button, you can right-click the button or remove the corresponding configuration file from the directory.

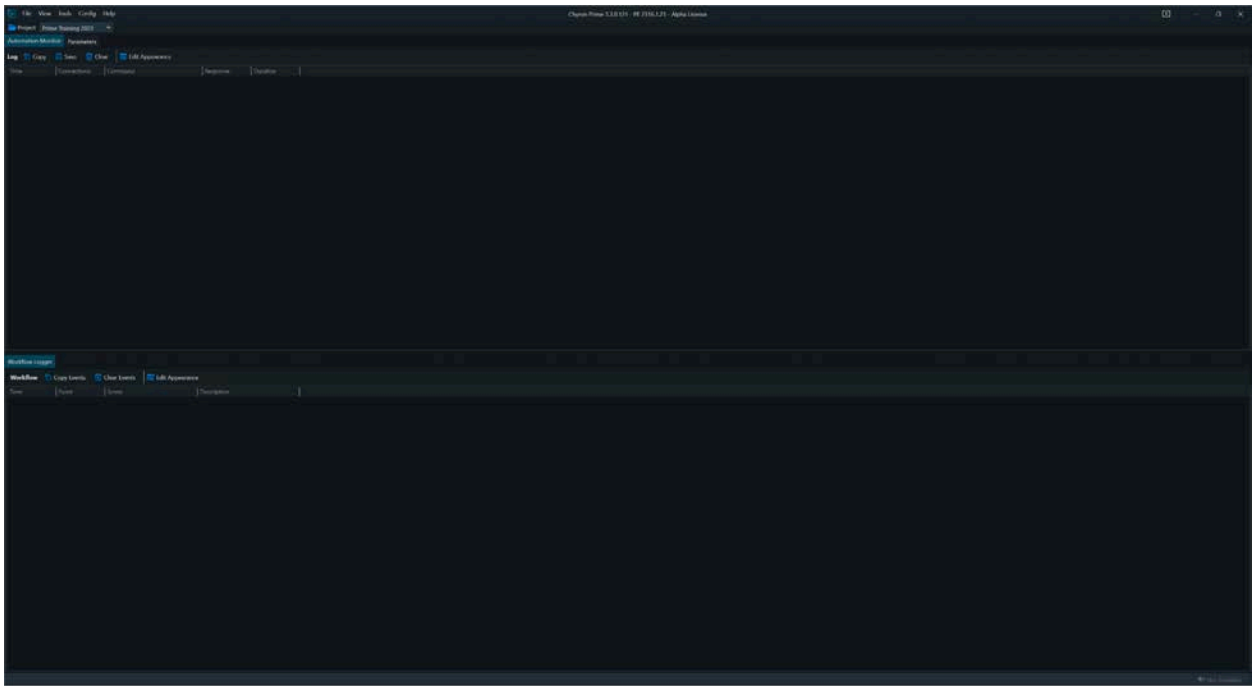
Options

- **Prompt On Startup:** Enables the setting to prompt for a Playout Configuration, displaying the Startup Configuration screen each time PRIME starts. This can be toggled by navigating to **Prime Playout Configuration -> Config -> Settings -> General**.
- **Start in Automation Mode:** Starts Prime in a minimal 'Playout Only' state, designed to be operated solely by an Automation System. This setting is enabled/disabled via **Prime Playout Configuration -> Config -> Settings -> General**.

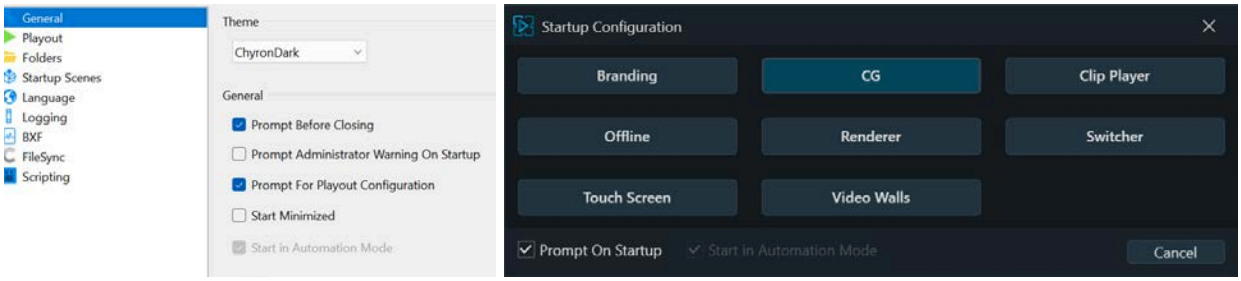
Prime Playout | Automation Mode

Starts Prime in a minimal Playout Mode intended for operation by supported Automation Systems. The Playout user interface is restricted, making only the Automation Monitor, Workflow Logger, and Parameters Panels accessible; **Output Channel Controls** with Proxy and Control Panels are not available.

The **Prime Scene Designer** is unavailable in this mode.

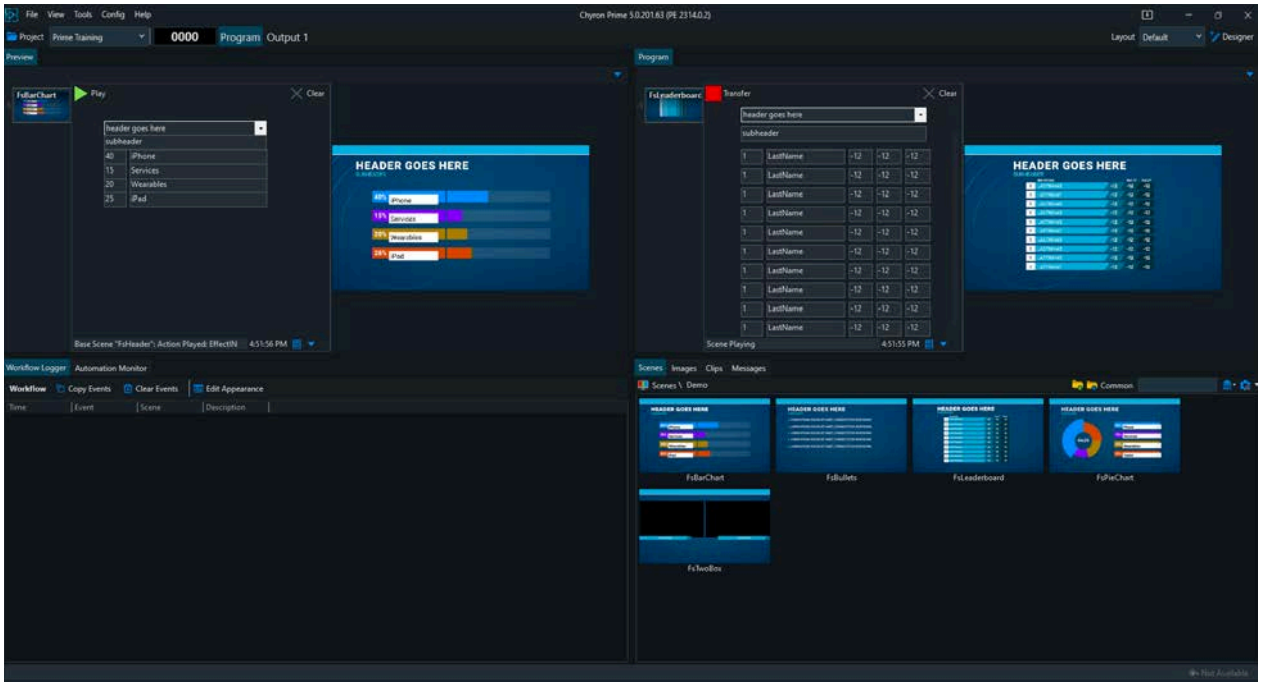


If **Start In Automation Mode** is checked and greyed out in both the **Startup Configuration / Prime Settings**, this indicates you are only licensed to run PRIME in Automation Mode.



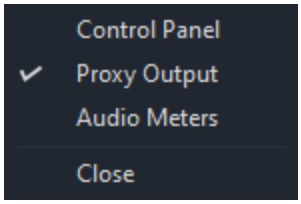
Prime Playout | Runtime User Interface

The main **Runtime User Interface** in PRIME is used for playout. PRIME can be configured for both a fully functional **preview** and program. Both the preview and program allow for proxies.



.

Channel Proxy Visibility



Enable and disable visibility of:

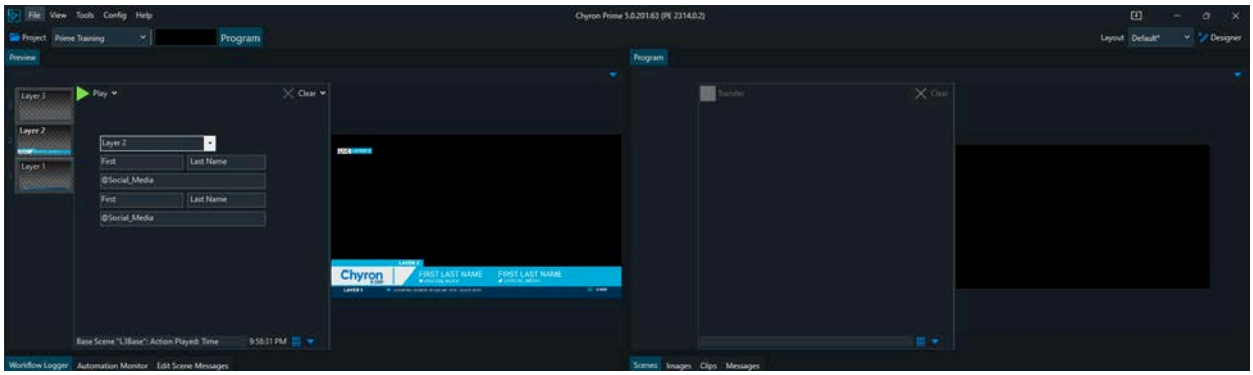
- Control Panel
- Proxy Output
- Audio Meters

For each configured Channel (Preview & Program)

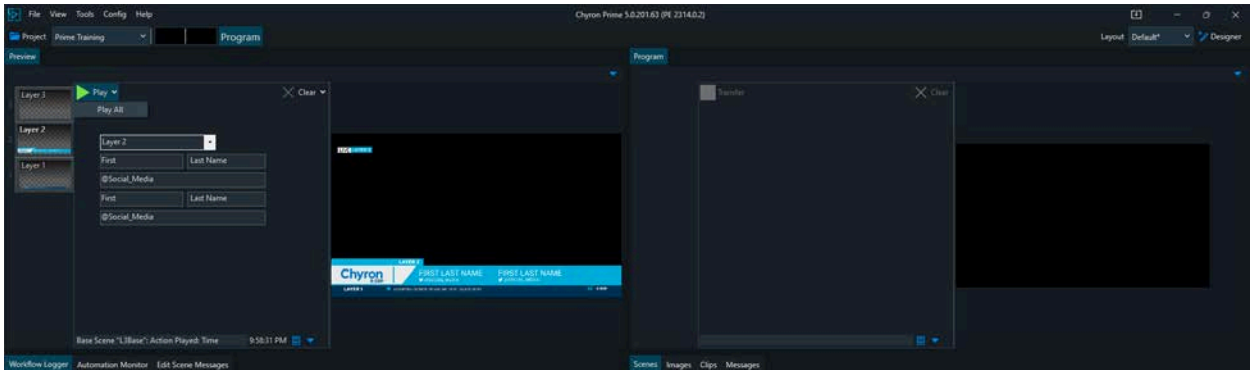
Playing the preview to air, regardless of its state, will default it back to its default state to ensure proper operation.

During Scene Design, each scene is assigned an output channel which may be any negative or positive value. The channel number determines the compositing output order. Each channel may only have a single scene assigned to it. If a scene on output is occupying Channel 1 and a preview scene assigned to Channel 1 is played to air, it will “Effect out” the current scene on Channel 1. Additionally, multiple scenes from preview may be moved to output in a single take.

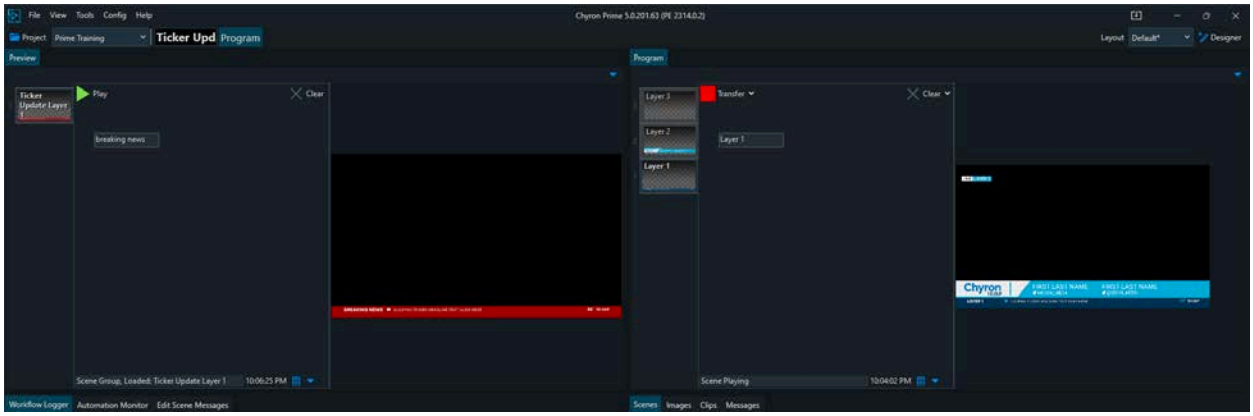
In the image below, there are 3 scenes loaded into preview. Each scene is in a different layer: Layer 1, Layer 2 and Layer 3.



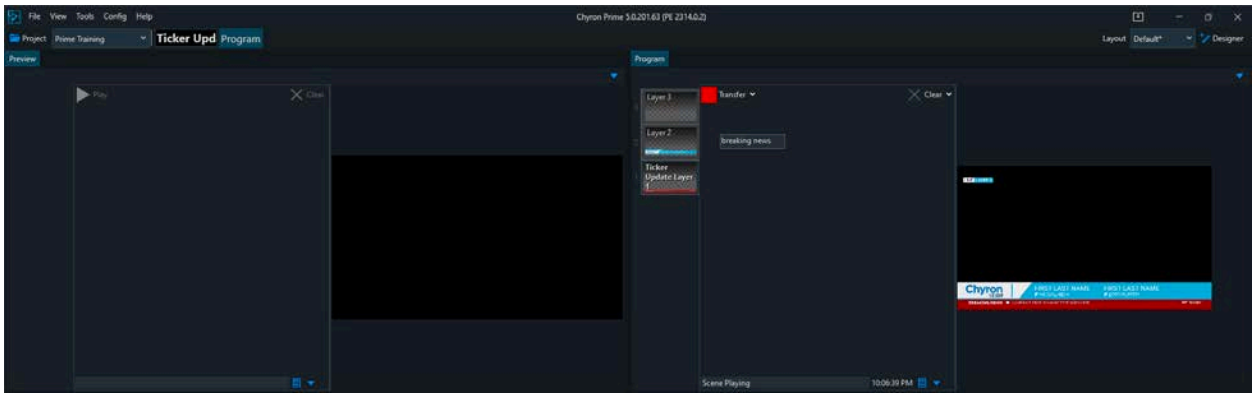
Users may choose to take all three scenes to air as a composite or select scenes individually.



For example, here all three scenes have been taken to air while another scene is loaded into layer 1.

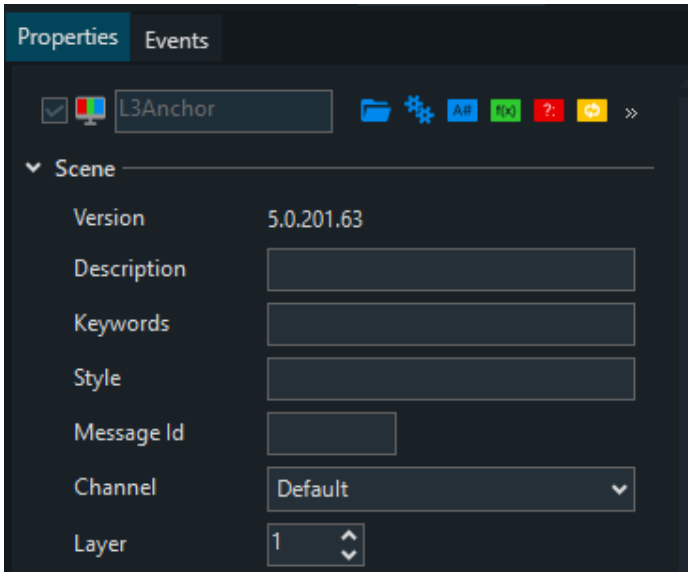


If the scene that is now loaded into layer 1 is sent from preview to air, it will bump off the existing scene on output that was assigned layer 1.



Preview Load Behavior options allows for Multiple Scenes, Single Scene Per Layer or Single Scene only.

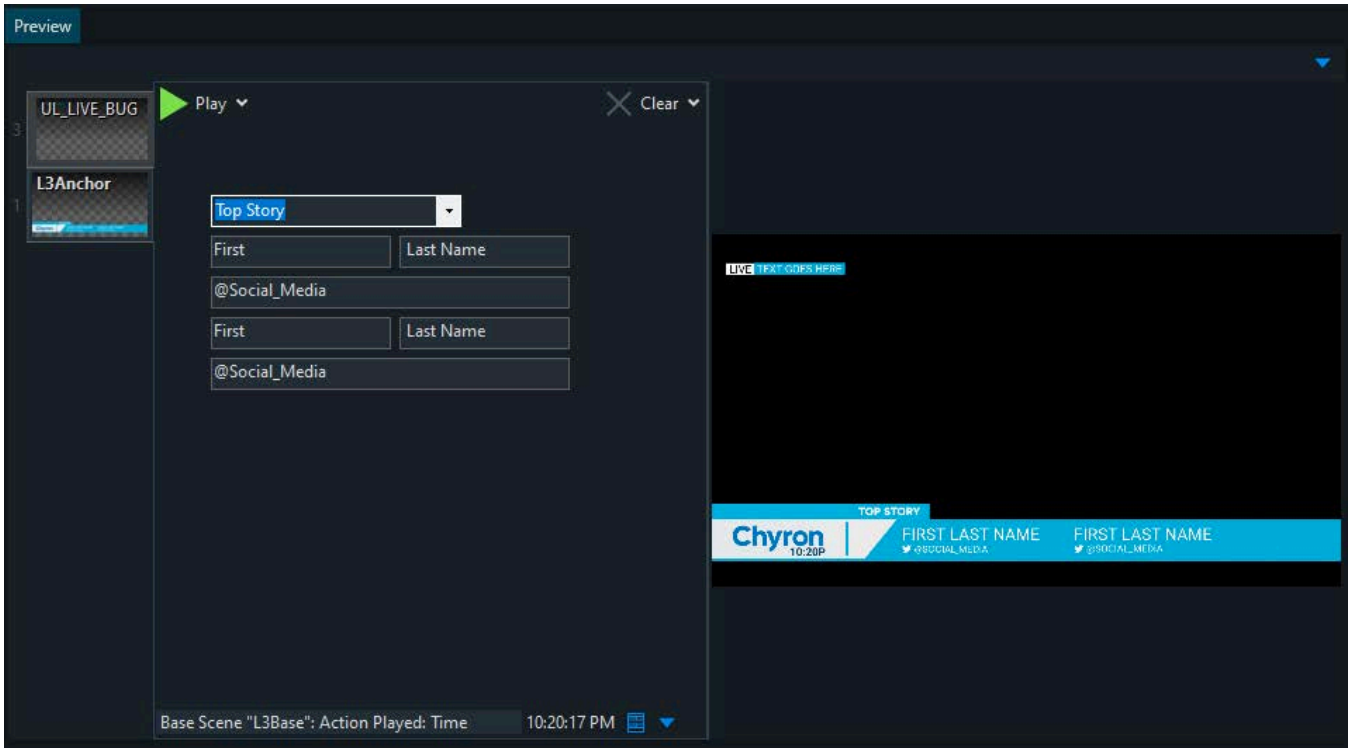
Output **Layer** assignments are properties of the scene.



Preview Scenes

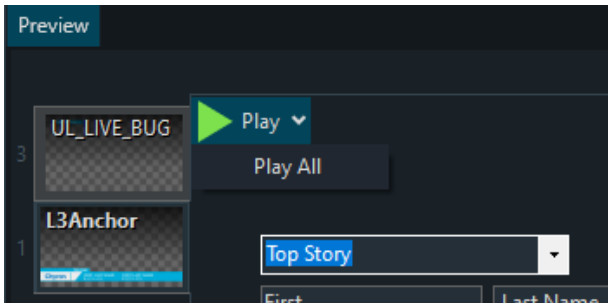
Output channels can have “Previews”. Multiple scenes can be loaded into a preview channel.

Multiple scenes can be played to air simultaneously. Scenes can be fully previewed in the preview channel. No matter what the state is of the scene in the preview channel the scene will revert to the “Default” state when played to air. In the example below two scenes are loaded into preview. One scene is in layer 5 and the other scene is in layer 1.



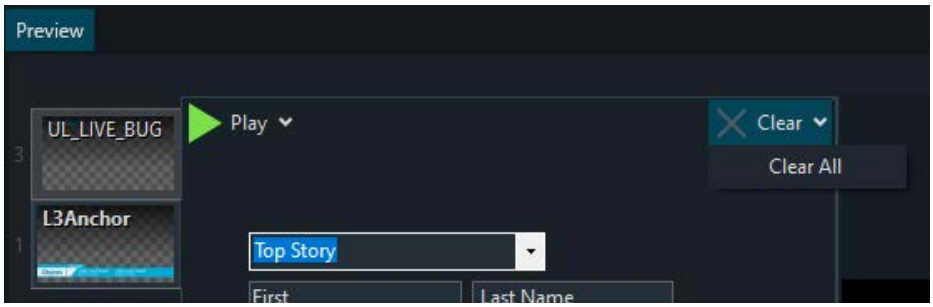
Play and Play All

These two scenes can be played to air individually or as a group.



Clear and Clear All

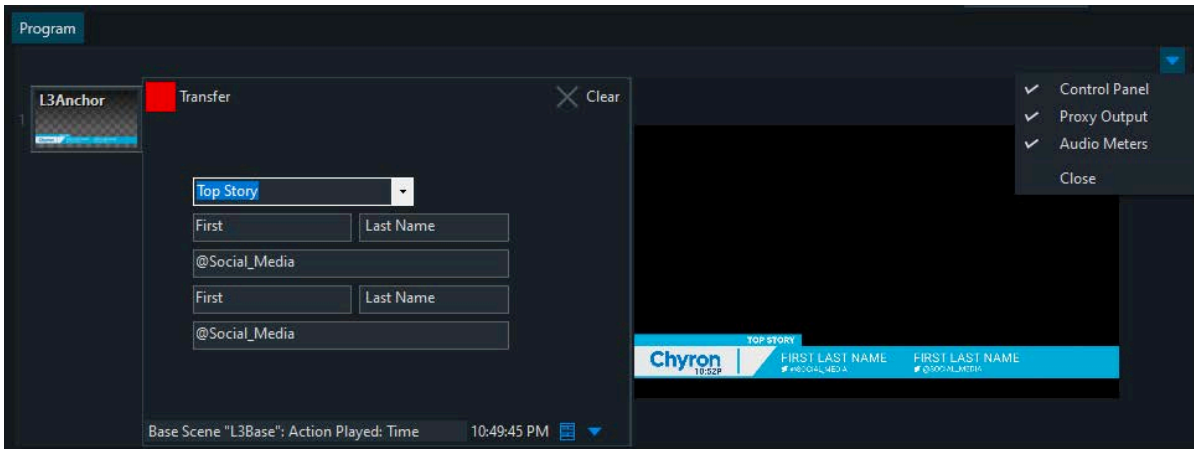
They can be cleared individually or all.

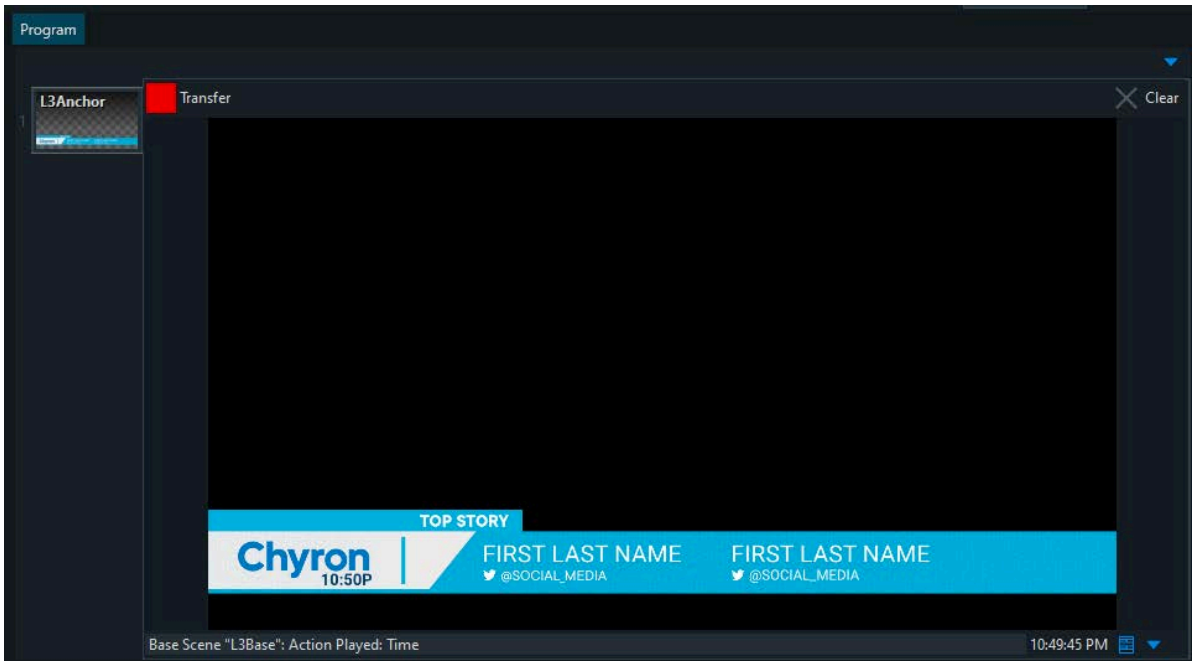


Preview / Program Display Options

For each configured Preview and Program channel you can choose to hide or show a proxy output, control panel and audio meters. Use the drop down arrow in the proxy windows upper right hand corner to check or uncheck desired selection

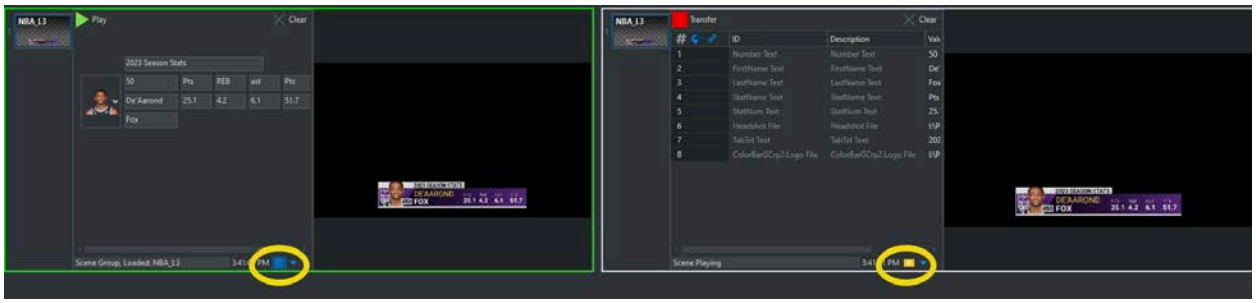
Control Panel Visible:





Control Panel / Replaceable Panel Toggle

To toggle between a control panel (this requires a control panel resource has been added the loaded scene, and applicable control panel objects), and replaceables panel (required replaceable objects added to the parent scene) then click on the control panel / Replaceable toggle icon in the bottom right of the control panel region.



Control panels allow for more complex and custom designs.

A replaceable panel is more limited and restrictive than a control panel. Replaceable panel support:

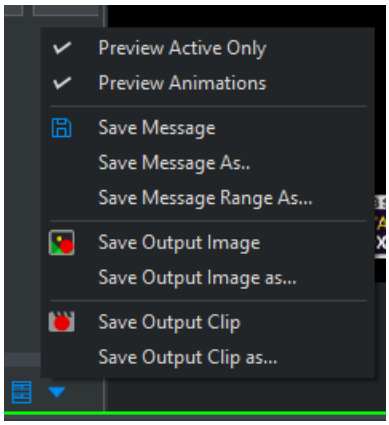
- Order: Enable / Disable II (Intelligent Interface for W commands)
- EX: Enable / Disable External Updates
- Databound: Enable / Disable
- ID: Read only. Updates to this alphanumeric value must be made to the scene in Prime designers replaceables.
- Description: Read only. Updates to this alphanumeric value must be made to the scene in Prime designers replaceables.
- Value: This is an editable field. For a value update to take effect, click enter.

  ID, Description and Value columns can be rearranged, by dragging on the column header.

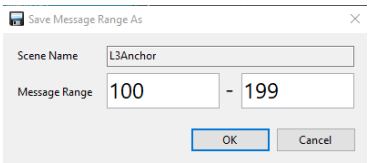
The selection of either control panel or replaceable panel will hold true for each individual preview/program channel.

Previewing Animations and Save Options

The dropdown in the lower right-hand corner allows for the following

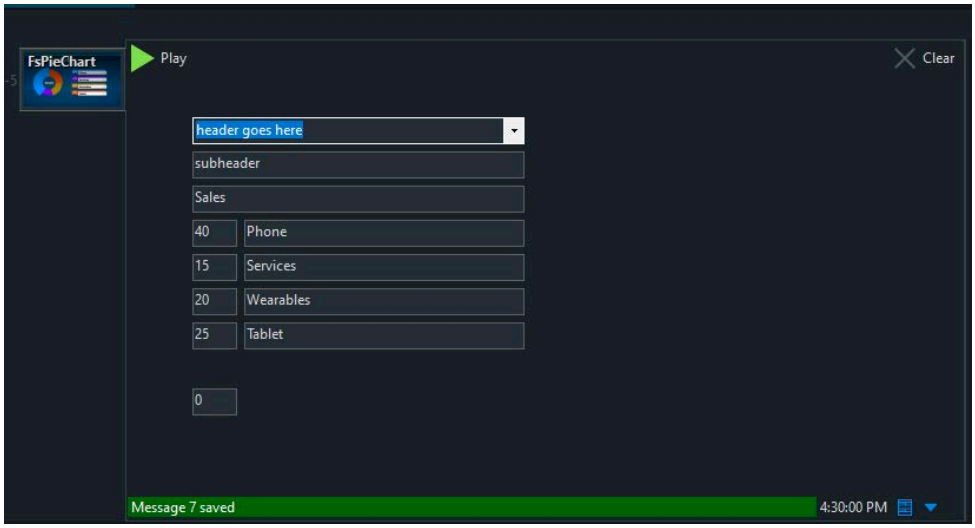


- **Preview Active Only:** When enabled, only the selected scene will show in the Preview. Otherwise, the preview will be a composite of all loaded scenes.
- **Preview Animations:** With this option enabled you can preview any animations that will occur within the scene. With this option disabled all animations will cut to the final keyframe and show the last state.
- **Save Message:** This option will save the scene as a “Template Data Message” and show up in the “Messages” browser. Refer to the section on Messages.
- **Save Message As:** Same as “Save Message” but prompts the user for a message name
- **Save Message Range As:** This option is primarily intended to be used with II & EX commands workflow. An individual message range can be saved to span over multiple message numbers. For example 100-199. If an II command is received for any message between 0-99 then a message will load with the settings applied from the message range. This elevates saving out 99 separate messages. Message Range will save in Messages folder 100-199.pbm



If a II/EX is received, and an individual message exists between a message range, then the individual message will load, not the message range message.

After a Message or Message Range is saved, a visual indicator will appear in the Playout Channel's Toolstrip for five seconds and then go back to normal.



Users can also log saved messages by enabling the Message Save option within the Workflow Logger. Please see the Logging Settings of this guide to enable this option.

- **Save Output Image:** Saves the proxy image to file. The file location is in a sub folder of the projects "Image" folder named "Captures". Ex: *I:\PRIME\Projects\News\Images\Captures*.
- **Save Output Image As:** Save As dialog prompts the user to save the image file type, location, and region of interest. Currently supported formats are .tif, .jpg and .png Region of interest must be predefined within the scene properties in Prime Scene Designer prior to saving out the image in Designer or Playout.
- **Save Output Clip:** Saves the proxy scene as a clip file. The file location is in a sub folder of the project's "Clips" folder named "Captures". Ex: *I:\PRIME\Projects\News\Captures*. Save output clip, will adhere to the last clip resolution set with Save Output clip as.

- **Save Output Clip As:** Save As dialog prompts the user to save the clip file name, output type, location and region of interest (cropped clip render). Currently supported formats are Quicktime Animation GTC, Motion JPEG, DNxHD, DNxHR, Web M.
  Region of interest must be predefined within the scene properties in Prime Scene Designer prior to saving out the image in Designer or Playout.

  Rendered clips using “Save Output Clip” will only honor the Effect In. If an action within the scene is triggered within the Effect In, this will be honored in the render. The Effect Out will not be rendered, unless it is triggered by the Effect In.

Scenes vs Messages

Scenes:

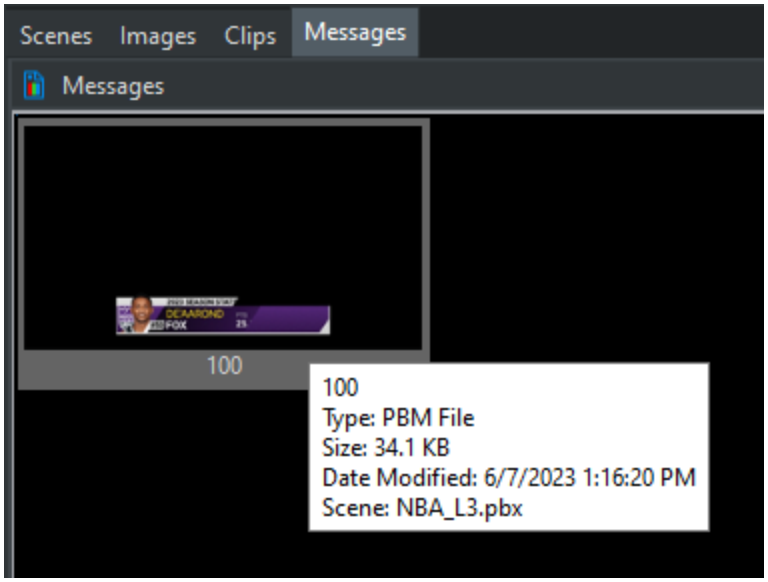
Scenes are saved to the file system as .pbx files and comprise of all the elements of a scene. Scenes are defined as “Templates” or “Base Messages”.

Messages:

Messages are a subset of scenes and are much smaller in size that contain a reference to the parent Scene file. Messages use the .pbm file extension. Messages are defined as “Template Data Messages”, “Automation files. See the separate section “Messages” for detailed information on creating and editing scene Messages.

Scenes and Messages can have their own independent browsers.

In the Messages browser, if you hover over the thumbnail you will get various metadata including the parent scene name.



Projects

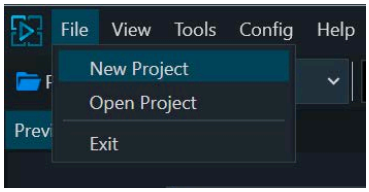
Creating a New Project

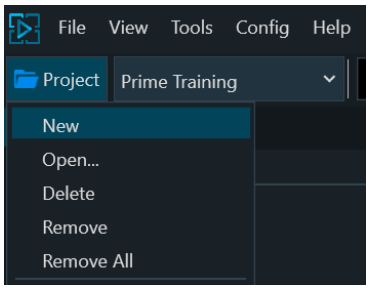
To create a new project:

- From the Main User Interface, select **File** from the top menu bar.
- Then select **New Project** to create a new PRIME project.

OR

- Click the **Project** icon on the top left-hand size of the Main User Interface,
- From the drop-down menu, select **New** to create a new PRIME project.





Hard Drive / Network Drive Best Practices and Recommendations

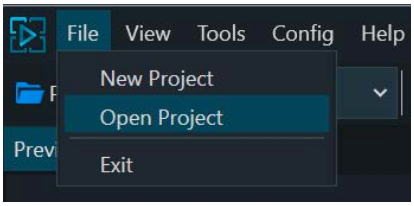
PRIME supports mapped network drives for Prime Projects, however PRIME does NOT support search capabilities for projects over a network due to the Microsoft Search API.

It is highly recommended to use a local high speed drive for Prime and Prime Engine. An NVME, high speed RAID, or SSD based hard drive provides the best performance capabilities for real time playback.

Using a network based drive has its pros and cons. Network drives are great for centralizing storage; however, depending on its network I/O bandwidth capability, it can greatly hinder Prime and Prime Engine's real time performance.

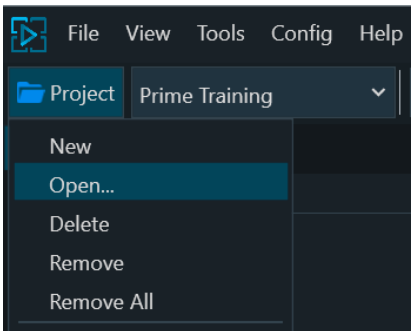
Opening a Pre-Existing Project

To open a preexisting project:

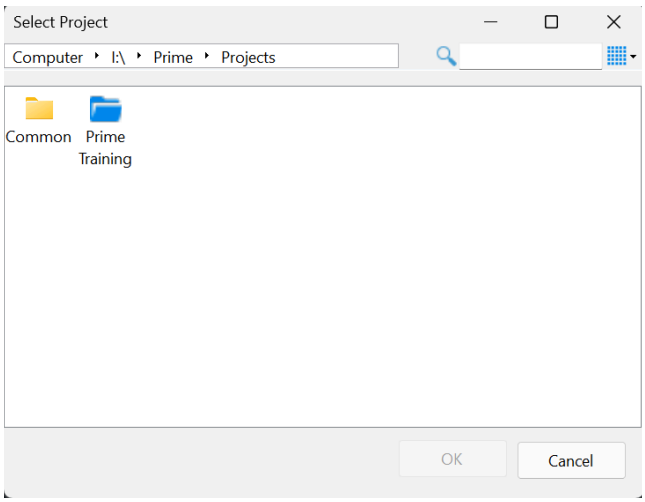


- From the Main User Interface, select **File** from the top menu bar.
- Then select **Open Project** to open a new PRIME project.

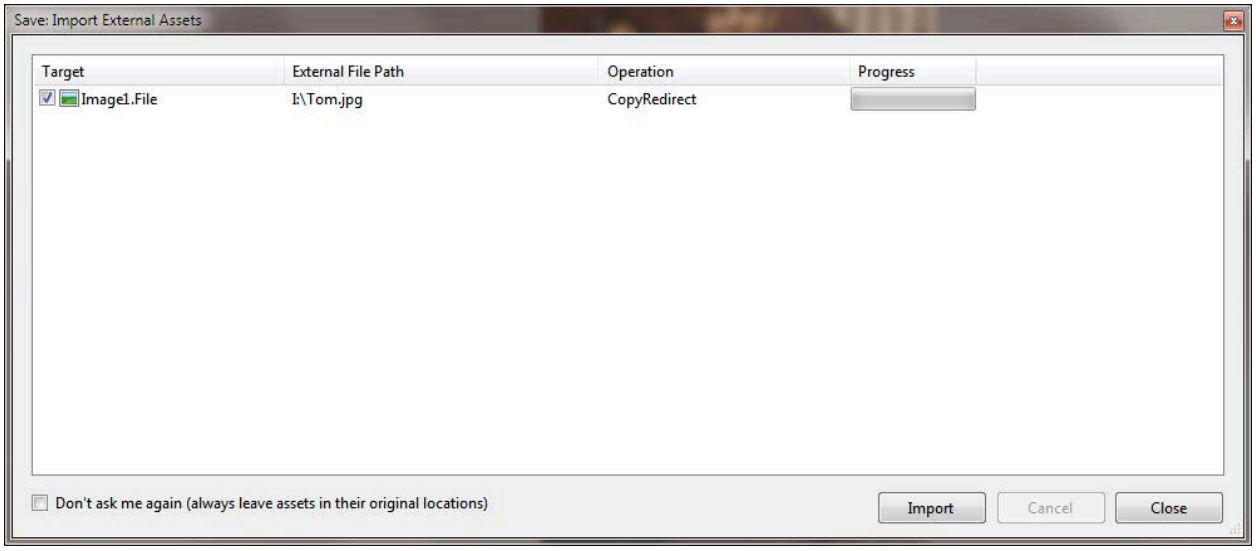
OR



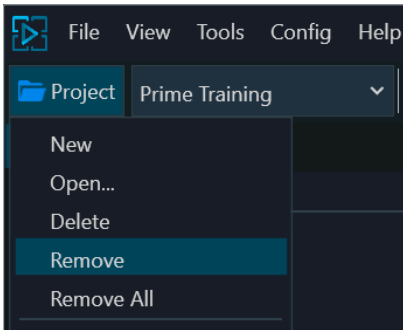
- Click the **Project** icon on the top left hand size of the Main User Interface,
- Select **Open** to open a preexisting project.
- The **Select Project** panel will be displayed. From here, the user may navigate to the preexisting project and open it.



When saving scenes, if PRIME sees assets from folders outside the project PRIME, PRIME will prompt users to import the asset.



Removing a Project



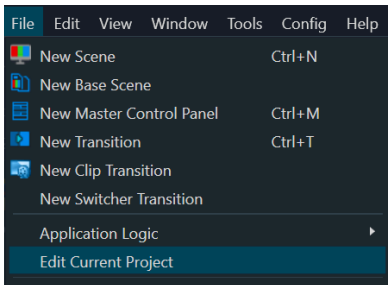
- From the **Designer** User Interface, click the “Project” icon from the top menu bar.
- Then select **Remove Project** to Remove PRIME project. This will NOT delete the project.

Deleting a Preexisting Project

- Select **Delete Project** to Delete PRIME project and all the files associated with it.

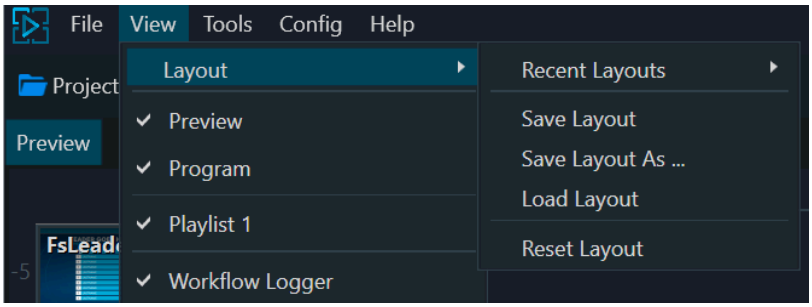
Editing a Pre Existing Project

- From the **Designer** User Interface, click the menu File > Edit Current Project
- This allows you to edit the Project Description, Project Parameters, Expressions, Conditions and C# code.

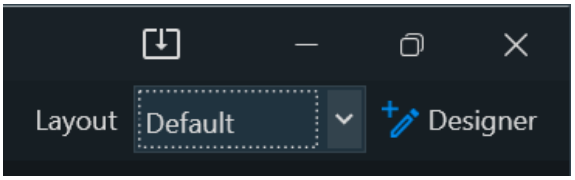


Layouts

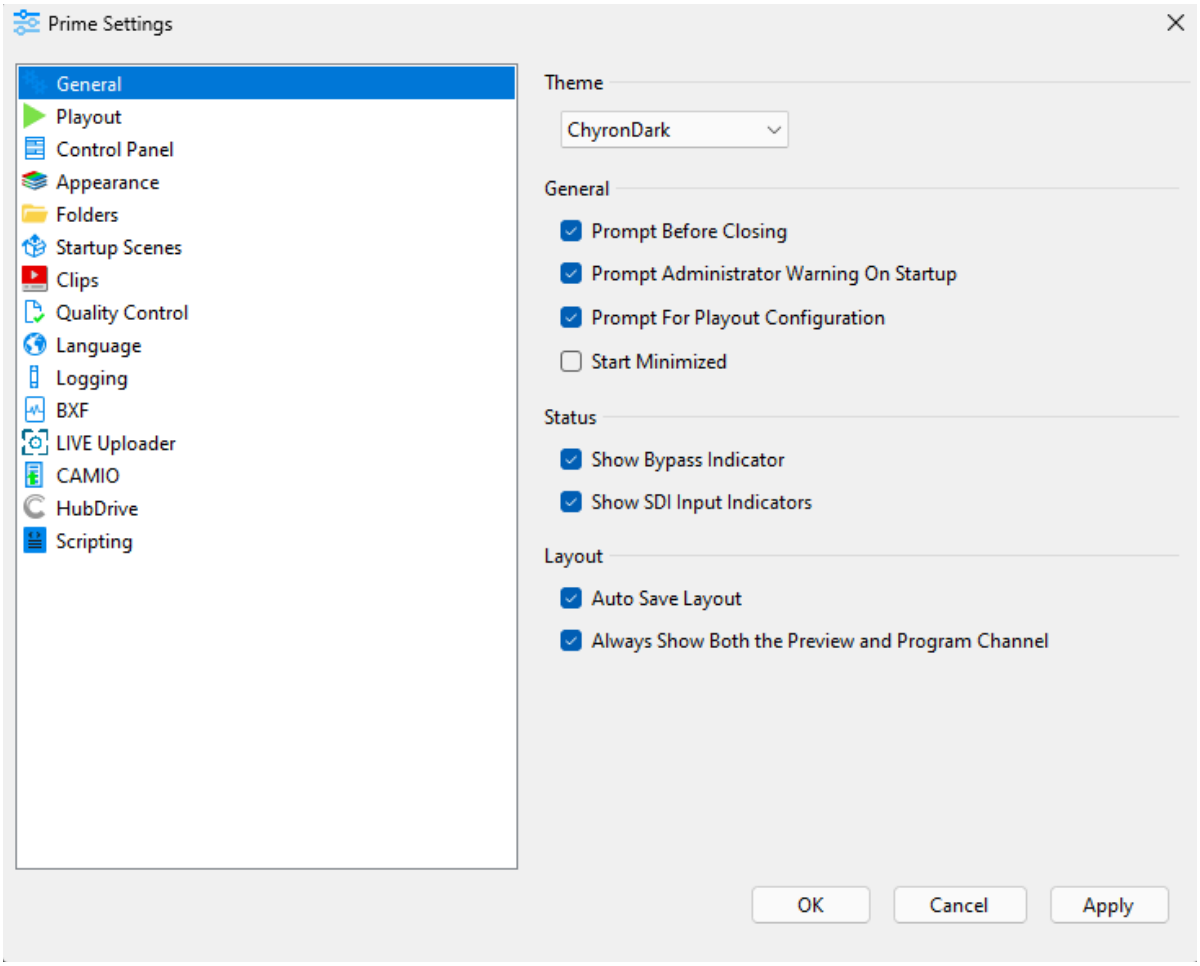
PRIME uses Windows docking panes which allows users to add/remove/position and size all of the available window panes. Layouts can be saved and loaded.



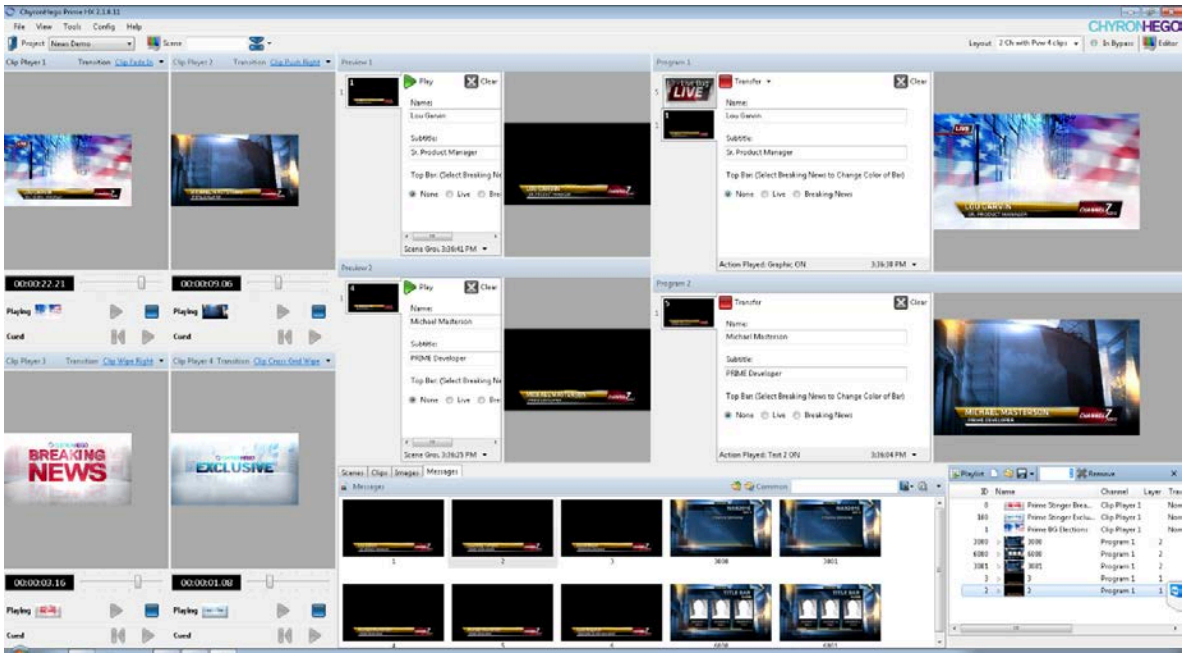
There is also a quick layout loader on the left top of the main Runtime user interface:



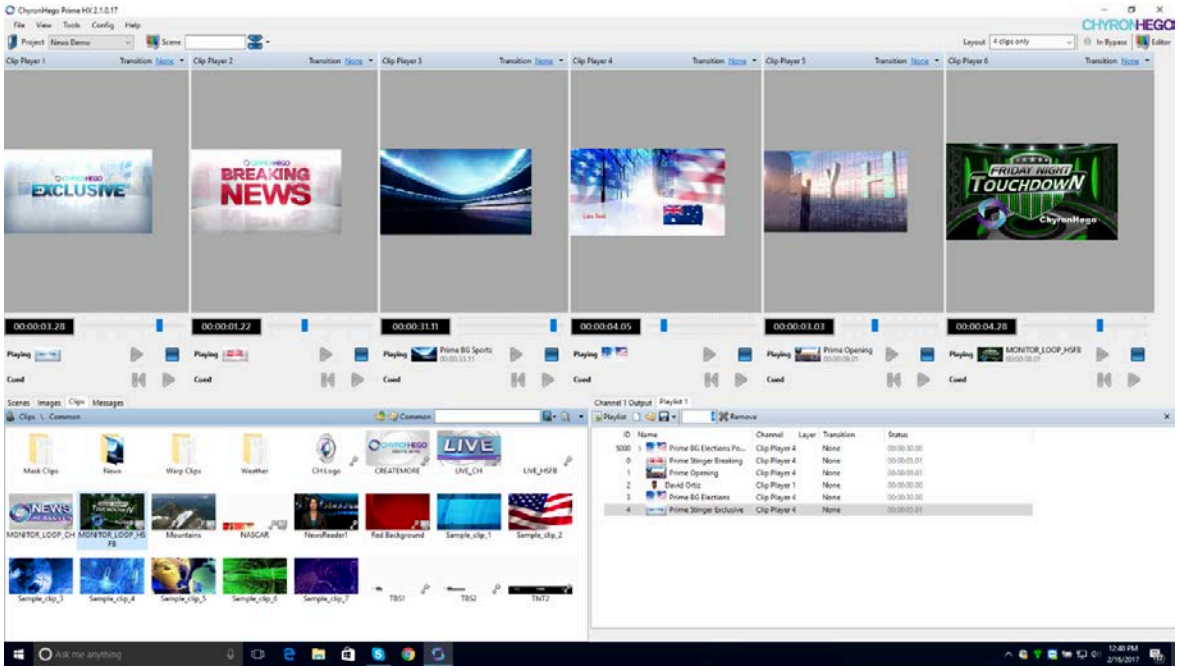
In the Prime settings dialog, there is a setting to automatically save the changes that are made to the layout. This setting is available in both the main application form and the designer form. This is not a global setting. If the **"Auto Save Layout"** checkbox is checked in the main application form, there is no guarantee it will be checked in the designer form and vice versa.


Prime Settings
General
Playout
Control Panel
Appearance
Folders
Startup Scenes
Clips
Quality Control
Language
Logging
BXF
LIVE Uploader
CAMIO
HubDrive
Scripting
Theme
ChyronDark
General
Prompt Before Closing
Prompt Administrator Warning On Startup
Prompt For Playout Configuration
Start Minimized
Status
Show Bypass Indicator
Show SDI Input Indicators
Layout
Auto Save Layout
Always Show Both the Preview and Program Channel
OK
Cancel
Apply

This layout shows 2 graphic channels with previews, 4 clip players and a playlist



This layout shows 6 clip players and a take list



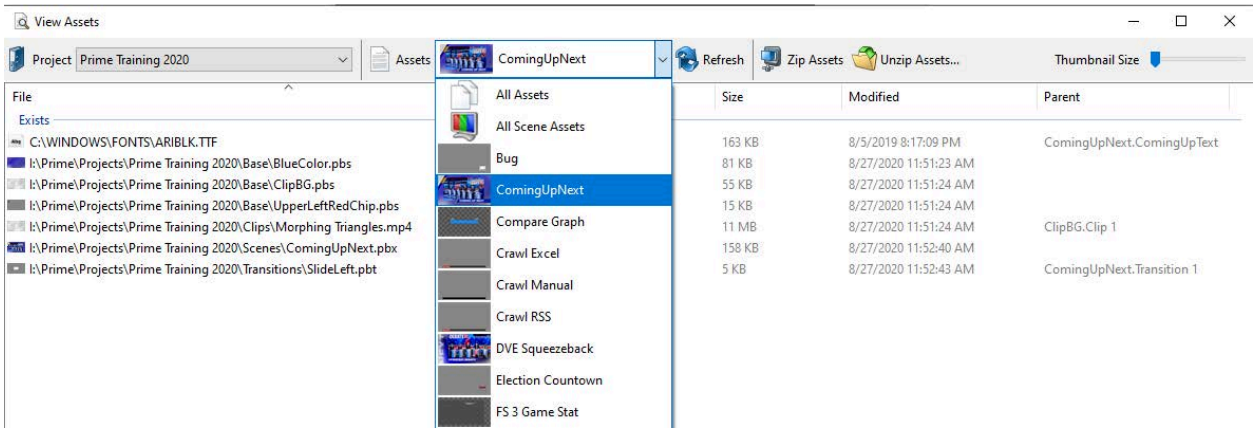
Tools

Application Scripting

Application scripts run the entire time the application is open as opposed to Scene Scripting which only runs while that scene is open. The scripting window language is C# and has access to the entire PRIME API. Refer to the separate document “API Scripting Guide”.

Zip & Unzipping Assets

Prime offers a built in Asset Viewer to view assets per scene or per project. Select column heading (File, Type, Size Modified, Parent) to sort assets by ascending or descending order.



Additionally, users can zip or unzip these assets using the built in Zip/Unzip tool.

Prime Playout Settings

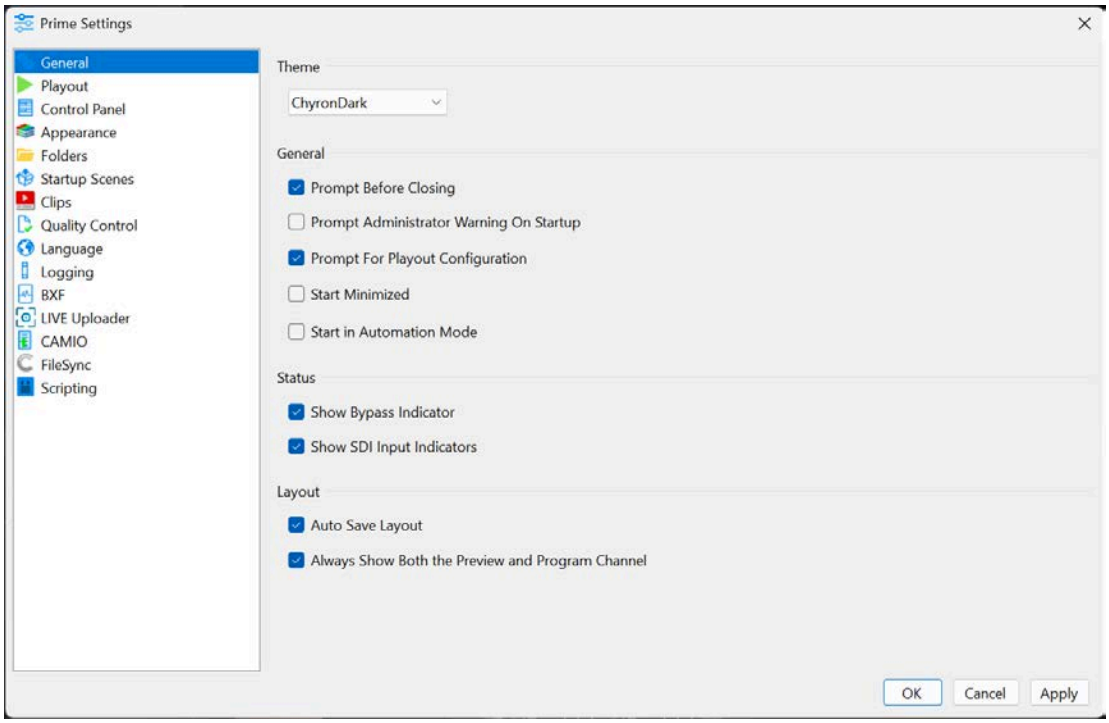
The various configuration settings determine the behavior and appearance of PRIME.

To access - In the top menu bar, select **Config** and select the desired item to configure:

- **Playout Configuration**
- **Automation**
- **Devices**
- **Keyboard Shortcuts**
- **Settings**
- **Import Configs**
- **Export Configs**

Settings Configuration

Selecting **Settings** from the **Config** drop down menu allows the user to change various aspects of PRIME.



General

Theme

ChyronDark - Sets Prime's UI/UX to Dark theme
Standard - Sets Prime's UI/UX to Light theme

General

Prompt Before Closing – If checked, PRIME will confirm with the user whether or not PRIME is to be closed.

Prompt Administrator Warning on Startup – To run out of process VB,JScripts Prime needs to be started with Administrator privileges.

Prompt for Playout Configuration – Shows the Prime Startup Configuration Screen pop up upon startup of Prime. Turning this off will Startup Prime in the last chosen Configuration.

Start Minimized – Starts Prime in a minimized state within the Windows Environment

Start in Automation Mode - Starts Prime in a minimal Playout mode which can only be operated by an Automation System. Prime Scene Designer is unavailable while in this mode.

Status

Show Bypass Indicator - shows the bypass indicator in the status bar of the playout window

Show SDI Input Indicators - shows the SDI Input Indicators in the status bar of the playout window

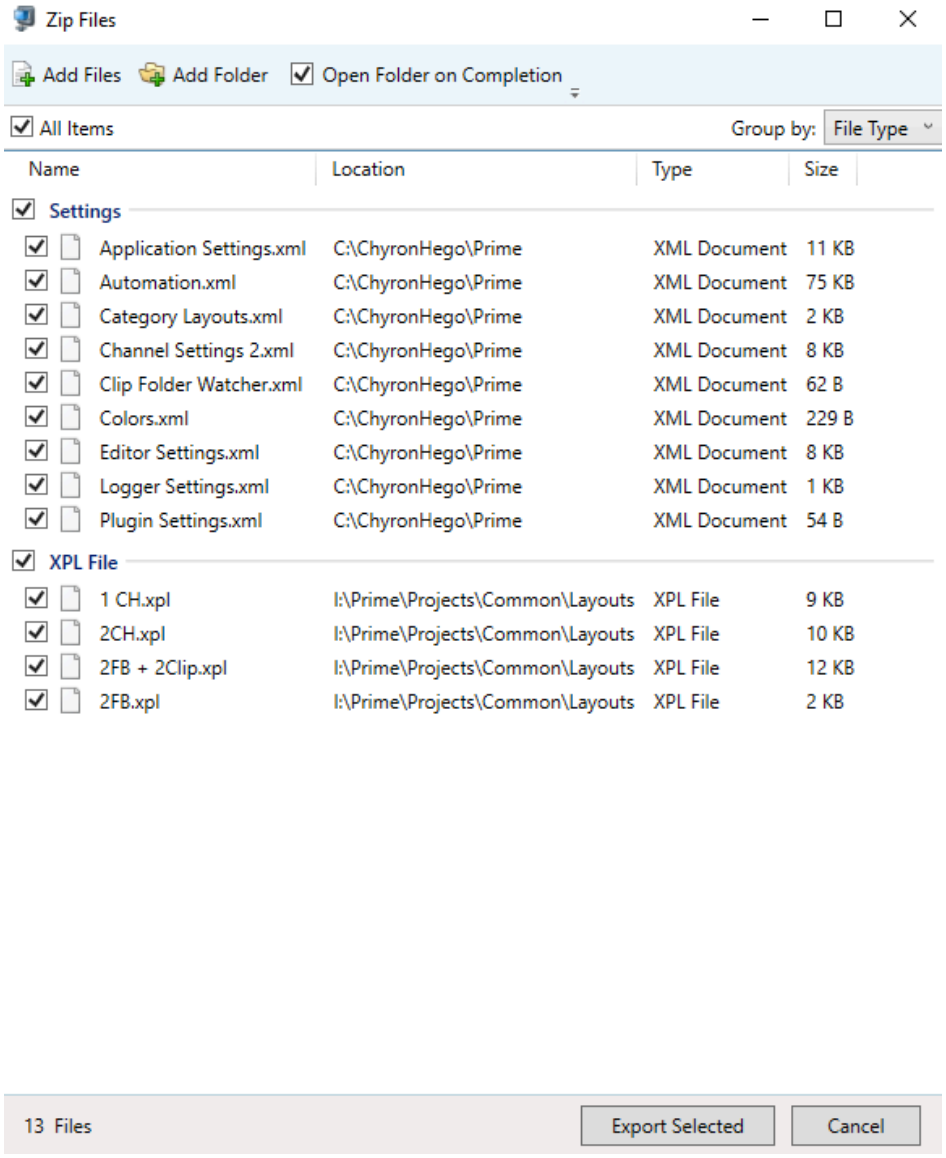
Layout

Auto Save Layout - automatically saves the current layout when changes are made (ie the layout should look the same when the application is restarted)

Always Show Both the Preview and Program Channel - if both the Preview and Program panels of a channel are not visible in the layout, and one is made visible, then the other will also be made visible

Import/Export Settings

Allows users to export a series of settings into a zip file allowing users to import them on a target machine elsewhere. Any files in the source machines “Common” folder will be extracted to the target machines “Common Folder” only if a Common folder is defined on the target machine.



- **Status –** if the system is run in downstream mode and an external bypass panel is installed, the following options may be configured
    - **Show Bypass Indicator –** Show an icon on the main Runtime user interface toolbar
    - **Show SDI input Indicator -** Show an icon on the main Runtime user interface toolbar

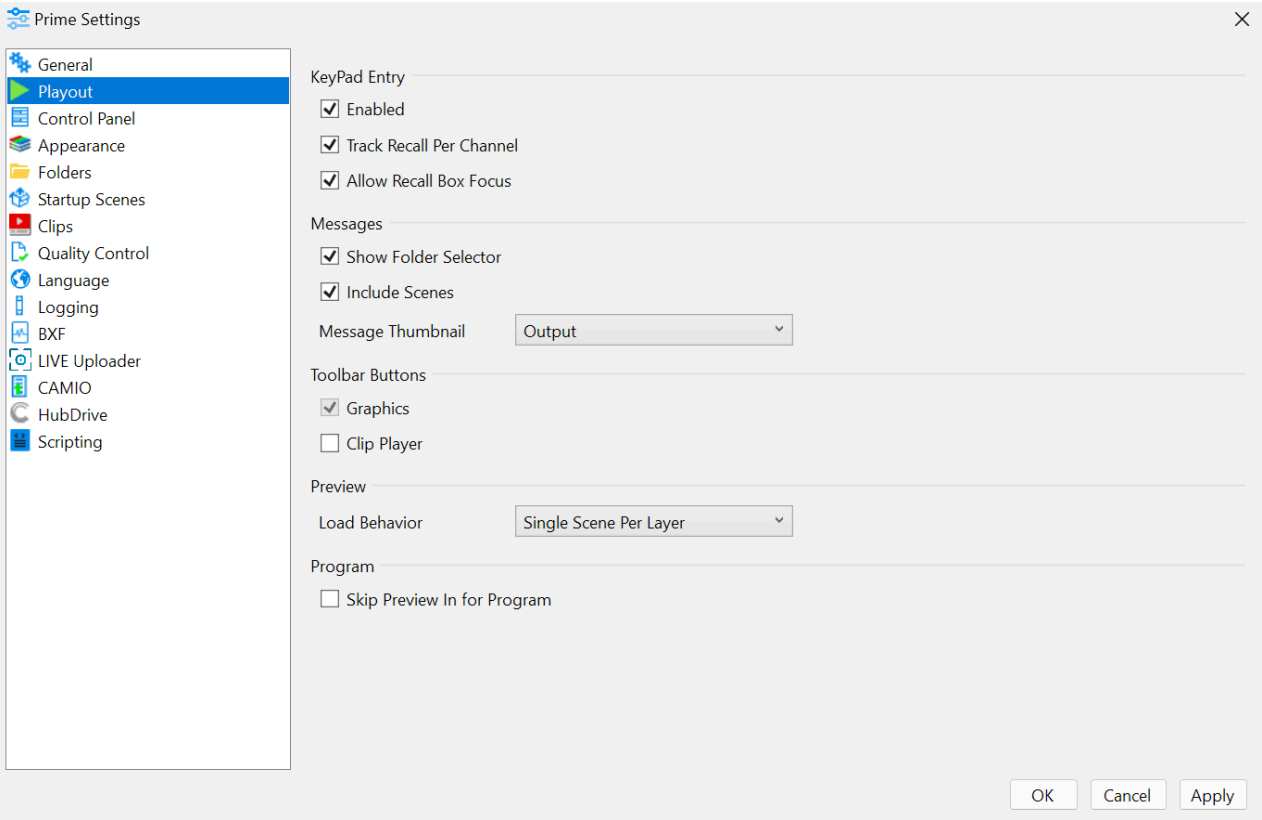
- **Layouts - Auto Save Layout** option automatically saves the changes that are made to the layout

- **Always Show Both the Preview and Program Channel**
    - If setting is checked, both preview and program channel controls will be made visible when a channel is activated.

    - If setting is not checked, only the visible section of the channel will be activated and the user can hide either or both.

  *Enabled (checked) by Default.

Playout



Numeric Keypad Entry

When **Numeric Keypad Entry** is enabled numeric and alphanumeric values can be applied to the keypad entry field in the Runtime interface.

Users can use Numeric Keypad playout mode for either Clips or Graphics. For Graphics the order of precedence will be: Scenes then Messages. Channel selectors will appear on the main toolbar. Shortcut keys can be assigned to select the “Active” channel. *See Shortcut Key Manager for configured shortcut keys.*
Scenes, Messages or Clips will load to the active channel i.e whichever channel has focus. This means that the scene’s default Channel will not be honored if the Channel property is set in Designer. *See Scene Properties for more information*

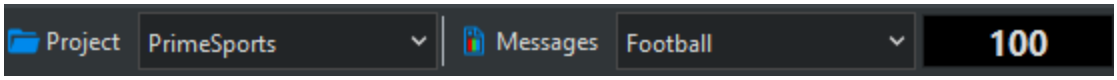
Track Recall Per Channel - (applicable when operating PRIME with a multi channel graphics or clip player system). When selected, the Keypad Entry field will populate the text value of the

next numeric or alphanumeric graphic (scene, message) or clip for the selected channel. When unchecked, multiple channels share the same value for recall.

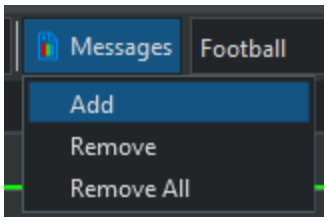
Allow Recall Box Focus - When checked, operator can tab or mouse click into the recall box to open a scene or message. When unchecked, Recall Box is only accessible via Numpad keys.

Messages

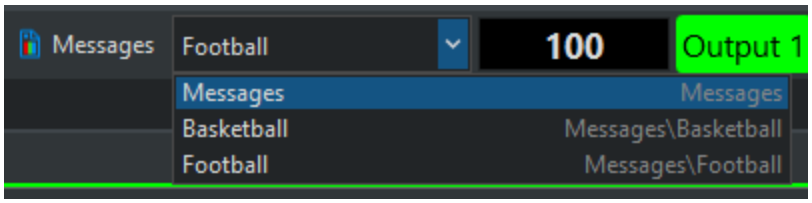
Show Folder Selector - When this is enabled, Messages folder selection will be visible in Prime playout UI.



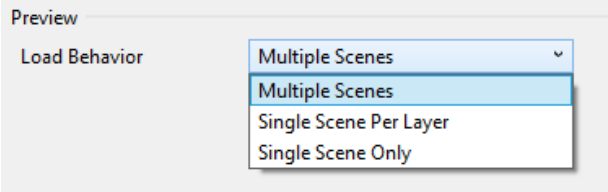
Click on Messages Icon to add or remove messages folders.



Numeric keypad entry will apply to the selected message folder. Select from drop down to change selected folder.



Preview Load Behavior



Multiple Scenes: Infinite number of scenes/messages can be loaded in preview regardless of layer assignment.

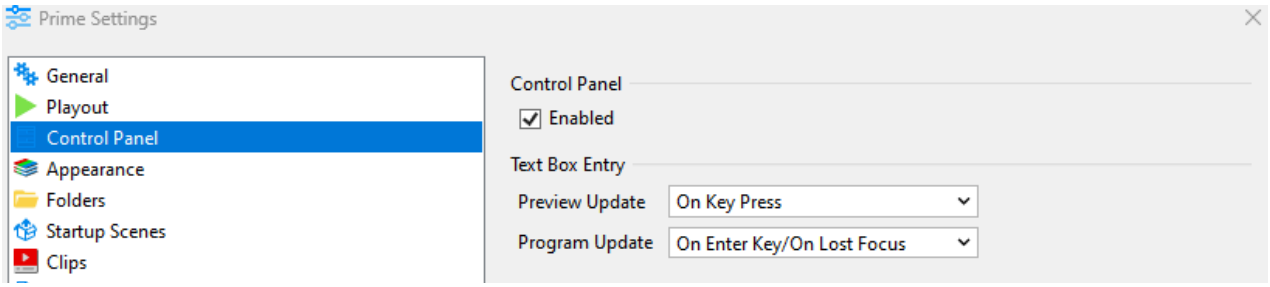
Single Scene Per Layer: Only one scene per layer can be loaded per preview channel. A scene with the same layer assignment will displace the other.

Single Scene Only: Only one can be loaded in preview regardless of layer assignment.

Skip Preview In for Program - When checked, Preview in Event animations state will be skipped on Program Channel. This results in consistent effect in behavior in case where scene is played directly to Program Channel.

Example use case: In Preview in Event a clip is set to cue frame 30, at its revealed state. But when the same scene is played to air, the clip should play from frame zero.

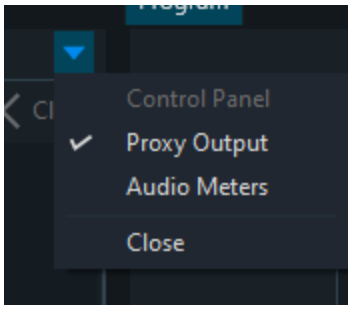
Control Panel



Enabled

Enables and Disables the Control Panels / Replaceables Panel in Playout

When unchecked (Disabled), Playout will deactivate the Control Panel option

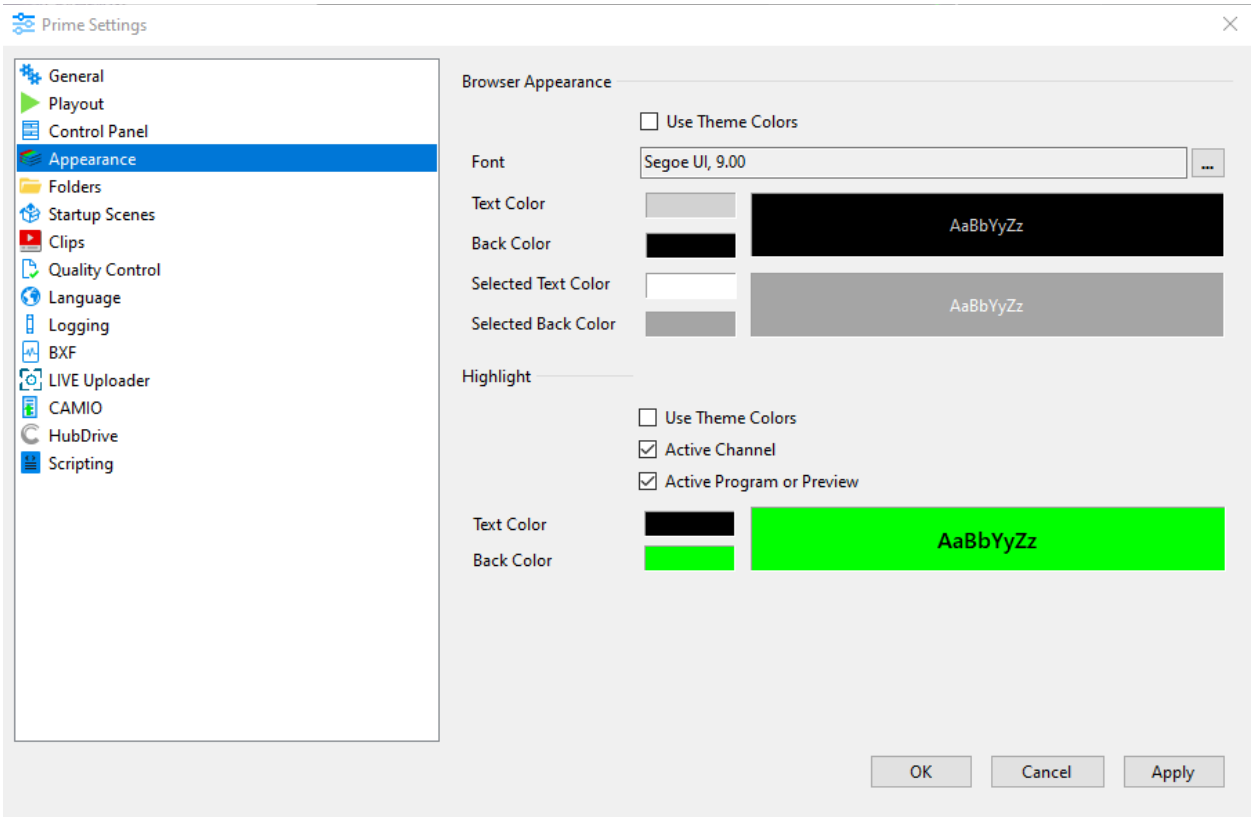


Text Box Entry

Specifies when changes to control panel text boxes should be applied to an output.

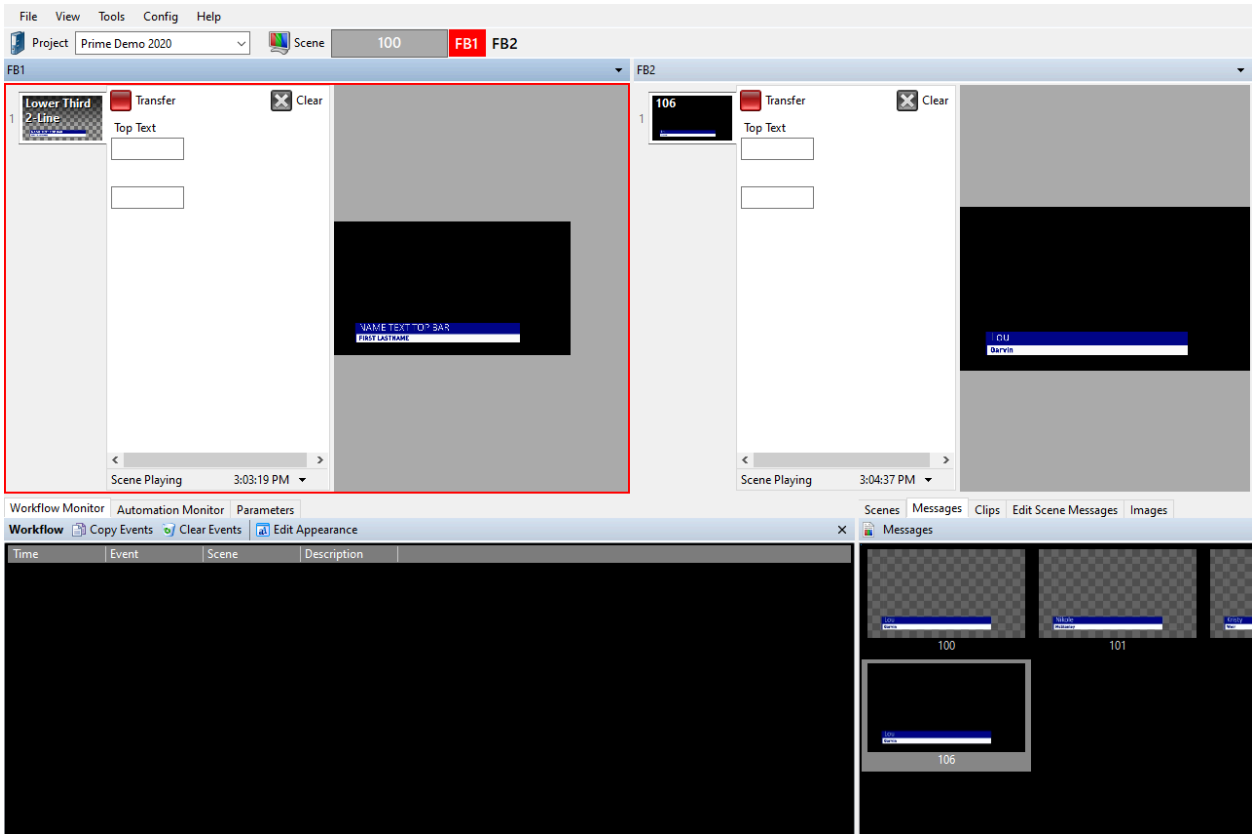
Preview and Program Update allow for the following options:
On Key Press - immediately when a key is pressed
On Enter Key/On Lost Focus - only when Enter is pressed, or the control loses focus

Appearance

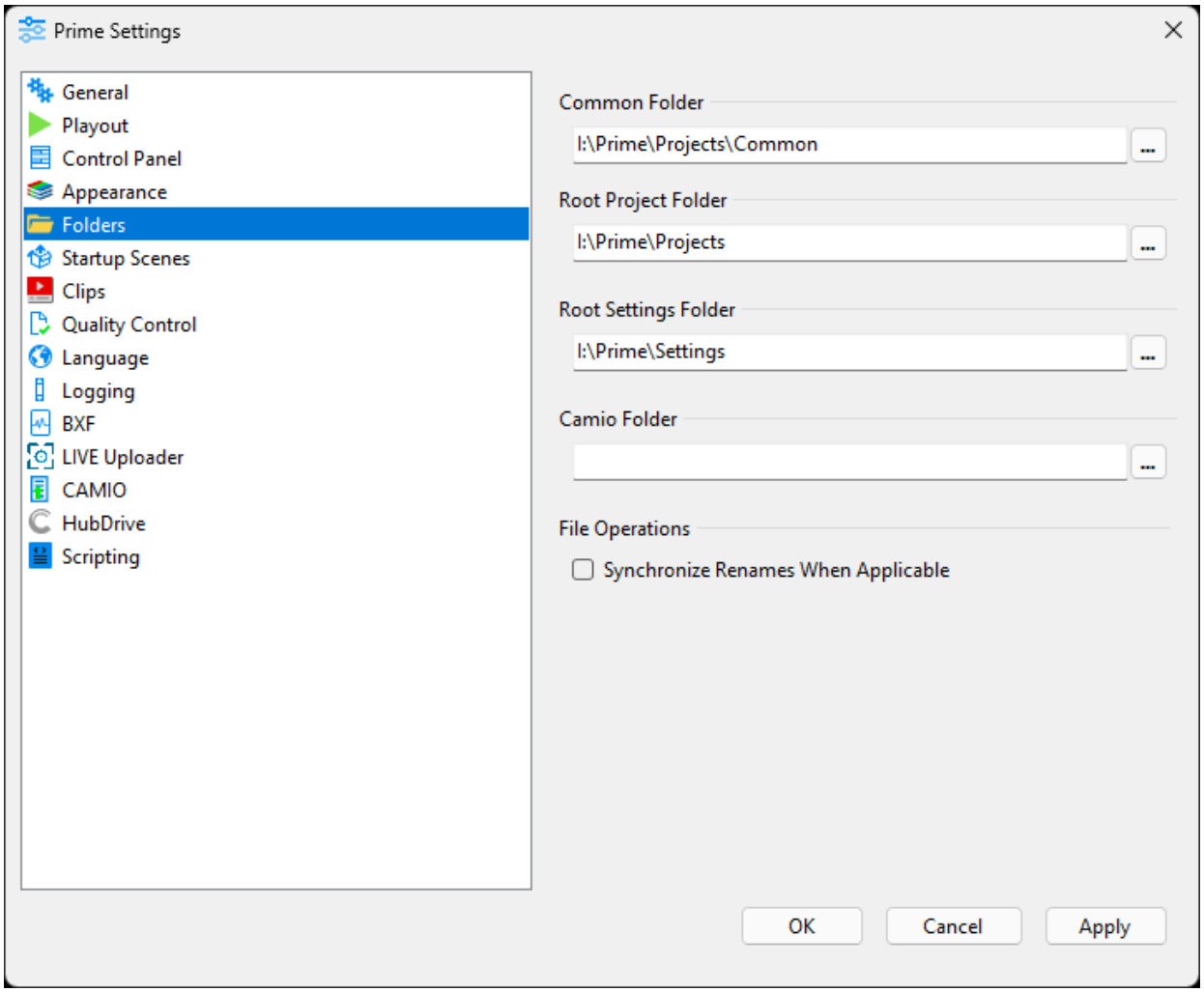


Browser: Allows users to customize the appearance of all browsers in the PRIME application

Highlight: Allows users to customize the appearance of the active channels and active Preview or Program


File
View
Tools
Config
Help
Project
Prime Demo 2020
Scene
100
FB1
FB2
FB1
Lower Third
2-Line
Transfer
Clear
Top Text
Scene Playing
3:03:19 PM
FB2
106
Transfer
Clear
Top Text
Scene Playing
3:04:37 PM
Workflow Monitor
Automation Monitor
Parameters
Workflow
Copy Events
Clear Events
Edit Appearance
Time
Event
Scene
Description
Scenes
Messages
Clips
Edit Scene Messages
Images
Messages
100
101
106

Folders



*Each folder's file path has a shortcut button to quickly set the desired folder location.

Common Folder – ChyronHego suggests the use of a "Common" folder. This stops the need for assets to be stored multiple times in multiple directories.

Root Project Folder- Define the root folder for all your projects.

Root Settings Folder - Defines the folder location of all the configurations, layouts etc. This is tied to the startup screen.

CAMIO Folder - This folder location will contain all the Project folders. These Project folders contain their associated assets (MOS Messages, CRD files and replaceable assets).

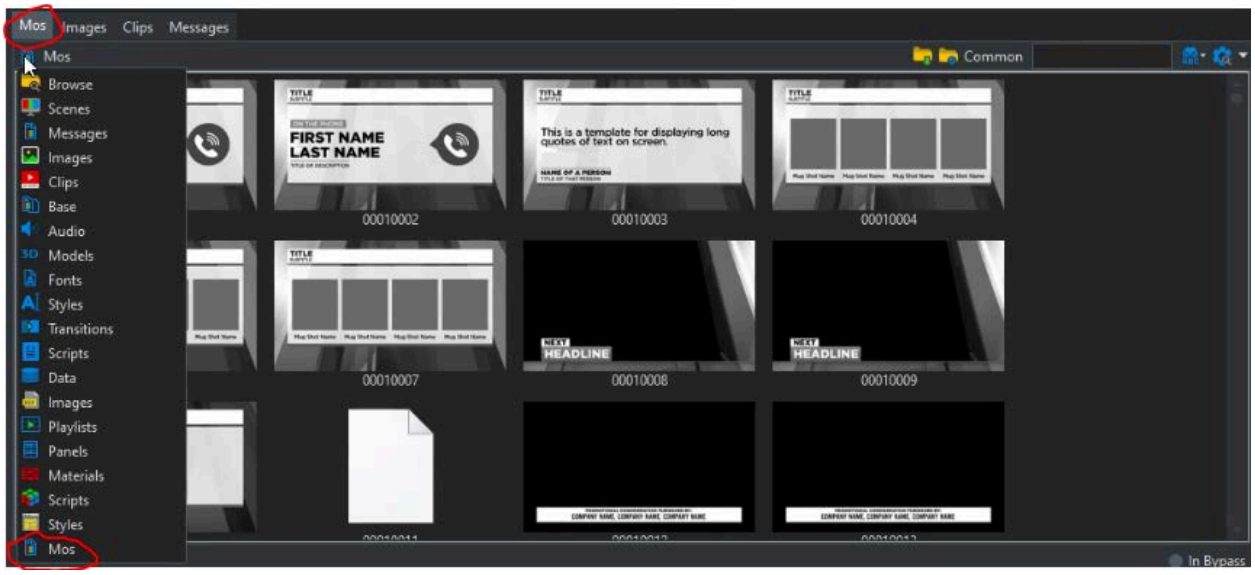
The PRIME messages in the "Message" folder can be called up in PRIME playout.

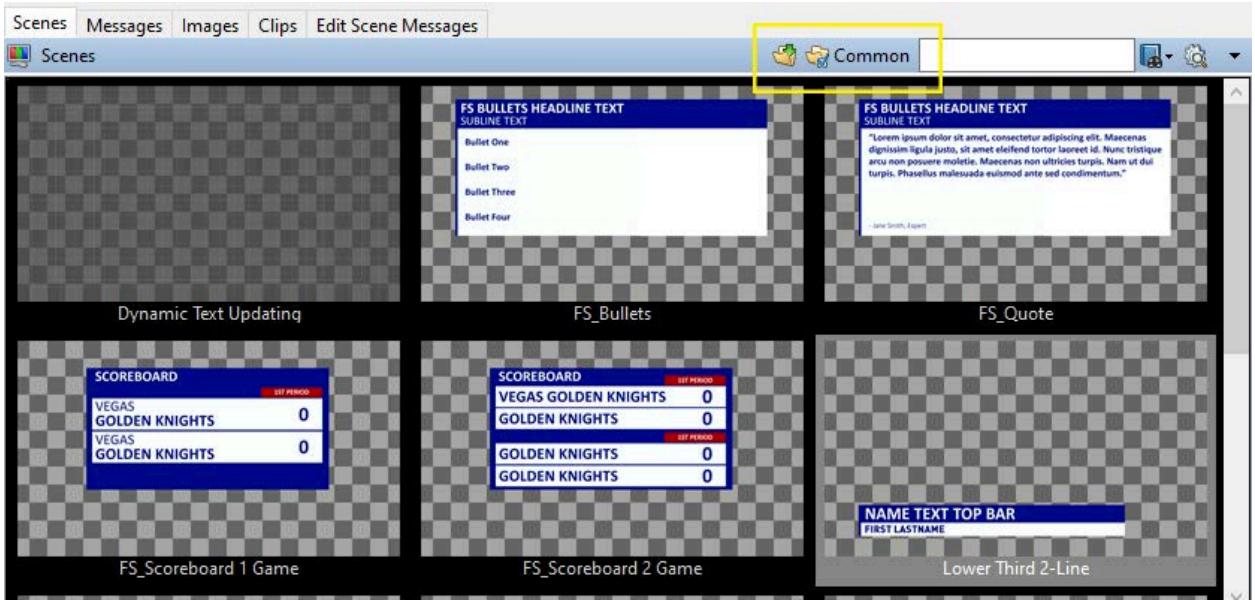
******* **IMPORTANT** **

The CAMIO Context MUST match the PROJECT Name.

Example: Context: News 5PM PRIME Project: News 5PM

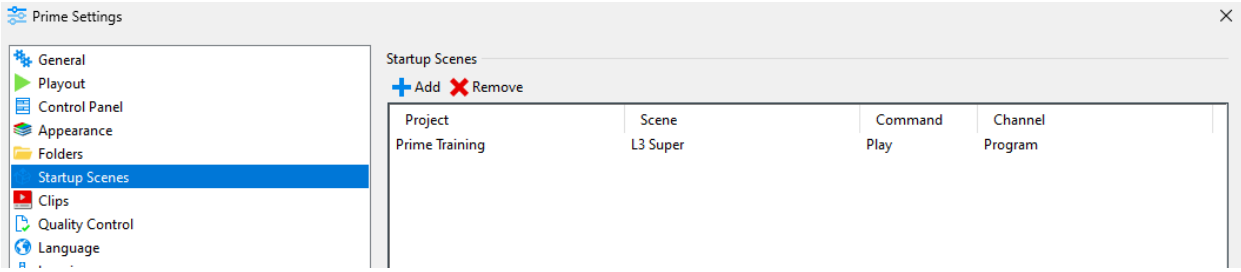
****



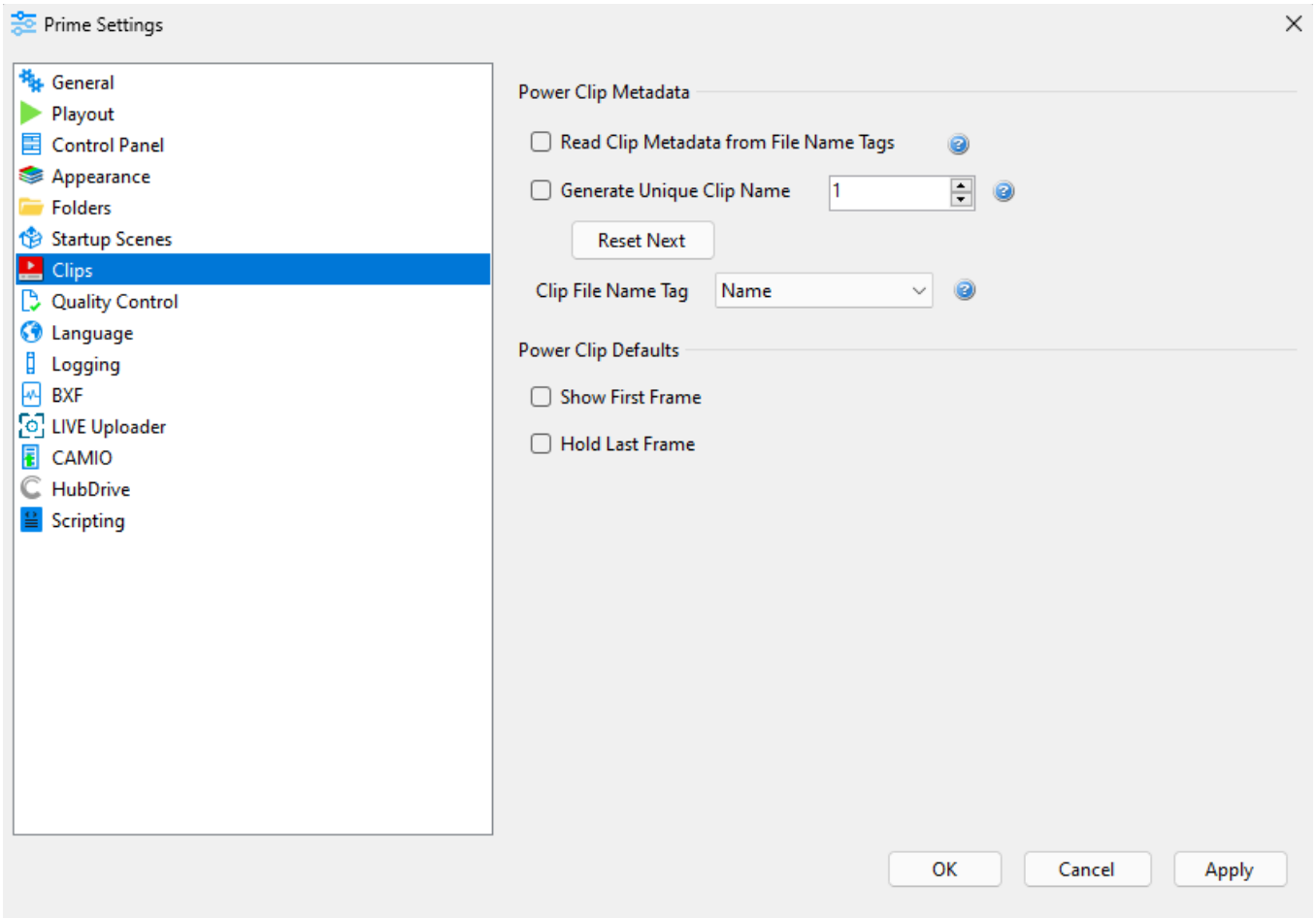


Startup Scenes

Scenes can be set to load or play when the PRIME application starts.



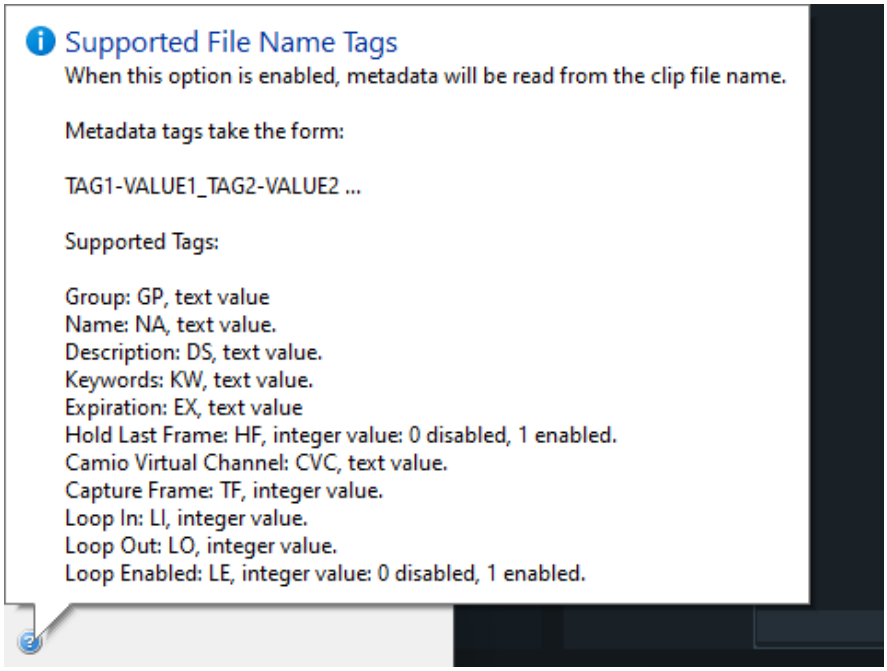
Clips


Prime Settings
General
Playout
Control Panel
Appearance
Folders
Startup Scenes
Clips
Quality Control
Language
Logging
BXF
LIVE Uploader
CAMIO
HubDrive
Scripting
Power Clip Metadata
Read Clip Metadata from File Name Tags
Generate Unique Clip Name
1
Reset Next
Clip File Name Tag
Name
Power Clip Defaults
Show First Frame
Hold Last Frame
OK
Cancel
Apply

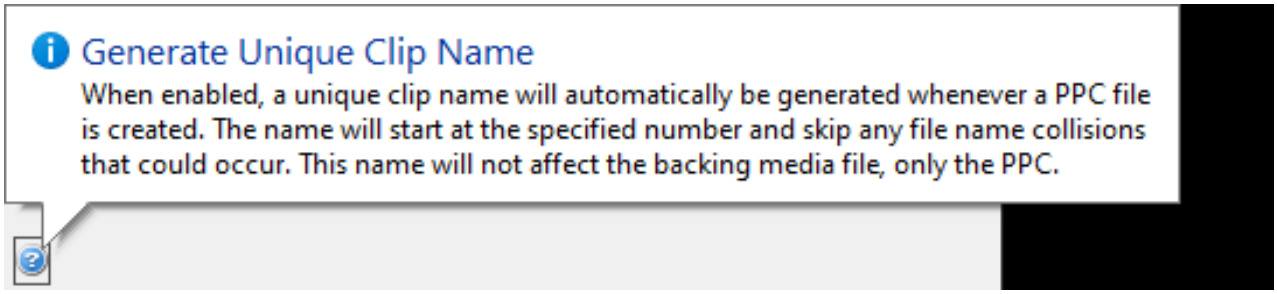
Read Clip Metadata from file Name Tags:
PRIME has the ability to add metadata to the associated clip metadata file when the clip is imported using the “Folder Watcher” application.

The metadata is part of the command line.

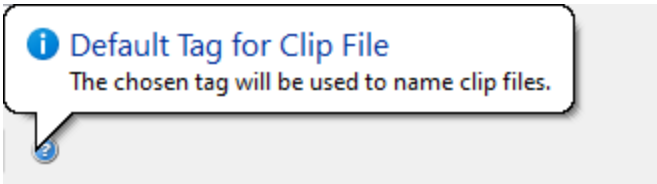
When clip files are imported into Prime (ie, when .ppc files are generated when a new clip file is placed into the Clips folder of a project), and this option is enabled, then the file name will be parsed for these metadata tags.
If found, the metadata values will be set in the .ppc automatically



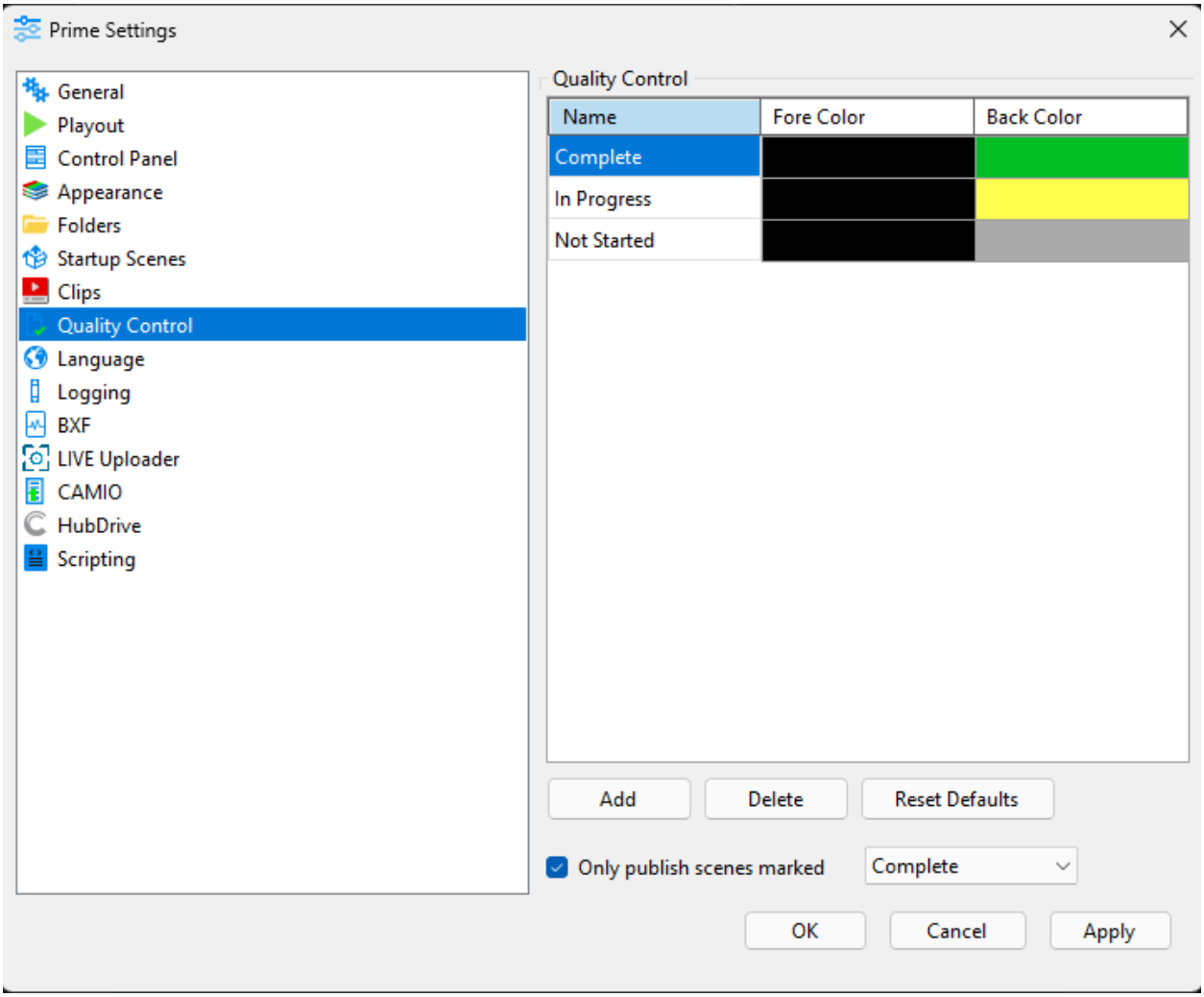
Generate Unique Clip Name:



Clip File Name Tag

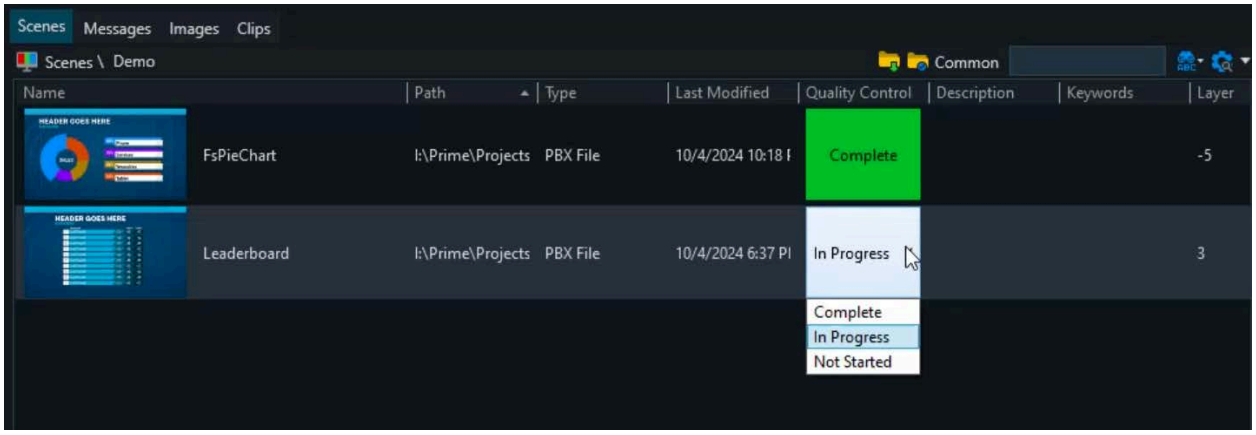


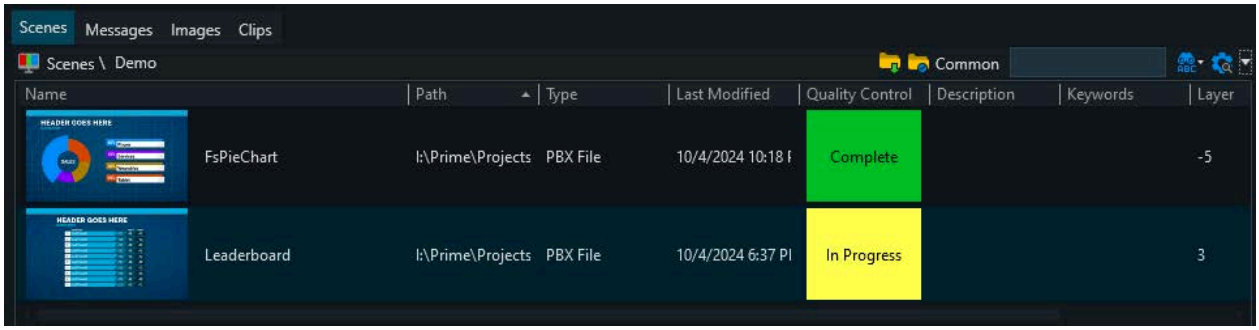
Quality Control



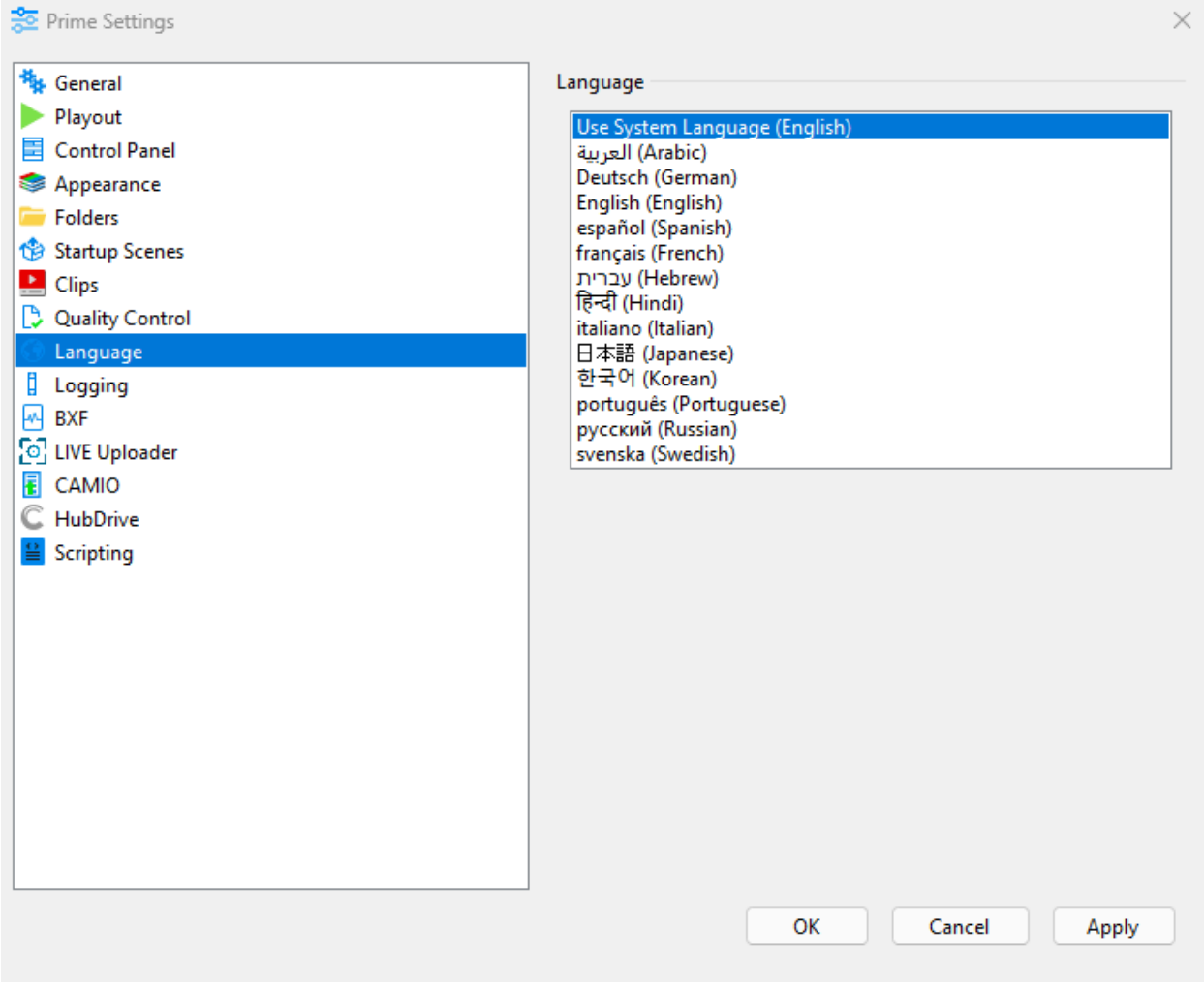
The **Quality Control** settings allow the user to define **Quality Control** states." These allow users to see the state of scenes. This comes into play in the distribution of scenes and their associated assets. See **Asset Viewer** also.

To view **Quality Control** states, select **Details View** from the **Scene Browser**. This allows the **Quality Control** field to appear in the scene list. From there, a state may be set as defined in the **Quality Control Settings** section.





Language

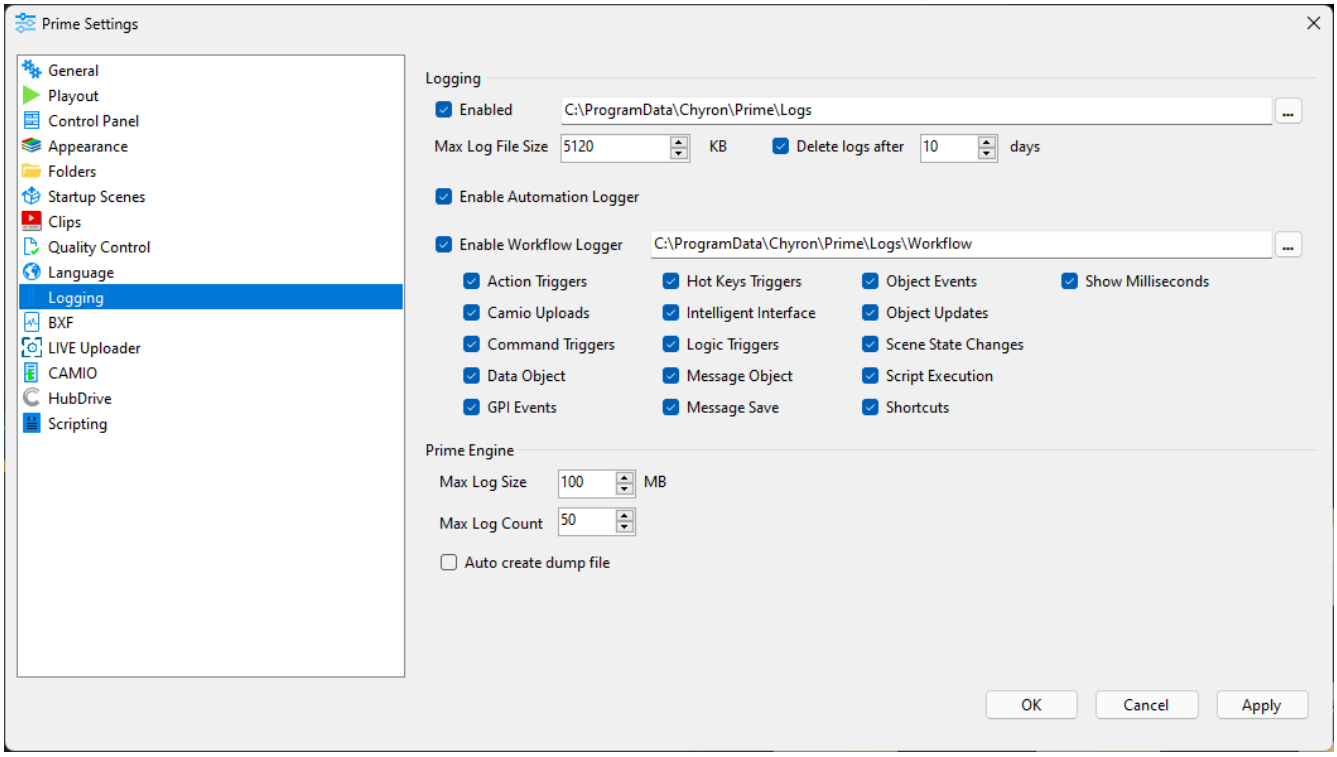


Language Settings allow the user to select from the available list of languages. Once a language is selected, the PRIME User Interface will switch languages.

Not all language translations are guaranteed to be accurate

Logging

Logging Settings enable the user to configure logging for the main PRIME application.



Beginning in 5.0, the Default locations for Prime Logs will be the following

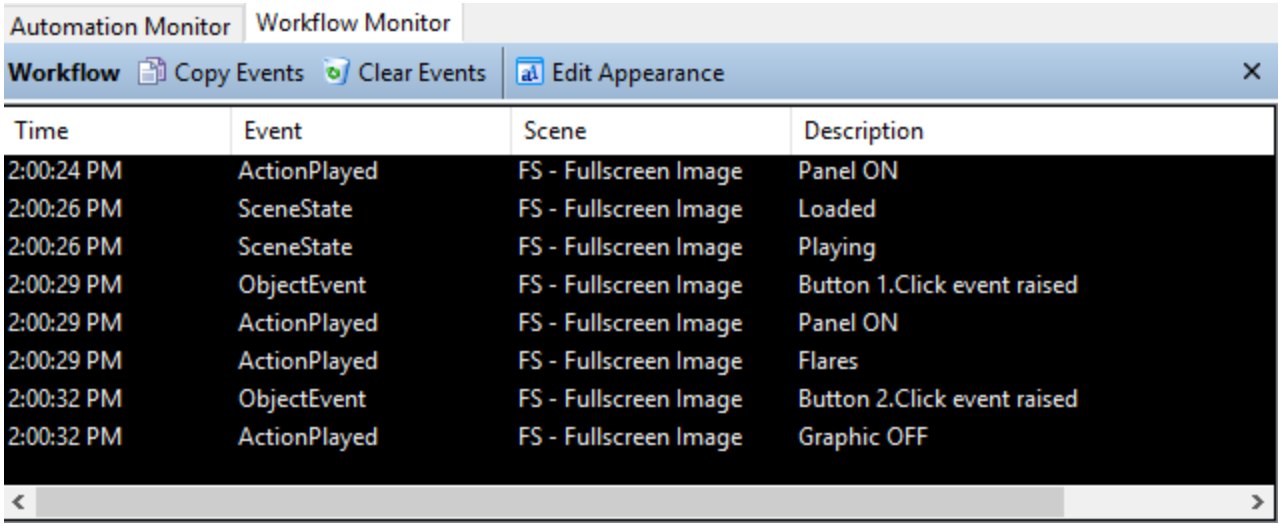
Prime Logs Location:
C:\ProgramData\Chyron\Prime\Logs

Workflow Logger Log Location:
C:\ProgramData\Chyron\Prime\Logs\Workflow

The **Workflow Logger** will log specific events in the application

The workflow logging is useful for viewing the order of events that happen with a scene or scenes. The workflow log window can be viewed from the main Runtime user interface.

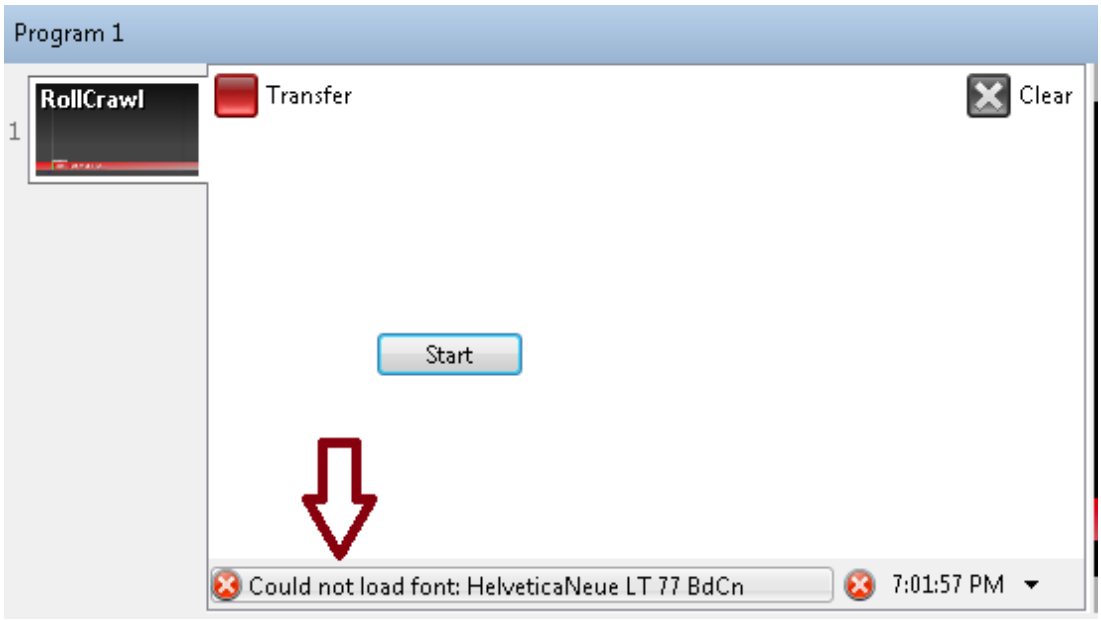
You can select which events will be logged in the Workflow Monitor.

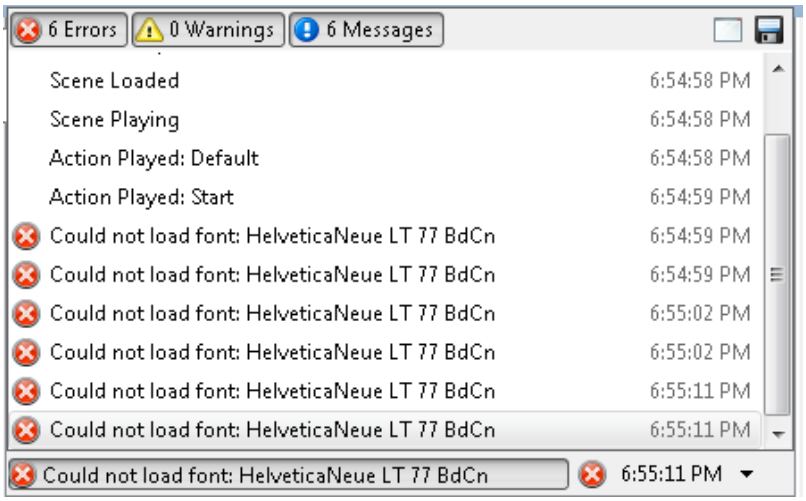


Only check the **Auto create dump file** checkbox when asked to do so by ChyronHego service.

The **Scene Logger**

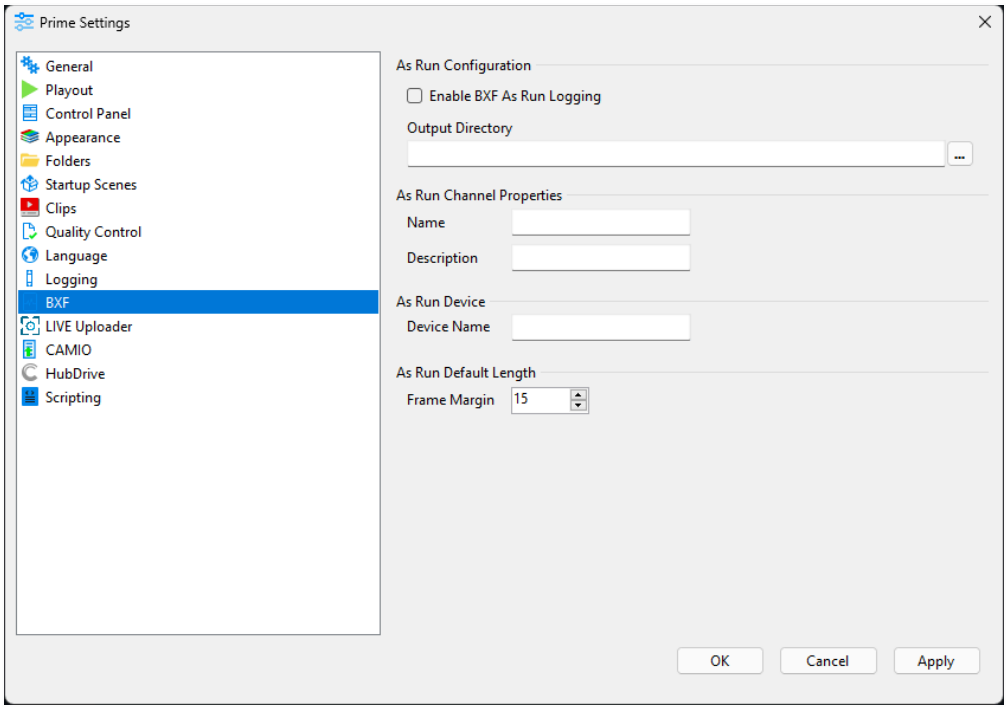
Scenes have a logger built into them. Clicking the log bar will show the current Scene Logger:




6 Errors
0 Warnings
6 Messages
Scene Loaded 6:54:58 PM
Scene Playing 6:54:58 PM
Action Played: Default 6:54:58 PM
Action Played: Start 6:54:59 PM
Could not load font: HelveticaNeue LT 77 BdCn 6:54:59 PM
Could not load font: HelveticaNeue LT 77 BdCn 6:54:59 PM
Could not load font: HelveticaNeue LT 77 BdCn 6:55:02 PM
Could not load font: HelveticaNeue LT 77 BdCn 6:55:02 PM
Could not load font: HelveticaNeue LT 77 BdCn 6:55:11 PM
Could not load font: HelveticaNeue LT 77 BdCn 6:55:11 PM
Could not load font: HelveticaNeue LT 77 BdCn
6:55:11 PM

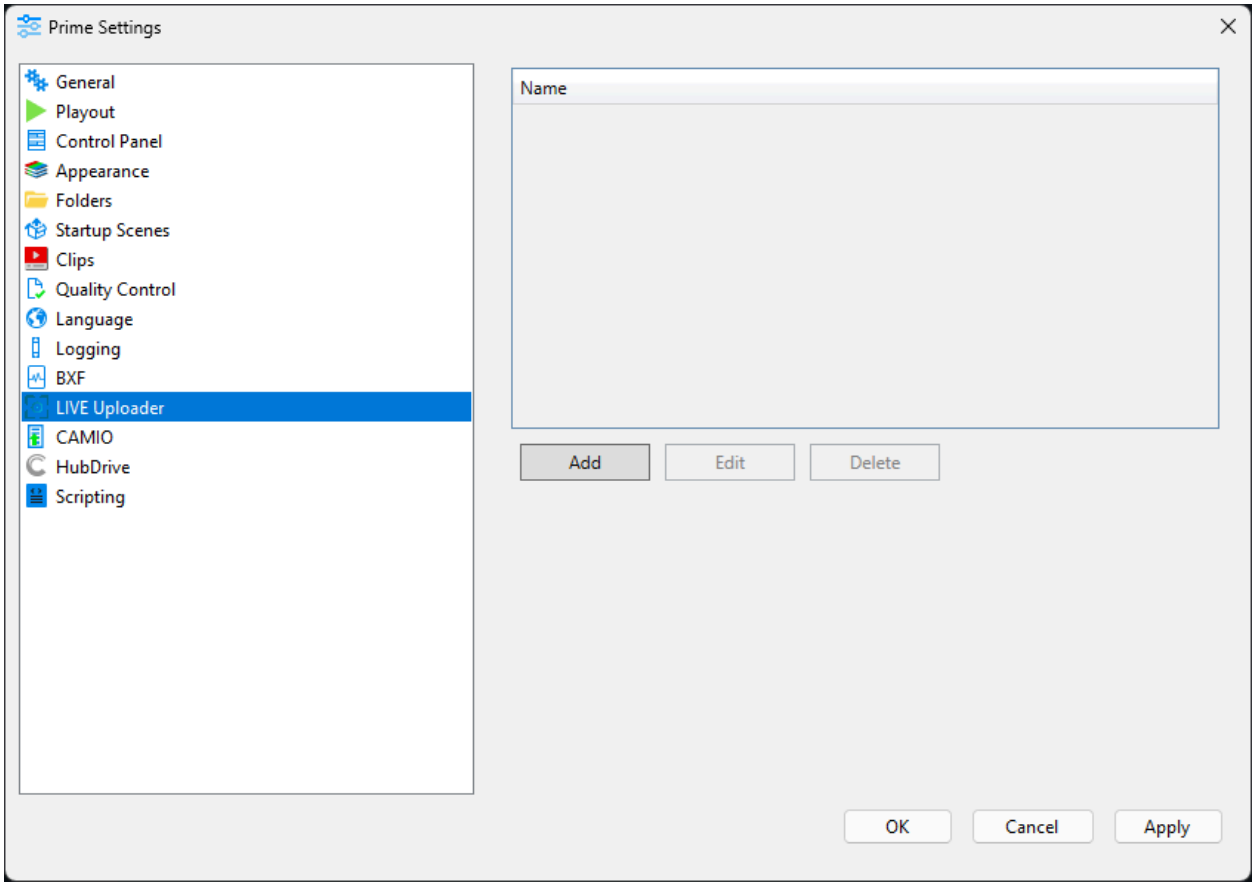
BXF

See the section that explains the BXF object as a scene resource



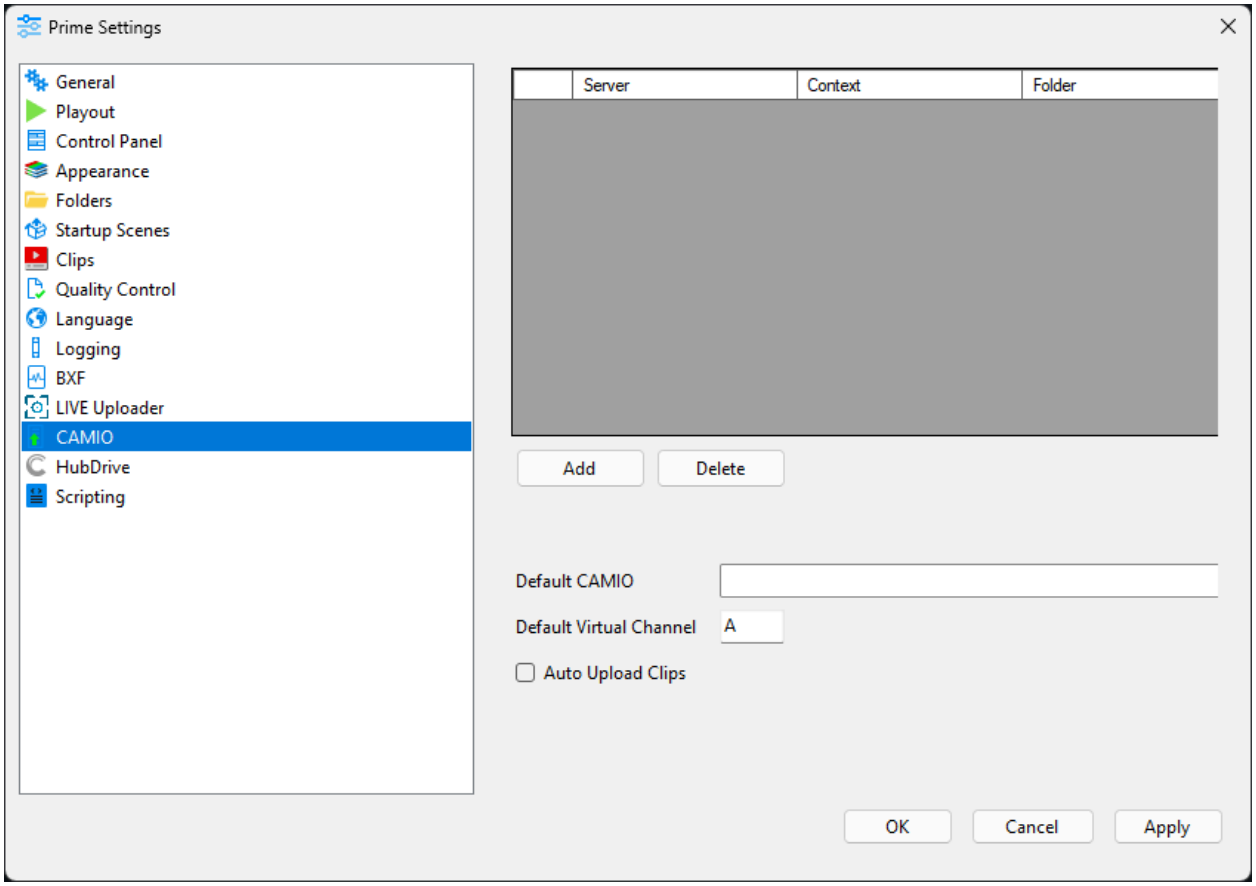
Chyron LIVE Uploader

See the section that explains LIVE Uploader so users can Upload their graphics from Prime to Chyron LIVE.



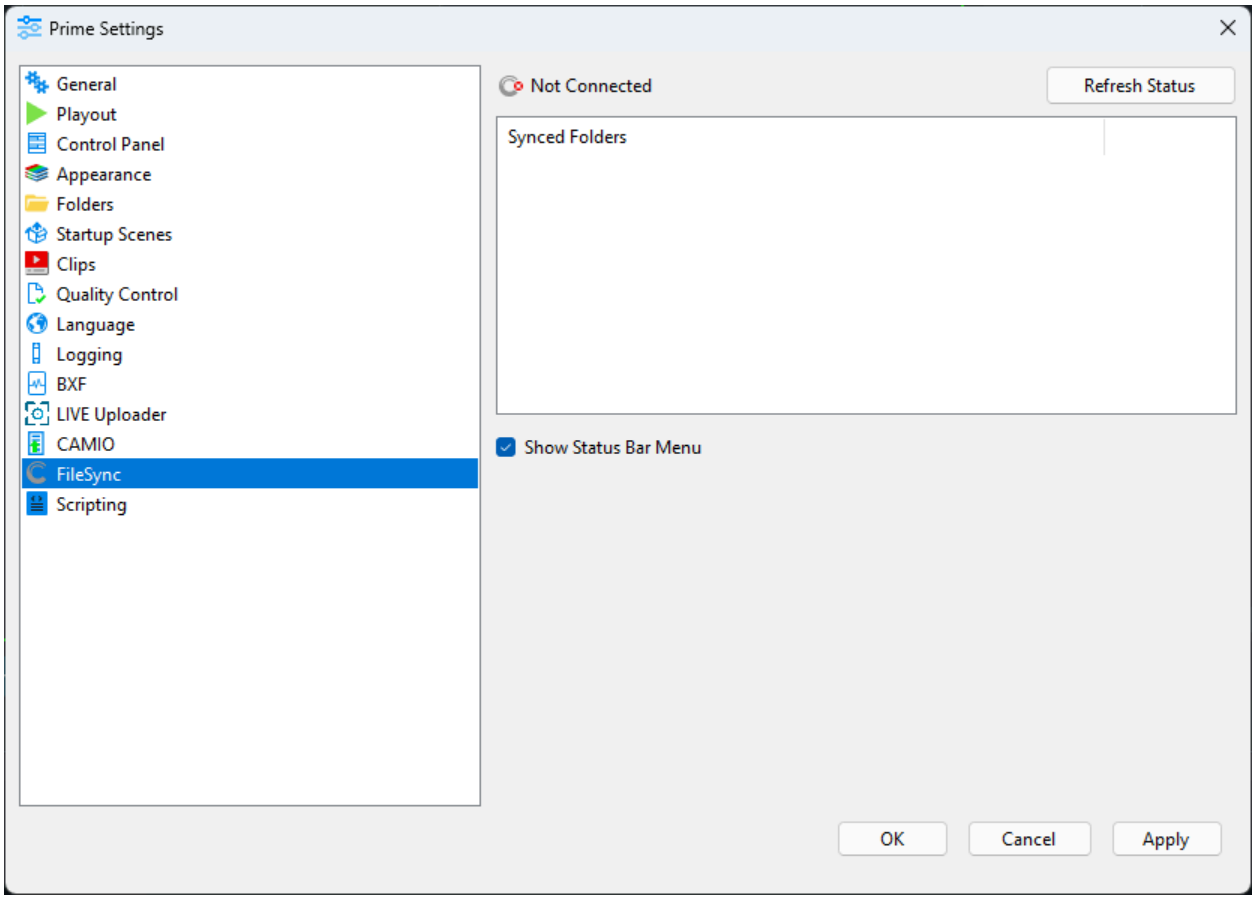
CAMIO

Apply your CAMIO Server settings here.

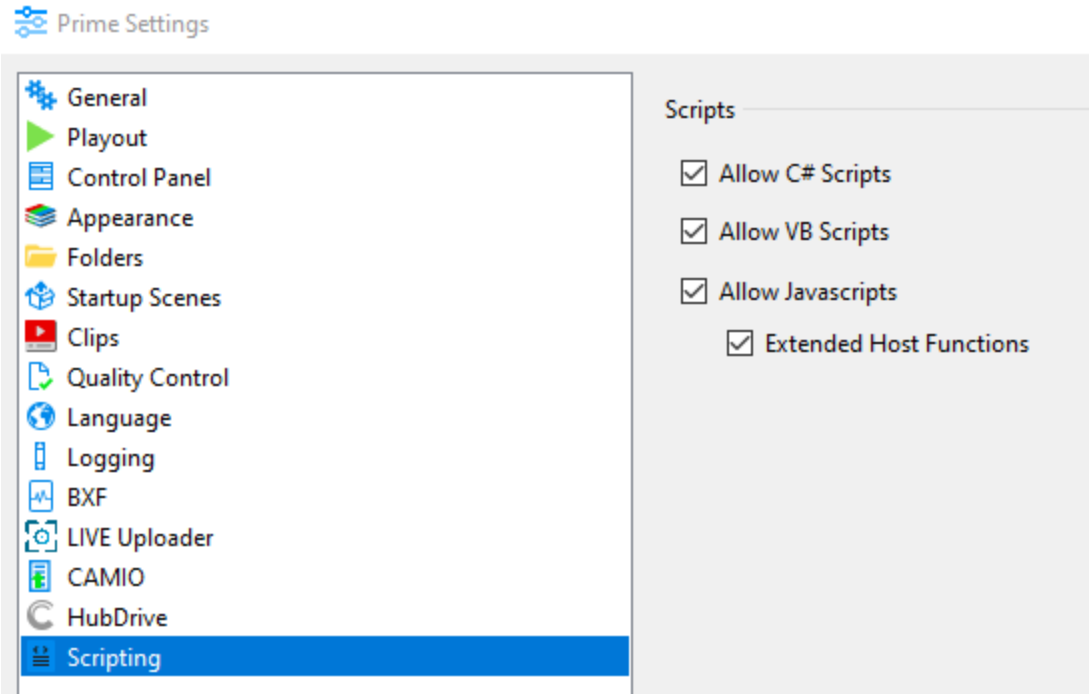


FileSync

FileSync, previously known as Chyron Hub Drive, allows users to remotely sync PRIME Projects, files, and folders.



Scripting



These settings allow Prime to function in Sandbox mode when unchecked. In addition it allows users to preview animations, without running/executing scripts. If a scene is loaded that utilizes a script, and Prime script settings is disabled, then Prime will log warning that the script can not compile and execute.

Hardware/Playout Configuration

Refer to the separate **PRIME_Playout Configuration Guide**

Subchannels

Subchannels are smaller defined areas of a larger output channel. Each subchannel is defined by its resolution and its “X” and “Y” position within the larger output channel.

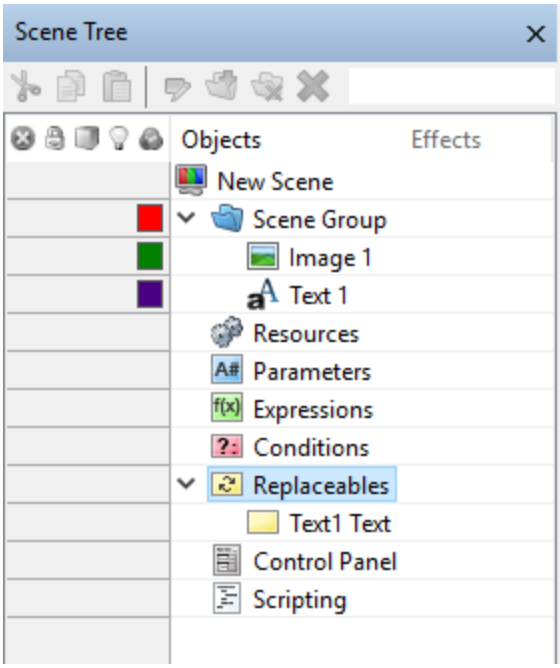
Each subchannel can have its own preview and output in the main Runtime user interface.

You can have independent scene browsers for each subchannel that only shows scenes with the exact same resolution as the subchannel itself to ensure only scenes designed for that resolution can be played.

Replaceables-Automation ID’s

Object properties that can be “Replaced” by automation are added to this list. A Node in the Scene tree “Resources” section will display the “Replaceables Automation ID Editor”. Objects

are required to be exposed in the Replaceable Editor for Update In/Out to execute; including for manual playback. Add items here



Configuration

Automation Configuration is documented in the

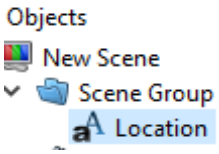
"PRIME Automation Guide."

Preparing the Scene for Automation (The Replaceables-Automation List)

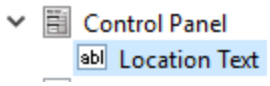
Commands that update scene objects can be connected in the following manner:

- By the scene Object name
- By the Control Panel name
- By the ID name from the automation list

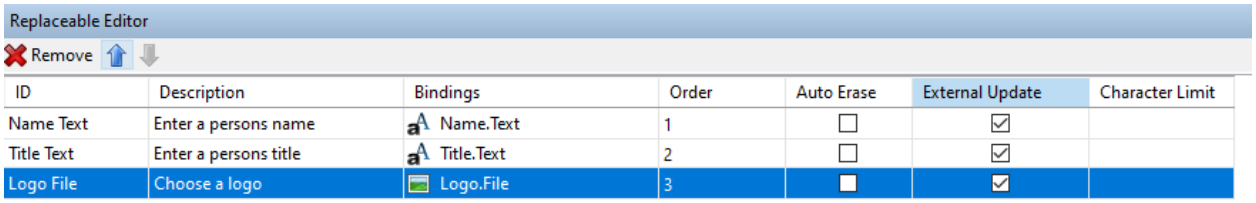
Scene Object Name: The name of the object from the Scene Tree



Control Panel Name: The name of the control Panel from the Control Panel section of the Scene Tree



Replaceables-Automation List: The name of the ID from the Automation ID Editor



- **Id:** This is the ID automation will use to identify this item.
- **Description:** This is a user-friendly description and is also used in *the NRS Plugin (LUCI) as the label for the replaceable item.*
- **Bindings**: Object(s) Properties bound
- **Order:** Used by legacy commands that expect the data in the order they are given in the command. The “W” command is a good example: W\100\200\A\B\C\\
- **Auto Erase:** Should the default value of this property be erased when viewed or loaded.
- **External Update:** When checked, the replaceable is marked to send and receive X and R commands respectively. Each replaceable is identified by is Bindings descriptor. Referencing the picture above a X command would be sent as follows

  *X\1****\Locator L3\Name.Text\Title.Text\Logo.File*

  The automation system would respond with an R Command

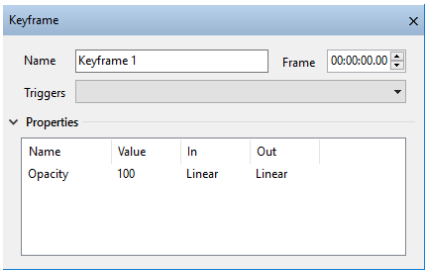
  R\1\Melville, NY\Joe Smith\Smith_Joe.jpg

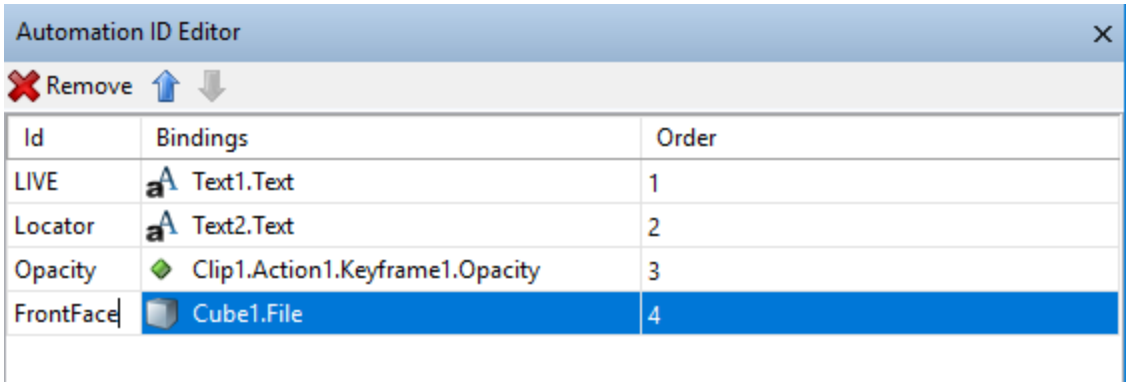
  See the Prime Automation Guide for more.

- **Character Limit**: Enforce a maximum number of characters when applying data supplied to this replaceable. For example, with a character limit of 5 a replaceable that received the value "ChyronHego" would only be updated with the truncated value “Chyro"

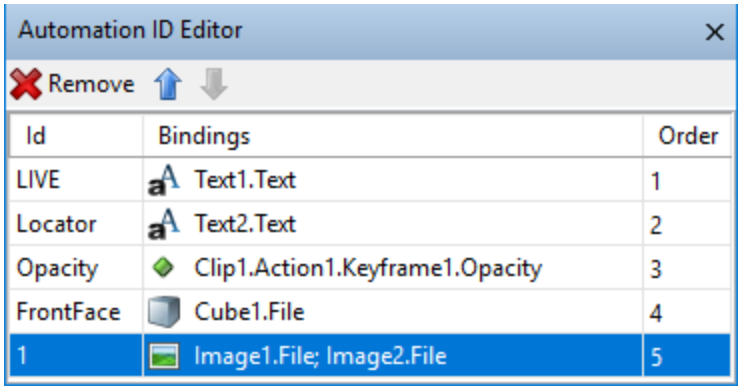
To enter items into the Automation List, drag any property or keyframe into the list. Each item in the list can be bound to multiple properties.

To get a keyframe into the list drag the keyframe from the Keyframe property window NOT the keyframe from within the Timeline.





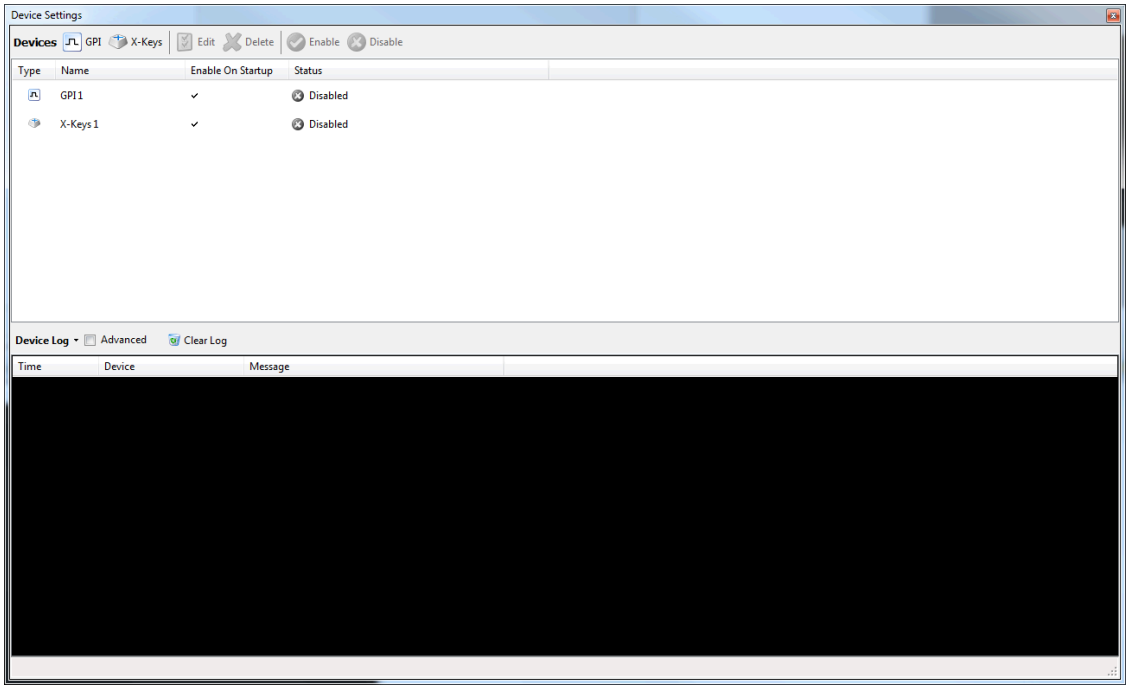
In this example, there are two properties bound to ID# 1



Note: Some scenes may contain Objects and Replaceable IDs that share the same name and are completely unrelated. In this case, the Object name will take precedent when a P/UPDATE command is received.

Devices Configuration

The **Devices Settings** panel provides the ability to add and edit an external device, as well as display a log of device activity once the connection is live. PRIME allows for either a **GPI** or **X-keys** device to be used.



The following parameters are displayed in the **Device Settings** panel:

- **Type -** Displays a **GPI** or **X-Keys** symbol as the type of device.
- **Name - T**he name given to the device.
- **Enable on Startup -** If enabled, then the device will be enabled every time that PRIME is started.
- **Status -** Displays **Enabled**, **Disabled** or **Waiting for Connection** as the current status of the device.

To configure the **Automation Log**:

- Select the **Automation Log** drop-down menu to either **Copy** or **Save** the log.
- Enable **Show Data** to show the data from the Automation Log.
- Select **Clear Log** to clear the displayed data from the Automation Log.
- Each log item will display the time of event, the connection in use and a message.

To edit a device setting, do one of the following:

- Click the item in the **Devices** list, and then click the **Edit** icon. The Device panel for the item will open.
- Double-click the item in the **Devices** list. The Device panel for the item will open.
- Right-click the item in the **Devices** list, and then click **Edit** on the drop-down menu. The Device panel for the selected item will open.

To delete a device, do one of the following:

- Click on the item in the **Devices** list, and then click **Delete** icon.
- Right-click the item in the **Devices** list, and then click **Delete** on the drop-down menu.

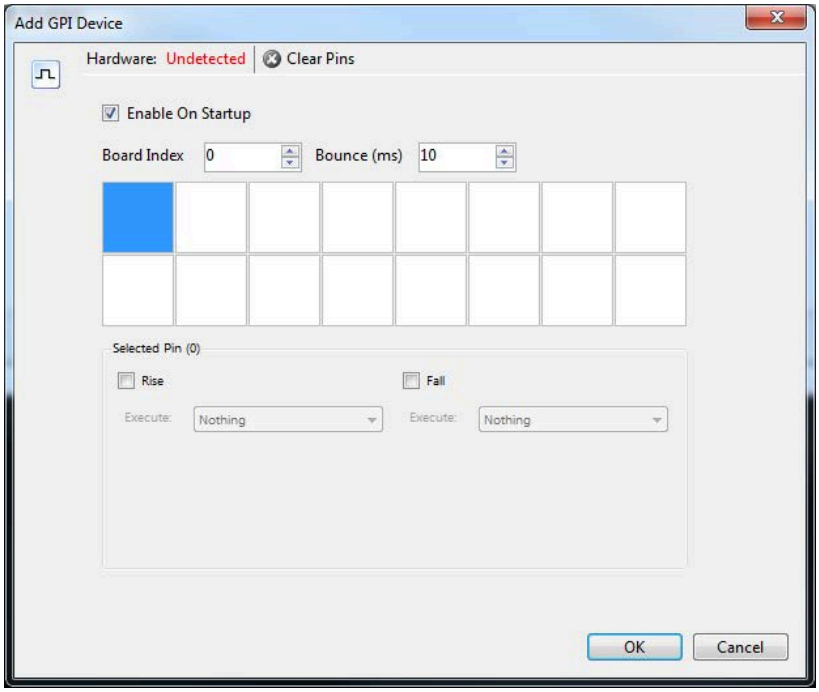
To enable a device, do one of the following:

- Click on the item in the **Devices** list, and then click **Enable** icon.
- Right-click the item in the **Devices** list, and then click **Enable** on the drop-down menu.

GPI In

Up to 16 GPI inputs may be configured in PRIME. To add a GPI connection:

1. Select the **GPI** icon located on the top toolbar of the **Device Settings** panel.

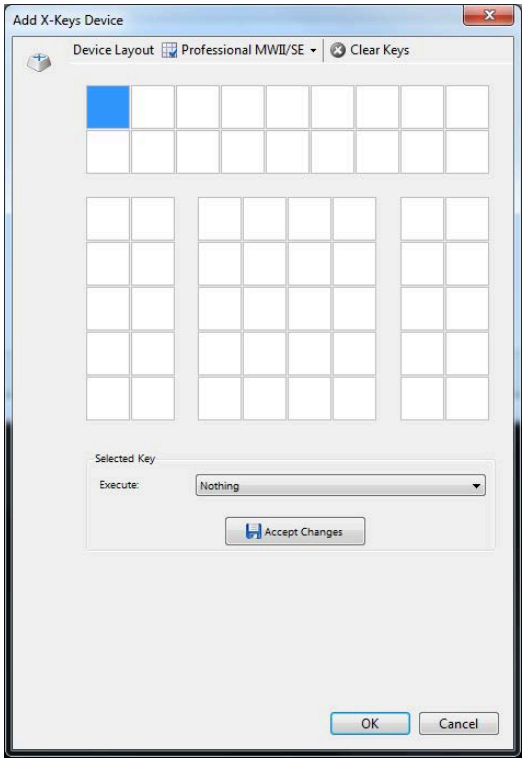


- **Enable on Startup** - Check the **Enable on Startup** check box to automatically enable the GPIs upon PRIME startup.
- The **Board Index** specifies the GPI number. Enter the desired **Board Index**, using the spin box.
- **Bounce** specifies the minimum amount of time, in milliseconds, between triggers. This prevents accidental triggering due to unintended multiple button pushes, which could be caused, for example, by a dirty switch. The default **Bounce** setting is **10 ms.** To change the setting, enter a new setting or select using the spin box.

To configure GPI Pins:

1. Select the desired pin to be configured by clicking the corresponding box. Note that the **Selected Pin (0)** group box label will reflect the number of the selected pin. Pins are numbered from left to right as follows:
    - **0** through **7** in the top row
    - **8** through **15** in the bottom row

2. An action can be executed on both the **Rise**, i.e., when the GPI button is pressed, and the **Fall**, i.e., when the GPI button is released. To set **Rise** and/or **Fall** actions:



   a. Check/uncheck the **Rise** and/or **Fall** checkboxes to enable or disable GPI execution when the button is pressed (**Rise**) and/or released (**Fall**).
   b. From the **Execute** drop-down, select an action to execute when the button is pressed (**Rise**) and/or released (**Fall**). The available actions are as follows: **Clear Channel, Select Channel, Cue Clip, Pause Clip, Play Clip, Stop Clip, Jog Clip (Fast Forward), Jog Clip (Rewind), Load Playlist, Play Playlist, Stop Playlist.**
   c. From the Channel drop-down, select the **Channel** and **Layer** to which the action should apply when the button is pressed (**Rise**) and/or released (**Fall**).

   Depending upon the action that is selected from the **Execute** drop-down, additional information may be requested. In the previous figure, **Play Playlist** is selected as the action to be executed when the GPI button is released. The **Select Playlist** enable check box and **Select Playlist** drop-down are also displayed, in addition to the **Channel** enable check box and **Channel/Layer** selection drop-down.

To clear all pins:

- Select **Clear Pins** located on the top of the GPI configuration dialog.

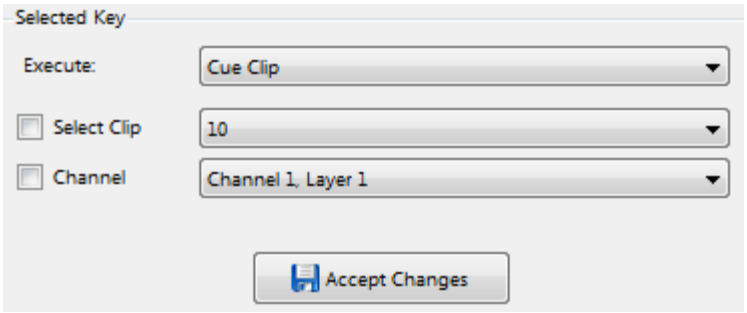
For GPI Out see "GPI Out" in the "Resources" section!

X-Keys

X-keys® are a programmable keyboard that can be customized. To add an X-keys connection:

- Select the **X-Keys** icon located on the top toolbar of the **Device Settings** panel.

- Select the corresponding X-keys model to be configured using the dropdown menu located next to **Device Layout** label. Once selected, the X-keys model name will be displayed.
    - X-keys can be purchased through the X-keys website: http://xkeys.com/
- The white boxes represent the buttons in the X-keys layout. Click a box that is to be assigned a function to be executed. The box will become highlighted.
- Using the drop-down located in the **Selected Key** group box, select the desired function to be assigned to the highlighted key.
    - If a function regarding a **Clip** or **Playlist** is chosen (Ex: “Cue Clip” or “Load Playlist”), then option to specify a **Clip** or **Playlist** as well as the **Channel** will appear.



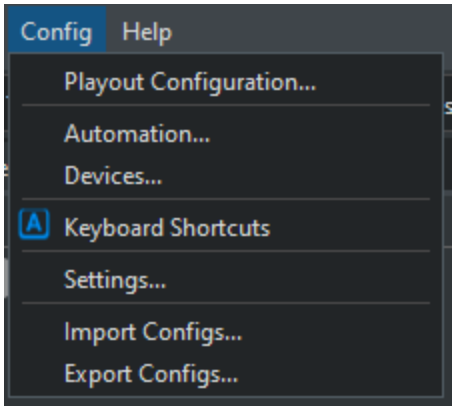
- Click **Accept Changes** to finalize your selection.

To clear all X-keys configurations:

- Click the **Clear Keys** button located on the top toolbar.

Import and Export Configs

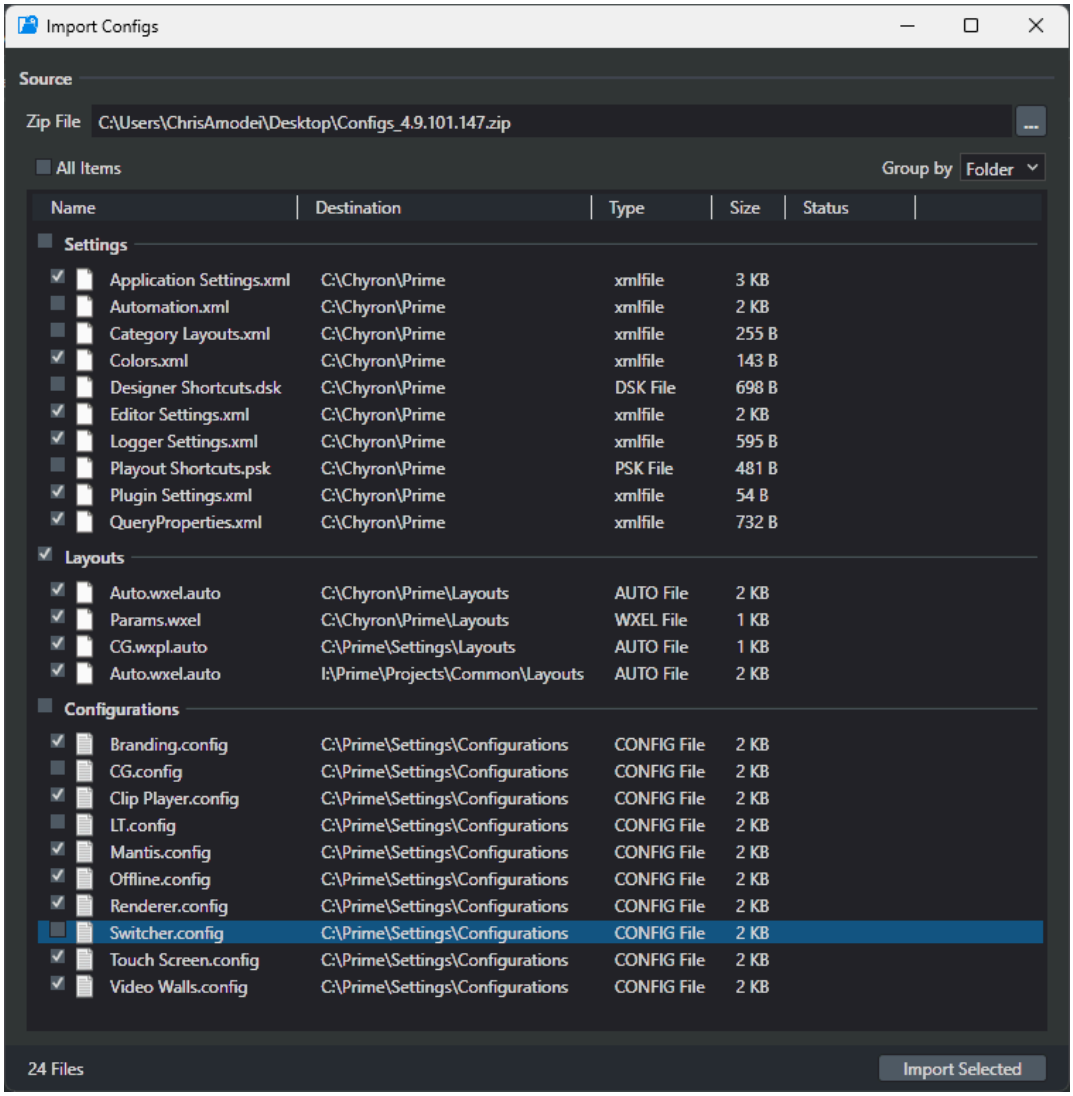
PRIME Playout > Config
Import Configs
Export Configs



Prime export's configuration files as a single zip file. By default will include: Settings, PSK, DSK, Auto, WXPL, Config and WXEL configuration files. User can deselect items as desired.
This method is ideal for replicating on additional prime devices, performing backups, and providing Chyron Customer Success the necessary config files for assistance.

Import Process

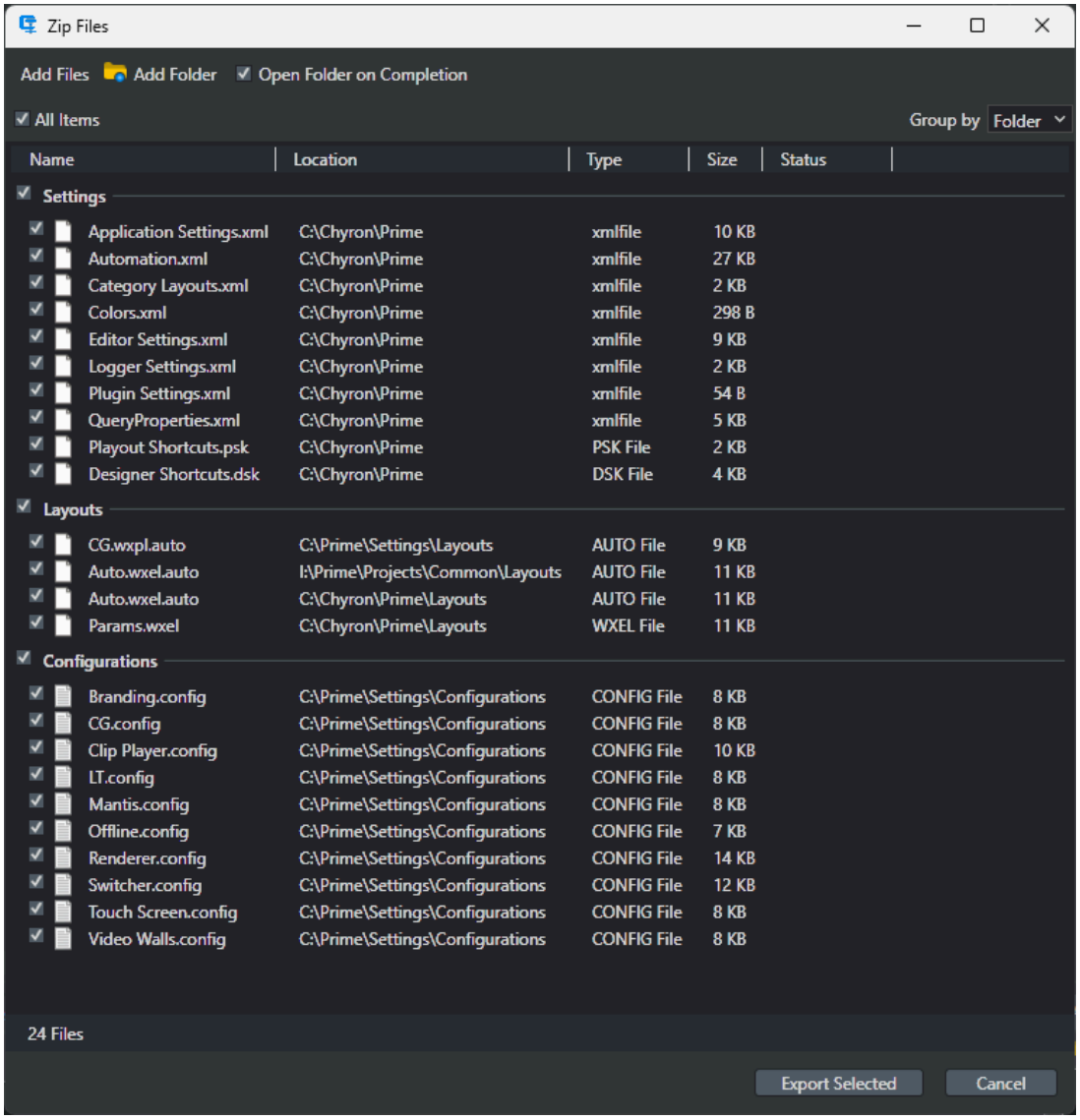
- Select Import Configs
- Choose a PRIME exported configuration zip file
- Choose all or desired config files to import
- Click Import Selected
- Restart PRIME for new configuration files to take effect



Export Process

- Select Export Configs
- Choose all or certain configuration files to export

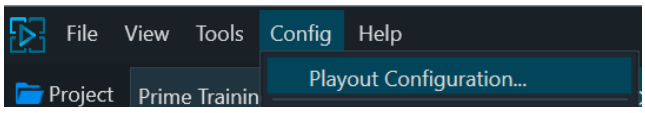
- Click Export Selected and save zip file



Playlists

Configure Playlists

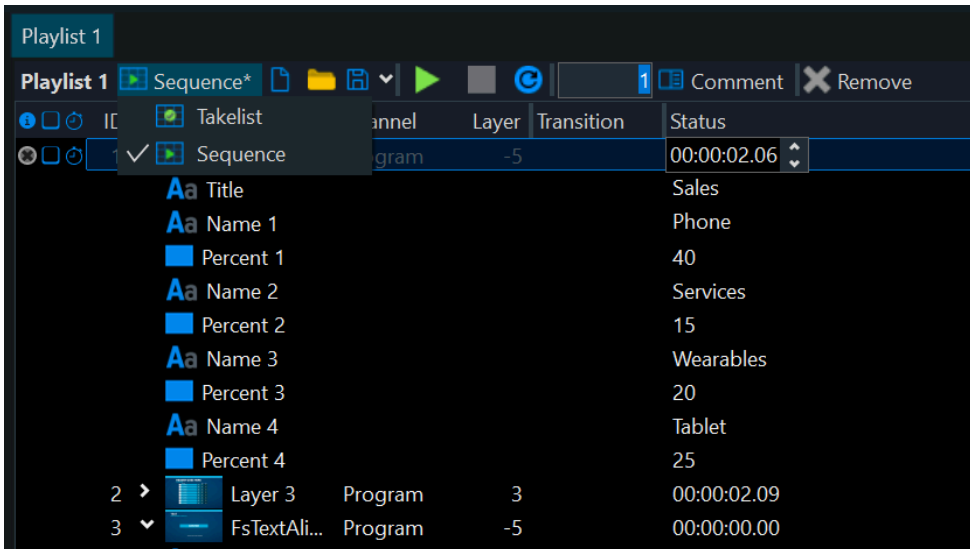
Use the “Playout Configuration” dialog to add playlists.



Playlists are lists of items that can easily be played to air. Playlists can play Scenes, Images and clips all from the same list. You can have many playlists open and playing simultaneously.

There are two modes for the Playlist selectable in each individual Playlist:

- Take List
- Sequence



Takelist

Allows scenes, messages, clips and images to be arranged in order to be played out manually. Each item is Loaded, Played, and Cleared using Enter or Spacebar keys. Items can be cleared using Escape key. The Takelist also includes an Auto Advance option that causes the next item to be automatically loaded and selected when the current item is played. Items can be selected by ID number using the Numpad + Enter.

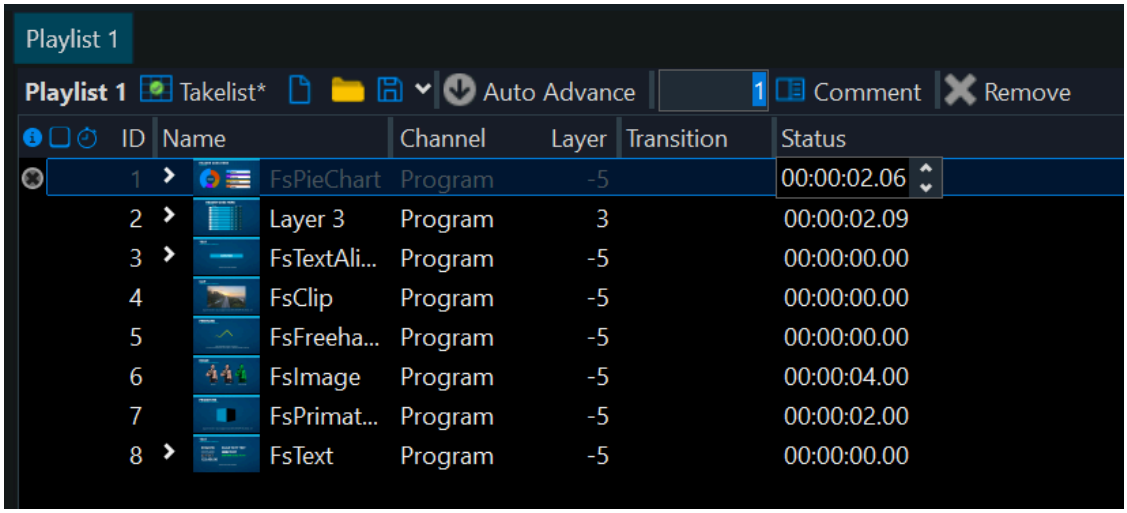
Sequence

In Sequence mode, the Playlist will operate as a Sequencer. Items can have pauses and be run in a linear fashion sequentially. You can add Graphic scenes, Images and clips to the sequencer. Each item can have a pause associated with it.

There is a Sequence Loop toolbar selection.

Allows scenes, messages, clips and images to be arranged in order to be played out sequentially. Clicking Play or pressing Enter or Spacebar on the sequence will start at the first item or the selected item and play each item according to the Duration set on each item. If an item does not have Duration enabled, then the sequence will wait for manual input to advance. The sequence can be set to pause for user input on an item by enabling the Trigger item.

To add items to the Take List, drag and drop any item from its browser to the playlist.



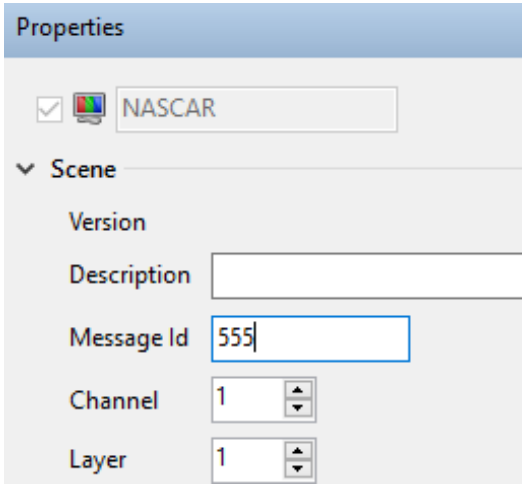
Disable - Disables the item from the Takelist and Sequence. Disabled items will be skipped

Trigger - Causes the sequence to be paused on this item, and waits for trigger to resume (Enter or Spacebar). Trigger is only applicable in Sequence mode.

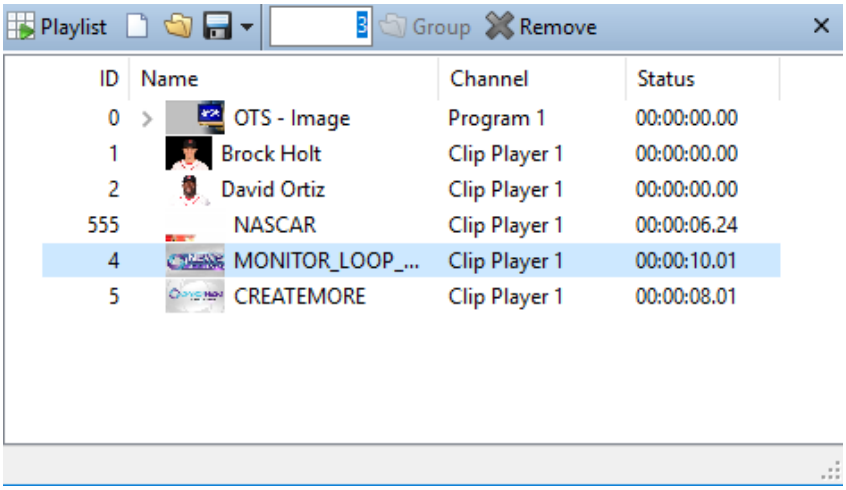
Duration - Sets a duration for the item to be played. Sequence is only applicable in Sequence mode.

ID – The ID is the number that is used to play the item to air from the keyboard. If the scene, image or clip does not have a “Message ID” associated with it the playlist will assign the next available ID. Scene and Clip “Message ID’s” are assigned from the Scene property editor.

Pressing 555 and hitting the Enter key will load the NASCAR clip from the playlist.



Expanding the item by clicking on the Right error next to the ID will expand the item to show any Control Panel items for this Scene. From this view, you can trigger buttons or do text, image and clip overrides.



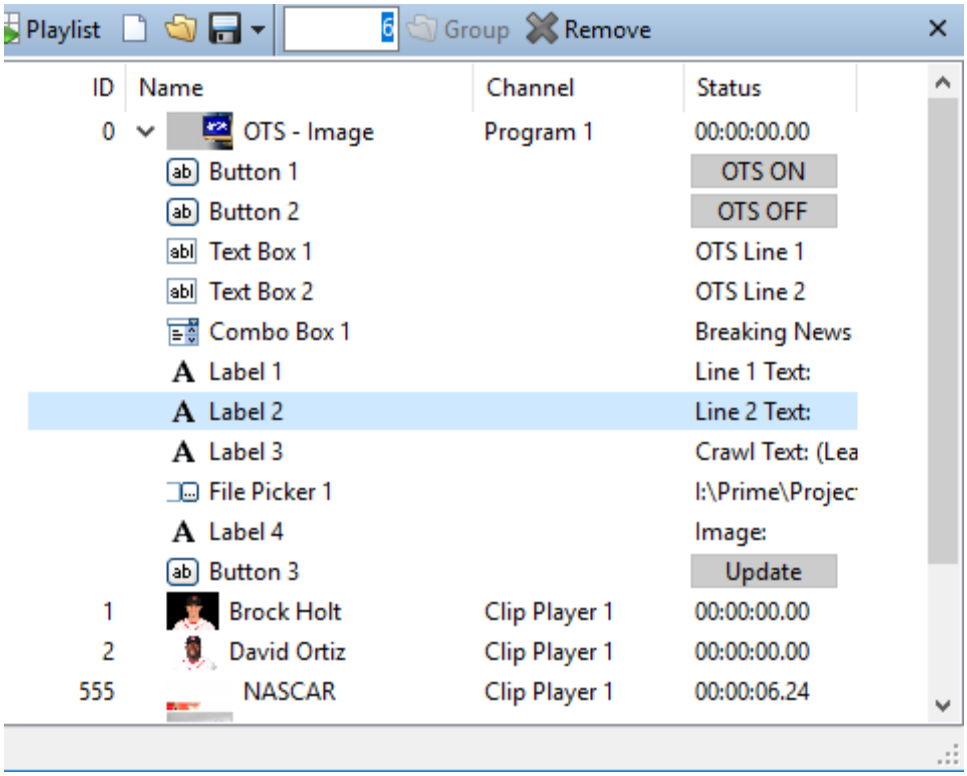
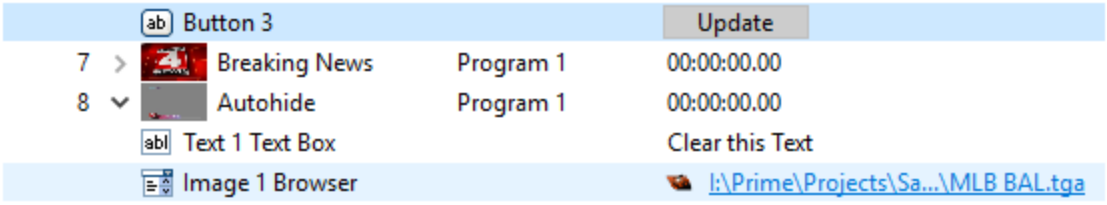
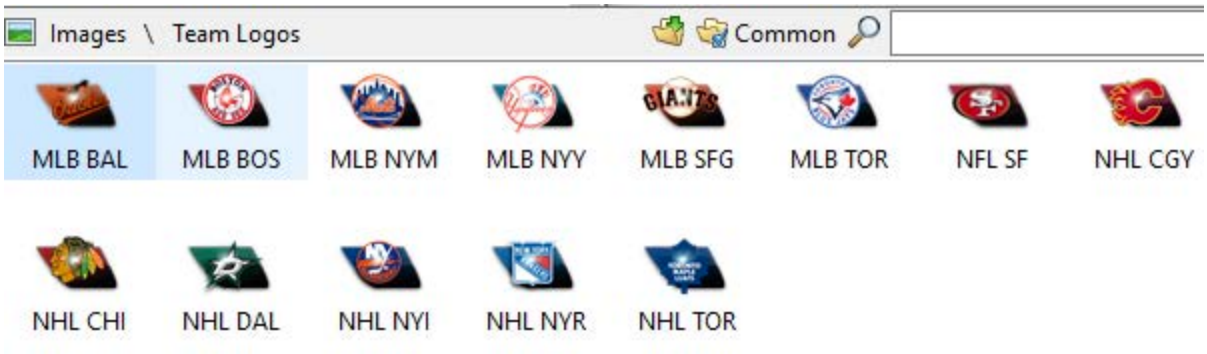


Image overrides will show the Image Browser:

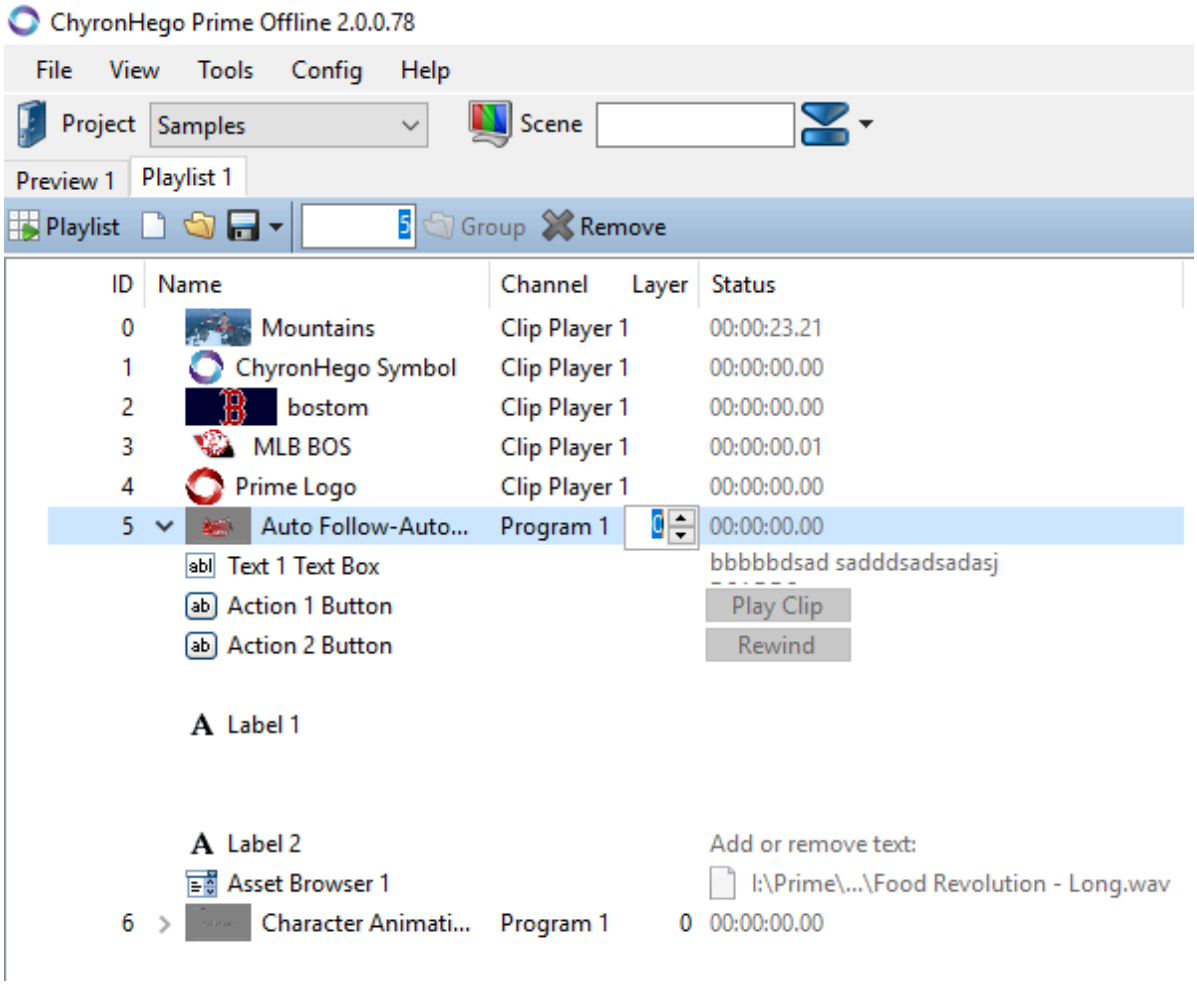


Click on the link to show the Image Browser:



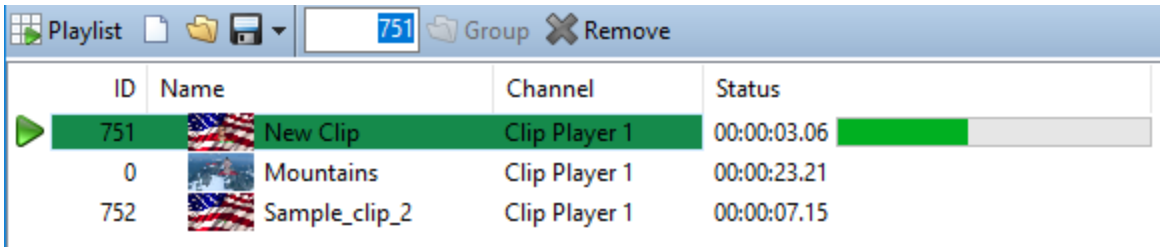
Name: The name field identifies the name of the item. The item can be a clip, Image or scene.

Layer: The layer a scene is played to air can be modified in this field:



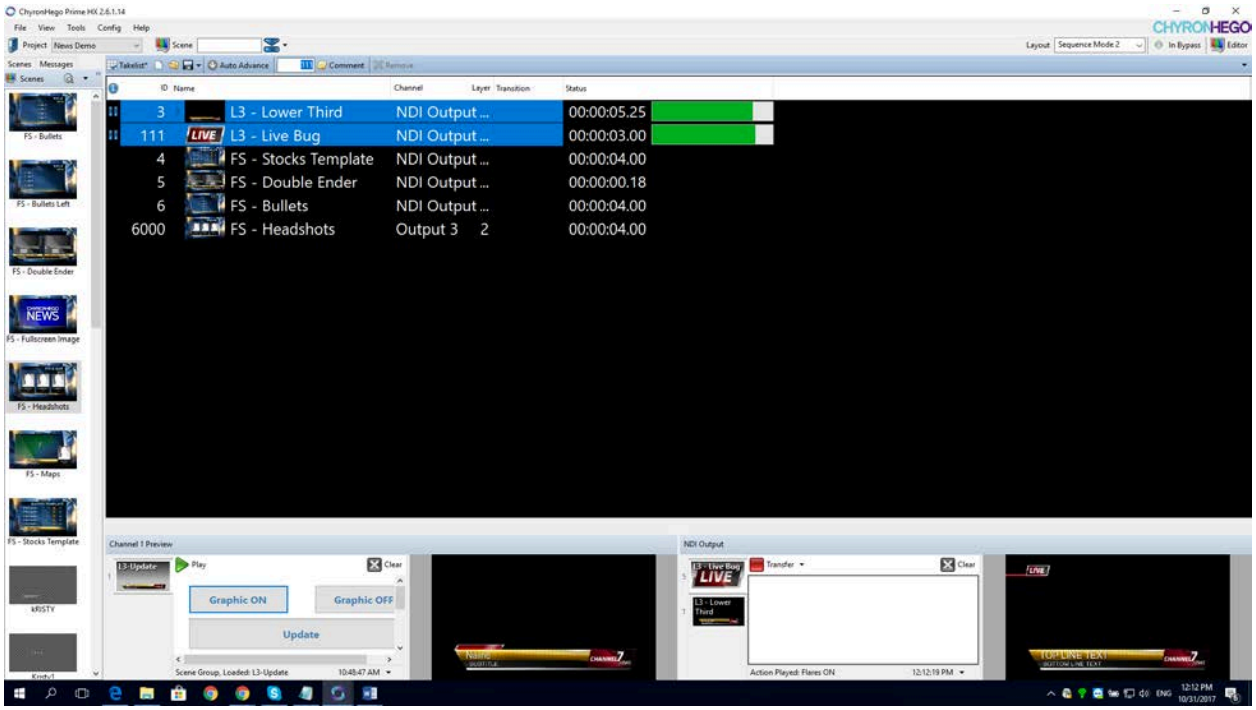
The layer field is NOT accessible for clips.

Status: Shows the status for clips



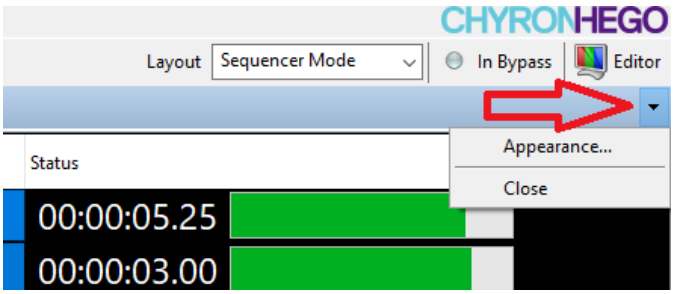
Show the status for graphics: The status bar will show the duration of the effect In, then pause until the effect out is played:

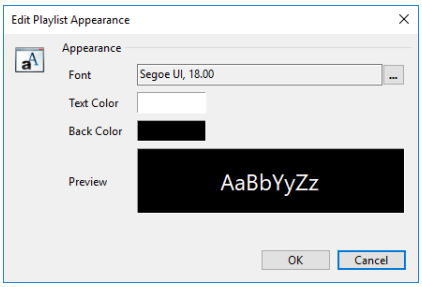
Here two graphics are on air.



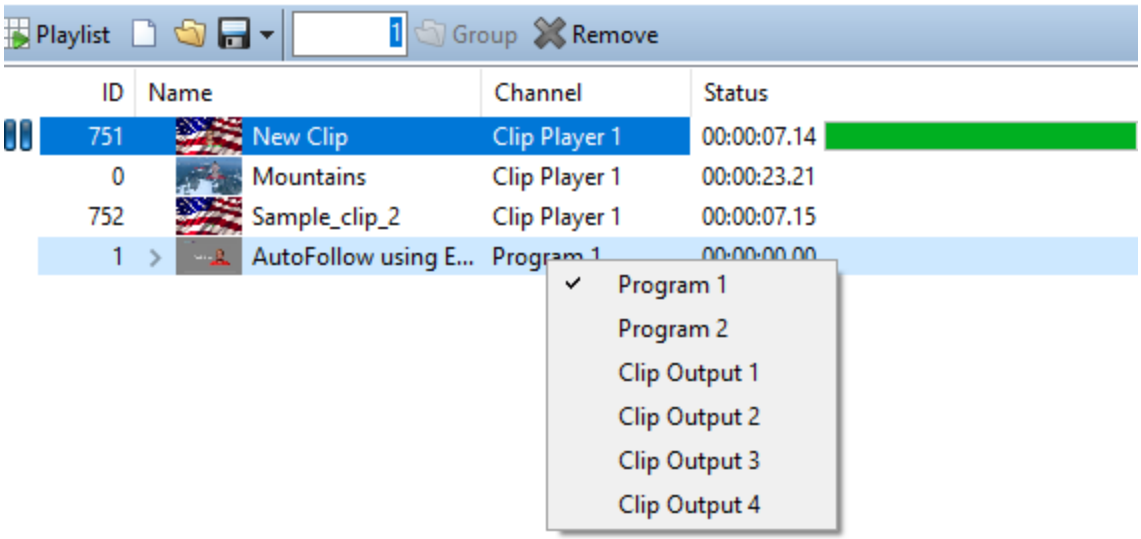
Now the second graphic, the live bug has been played off:

To set a new appearance for the playlist click the dropdown in the upper right-hand corner



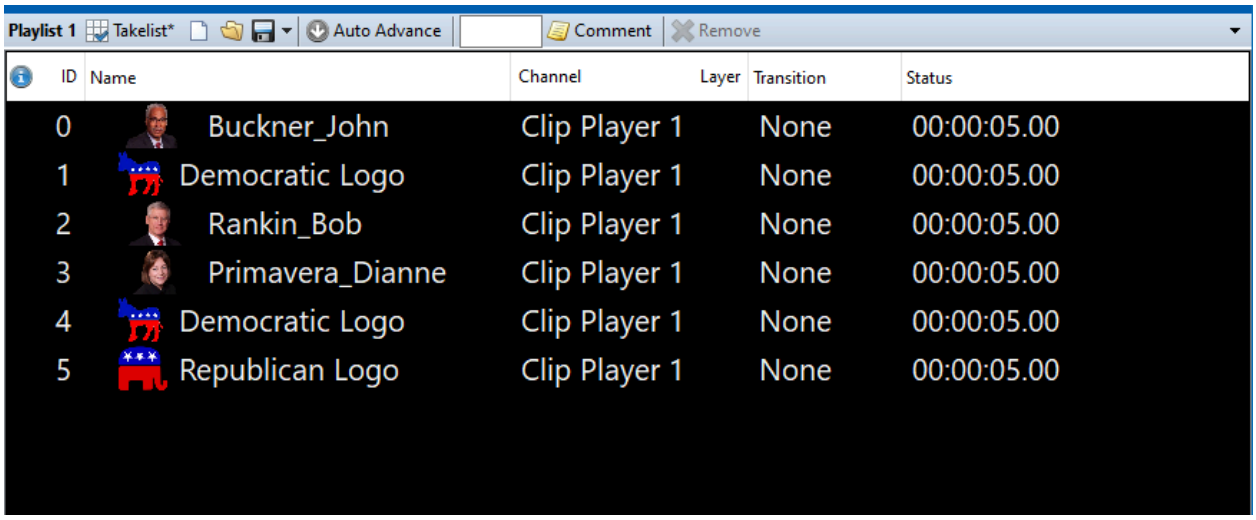


Channel Assignment:



Playlist as a Still Store

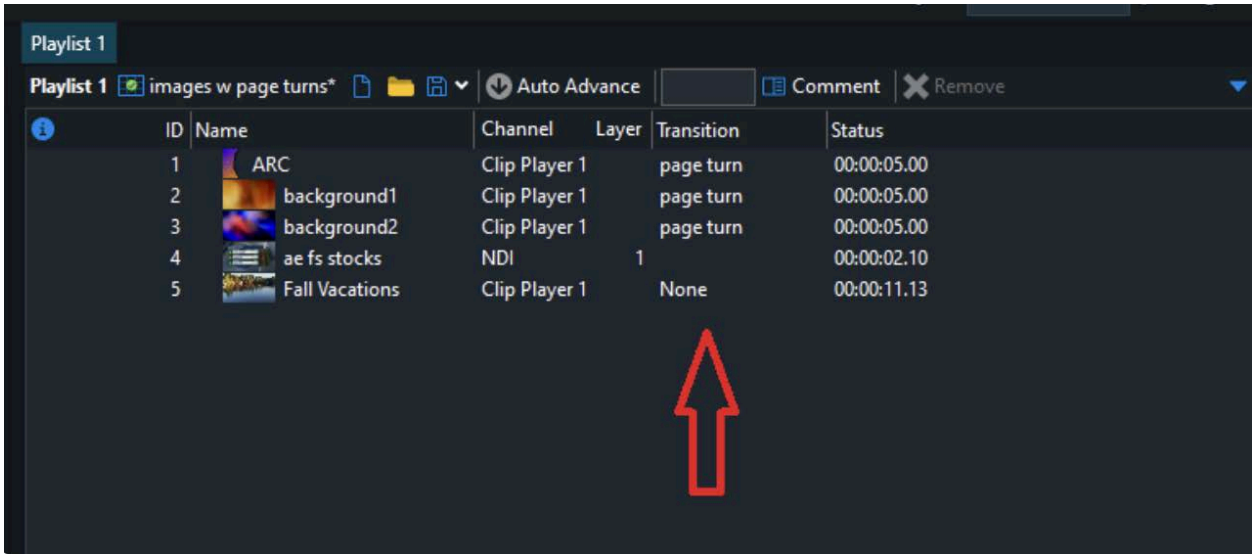
Simply drag images from the browser into the playlist…



Playlist Transitions

The transition column is only active for clips or images, not scenes. It allows you to browse to clip transition files (.pct).

Transition – The transition column is only active for clips or images, not scenes. It allows you to browse to clip transition files (.pct). When a Playlist ID is played, the selected Transition will play.



Shortcut Key Editor

The **Shortcut Key Editor** allows the user to configure which shortcut keys correspond to which action defined in the “Description” column. Prime employs two Shortcut Key Editors. One for Playout and one for the Designer.

Shortcut keys are assigned by selecting the shortcut and pressing the keyboard key(s) you wish to have assigned to that currently selected shortcut. For each Shortcut Key Editor, assigned Shortcut keys can be saved and loaded. Playout shortcuts are saved with a .psk file extension and Designer shortcut keys are saved as a .dsk file extension.

Playout Shortcut Keys:

Shortcut key categories:

1.) **Component** - these target PRIME Components more generally eg Play Preview
2.) **Global** - target PRIME Components more specifically eg Play Preview 1

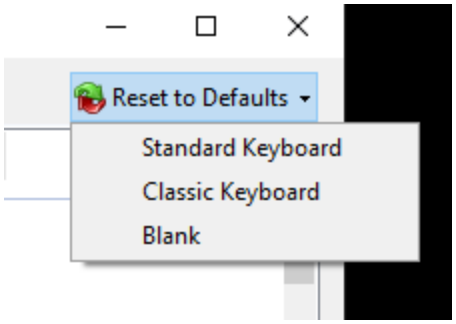
3.) **Scripts** - these target Application Scripts (Tools > Application Scripting)

Compound Shortcuts - Multiple shortcuts can be set to a single shortcut key combination, which, when triggered execute all assigned functions simultaneously.

Keyboard shortcuts can be executed at anytime regardless of the focused window in the application.

Reset to Defaults

Preassigned Keyboard shortcuts can be loaded via the Reset to Defaults dropdown



Standard Keyboard - PC keyboard based PRIME default shortcut keys

Classic Keyboard - These shortcuts are designed to be used with the Chyron Classic Keyboard. Shortcuts are familiar to Lyric users. Additional documentation located in the

Chyron Classic Keyboard User Guide

Blank - no assigned shortcuts

Default shortcut key files cannot be overwritten however they can be loaded, customised and saved to a file.

Erase vs Clear Shortcuts

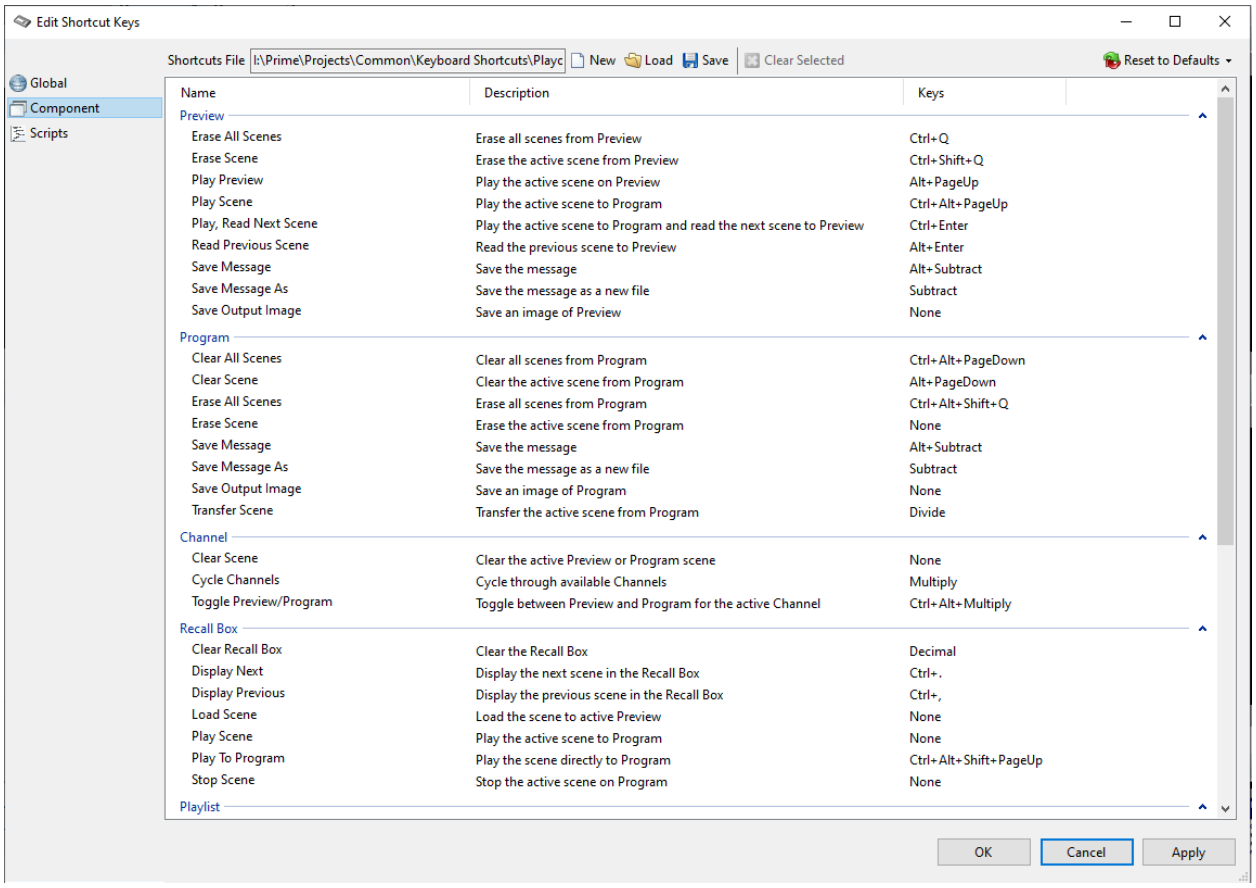
Erase and Clear shortcuts exist at both Global and Component levels. There are options to affect either a single scene or the entire output.

Erase: Cuts a scene(s) from Preview or Program without playing the Effect Out event.

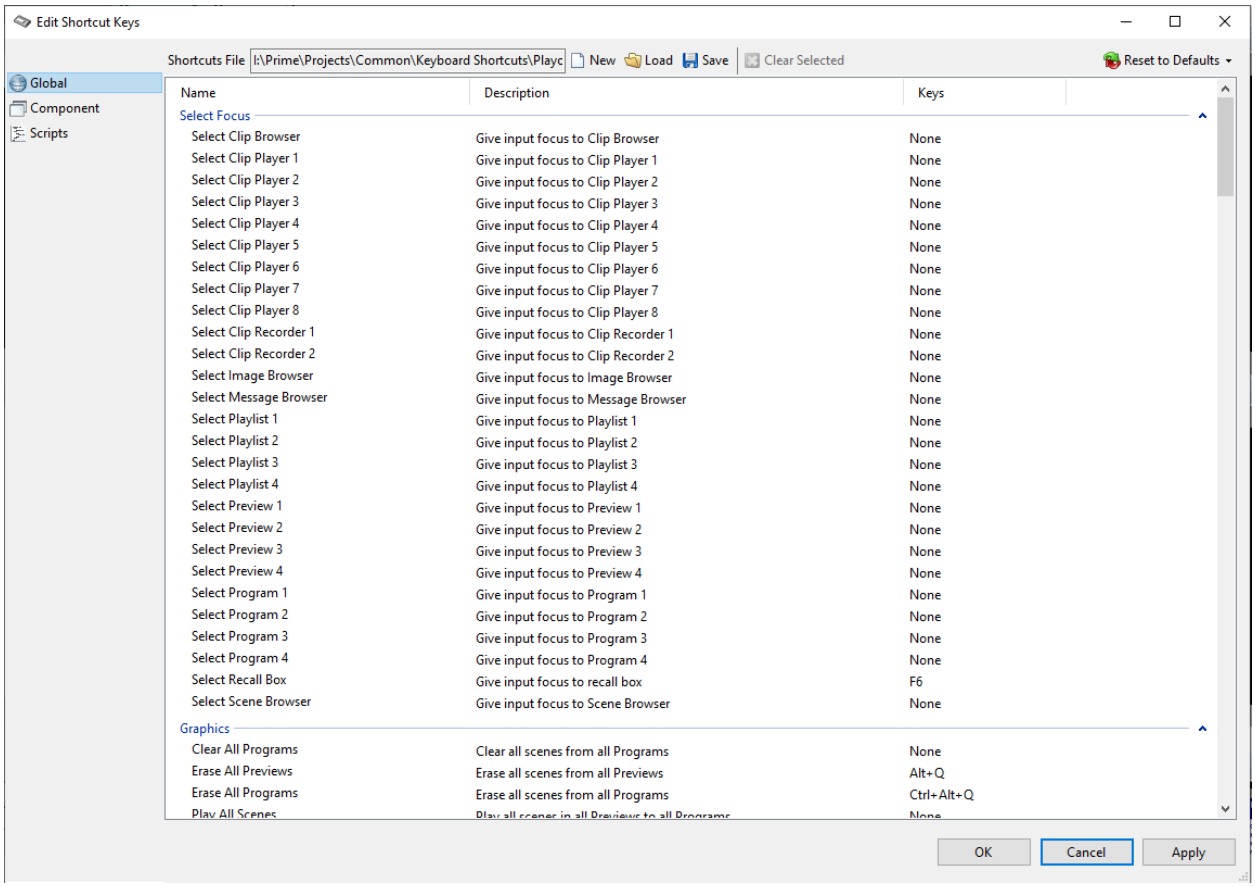
Clear: Removes a scene(s) from Program by playing the Effect Out event. Clear shortcuts are not available for Preview outputs.

The Keyboard Shortcuts are a growing list and can be different than currently documented.

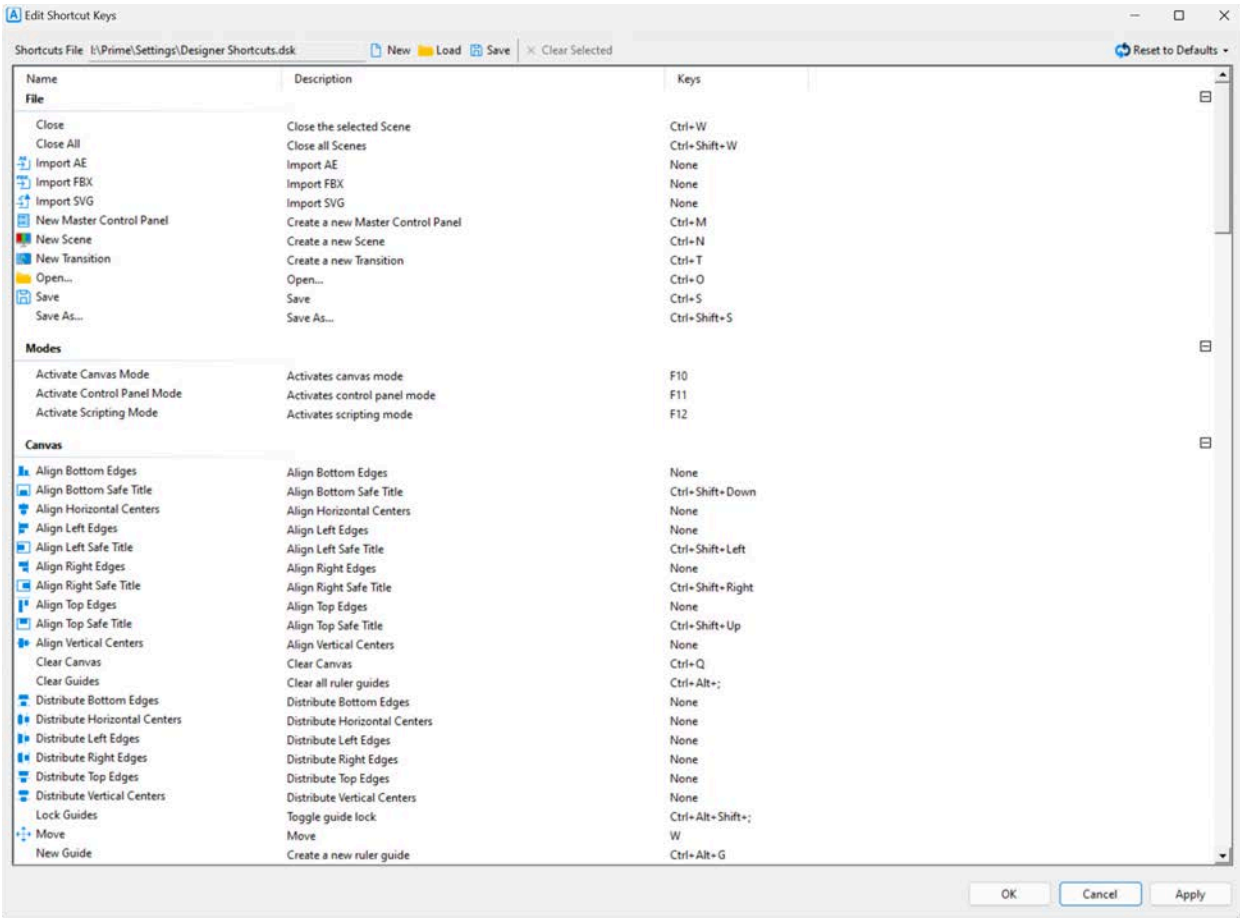
Component


Edit Shortcut Keys
Shortcuts File
I:\Prime\Projects\Common\Keyboard Shortcuts\Playc
New
Load
Save
Clear Selected
Reset to Defaults
Global
Component
Scripts
Name
Description
Keys
Preview
Erase All Scenes
Erase all scenes from Preview
Ctrl+Q
Erase Scene
Erase the active scene from Preview
Ctrl+Shift+Q
Play Preview
Play the active scene on Preview
Alt+PageUp
Play Scene
Play the active scene to Program
Ctrl+Alt+PageUp
Play, Read Next Scene
Play the active scene to Program and read the next scene to Preview
Ctrl+Enter
Read Previous Scene
Read the previous scene to Preview
Alt+Enter
Save Message
Save the message
Alt+Subtract
Save Message As
Save the message as a new file
Subtract
Save Output Image
Save an image of Preview
None
Program
Clear All Scenes
Clear all scenes from Program
Ctrl+Alt+PageDown
Clear Scene
Clear the active scene from Program
Alt+PageDown
Erase All Scenes
Erase all scenes from Program
Ctrl+Alt+Shift+Q
Erase Scene
Erase the active scene from Program
None
Save Message
Save the message
Alt+Subtract
Save Message As
Save the message as a new file
Subtract
Save Output Image
Save an image of Program
None
Transfer Scene
Transfer the active scene from Program
Divide
Channel
Clear Scene
Clear the active Preview or Program scene
None
Cycle Channels
Cycle through available Channels
Multiply
Toggle Preview/Program
Toggle between Preview and Program for the active Channel
Ctrl+Alt+Multiply
Recall Box
Clear Recall Box
Clear the Recall Box
Decimal
Display Next
Display the next scene in the Recall Box
Ctrl+.
Display Previous
Display the previous scene in the Recall Box
Ctrl+,
Load Scene
Load the scene to active Preview
None
Play Scene
Play the active scene to Program
None
Play To Program
Play the scene directly to Program
Ctrl+Alt+Shift+PageUp
Stop Scene
Stop the active scene on Program
None
Playlist
OK
Cancel
Apply

Global

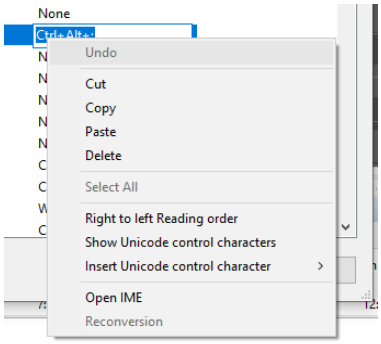

Edit Shortcut Keys
Shortcuts File
I:\Prime\Projects\Common\Keyboard Shortcuts\Playc
New
Load
Save
Clear Selected
Reset to Defaults
Global
Component
Scripts
Name
Description
Keys
Select Focus
Select Clip Browser
Give input focus to Clip Browser
None
Select Clip Player 1
Give input focus to Clip Player 1
None
Select Clip Player 2
Give input focus to Clip Player 2
None
Select Clip Player 3
Give input focus to Clip Player 3
None
Select Clip Player 4
Give input focus to Clip Player 4
None
Select Clip Player 5
Give input focus to Clip Player 5
None
Select Clip Player 6
Give input focus to Clip Player 6
None
Select Clip Player 7
Give input focus to Clip Player 7
None
Select Clip Player 8
Give input focus to Clip Player 8
None
Select Clip Recorder 1
Give input focus to Clip Recorder 1
None
Select Clip Recorder 2
Give input focus to Clip Recorder 2
None
Select Image Browser
Give input focus to Image Browser
None
Select Message Browser
Give input focus to Message Browser
None
Select Playlist 1
Give input focus to Playlist 1
None
Select Playlist 2
Give input focus to Playlist 2
None
Select Playlist 3
Give input focus to Playlist 3
None
Select Playlist 4
Give input focus to Playlist 4
None
Select Preview 1
Give input focus to Preview 1
None
Select Preview 2
Give input focus to Preview 2
None
Select Preview 3
Give input focus to Preview 3
None
Select Preview 4
Give input focus to Preview 4
None
Select Program 1
Give input focus to Program 1
None
Select Program 2
Give input focus to Program 2
None
Select Program 3
Give input focus to Program 3
None
Select Program 4
Give input focus to Program 4
None
Select Recall Box
Give input focus to recall box
F6
Select Scene Browser
Give input focus to Scene Browser
None
Graphics
Clear All Programs
Clear all scenes from all Programs
None
Erase All Previews
Erase all scenes from all Previews
Alt+Q
Erase All Programs
Erase all scenes from all Programs
Ctrl+Alt+Q
OK
Cancel
Apply

Designer Shortcut Keys



To set the “Keys” field back to “None”, right click and select “Clear Selected”

Left click and select a Key text, then right click on the key text for unicode options



The keyboard arrow keys functions as follows when the scene tree or scene object in the canvas is selected:

- **Arrow Keys** will change value by **1 unit** in the direction of the arrow
- **Shift + Arrow Keys** will change value by **10 units** in the direction of the arrow
- **Ctrl + Arrow Keys** will change value by **.1 units** in the direction of the arrow

The Transform Spinner controls will work as follows:

- **Right click drag** or **mouse wheel** will change the value by **1 unit**
- **Shift + Right click drag** or **mouse wheel** will change the value by **10 units**
- **Control + Right click drag** or **mouse wheel** will change the value by **.1 unit**

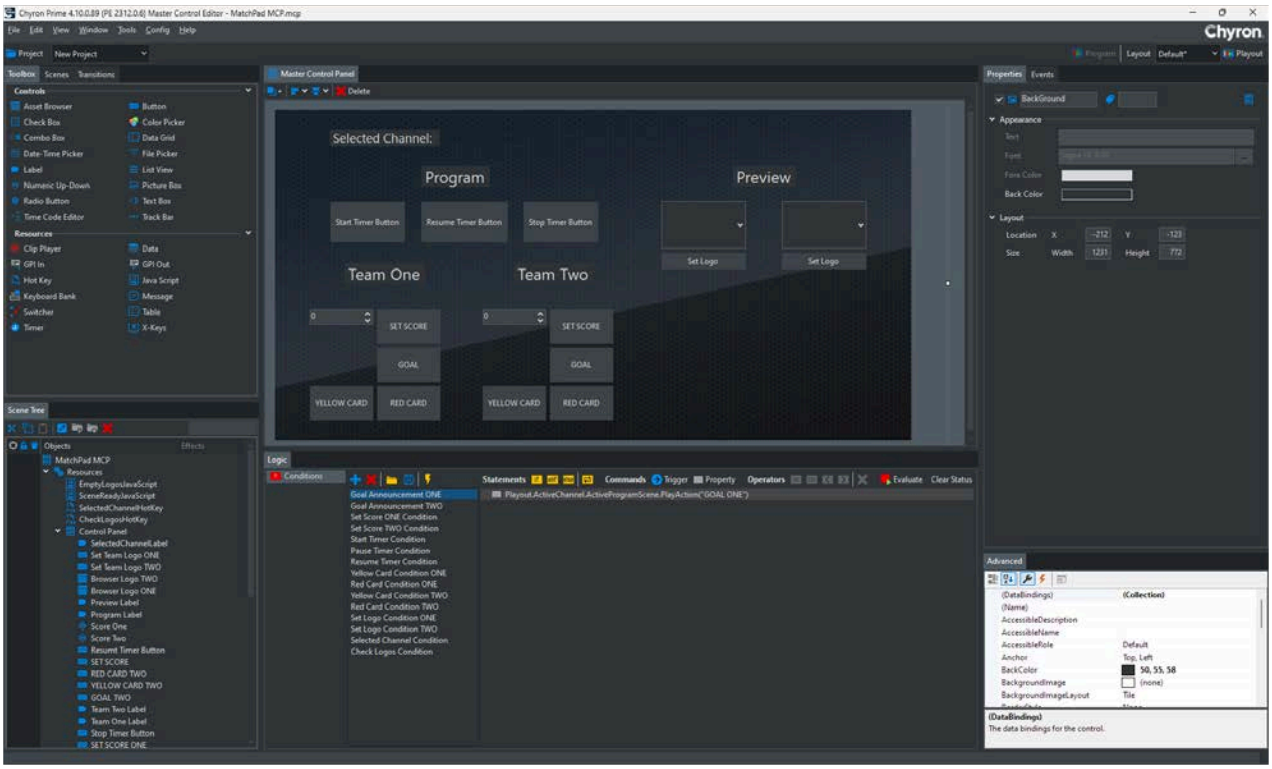
To set the “Keys” field back to “None”, right click and select “Clear Selected”

Master Control Panels

Master Control Panels are panels users create that, unlike scene control panels, are not tied to any specific scene. Controls and Resources can be either hooked up in the user interface or execute Java Script code for more sophisticated control.

To Create - Select File > New Master Control Panel (Ctrl + M)

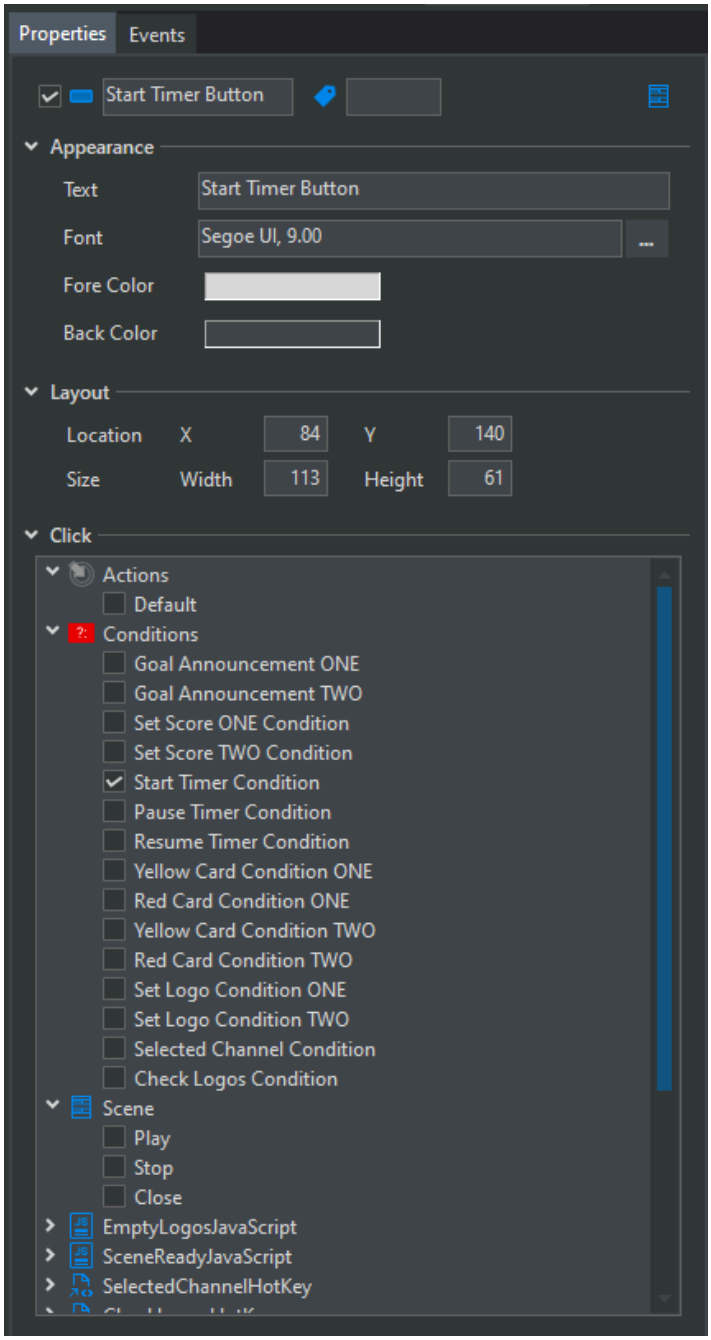
Click and/or drag Controls or Resources from the “Toolbox” to the Master Control Panel Canvas.



Beginning in Prime 5.0, some Advanced options have now been exposed within the base properties of certain Controls

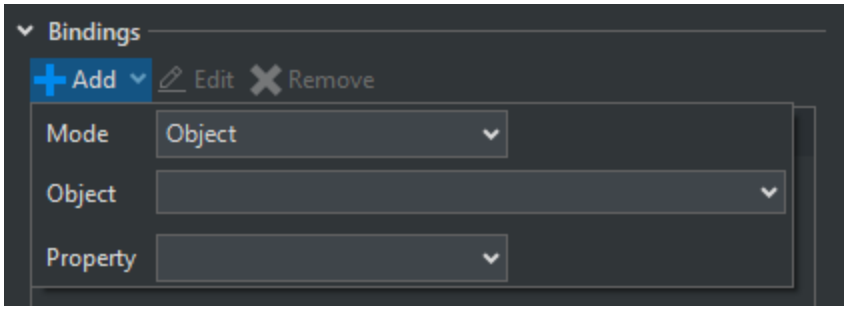
Bind a Button using the “Properties panel” of the control.

In this example, the button is bound to a Condition.



You can continue to bind as many commands to the button as needed.

Bindings can be made similar to Control Panels.
Please navigate to the Scene Control Panel section of this User Guide for more details.



Load a Scene - To load a scene, add a Property item to a Condition and type a line such as: Playout.Channels(0).LoadScene("123"). This would load scene 123 on the first channel

Play a Scene - To play a scene, add a Property item to a Condition and type a line such as: Playout.GetChannel("Program").PlayScene("123"). This would play scene 123 on a channel named Program

Stop a Scene - To stop a scene, add a Property item to a Condition and type a line such as: Playout.ActiveChannel.StopScene("123"). This would stop scene 123 on the active channel

Close a Scene - To close a scene, add a Property item to a Condition and type a line such as: Playout.GetChannel("Program").CloseScene("123"). This would close scene 123 on a channel named Program

Active Channel - To access the active channel use the ActiveChannel property of the Playout object.

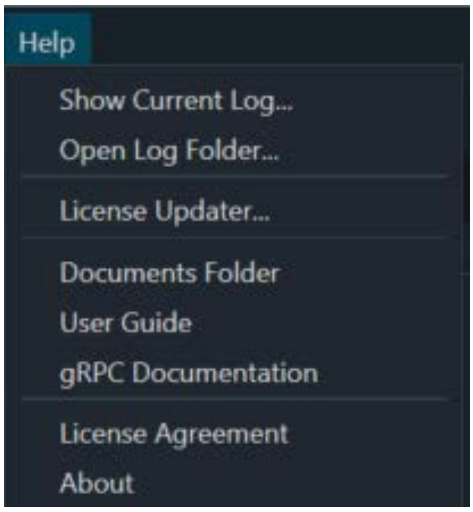
For example:
Playout.ActiveChannel.LoadScene("123") would load scene "123" on the active channel

Get Channel - To access a channel by name or by number, use the GetChannel method of the Playout object.

For example:
Playout.GetChannel("Program").LoadScene("123") would load scene "123" on the channel named "Program".

Playout.GetChannel(1).LoadScene("123") would load scene "123" on the first channel

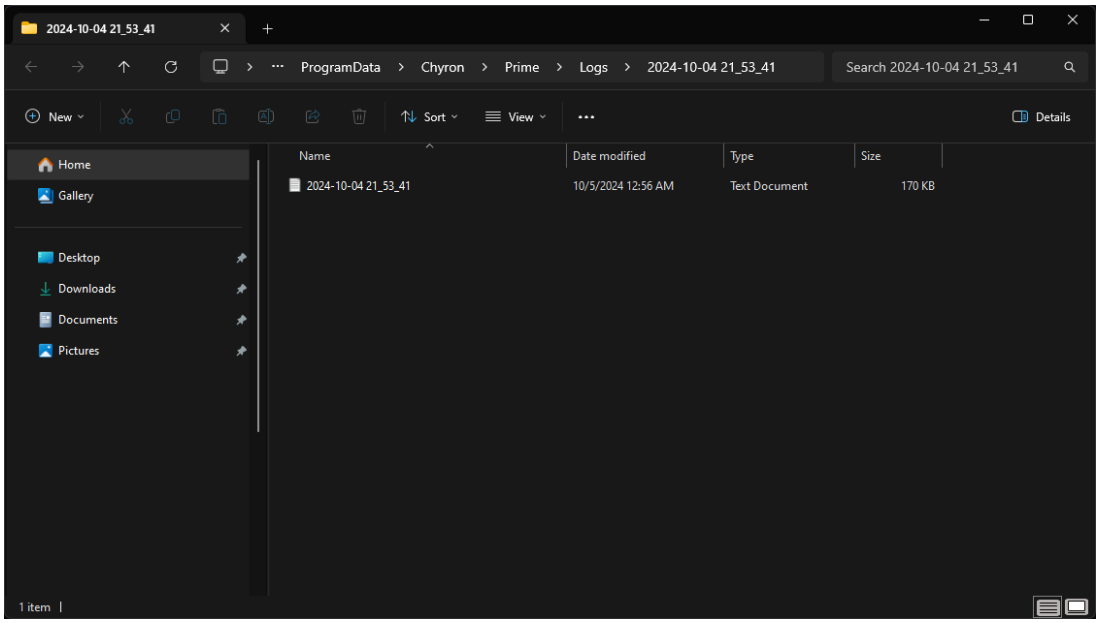
Playout Help



Show Current Log

Opens the current log

Open Log Folder



All PRIME log files will be located in this folder

License Updater

Launches the ChyronHego License Updater

Documents Folder

Opens the offline PRIME Documents folder installed with your version

User Guide

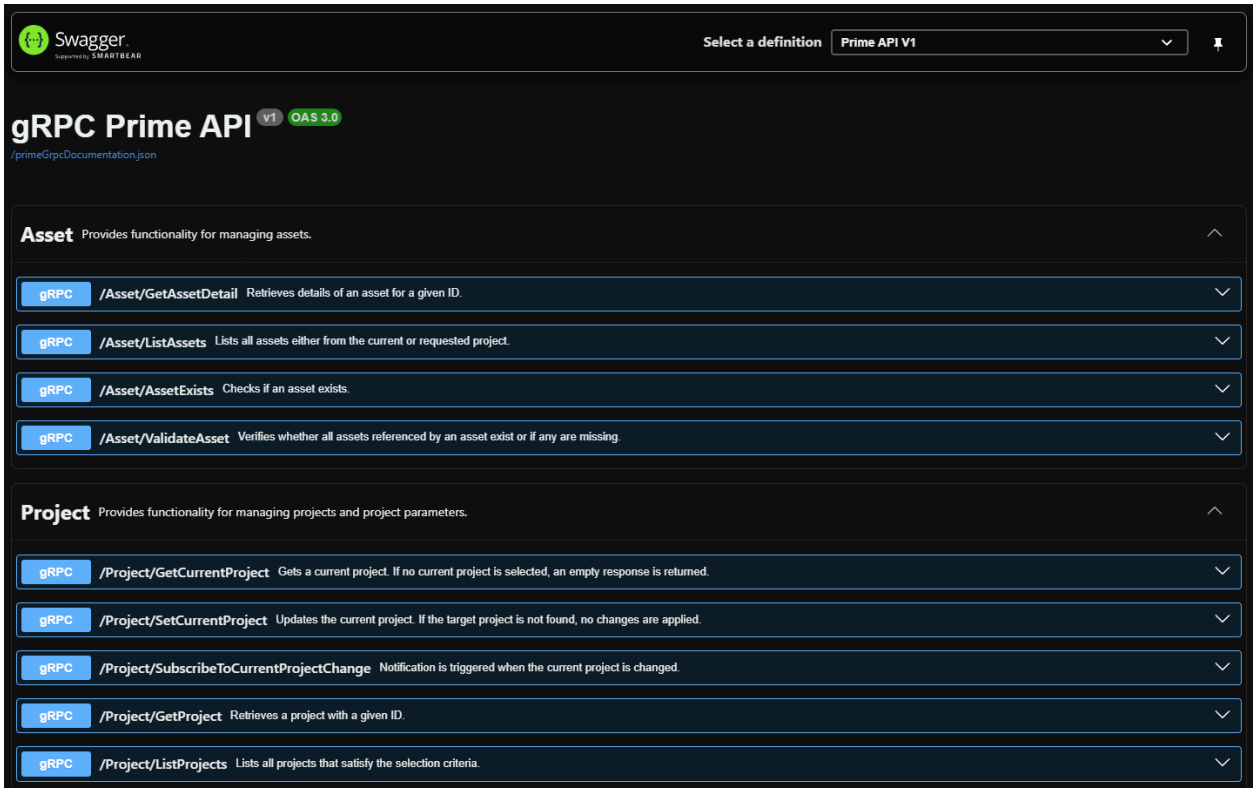
Opens this User Guide

gRPC Documentation

Opens a local file within Chrome to the new gRPC API Definitions.

Each time you relaunch Prime, the gRPC Prime API Documentation will take 6 seconds or so to launch the first time.

For more information regarding gRPC, please see the PRIME Automation User Guide.



License Agreement

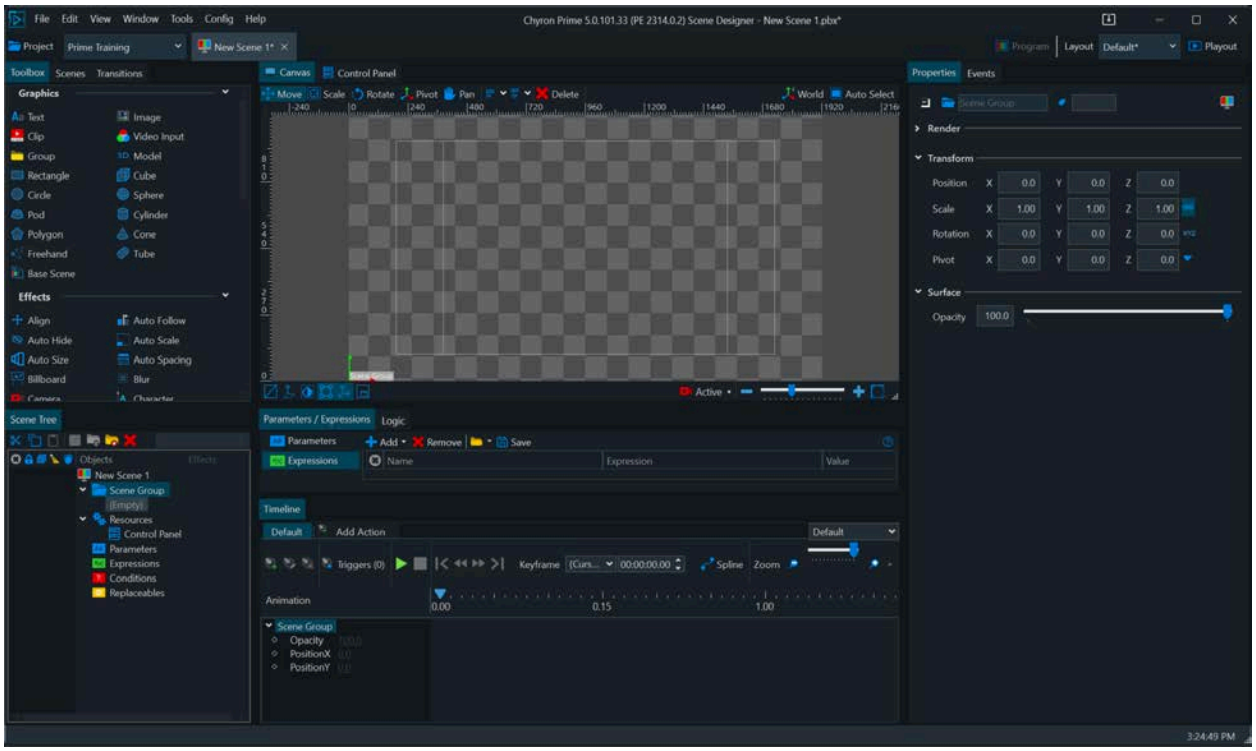
Opens the ChyronHego Software License Agreement

About

Displays the PRIME CG and Prime Engine versions currently running

Prime Scene Designer

Scene Designer is the primary design application designers will use to create 2D and 3D graphics available in Prime Playout Mode.



Prime Title Bar

Application Menus

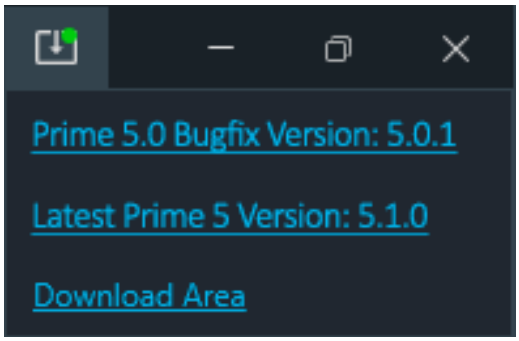
- File
- Edit
- View
- Window
- Tools
- Config
- Help

Version Identifier

- The Chyron Prime version currently being ran
- Chyron Prime Engine version currently installed and being ran
- File Name the canvas is currently focused on

Release Notifications

When a New Release is available, the Notifications Icon will display a Green Circle.
Click on the Release Notifications Icon to display the latest available versions.



- **Latest Bug Fix Version:**
  latest bugfix build based on the version currently running
- **Latest Prime Version:**
  shows the latest Minor version available based on the Major Version you are running
- **Newest Prime Version:**
  Newest Major Version Available
  (Users may need to purchase New Licensing in order to download and run this version)
- **Download Area** - Links directly to the main Download Area

  *If no updates are available, only the Download Area link will be present

NOTE Clicking on any one of the release notifications will open up your Windows default internet browser and link you directly to that release in the Chyron Download Area.

The Chyron Download Area, also known as the Chyron DA, allows users to download the Chyron Products they are licensed for, read through the latest release notes, download Qualified NVIDIA drivers, as well as download additional files.

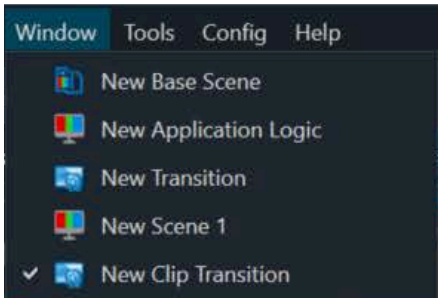
Prime Projects

The creating and opening of Projects is covered at the beginning of this guide.

Designer Tabs

Quickly and easily navigate between multiple files at once.

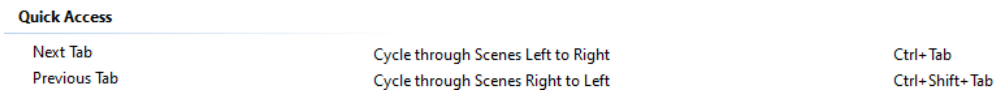
To re-organize tabs, drag and drop the tabs next to each other by utilizing the drop indicator line. Reorganizing the tabs on the Project Bar will automatically reorder your open files within the Window menu.



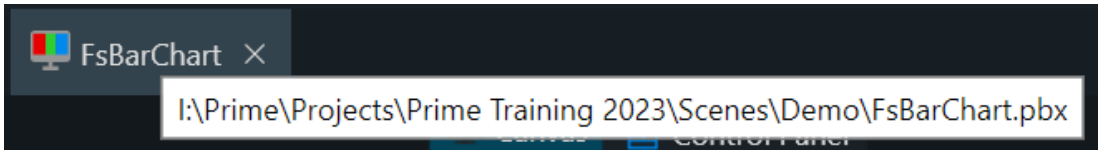
Designer Tab Shortcut Keys

Quick access shortcut keys are available for Tabs. Please see the Designer Shortcut Keys section of this document to learn how to access and modify shortcut key bindings.

Ctrl + Tab will tab / cycle through Tabs from left to right
Ctrl + Shift + Tab will tab / cycle through Tabs from right to left



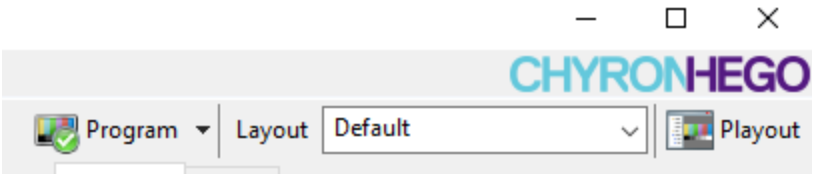
Hovering your mouse over a Designer Tab will display the file path



Live Mode

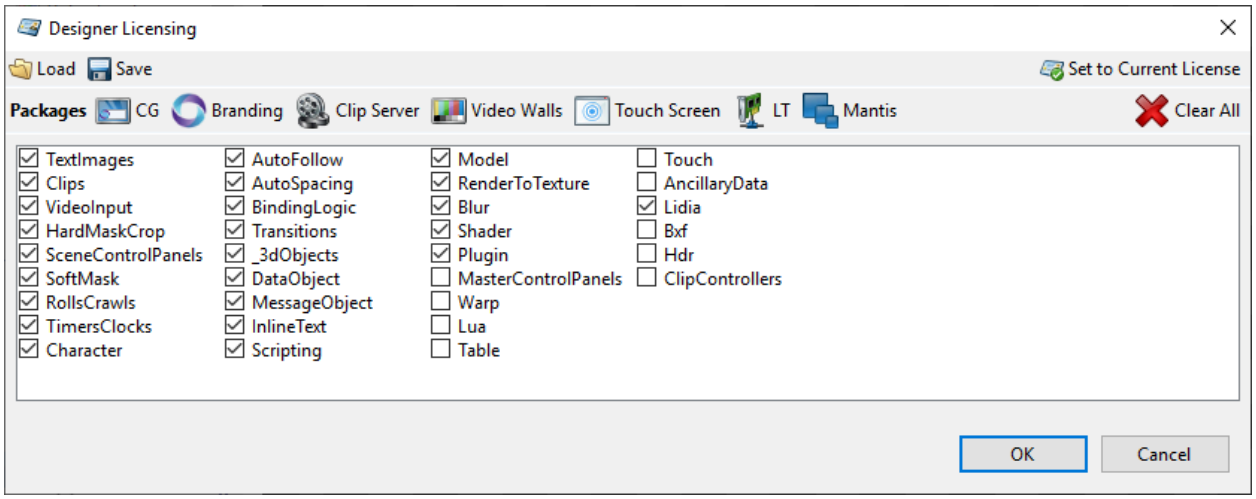
The Designer can be output to any of the defined outputs in the Playout Configuration.

This allows for Realtime output previews. Select from the list of outputs. The currently selected output is “Program”.



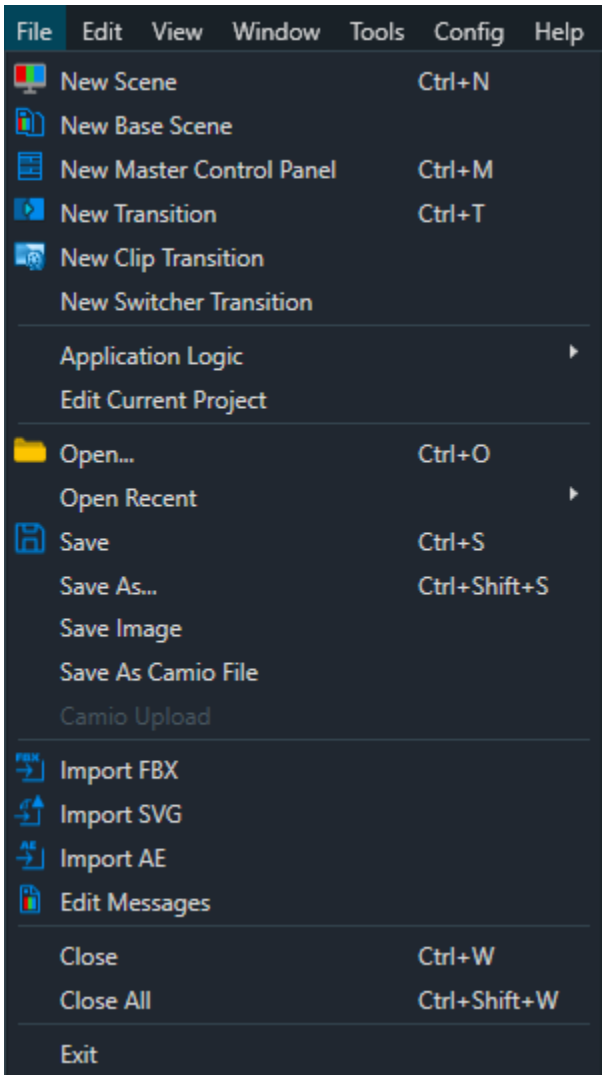
Design for specific licensed options

You can enable/disable software features to match your playout license. This gives you the ability to target systems that are licensed differently.



The toolbar has some quick pick shortcuts based on PRIMES use case pricing model. Select the options you would like to enable. You can load/save these settings.

File Menu



New Scene
Create a New Scene (.pbx). Useful to have a base scene and its elements when new scenes are created.

New Base Scene
Create a new Base Scene (.pbs) to be referenced by normal (.pbx) scenes.

New Master Control Panel
Create a new Master Control Panel (.mcp)

New Transition
Create a New Transition (.pbt)

New Clip Transition
Create a New Clip Transition (.pct)

New Switcher Transition
Create a New Switcher Transition (.pst)

Application Logic
Create and Edit Application Logic (.pal)
See the separate “Application Logic” Section for more details.

Edit Current Project
Edits the current project in the scene editor.
This allows for custom resource objects to be loaded when the project is selected.

Open
Open a File

Open Recent
Open a Recently Opened File

Save
Save the File

Save As
Save the File as a different file name

Save Image
Captures an image of the current state of the canvas

Save as CAMIO File
.CRD files are currently generated when ‘Saving to CAMIO’ from the Prime Designer. This process automatically exports the file into the Chyron CAMIO Context and Folder defined by the CAMIO export settings in Prime.

To permit users to have more control over the upload process, and to prevent on-air content being accidentally overwritten, users can manually upload the .crd file using CAMIO Asset Manager.

In addition, users using the CAMIO Render Engine outside of a CAMIO environment, with the Chyron Media Engine API requires a .crd file in order to specify jobs to be rendered.

CAMIO Upload
Upload your scene directly to CAMIO. Please see the CAMIO

Import FBX
Allows for importing FBX models. Refer to the Model object. (.fbx)

Import Vector
Allows for importing .AI. PDF and .SVG files. Please refer to the Importing Vector Files and Polygon object sections of this guide.

Import AE

Allows importing of After Effects Projects when using the AE\Prime Exporter. (.json)
Prime 5.2 introduces new AE Export / Import functionalities. Please refer to the “PRIME After Effects Guide” for all details.

Edit Messages

Shows the Edit Scene Messages window. This allows for visualizing and editing the messages built off of a Scene in a table view.

Close

Closes the File you have selected/focused

Close All

Close all opened files

Exit

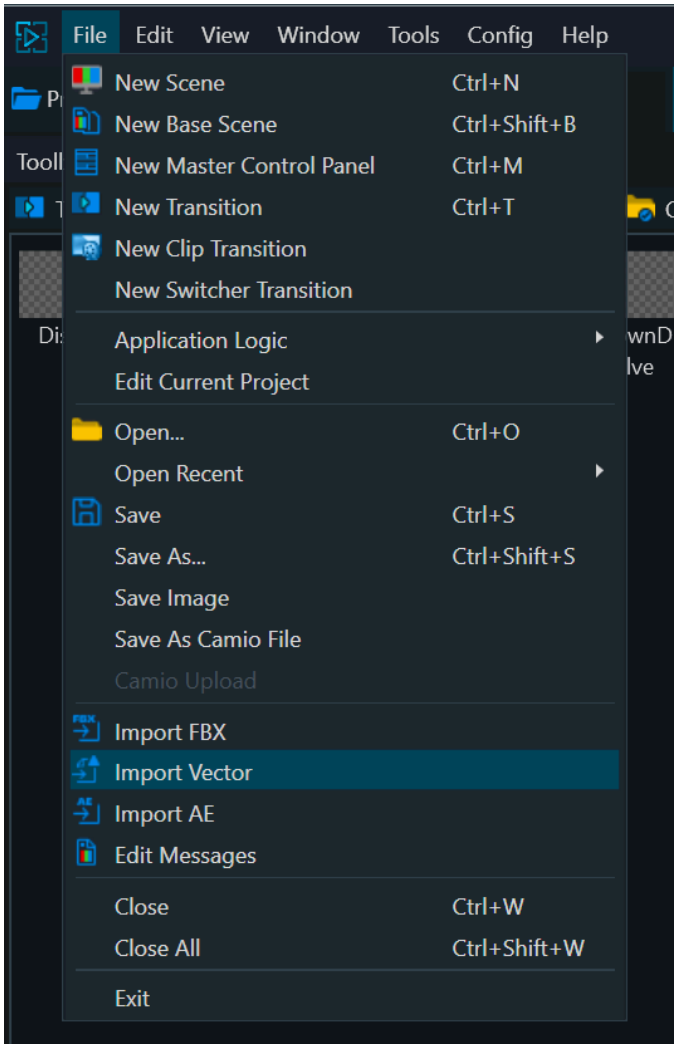
Exits the Prime Designer Application, but not Playout or Prime Engine

Importing Vector Files

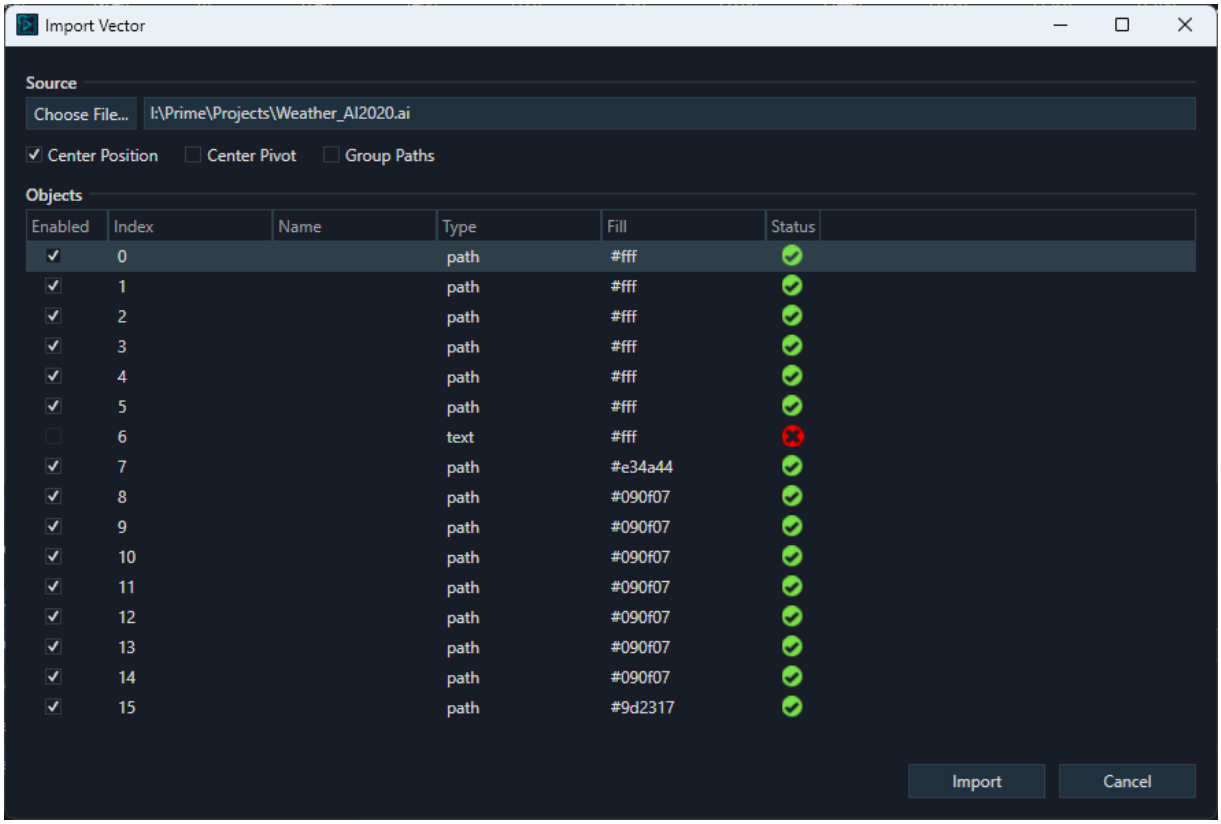
Designers can import vector files into PRIME by opening Prime Scene Designer and going to File > Import Vector. Unlike the direct Polygon object Vector Import method, this method allows designers to import all supported layers individually at once. Each supported vector layer will be imported into the Prime scene's scene tree separately. Please see Vector File Compatibility details below.

Supported File Types

- .SVG
- .AI
- .PDF



Import Vector Dialog



- **Center Position**
  - Centers the polygons in the scene
- **Center Pivot**
  - Centers the pivot point for each layer
- **Group Paths**
  - The end result will be one polygon object in the scene created from all the data in the vector file.
    - Uncheck this option if you want all supported layers to come into PRIME individually
- **Enabled**
  - Select which polygons in the file you would like to import by selecting the check box under Enabled. If an element is not supported, the Enabled checkbox is disabled by default and can't be enabled.

- **Index**
  - Layer # from the file

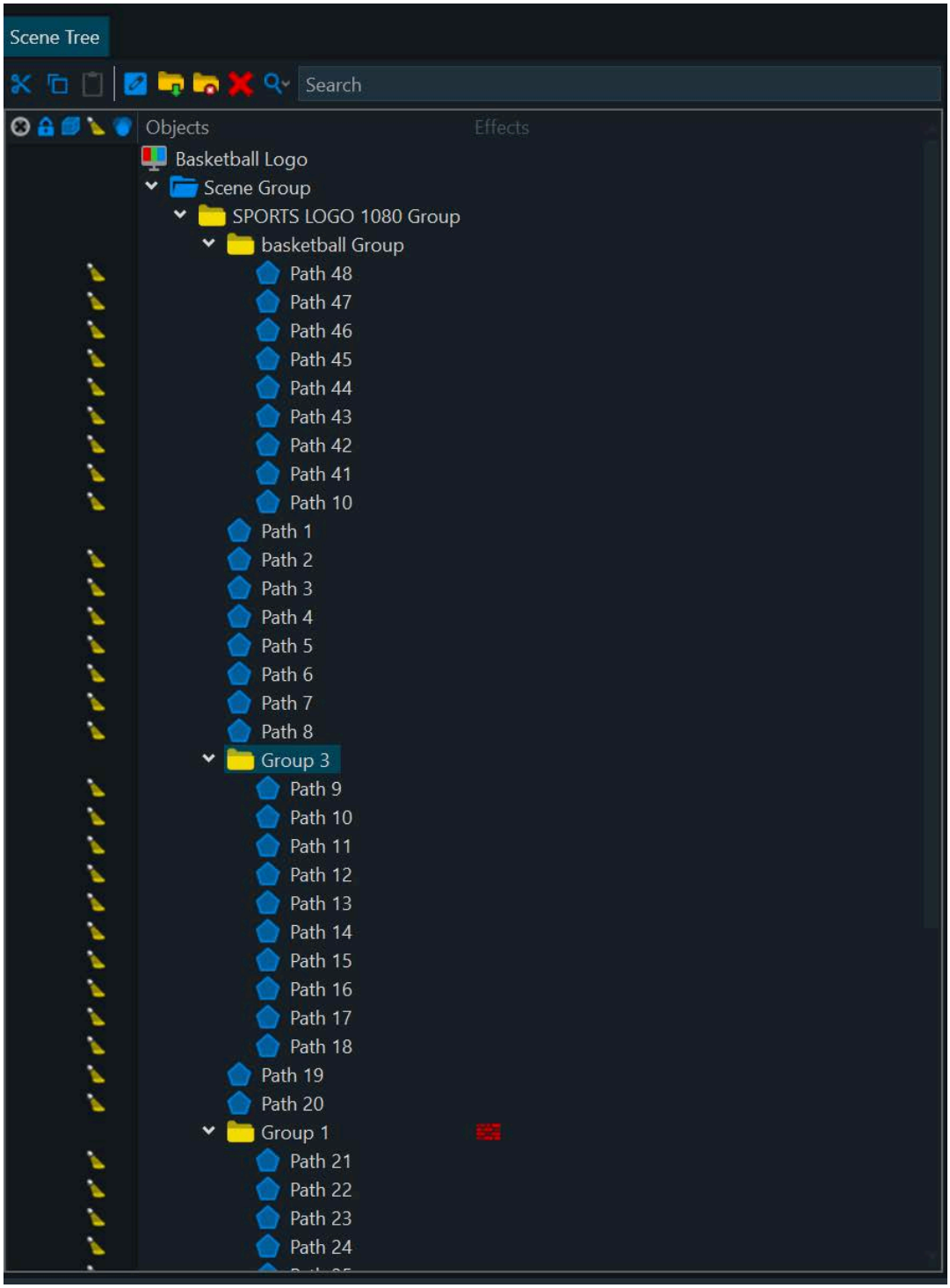
- **Name**
  - layer name if specified within the file

- **Type**
  - type of element

- **Fill**
  - Displays the Color Hex value it will import. Users can edit the color value during import if needed.

- **Status**
  - Can display 3 different status types
    - **Green Check mark** = Supported
    - **Yellow Exclamation** = May not import correctly as the element contains an unsupported attribute or effect
    - Red X = Unsupported Element

File > Import Vector Method Scene Tree Example:



Vector File Compatibility

***Please Note -** Vector Import results will vary as not all Illustrator Designs, tools, and functionality scenarios are compatible since this can vary greatly. If a supported object is not importing please try outlining, vectorizing, or expanding the object first before importing into PRIME.

- **Color Import Support**
    - RGB color space Only.
        - CMYK color space is not supported and will not convert properly
    - Only Fill Colors are supported
        - Stroke, Gradient and Mesh Colors are not supported
    - SVG files offer the best RGB color accuracy
    - .AI and .PDF RGB color values may differ slightly in Prime

- **.AI and .PDF Illustrator Tool Prime Import Support**
    - For Best Results and Performance - We recommend using the same Artboard size as your PRIME Scene Resolution.
    - Shapes, Draw, Modify, Open and Closed Paths, and Type Tools are supported but results can vary
        - The Line Segment Tool is not supported. Lines will be imported into PRIME however due to the lack of a Stroke color option in PRIME, it will appear hidden.
    - Clipping Maks and Compound Paths results will vary
    - Illustrator Effect Support will vary
    - Photoshop Effects are not supported
    - 3D is not supported
    - Type must be outlined (Non-Outlined / Editable Type will not import into Prime)
        - Outlined Area Type, Type on Horiz and Vert Path, and Vertical Text is supported
    - Images are not supported
    - The Blend Tool support will vary. We do not recommend importing with Smooth Color Spacing or high steps / distance values as each blend step will import as its own individual path.

- **.SVG Prime Import Support**
    - Exact vector shape and layer compatibility will vary
    - .AI and .PDF file types offer superior vector object support than .SVG files
    - RGB color value accuracy is greater with .svg files

Saving Vector Images from Adobe Illustrator for PRIME

- Open or Create artwork in Illustrator based on the supported Vector options notes above
- Go to File > Save
- Choose your preferred save location
- Save as Type
    - Select either .AI, .PDF, or .SVG
        - For .SVG - If needed, choose the required artboard you will to save out (artboards are not supported in PRIME
        - For .PDF - All and Range are supported in PRIME, however only 1 page can be imported at a time during the PRIME Import Vector process.

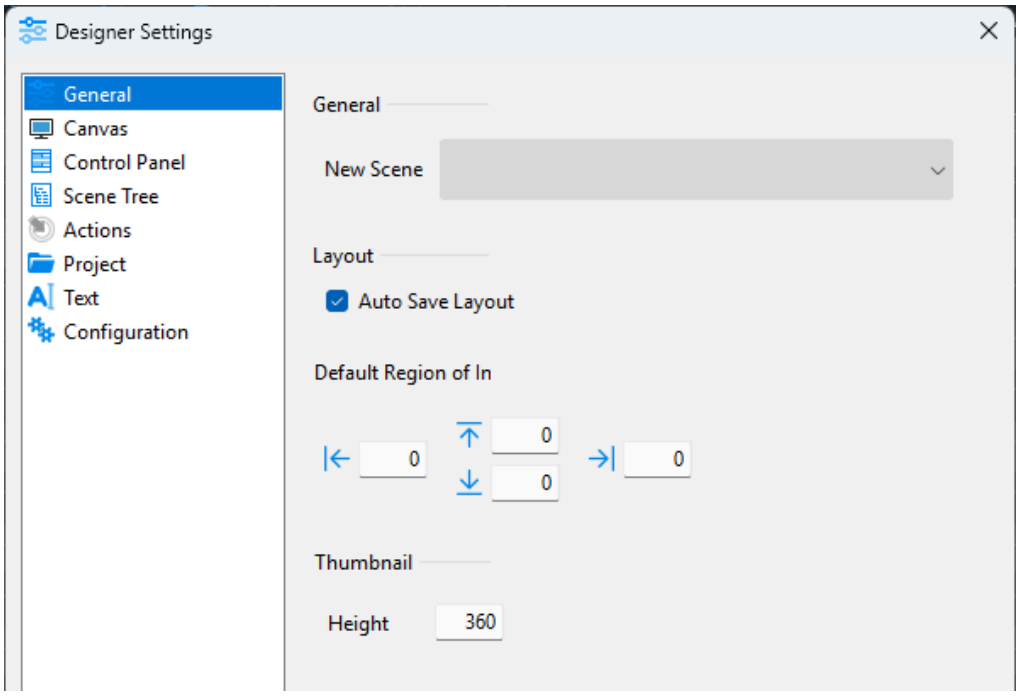
- **(.ai) Save Options**
    - Files must be saved out as Illustrator 2020
    - Create PDF Compatible File option must be turned on
    - Illustrator artboards are not supported, single artboard only

- **(.pdf) Save Options**
    - Please use the [Illustrator Default] pdf save options
    - Multiple PDF Pages are supported in PRIME, however you can only import one page at a time within PRIME's import vector process.

- **(.svg) Save Options**
    - Please use the Default SVG 1.1 save options

Designer Settings

General



New Scene

Optional to define a default scene whenever New scene (ctrl + N) is created .

Layout

Auto Save Layout enabled will save all layout changes to the currently loaded layout. With this setting disabled, you must manually save any layout changes to the specified .wxel file.

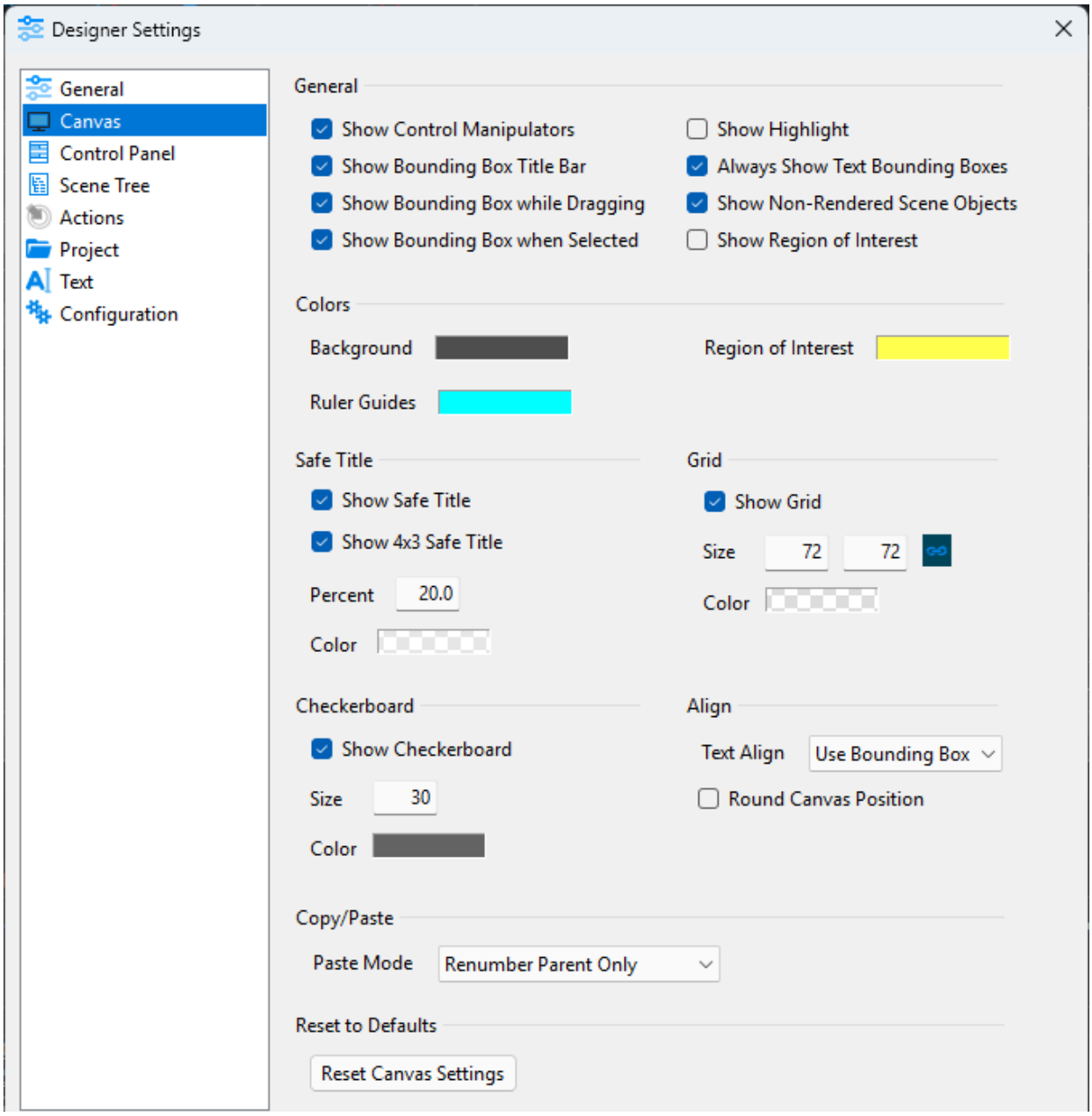
Default Region of Interest

Define numeric values for Top, Left, Bottom and Right for the default region of interest guideline that will be displayed for each new scene. *(0,0,0,0 is fullscreen)*

Thumbnail

Default height of thumbnail image

Canvas Settings



General

Allows for visual control of selected objects.

Color

Allows setting background color, region of interest color, ruler guide color.

Safe Title
Allows for visual control of the canvas safe title guides.

Ruler Guides
Creating Guides
By default, objects will snap to ruler guides. You can adjust snapping settings in the Tools menu.

You can also lock all guides from the Tools menu. This can be handy when you have lots of objects in your scene and you don't want to accidentally select a ruler guide.

To begin creating a ruler guide, open the designer. Next, open the tools menu and choose "Create Guide." This will open the Guide Form, from which you can define the dimension and position of your new guide. The default shortcut to open this form is Ctrl+Alt+G.

Alternatively, you can create guides by dragging them onto the designer canvas. First, make sure you are in the designer and that rulers are shown (Tools > Rulers/Ctrl+R). Then, click on a ruler and drag your mouse onto the canvas. A new guide will be created and placed wherever you drop it.

Deleting Guides
To delete a guide, simply drag it onto a ruler and it will automatically be deleted. To delete all guides, go to Tools > Clear Guides.

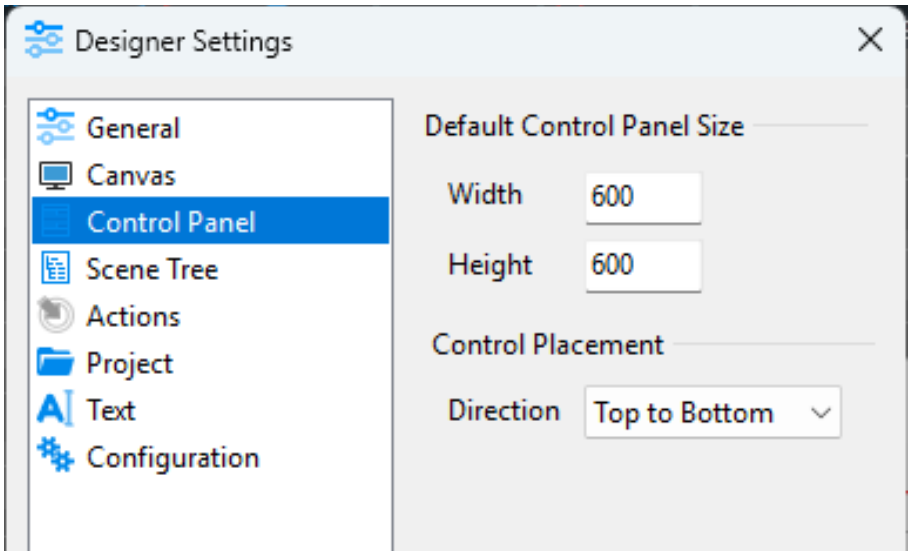
If you want to hide all of the guides temporarily, you can go to Tools > Show Guides to toggle them off and on.

Align (Smart Guides)
Determines if the built-in alignment tools (Smart Guides) should align text objects by its bounding box or the bounds of the text itself.

Copy/Paste Mode
Renumber Parent only: When you copy and paste a group, only the pasted parent will autoincrement the suffix number value of the group name.

Renumber Parent and Children: When you copy and paste a group, the pasted parent as well as all children objects will autoincrement the suffix number value of their node name.

Control Panel Settings



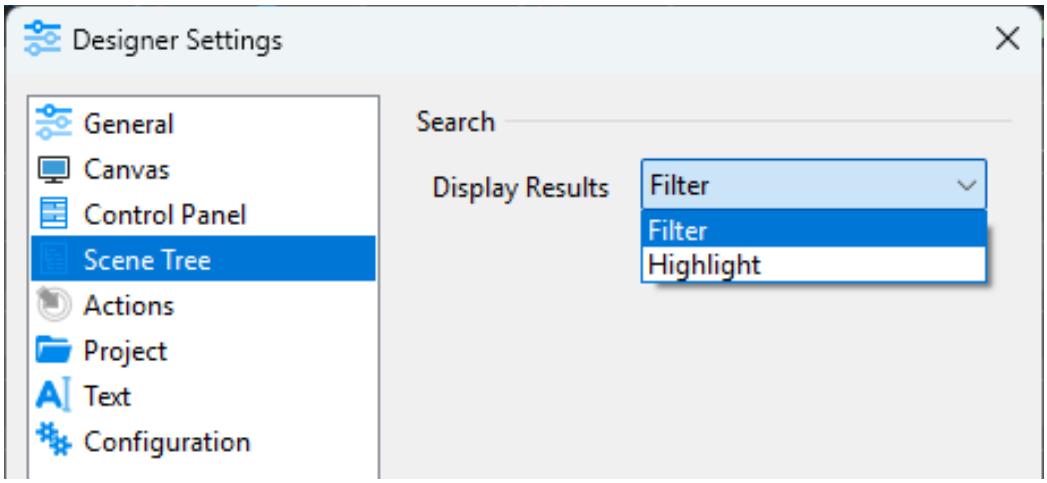
Default Control Panel Size - Default size of new Control Panels

Control Placement - When new Controls are added to a Control Panel, this determines the direction in which they are placed.

Left to Right Example:

Top to Bottom Example:

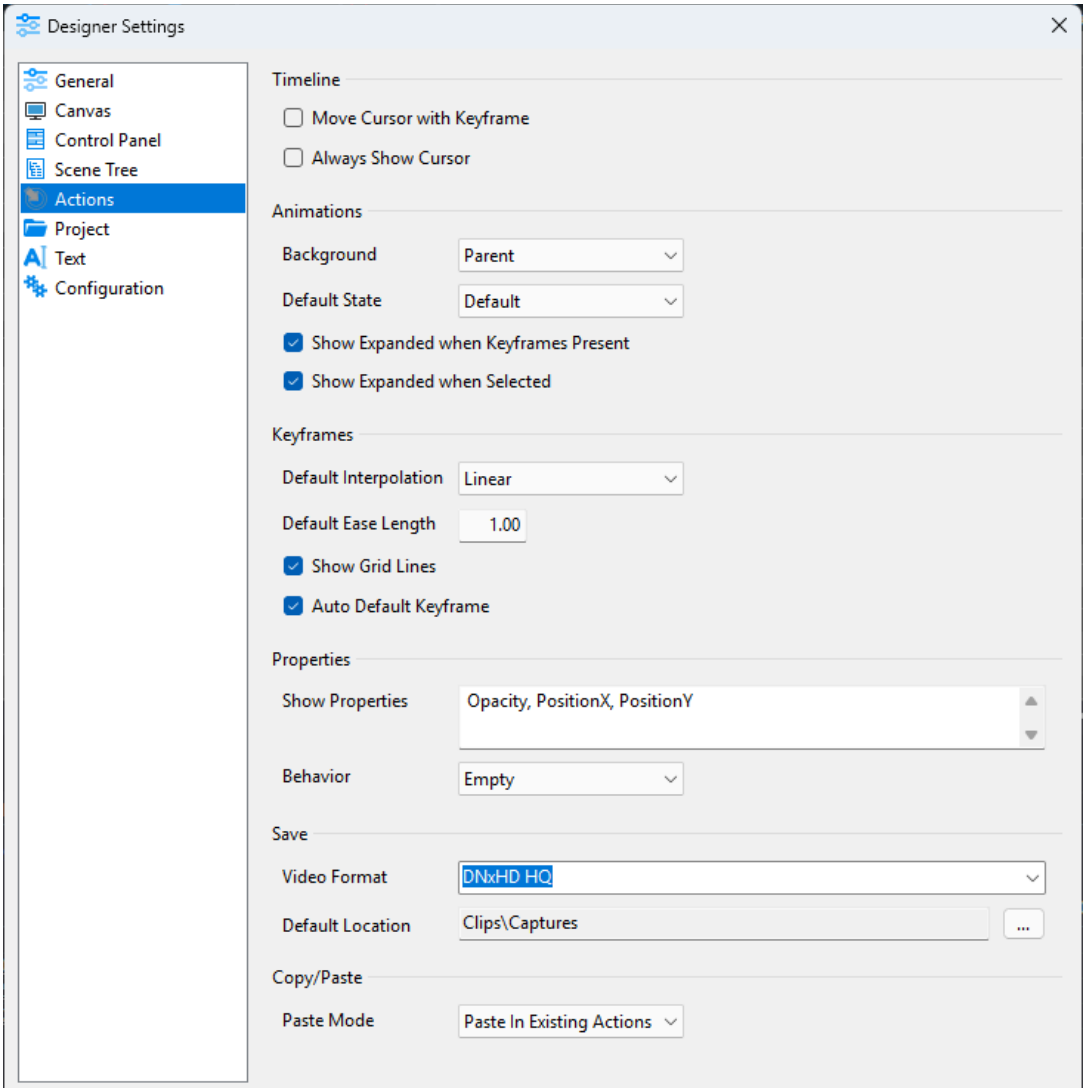
Scene Tree



Filter
With filter selected, only objects that meet the search criteria in the scene tree search bar will be displayed in the scene tree.

Highlight
With highlight selected, all objects in the scene tree will remain visible, and those that meet the search criteria of the scene tree search bar will be highlighted.

Action Settings



Timeline

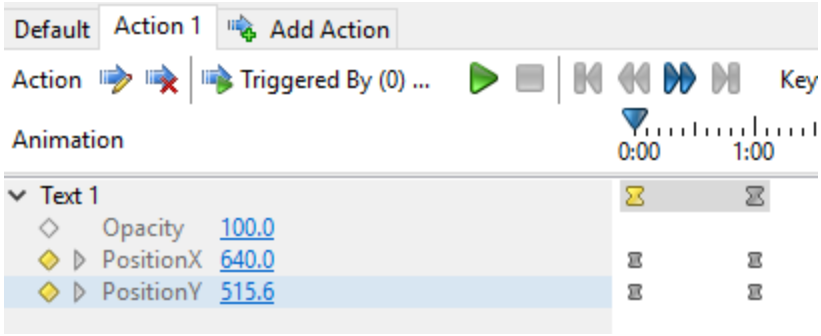
Move Cursor with Keyframe - moves the playhead and cursor to the keyframe

Always Show Cursor - always shows or hides the vertical timeline playhead cursor line

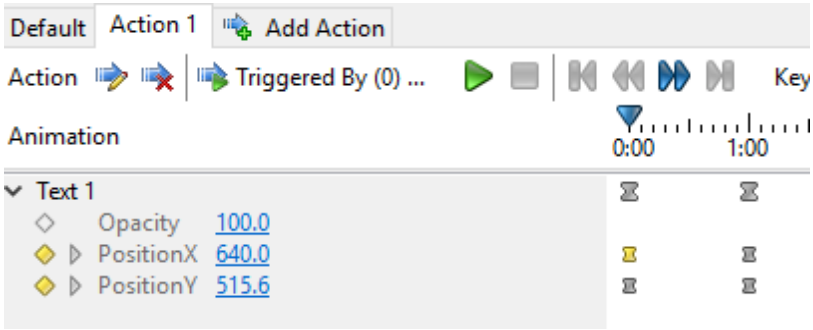
Animations

Background:

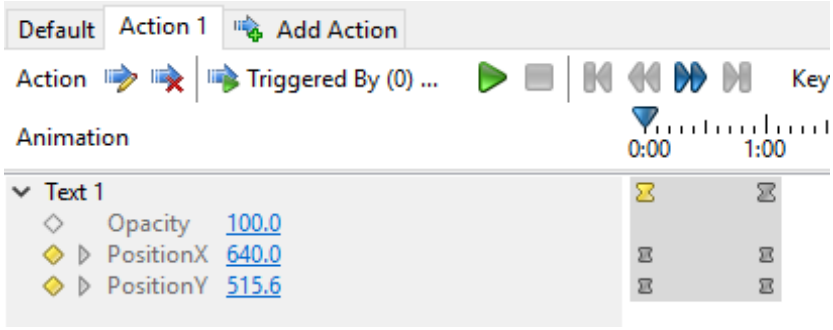
Parent



Hide



Show



Default State: Expanded or collapsed

Show Expanded when Keyframes Present

Show Expanded when Selected

Keyframes

Default Interpolation: Sets the default keyframe behavior.

Show Gridlines: Show or hide canvas gridlines

Auto Default Keyframes: Adds keyframes to the “Default” action when keyframes are created in other Actions. Example: add “PositionX” into the setting then create a new action and you will see “PositionX” in the timeline. Add as many properties as you need. Separate them by commas. “PositionX,PositionY,ScaleX”.

Default Ease Length: When a new “ease” keyframe is added, set the default ease to some value.

Properties

Show Properties: Define which properties you would like to be automatically added to the Timeline Editor when a new action is created.

Behavior

Never: If a second object of the same type is added to the Action the properties listed will not show.

Empty: Remove properties defined in the “Show Properties” that have no keyframes.

Selected: Shows the properties with or without keyframes from the selected object.

Always: Always show the properties when the object has no keyframes.

Save

Video Format: Select the video format when saving actions to a clip file. Right clicking on the Action tab allows users to record the animation to file.

Action is saved using first output channel and certain restrictions apply based resolution of the Output Channel

4K Support. Only DNxHR codes supports resolution higher than 1080p
Interlace Support. DNxHD does not support.

Save Action to Clip will only honor auto follow source mode on the first frame of the selected action. If autofollow expressions (including position and size) are evaluated after the initial keyframe then the render will not evaluate. For example if the source object's position or size changes during the animation, then autofollow will not evaluate on the target object.

Default Location: Set the folder where Action clips will be stored

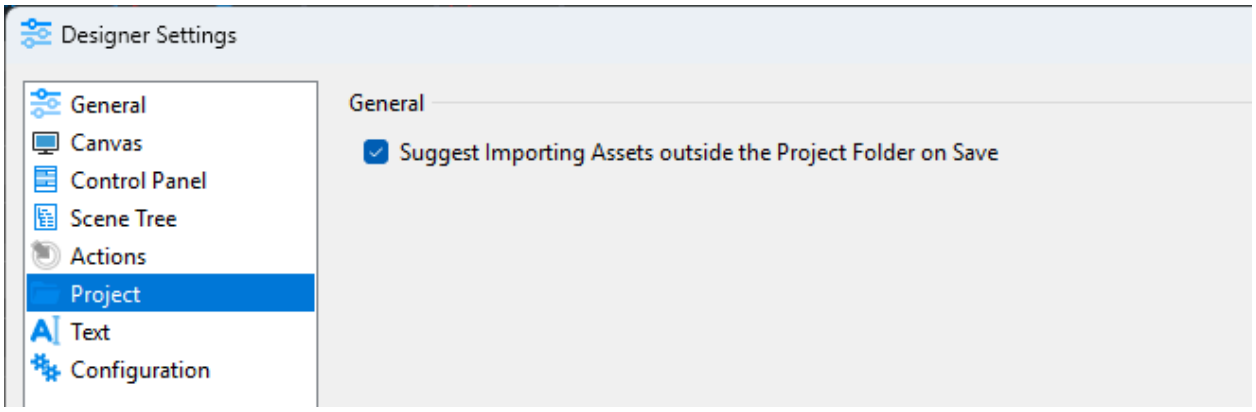
Copy/Paste

Paste Mode

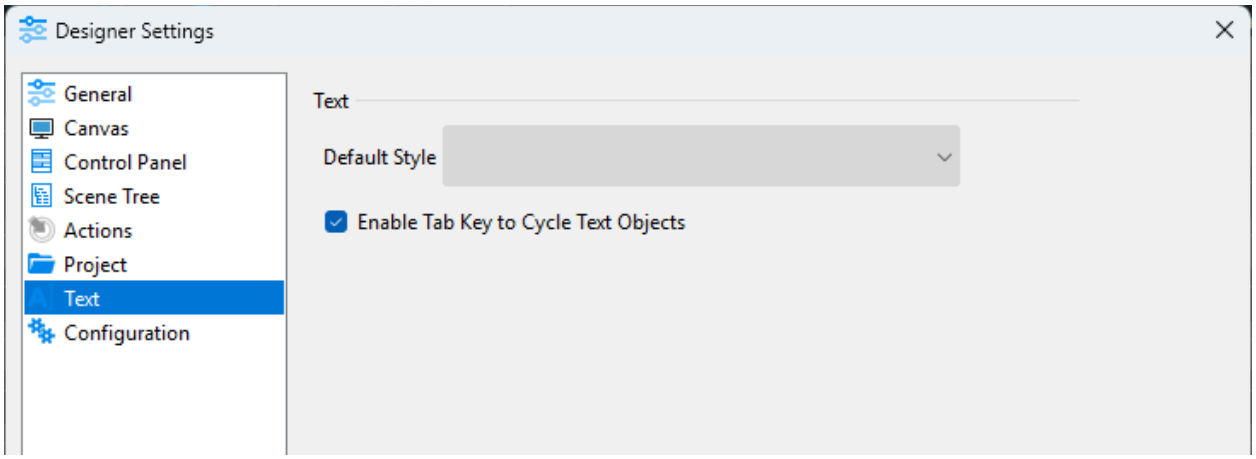
Create New Actions

Paste in Existing Actions

Project Settings



Text Settings



Default Style

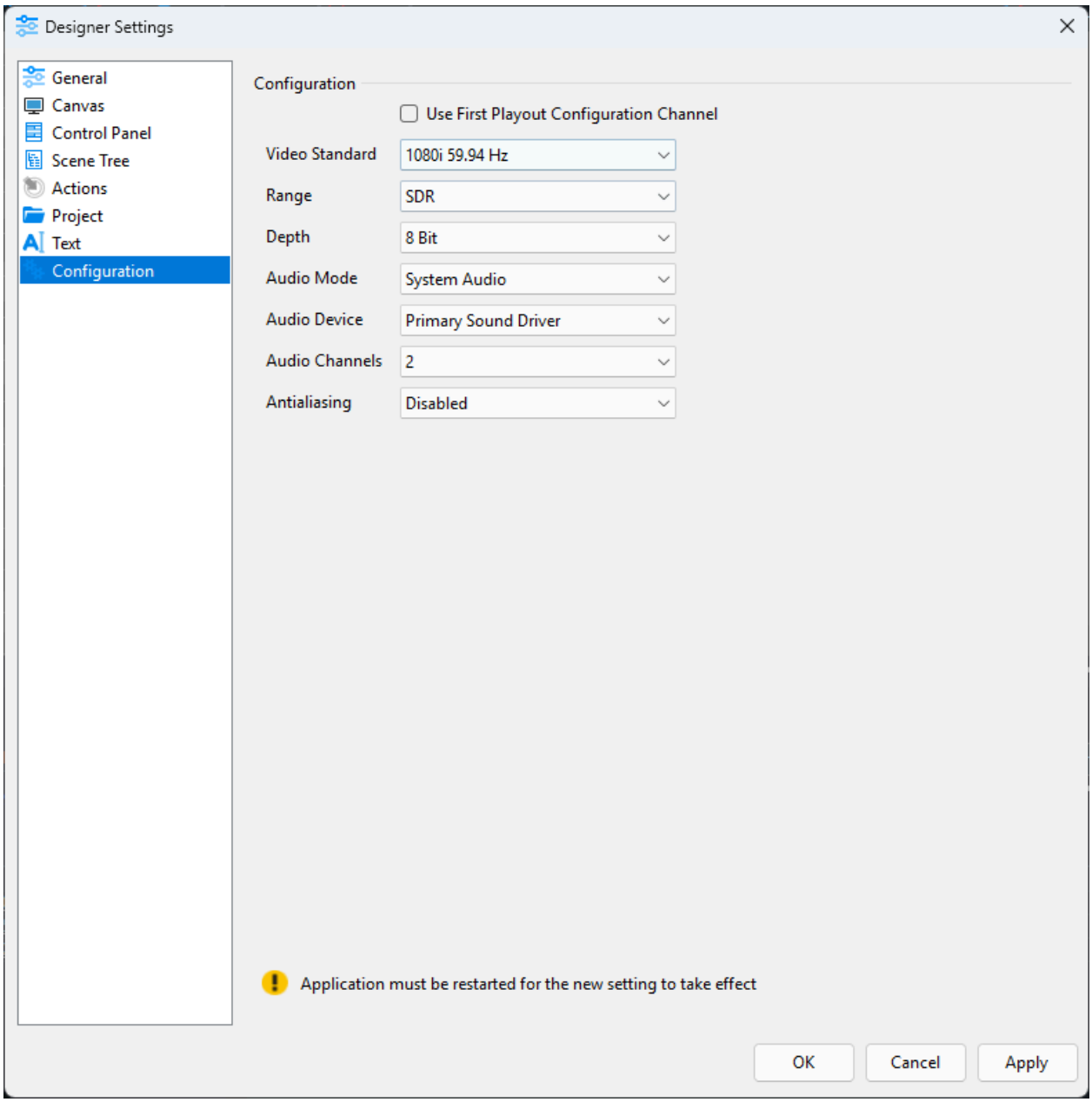
Select from the list of Styles (Refer to the “Text” section on Styles). This style will be the default style each time a new text object is added to your scene.

Enable Tab Key to Cycle Text Objects

With this option enabled the tab key will cycle to the next text object in the scene tree and automatically places focus in the properties text field. This allows you to quickly and easily update text fields within your scene in Prime Designer. Focus must be on either the Scene Tree, Canvas or Text Editor for this feature to function. Shift Tab cycles to previous text objects.

Configuration (Designer Canvas)

*Changing this configuration will not affect Playout Channels



Use First Playout Configuration Channel

Uses the very first PRIME Playout Configuration Channel Settings to configure the PRIME Scene Designer Canvas output settings (Traditional Method from all Previous PRIME Versions).
*Checked on (Enabled) by Default to use the first playout configuration channel

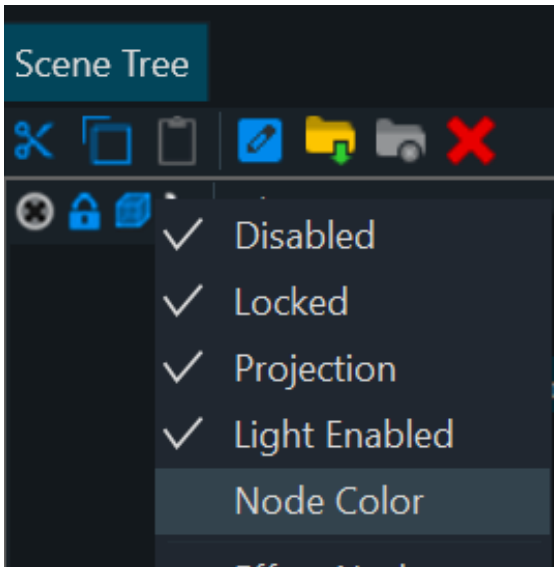
Video Standard	Output resolution and frame rate to be used for the channel
Range	SDR or HDR (Windows HDR PQ Only) ***Special Note** If you are designing in HDR but do Not have an HDR Monitor, change this setting to SDR to prevent the Designer Canvas being washed out due to no HDR Monitor being used
Depth	8Bit or 10Bit
Audio Mode	Chooses output audio type: Disabled or System Audio
Audio Device	Can be set to Primary Sound Driver to use the default audio output from the system, or to any of the audio devices available to the system
Audio Channels	The number of audio output channels
Antialiasing	Sets the antialiasing for the output: Disabled, Multi Sample 2x-16x, Coverage Sample (Quality) 8x-16x

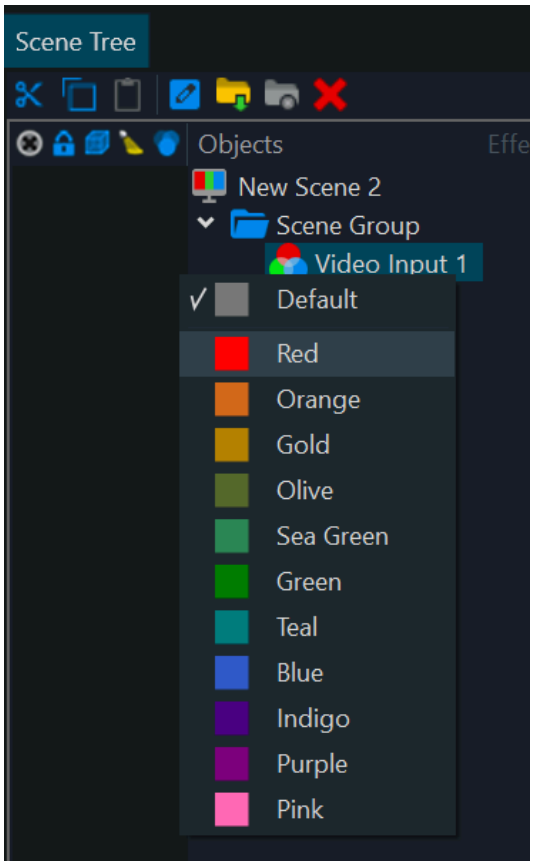
*After changing the settings, you will need to restart PRIME for the new settings to take effect

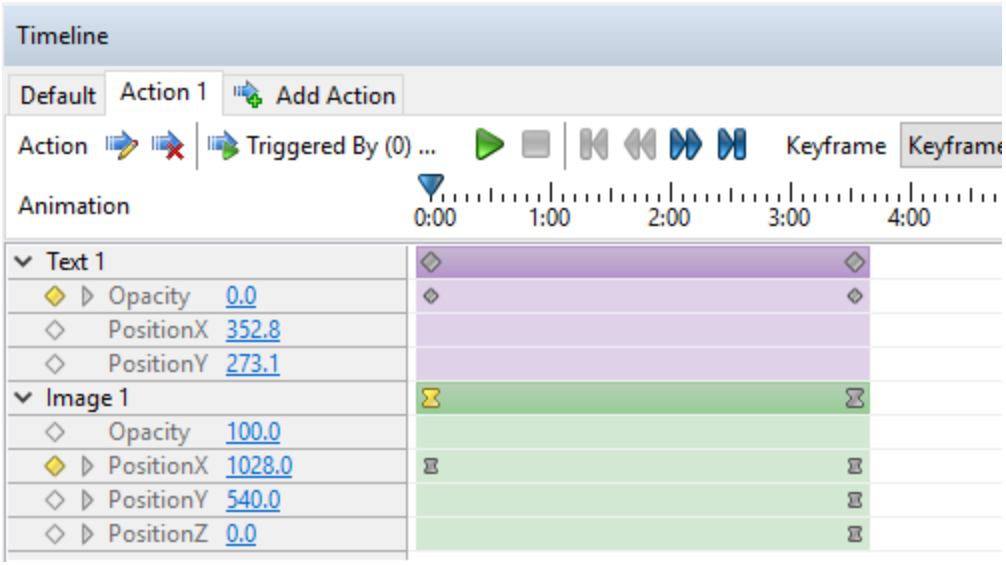
Scene Tree Node Coloring

Enable color coding in the scene tree will also color code the shaded areas above/

To enable Node Coloring right click on the toolbar left of the Scene Node where the “Lock” icon is located.

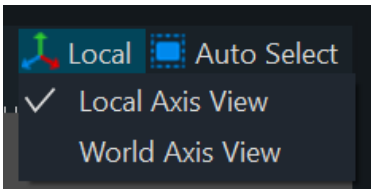





Timeline
Default
Action 1
Add Action
Action
Triggered By (0) ...
Keyframe
Keyframe
Animation
0:00
1:00
2:00
3:00
4:00
Text 1
Opacity 0.0
PositionX 352.8
PositionY 273.1
Image 1
Opacity 100.0
PositionX 1028.0
PositionY 540.0
PositionZ 0.0

Canvas Properties

Axis Mode



Toggles between **Local** and **World Axis View** modes.

> **World Axis View:** When you move an object using this coordinate system, you are moving it relative to the space of the viewport.
>
> **Local Axis View:** Uses the coordinate system of the selected object.

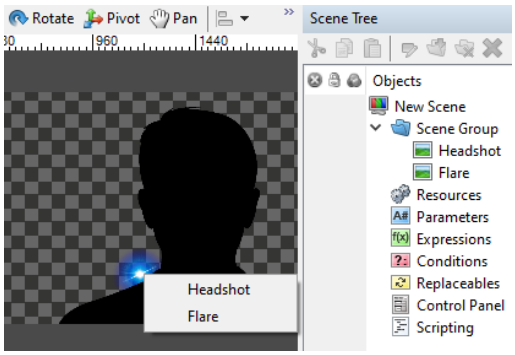
Auto Select

Toggles between **Auto Select** and **Lock Selection**

> **Auto Select:** The active selection changes to where the user clicks on the Canvas.
>
> **Lock Selection:** The active selection is persistent regardless of where the user clicks on the Canvas. Changing focus is done on the Scene Tree.

Selecting Overlapping Objects

Right-clicking on the Canvas at the point where two or more objects overlap will display a context menu of the overlapping objects. Objects with the same not are not distinguished in this menu.



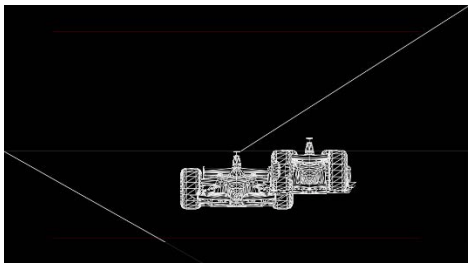
Alt+left click at the overlapping area will cycle through the overlapping objects.

Pan & Zoom

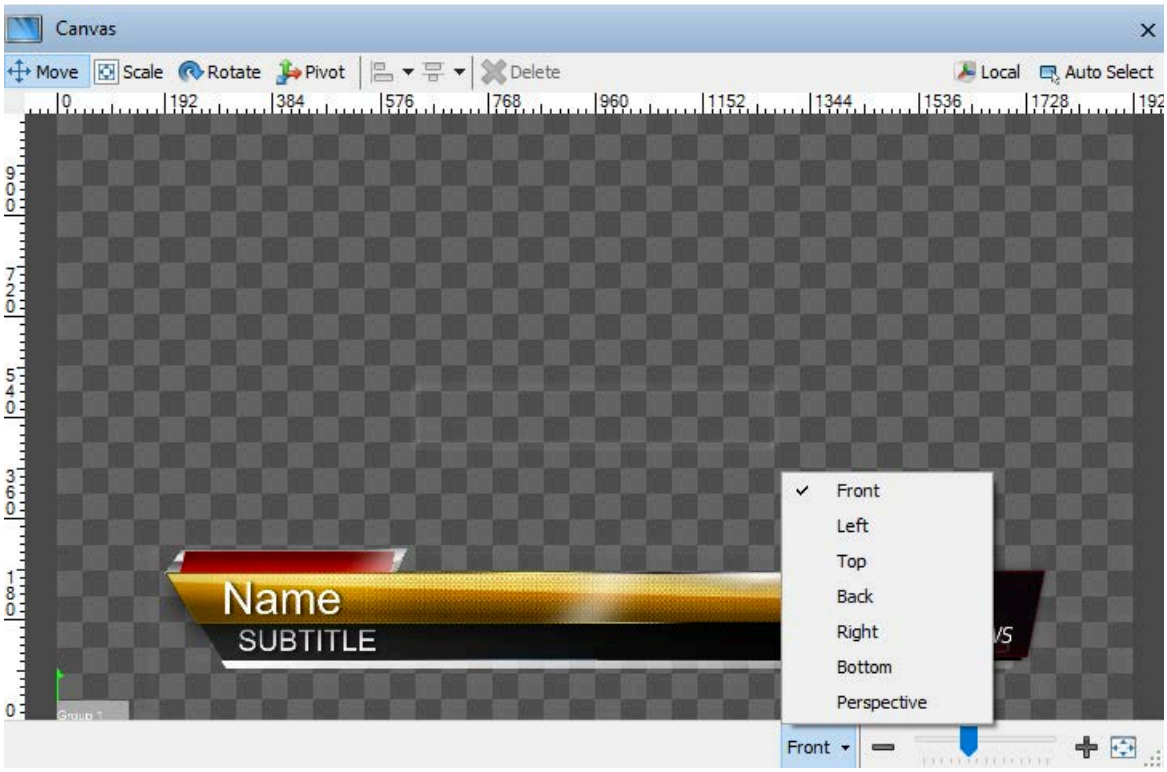
Use the “-“and “+” buttons on the slider control or your mouse wheel for zoom control.

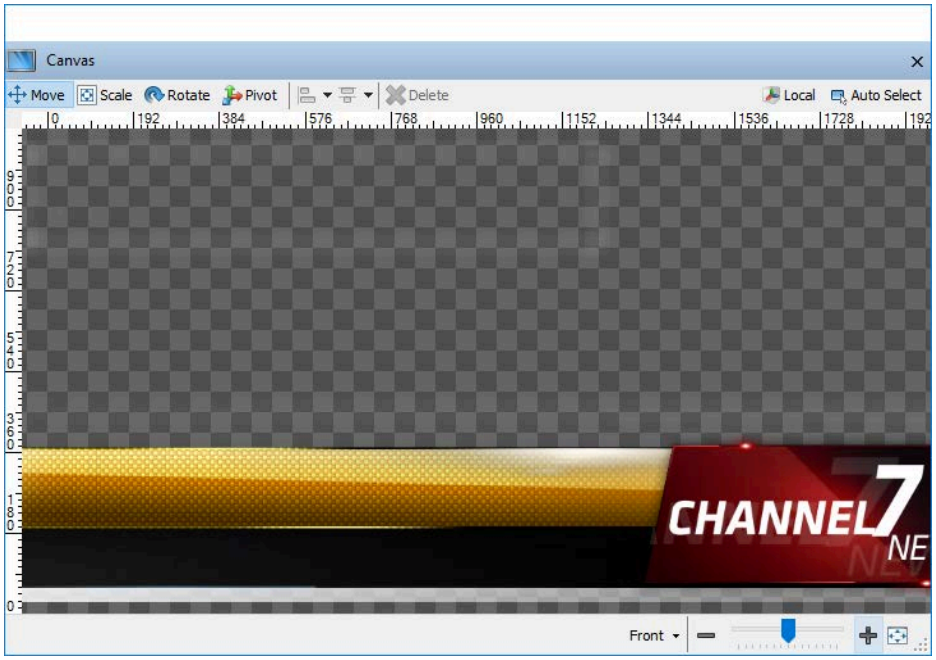
Hold the middle mouse wheel down to pan the canvas. Zoom will “Zoom to Mouse”

Show Wireframe-Normals-Key



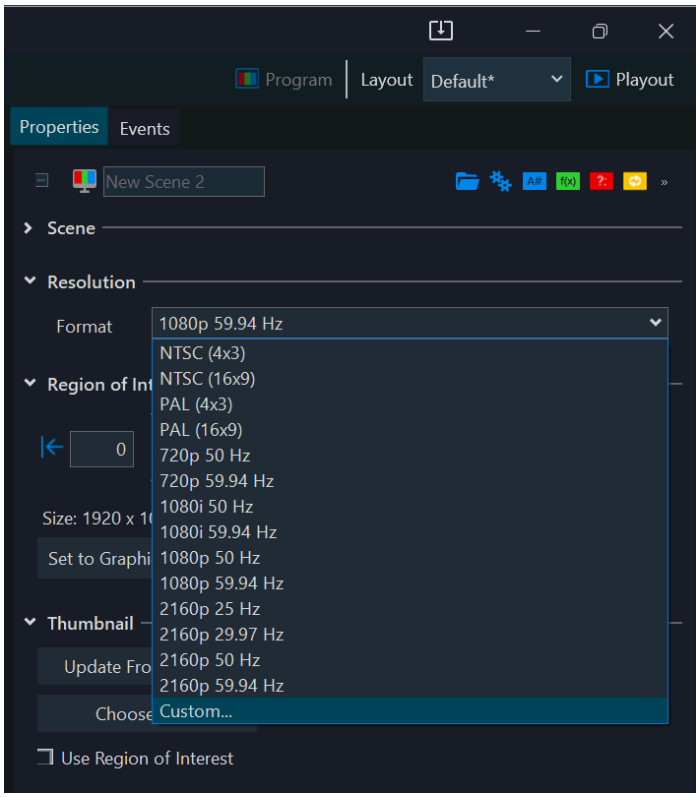
Show Bounding Box-Manipulators


Canvas
Move
Scale
Rotate
Pivot
Delete
Local
Auto Select
Name
SUBTITLE
Front
Left
Top
Back
Right
Bottom
Perspective
Front

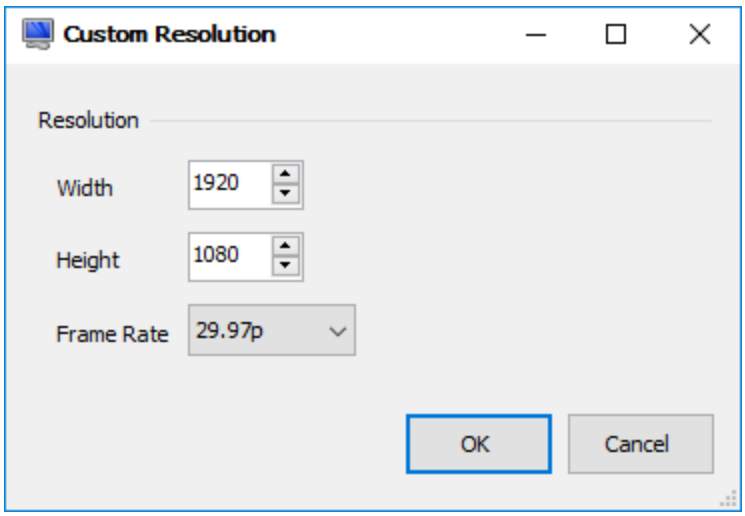

Canvas
Move
Scale
Rotate
Pivot
Delete
Local
Auto Select
CHANNEL 7
Front

Custom Canvas Resolutions

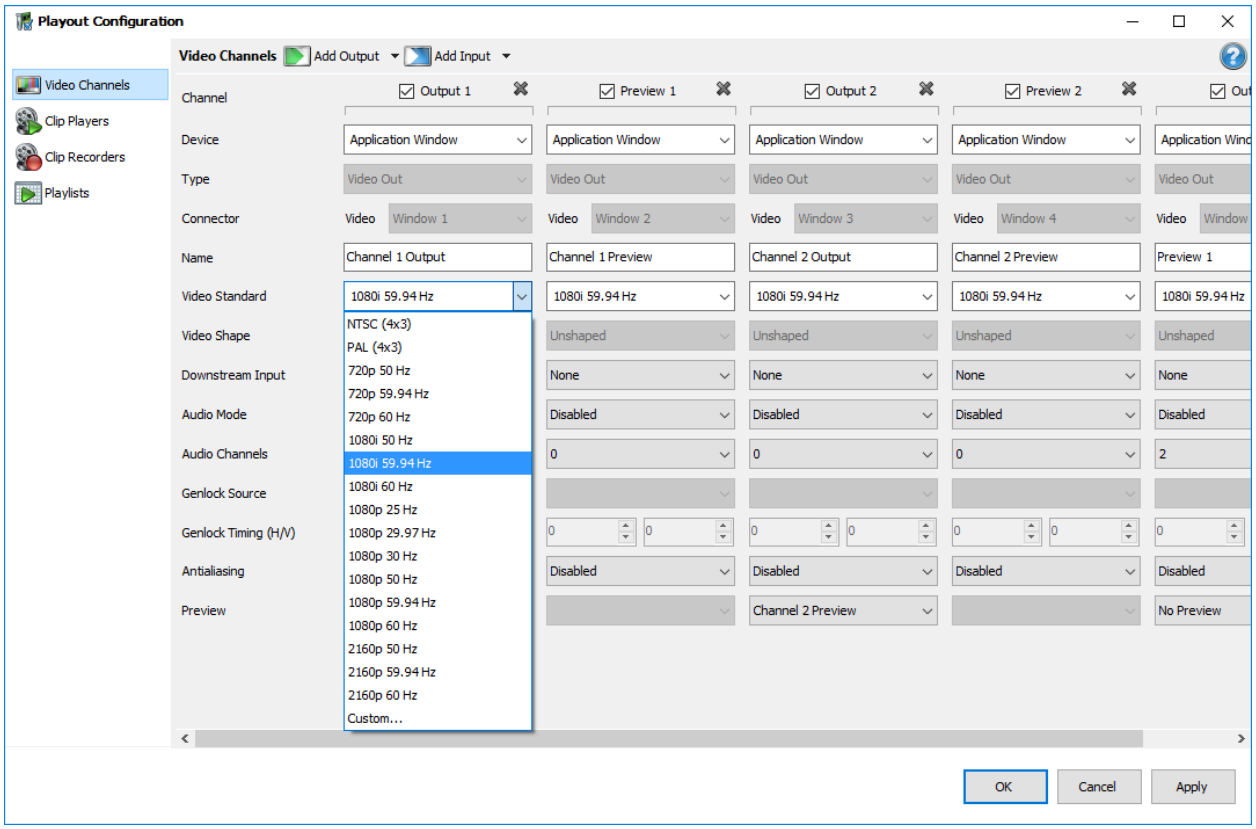
This property is part of the “Scene/Resolution” property.



Selecting “Custom” will bring up the following dialog:



Playout Configuration:



The Prime Scene Designer Canvas derives the starting resolution from the first output channel within Prime Playout Configuration. Any Custom resolutions set in the Playout Configuration will be enumerated in the Canvas Resolutions list automatically and vice versa.

Setting up HDR within Windows

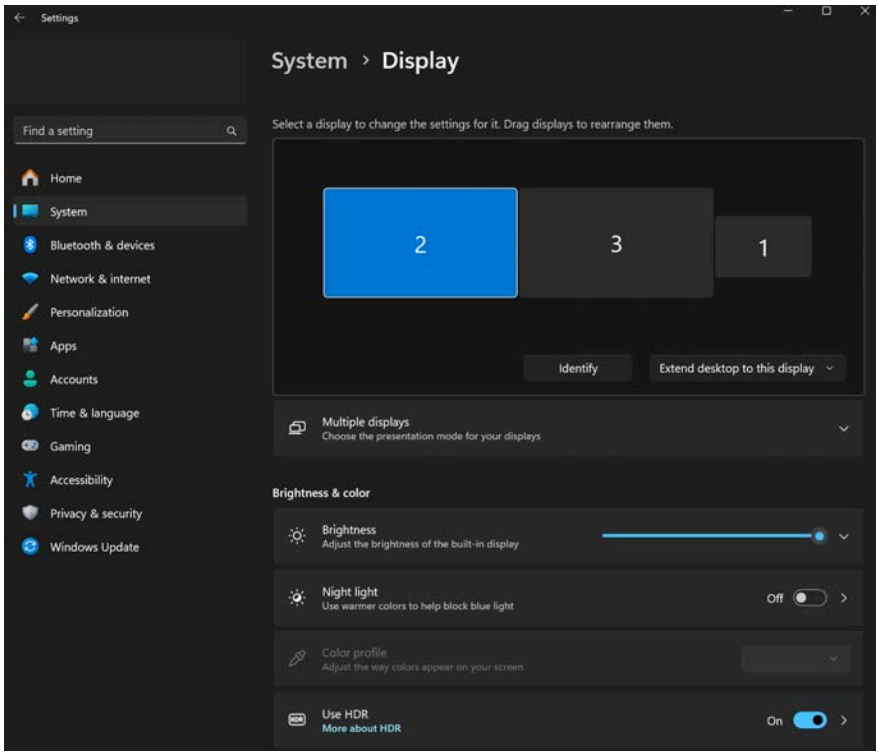
To enable HDR for the Prime Scene Designer Canvas, your Windows Display Settings must be configured to use HDR. The monitor you will be using to display Prime Designer must be a HDR-capable monitor in order to turn on HDR in Windows.

Enable HDR in Windows 10:

1. Select the Windows Start Button, then select Settings > System > Display.
2. Choose the HDR-capable display under Rearrange your displays.
3. Select Windows HD Color settings
4. Under Display capabilities, check to make sure it says Yes next to Use HDR.
5. Turn on Use HDR.

Enable HDR in Windows 11:

1. Select the Windows Start Button, then enter Settings. Select Settings > System > Display.
2. Choose the HDR-capable display at the top of Display Settings.
3. Scroll down to HDR under Brightness & Color and switch HDR to On.

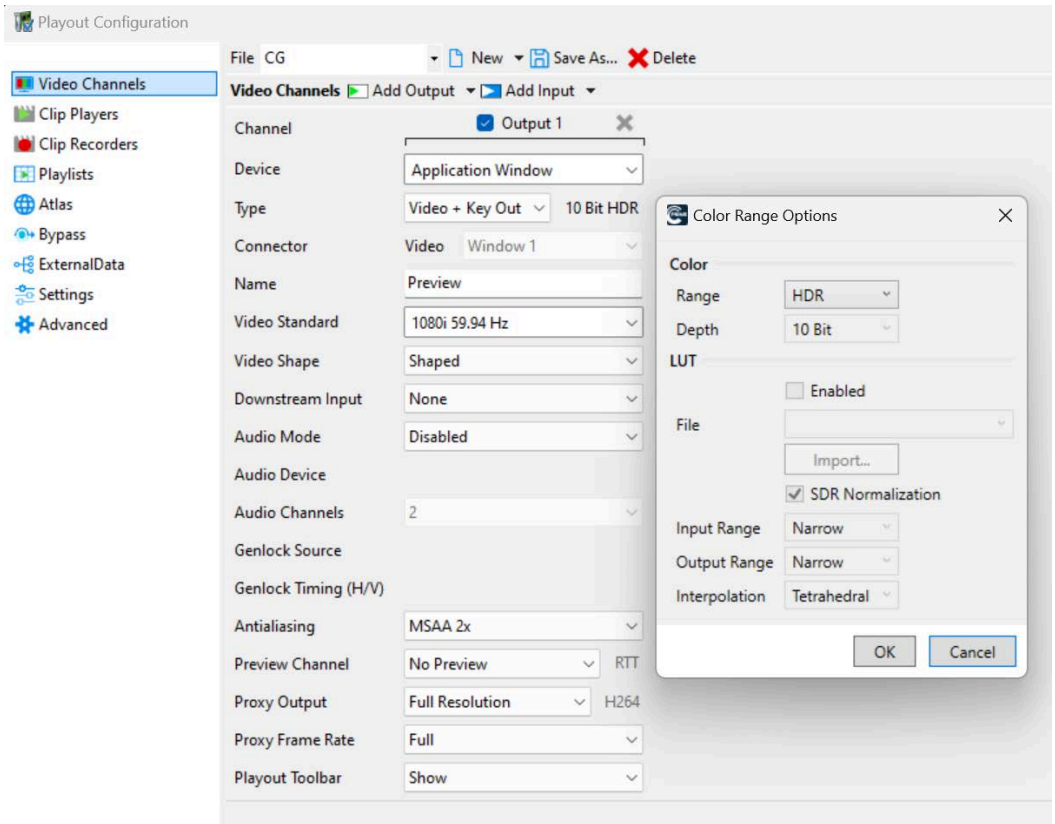


Prime Scene Designer HDR Canvas Setup

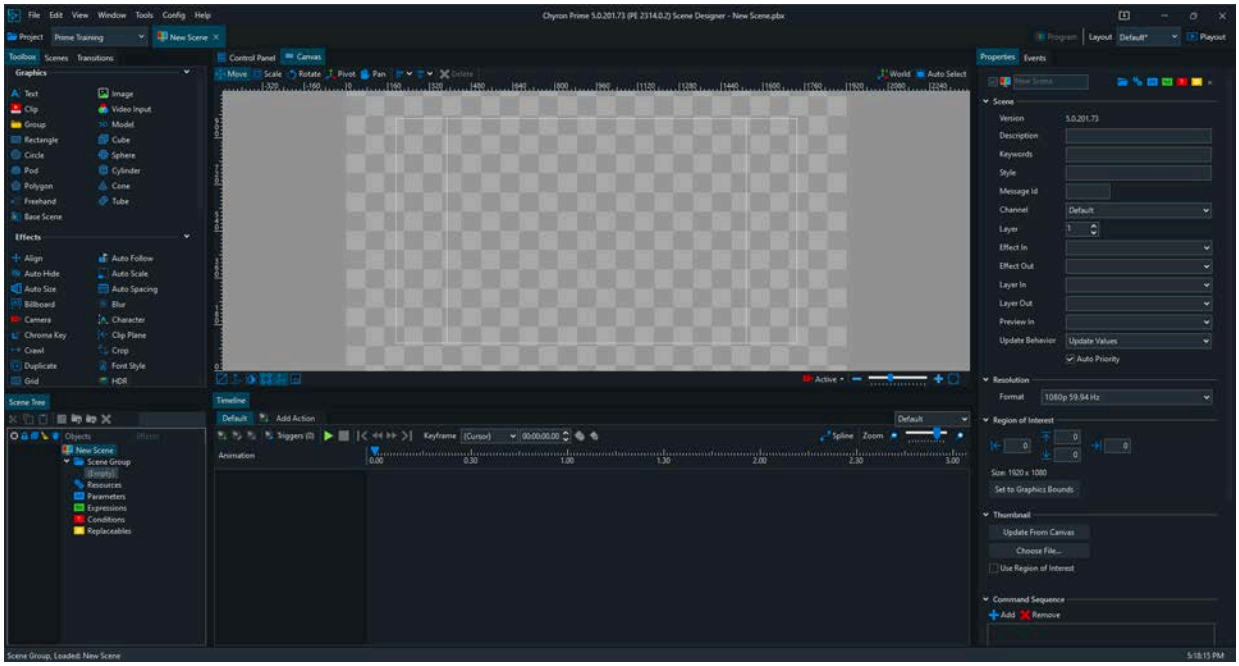
Once HDR is set up within Windows, please startup Prime and navigate to Playout. Select Config > Playout Configuration. The Prime Scene Designer Canvas is tied to the first output channel within Playout Configuration unless it has been overridden by PRIME Designer's Canvas Configuration in Prime Designer Settings. Due to this, please set either the first output channel to a Device type that will allow you to select HDR 10 Bit or manually setup the Prime Designer Canvas Configuration to HDR. Please see the Configuration (Designer Canvas) section of this document for details.

HLG and S-Log3 based HDR are not available for use with the Canvas. However, if your first Output Channel is set to HLG or S-Log3, the canvas will automatically use HDR 10 Bit. LUT files are not compatible with HDR or Prime's Scene Designer Canvas. HLG based channels are the only type of channel which supports LUT files as outlined in the Prime Playout Configuration User Guide.

Even if your first output video channel is set to HLG with a selected LUT file, the LUT will Not be applied and displayed on the Canvas itself. It will only be applied to the Playout Video Output Channel itself as the Canvas does not support LUTs.

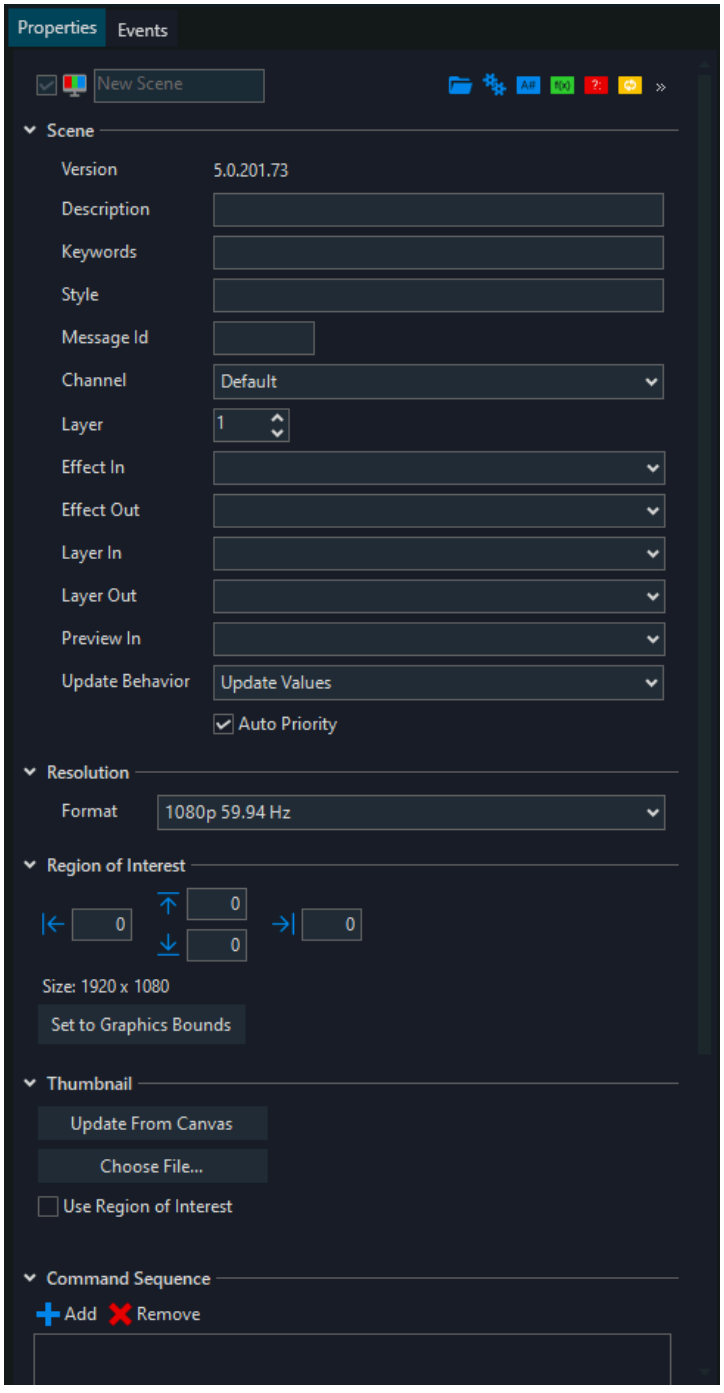


NOTE When HDR is enabled for the first Playout Video Channel but your monitor does not have HDR enabled within Windows, the Prime Scene Designer Canvas will appear washed out like in this example.



Please see the Prime Playout Configuration User Guide for channel setup instructions and further HDR, HLG, and S-Log3 details.

Scene Properties



The following scene properties are displayed:

- **Description** – The user may enter a simple description of the scene
- **Keywords**: Add metadata to search for scenes
- **Style:** Can be linked to a CAMIO context and changed in LUCI. See Style Sheets for more.
- **Message Id** - Messages recorded from this scene will start recording at the specified location or the next available location. When a message is read, PRIME will read in the base message and fulfill the template with the data from the message.
- **Channel**-On recall the scene will play to the defined channel
- **Layer**-On recall the scene will be positioned in the defined layer on output
- **Effect In**: When the scene plays use these triggers in the trigger list as the Effect In. Usually it's just an Action or Condition to effect in
- **Effect Out**: Execute these triggers when the scene transfers from Program to Preview
- **Layer In:** Triggers when a scene in Preview plays to Program replacing another scene in the same layer. This supersedes the "Effect In".
- **Layer Out:** Triggers when a scene in Program is played off by an incoming scene in the same layer. This supersedes the "Effect Out".
- **Preview In**: Executes when a scene is loaded into Preview. The Defined "Effect In" will still execute when the scene is played. This is useful for LUCI previews in a CAMIO workflow.
- **Update Behavior**: Only applies when the scene is playing on Output and the same scene (or message based on same) is cued to played next
    - **Update Values**: On playback of the cued scene, the cued scene updates the replaceable values of the playing scene without replacing the playing scene from the output
    - **Replace Scene**: On playback of cued, the playing scene is fully replaced by the cued scene. Layer In and Layer Out will be used if defined. Otherwise, Effect In

and Effect Out will be used.

- **Auto Priority** - An incoming scene takes priority over an outgoing scene. To adjust the priority, uncheck Auto Priority and change the value in the Scene Properties > Render section of the Scene Group. The default is 2000. Auto Priority will override the Z position of multiple scenes in the same channel.

- **Resolution** - Set the resolution format for the scene.

- **Region of Interest** - Set the Region of interest for the scene that can be used in designer to crop; save image and save clip files. (0,0,0,0 for Left, Top, Right and Bottom bounds is fullscreen resolution with no cropping applied).
    - Size: Reward only text for final size of defined region of interest
    - Set to Graphics Bounds: Selecting this button will update region of interest values to calculate the utmost bounding edges for top, left, bottom and right of all objects combined in the scene.

- **Thumbnail** - Set the thumbnail that will be used in PRIME's scene browser.
    - Use Region of Interest: Enable this to crop the thumbnail to the defined region of interest in the scene.
      **This will only be applied to Prime's scene browser and does not apply to LUCI thumbnails and previews.*

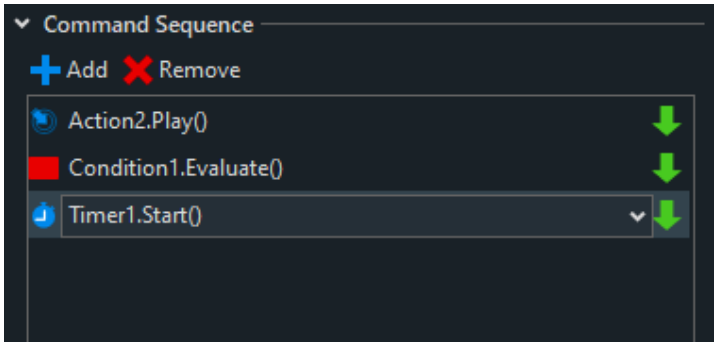
Command Sequence:

The command sequence allows you to build a list of Trigger items to play out in a sequence:

Adding a Command allows you to choose an item from the Trigger list:

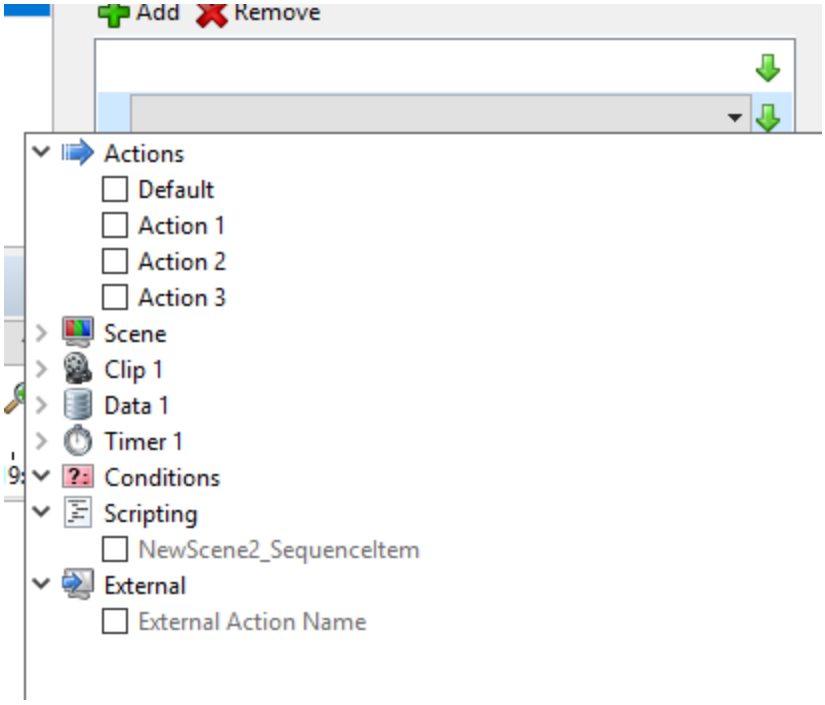
The right Green arrow indicates whether the item, after being executed, will move to the next item in the list. This is called “Follow Through”. Some items, like Action, can ONLY be follow through.

The Command Sequence has its own API and can be controlled by a Condition, A script or from a Control Panel

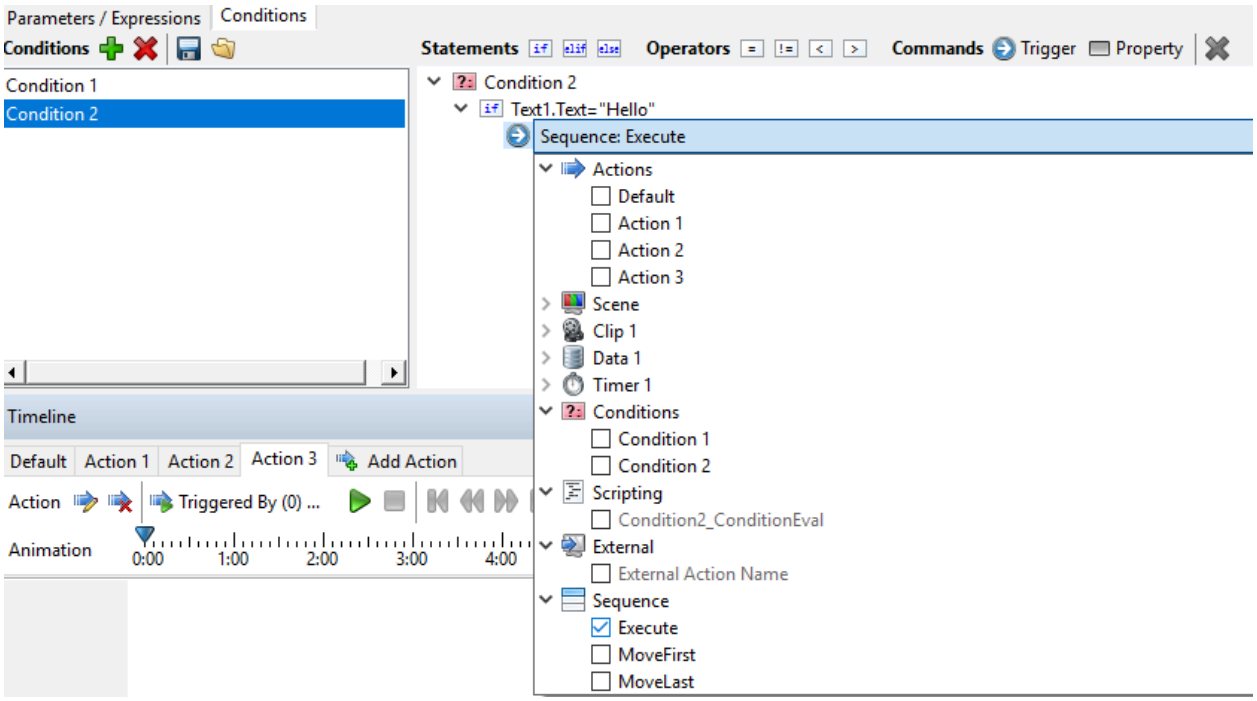


C# Script:

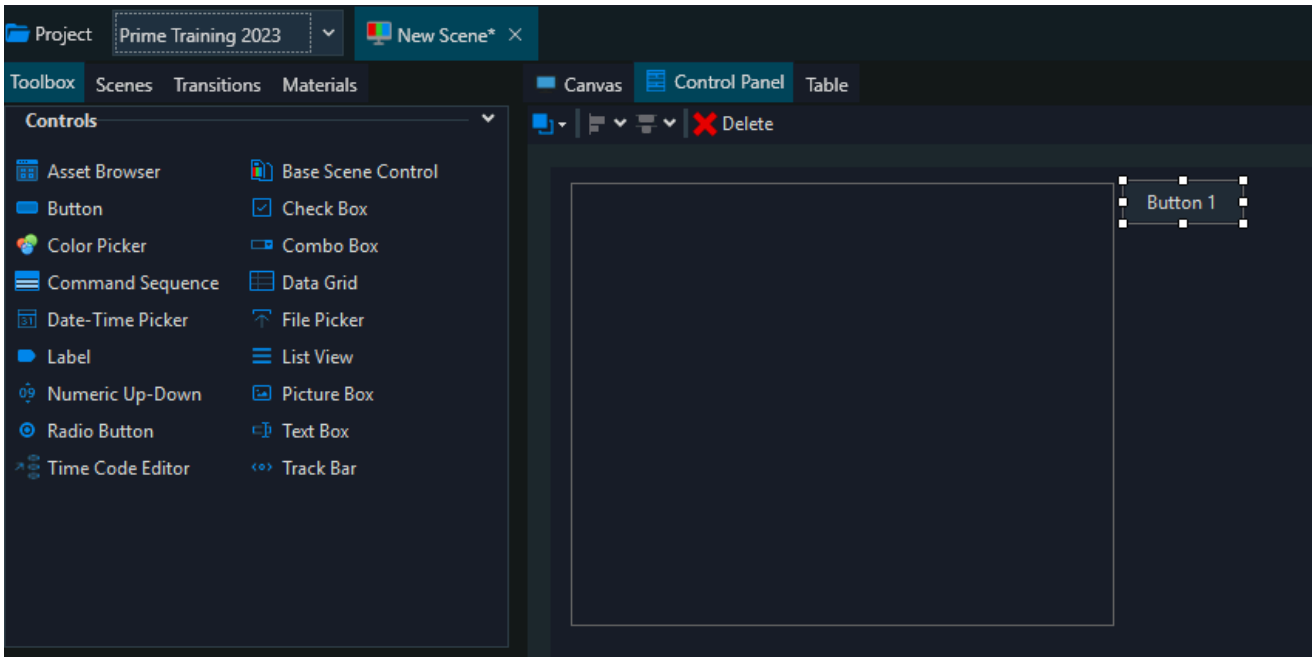
```
Scene.CommandSequence.Execute
```



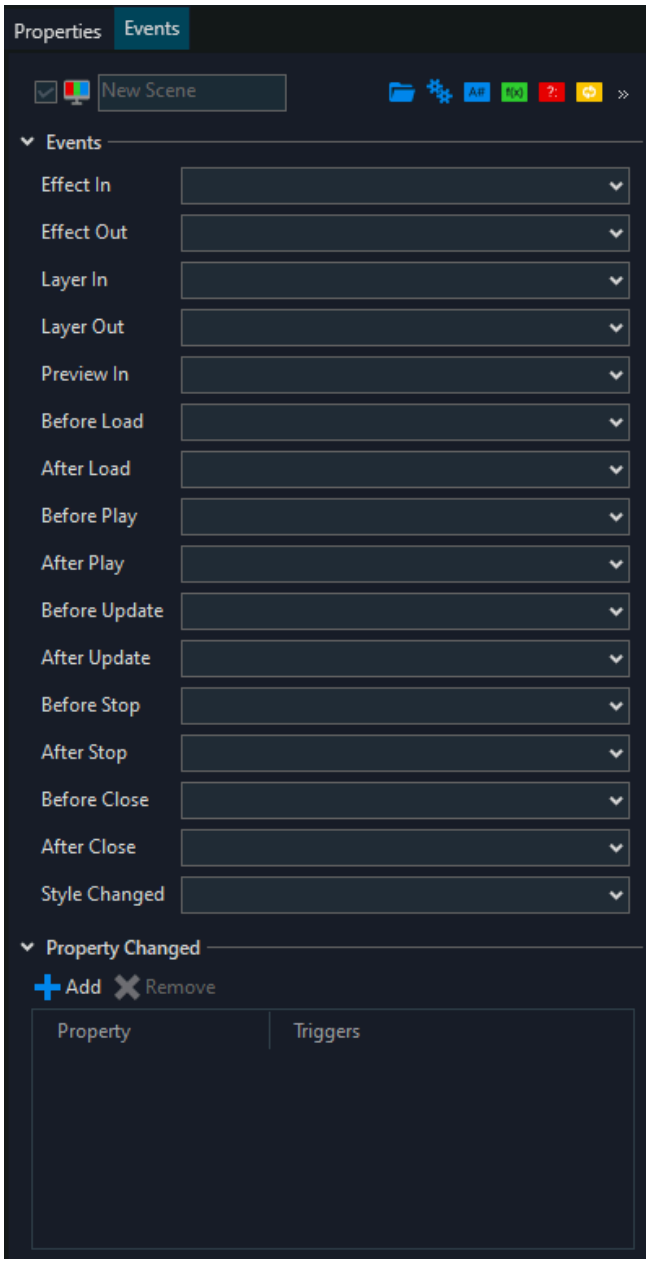
Condition:



Control Panel:

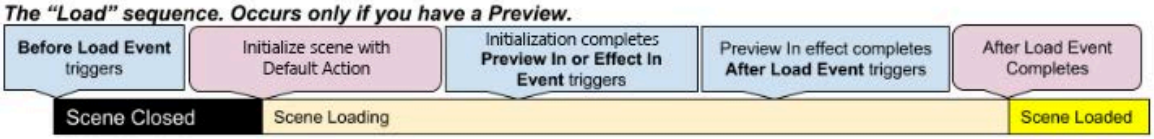


Scene Events

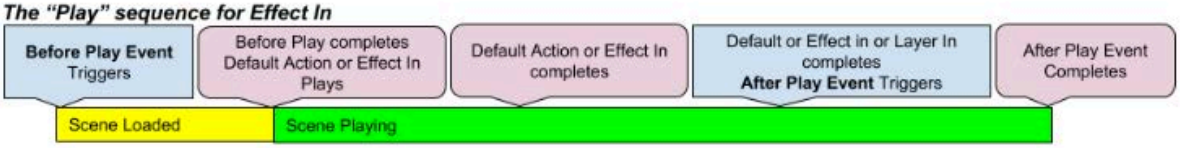


- **Before Load** - Executes once before a scene is loaded into either Preview or Program
- **Effect In** -Triggers when a scene is transferred to Program. (See Layer In)
- **Effect Out** - Triggers when a scene is transferred from Program to Preview or Scene is closed. (See Layer Out)
- **Layer In** - Triggers when a scene in Preview plays to Program replacing another scene in the same layer. This supersedes the “Effect In”.
- **Layer Out** - Triggers when a scene in Program is played off by an incoming scene in the same layer. This supersedes the “Effect Out”.
- **Preview In** - Triggers when a scene is loaded into Preview. Supersedes the Effect In for Preview.
- **Before Load** -Triggers before a scene is loaded into Program
- **After Load** - Triggers once after a scene is loaded into either Preview or Program
- **Before Play** - Triggers before a scene is played from Preview to Program
- **After Play** - Triggers after a scene is played to output
- **Before Update** - Triggers before the elements of a scene are loaded.
- **After Update** - Triggers after the elements of a scene are loaded.
- **Before Stop** - Triggers when a scene is taken off Program
- **After Stop** - Triggers after a scene is taken off Program
- **Before Close** - Triggers before a scene is closed. (Cleared from both Preview and Program)
- **After Close** - Triggers after a scene is closed. (Cleared from both Preview and Program)
- **Style Changed** - Triggers when the scene’s **Style Property** is changed (See Style Property)

The "Load" sequence. Occurs only if you have a Preview.

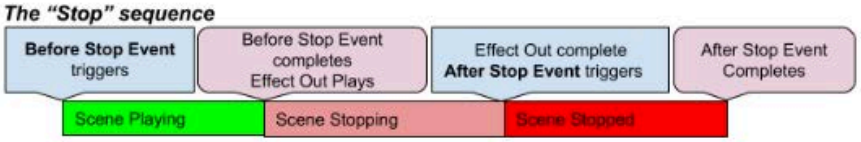


The "Play" sequence for Effect In

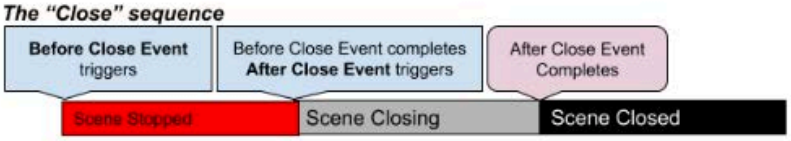


The "Play" sequence for Update In

The "Stop" sequence



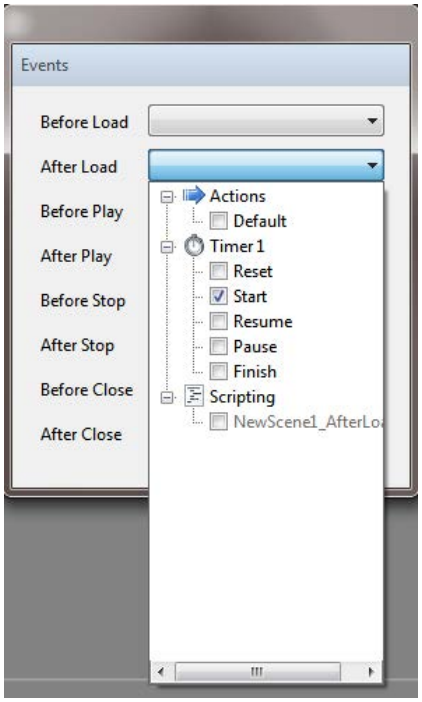
The "Close" sequence



NOTE

Opening a scene directly to output will trigger Before load, After Load, Before Play and After Play.

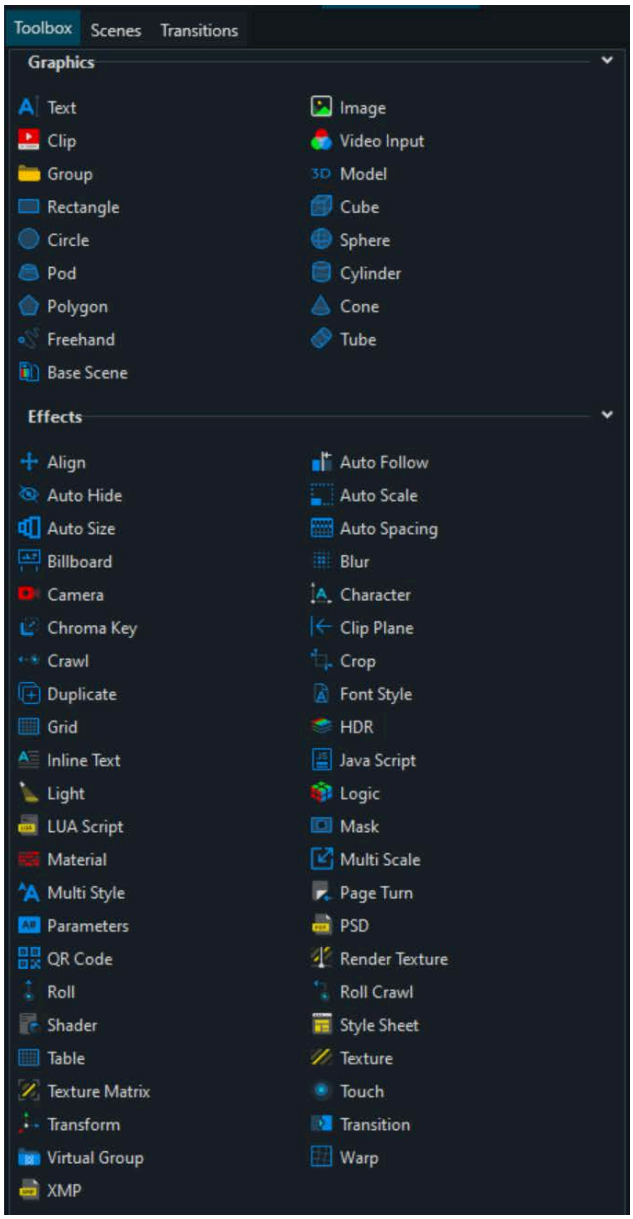
All of the scene events handlers can be used to attach any of the other objects methods in the scene. **EX**:Timer1.Start

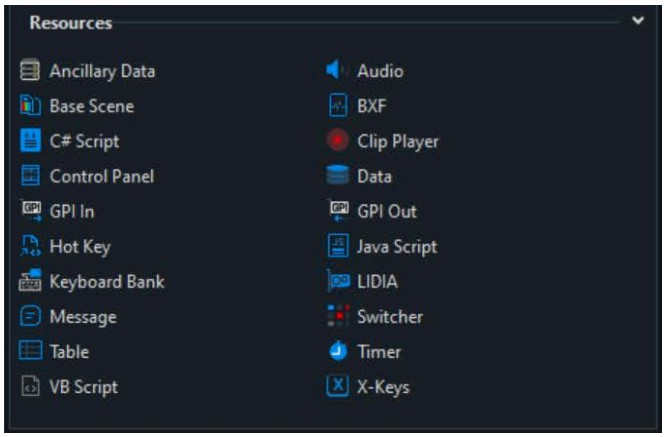


Example of assigning an “Effect In” and “Effect Out”:

Scene Objects

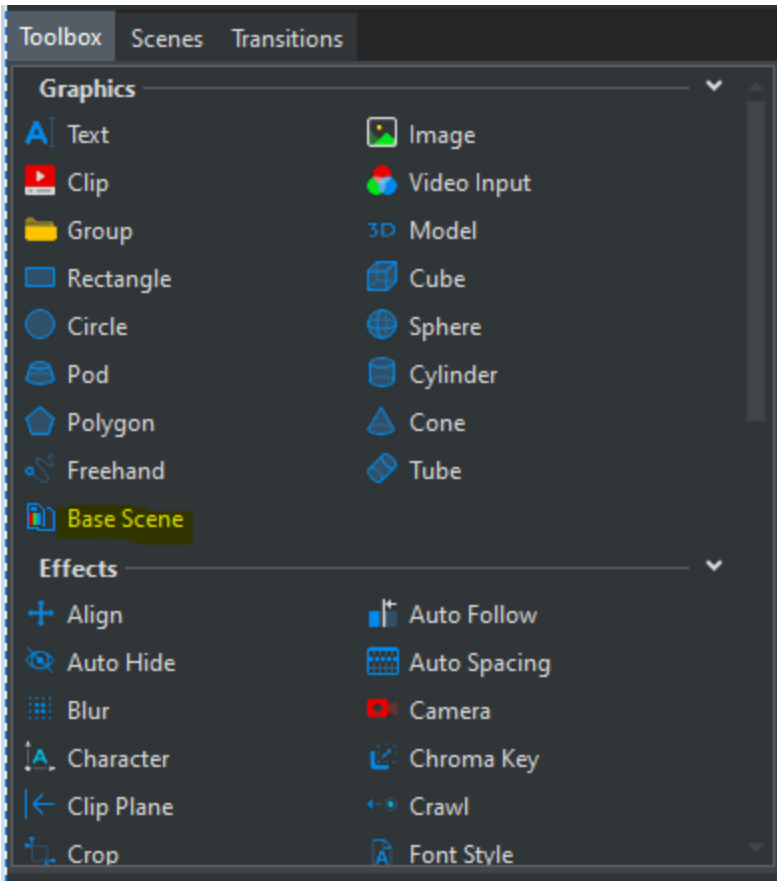
The Toolbox



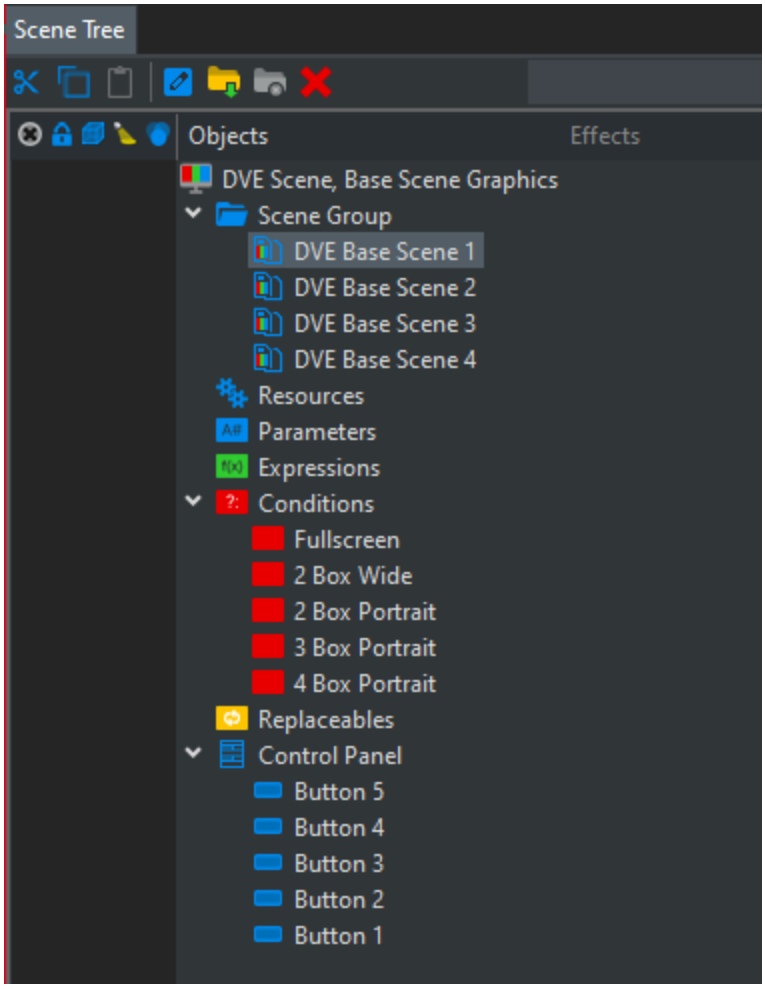


Base Scene

Base scenes can be added as objects in a scene as well as a Scene resource. (See the “Resources” section).



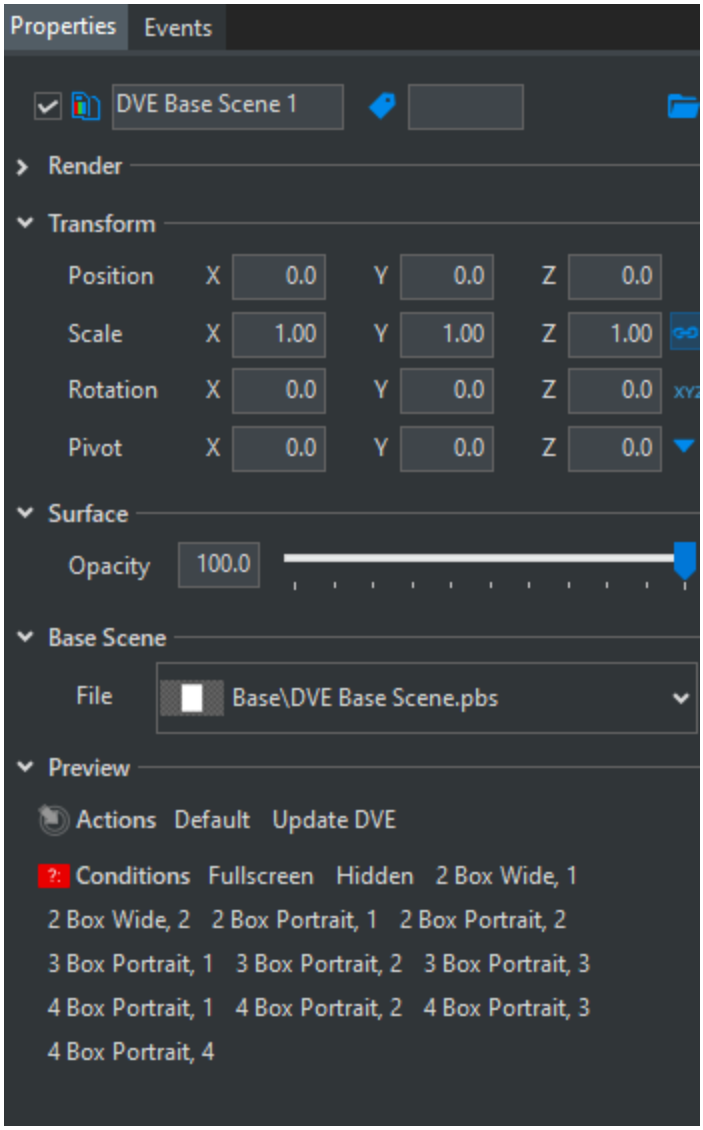
When Base scenes are added to scenes the Base Scene will be inserted into the current scene as a Scene child object. Control panel objects will be appended to the Control Panel.



Base Scene Actions and Conditions become available in the Triggers list and through Conditions.

Base Scene Properties

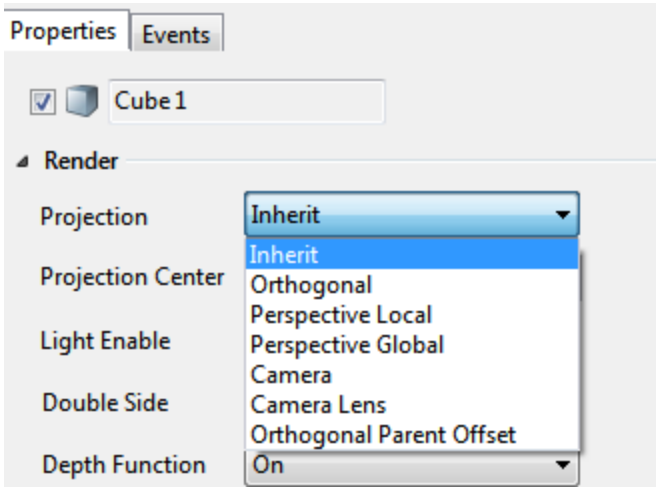
Same as a normal scene.



Circle Object

Render Properties

Projection



- **Orthogonal** - Orthogonal projection.
- **Perspective local** - Central projection. The mid-point of projection is affected by an object.
- **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
- **Camera** - Projection in line with an external camera.
- **Camera Lens** - Special kind of projection in line with an external camera. Only the lens is tracked, it means just projection. The view matrix is the identity matrix, it doesn't depend on a location or camera direction.
- **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

Projection Center

- **On** - Fragment is rendered if object lies close to a observer (it's Z-coordinate is smaller than Z-coordinate in depth buffer). This option ensures the correct visibility of 3D object surface and its mutual location with other objects. Default value.
- **Always** - Fragment is rendered always independently of depth buffer.
- **Never** - Fragment isn't rendered ever.
- **Equal** - Fragment is rendered if Z-coordinate at a given point is equal to Z-coordinate from depth buffer. Appropriate for n-pass drawing of the same object.

- **Less than or Equal** - Fragment is rendered if Z-coordinate is less or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects.
- **No Write** - Similar to option "ON" with difference of Stealth attribute.
  Object is rendered under the rule visibility, but it isn't placed in depth buffer in itself.
  - **Greater than or Equal** - Fragment is rendered if Z-coordinate is greater or equal to Z-coordinate from depth buffer.
    The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects. Use just for special purposes!

Light Enabled

Double Sided

Depth Function

Priority

Transform Properties

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

Origin: Move the Origin Position of the object in X, Y or Z

Surface Properties

- **Opacity**

Circle Properties

- **File**
- **Color**
- **Angle**
  - Visible angle in degrees from 0Â° to 360Â°.
    Value below 360Â° increases open angle in the circle.
- **Diameter**
  - Circle diameter.
- **Hole**
  - Creates a hole in the circle, making it into a ring.

- **Tessellation**
  - Number vertices on the circle perimeter.
    Higher tessellation makes the circle smoother but consumes more resources to render.
- **Alignment**
  - **Center** - Open angle is centered at the top (Y+).
  - **Clock Wise** - Clockwise alignment. Angle starts at zero and opens clockwise.
  - **Counter Clock Wise** - Counter-Clockwise alignment. Angle starts at zero and opens counter clockwise
- **UV Mapping**
  - **Planar** - UV coordinates projected linearly by a plane.
  - **Polar** - U is angle, V is distance from center.

Clip Object

The Clip object allows designers to playback clips within Designer and Playout.

Supported Playback Clip Formats:

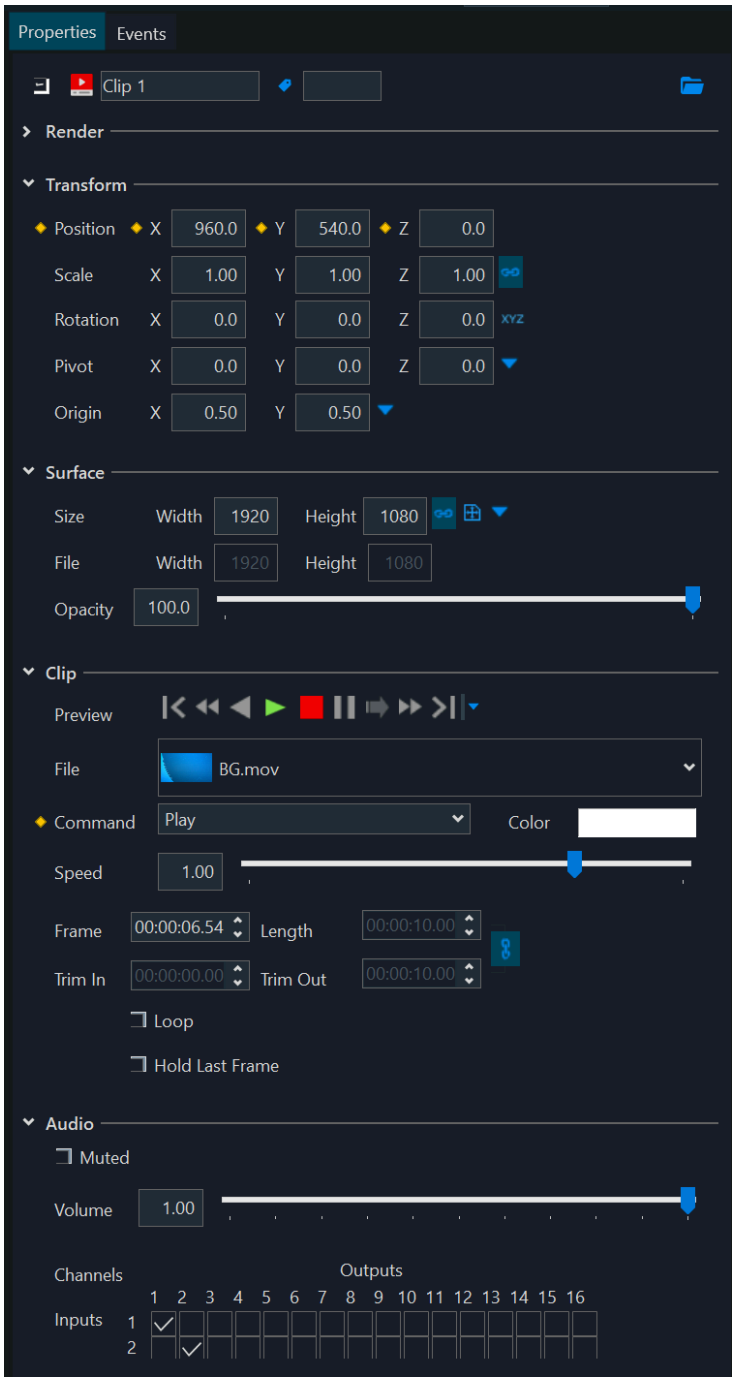
GTC is the native PRIME clip Format.

Supported formats in various wrappers include .MOV. DNxHD, DNxHR, PRO Res, XDCam, .mxf, H264, AVC Intra, DVC Pro HD, HQ, HQX, MPEG2, and MPEG4

DNx and ProRes both require a valid license for playback support.
A warning prompt will display if these codecs are unlicensed.

***There maybe some exceptions for key, audio, 4K, and HD support depending on the codec's native support of those features**

If your use case requires more system resources for clip playback performance, especially when using Apple ProRes based clips, please read about the Copy Threads setting within the PRIME_Playout_Configuration_Guide.



The following settings may be configured on the **Clip Properties** window:

- **Name** - The user friendly name to refer to the object throughout the application.

Render Properties

The **Render** subcategory includes:

- **Projection** – Projection mode. It is method how to map 3D objects to 2D screen plane.

- **Orthogonal** - Orthogonal projection.
- **Perspective local** - Central projection. The mid-point of projection is affected by an object.
- **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
- **Camera** - Projection in line with an external camera.
- **Camera Lens** - Special kind of projection in line with an external camera.
  Only the lens are tracked, it means just projection.
  The view matrix is the identity matrix,
  it doesn't depend on a location or camera direction.
- **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

- **Projection Center** – Center of projection. (Position on the screen where all lines meet in infinity.)
- **Light Enabled** – Enable use of lights. Applies only to object with generated normals. This feature is ignored when using shaders.
- **Double Sided** – Double side visibility.
- **Depth Function-** Function for making decision whether it will write to scene according to z-buffer.

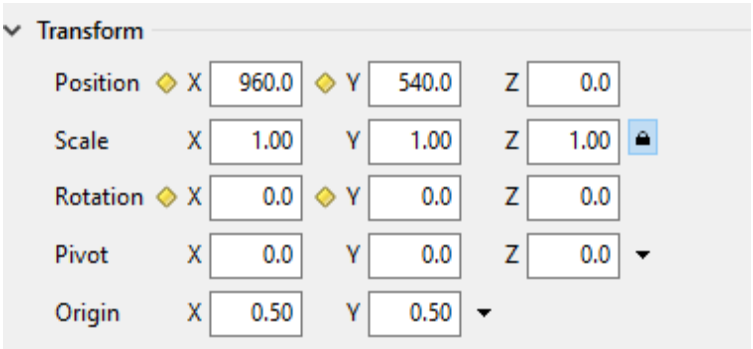
    - **OFF** - Disabled writing to depth buffers.
      Suitable for flat object which doesn't collide with any other objects.
    - **ON** - Fragment is rendered if object lies close to a observer (it's Z-coordinate is smaller than Z-coordinate in depth buffer). This option ensures the correct visibility of 3D object surface and its mutual location with other objects.
      Default value.
    - **ALWAYS** - Fragment is rendered always independently of depth buffer.
    - **NEVER** - Fragment isn't rendered ever.
    - **EQUAL** - Fragment is rendered if Z-coordinate at a given point is equal to Z-coordinate from depth buffer. Appropriate for n-pass drawing of the same object.

- **EQUAL** - Fragment is rendered if Z-coordinate is less or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects.
- **NOWRITE** - Similar to option "ON" with difference of Stealth attribute.
  Object is rendered under the rule visibility, but it isn't placed in depth buffer in itself.
- **GEQUAL** - Fragment is rendered if Z-coordinate is greater or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects. Use just for special purposes!

- **Priority-** Rendering priority within a layer. The higher number the later the object gets rendered.
  Use with care! Rather use Position.Z instead.
  The priority change doesn't work well if objects use depth buffer.
- **Texture Quality**
- **Texture Wrap**

Transform Properties

The **Transform** subcategory allows for the manipulation of the Clip Objects **Position, Scale, Rotation** and **Pivot** along the XYZ axis.



- To keep the Scale Aspect fixed to its current dimensions, click the lock icon to Lock Aspect Scale.

- **Position:** Position the object in X, Y or Z
- **Scale:** Scale the object in X, Y or Z
- **Rotation:** Rotate the object in X, Y or Z
- **Pivot:** Move the Pivot Position of the object in X, Y or Z
- **Origin:** Move the Origin Position of the object in X, Y or Z
-

Surface Properties

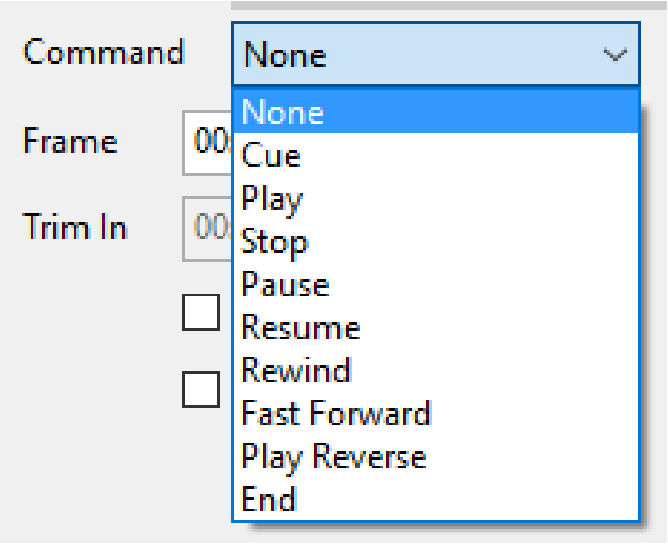
The **Surface** subcategory includes:

- **Size Width**
- **Size Height**
- **Opacity**

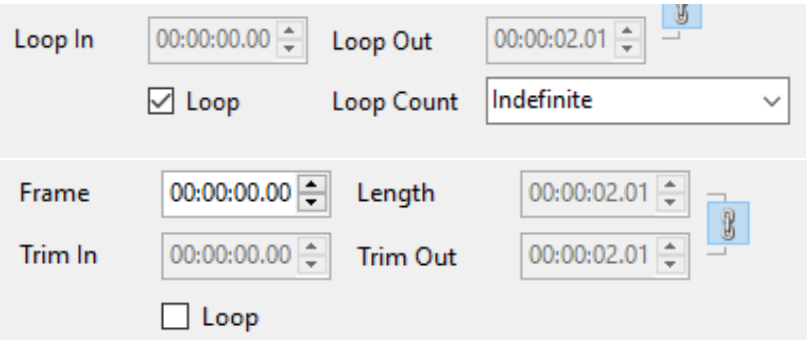
Clip Properties

The **Clip** subcategory includes:

- **File** – Clip file name
- **Command**
  - None
  - Cue
  - Play
  - Stop
  - Pause
  - Resume
  - Rewind
  - Fast Forward
  - Play Reverse
  - End



- **Frame –** Current Frame number
- **Length** –length of the clip file
- **Trim In** – Trim the start of the clip. Marks the “In” point
- **Trim Out** – Marks the “out point” of the clip
- **Loop** – Loop the clip any number of times or indefinitely.



Configure the loop as follows:

- To enable/disable the loop, check/uncheck the check box.
- To set the number of times that the clip loops:

Enter a number: Loops the specified number of times.

Indefinite: Select **Indefinite** to have the loop play indefinitely.

- **Loop Points:** Two loop points can be set, so that the clip begins from one point and loops back to a point different from the start point of the clip and loops back from a point different from the end point of the clip.
- **Loop In:** Set the point back to which the clip loops, i.e., the loop start point.
- **Loop Out:** Set the point back from which the clip loops, i.e., the loop end point. This action is not yet available

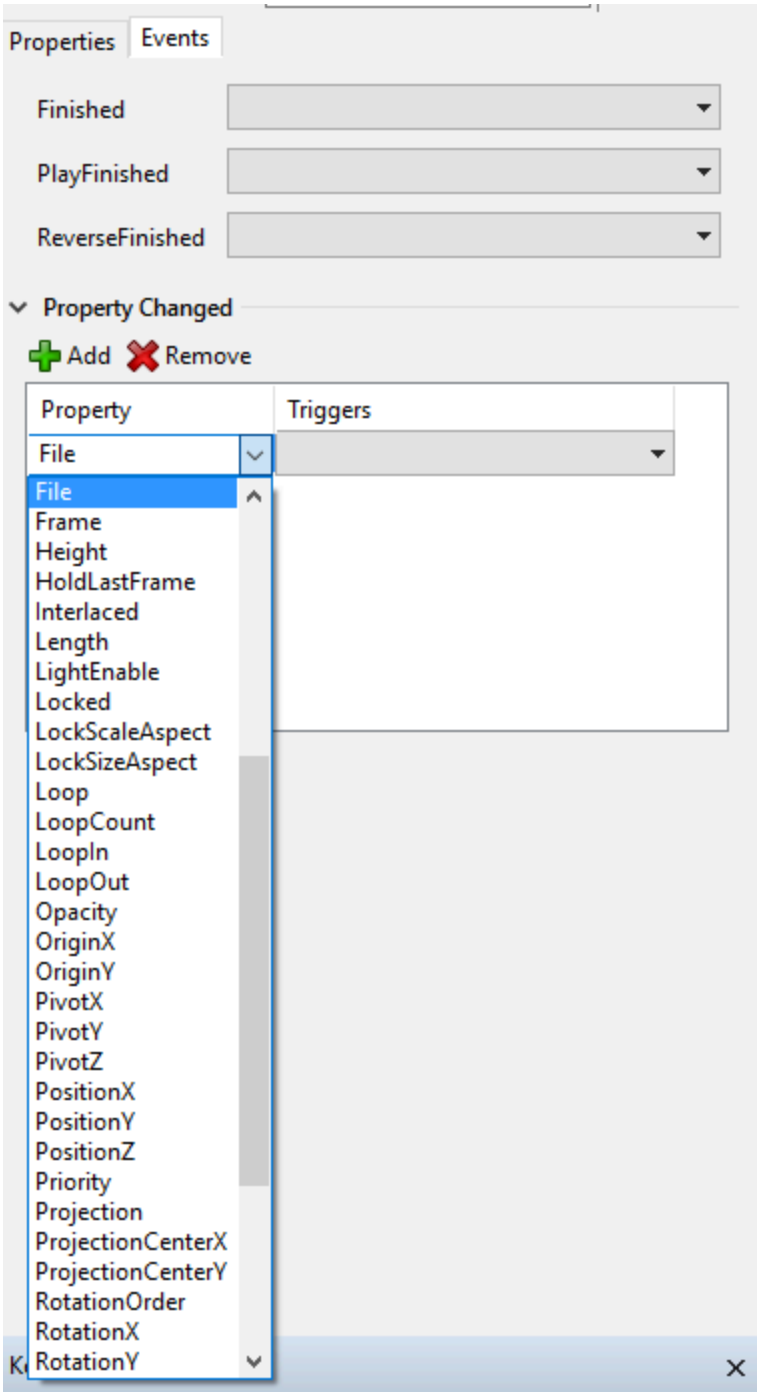
- **Hold last Frame-**Pause at last frame

Clip Events

There are a few ready to use events

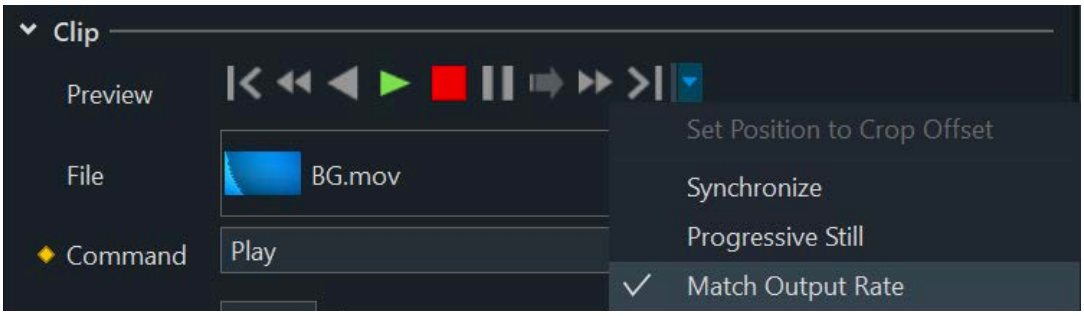
- Finished
- Play Finished
- Reverse Finished

There are events for all the clip properties as well:

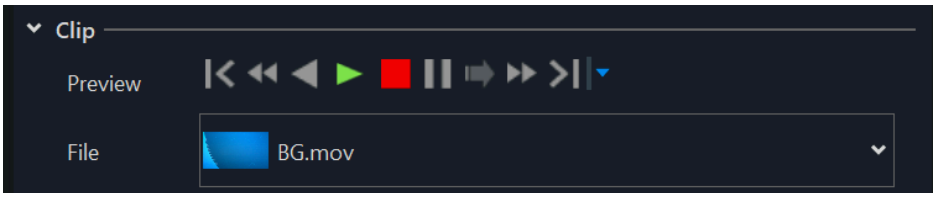


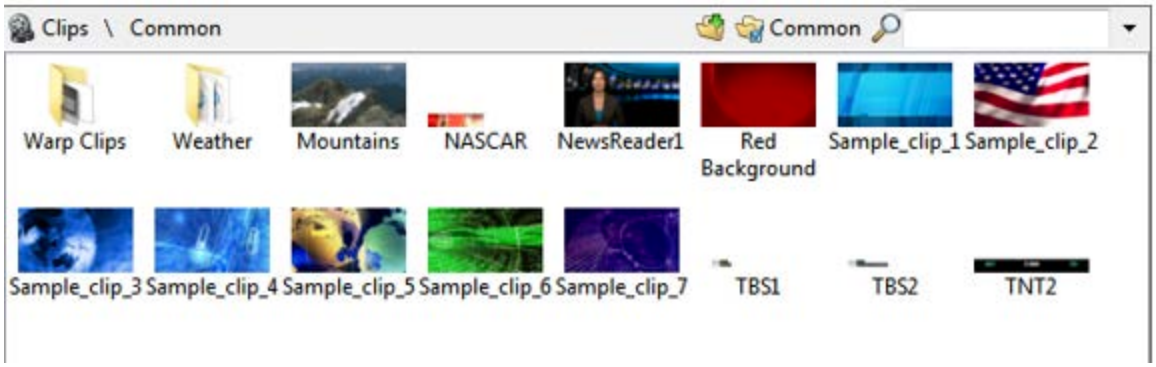
The **Clip** subcategory includes:

- **Preview** – These controls allow you to preview clips
- **Set Position to Crop Offset** - GTC files can be generated by cropping off all pixels that are always transparent, and embedding this crop information as metadata into the clip. Enabling this option allows this crop position to be automatically set to the Position property of the clip
- **Synchronize** - Enable to synchronize multiple clips using the same File
- **Progressive Still** - Merges two interlaced fields into one frame during pause. Only available for interlaced clips.
- **Match Output Rate** - If enabled, automatically adjusts the playback rate of the clip to match the output rate of the channel.
    - For Playout: Match Output Rate only supports the playout of audio if the video output channel you are playing out to is set to the same frame rate as the frame rate of the clip.
    - Example 1 - Clip is rendered at 50fps, Output Channel is set to 59.94. Clip will playback at 59.94 instead of 50fps but audio will not play.
    - Example 2 - Clip is rendered at 50fps, Output Channel is set to 50fps. Clip will playback at 50fps and audio will play.

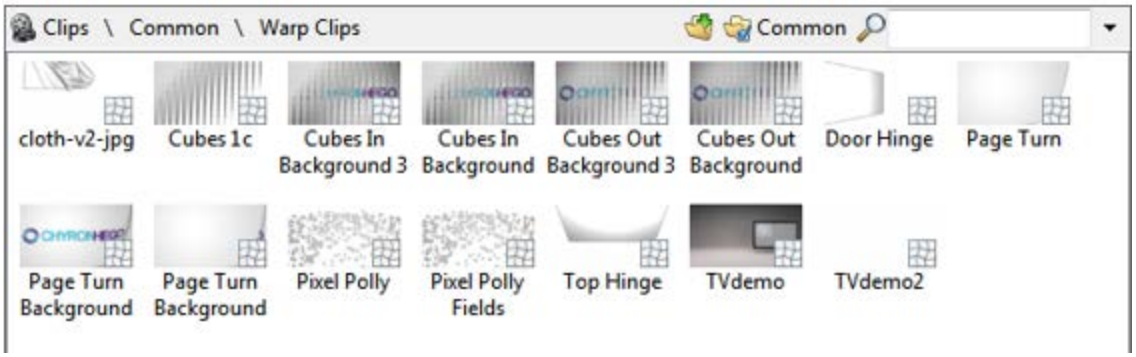


- **File** – Shows the clip browser starting in the “Clips” folder of the current project.

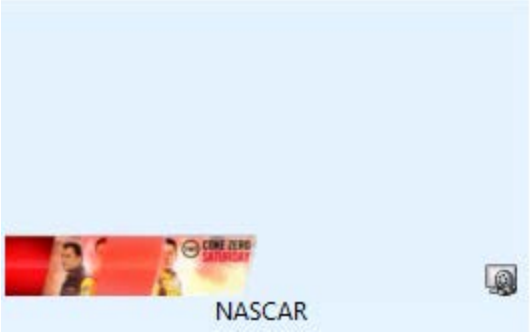




Clips with the “Warp” icon in the lower right hand corner are flagged as “Warp” clips that contain the UV Mapping information.

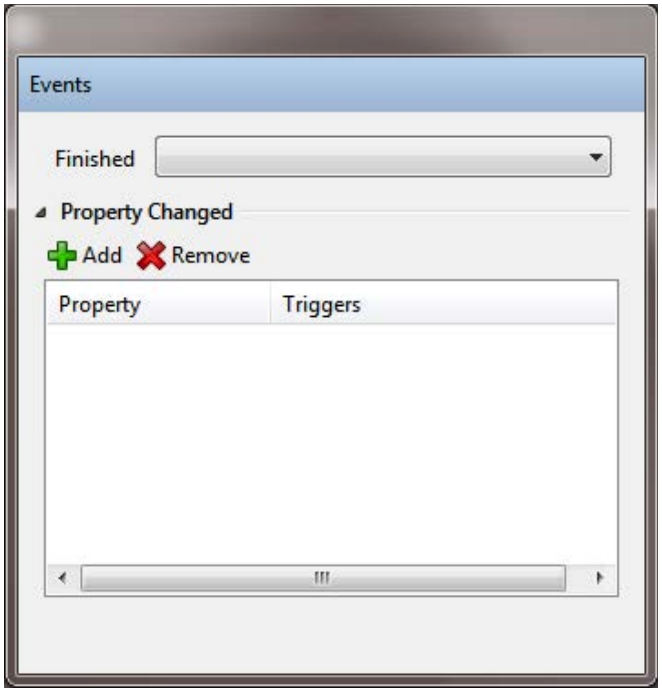


Clips with Key icon:



The **Events** subcategory includes:

- **Finished Event** - When the clip is finished perform something else available in the scene.

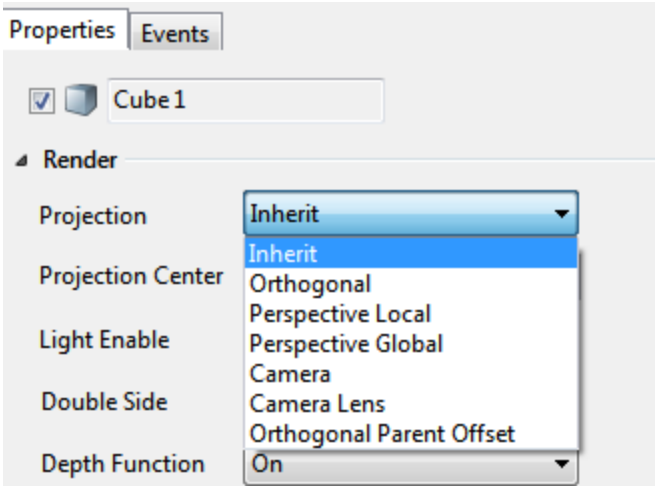


Cone Object

Cube Object

Render Properties

Projection



- **Inherit**
- **Orthogonal** - Orthogonal projection.
- **Perspective local** - Central projection. The mid-point of projection is affected by an object.
- **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
- **Camera** - Projection in line with an external camera.
- **Camera Lens** - Special kind of projection in line with an external camera. Only the lens is tracked, it means just projection. The view matrix is the identity matrix, it doesn't depend on a location or camera direction.
- **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

Projection Center

- **On** - Fragment is rendered if object lies close to a observer (it's Z-coordinate is smaller than Z-coordinate in depth buffer). This option ensures the correct visibility of 3D object surface and its mutual location with other objects. Default value.
- **Always** - Fragment is rendered always independently of depth buffer.
- **Never** - Fragment isn't rendered ever.
- **Equal** - Fragment is rendered if Z-coordinate at a given point is equal to Z-coordinate from depth buffer. Appropriate for n-pass drawing of the same object.

- **Less than or Equal** - Fragment is rendered if Z-coordinate is less or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects.
  - **No Write** - Similar to option "ON" with difference of Stealth attribute.
    Object is rendered under the rule visibility, but it isn't placed in depth buffer in itself.
  - **Greater than or Equal** - Fragment is rendered if Z-coordinate is greater or equal to Z-coordinate from depth buffer.
    The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects. Use just for special purposes!

Light Enabled

Double Sided

Depth Function

Priority

Transform

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

Origin: Move the Origin Position of the object in X, Y or Z

Surface

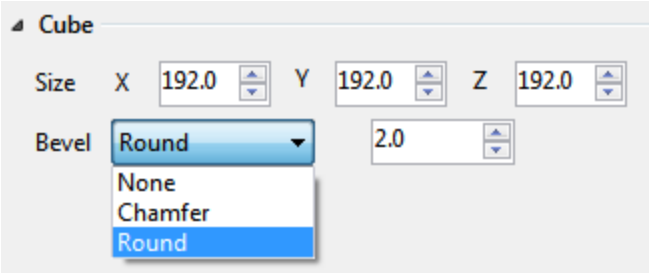
Opacity:

Cube Properties

File:

Size:

Bevel



- None:
- Chamfer:
- Round:

Cylinder Object

Render Properties

Projection

- **Orthogonal** - Orthogonal projection.
- **Perspective local** - Central projection. The mid-point of projection is affected by an object.
- **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
- **Camera** - Projection in line with an external camera.
- **Camera Lens** - Special kind of projection in line with an external camera.
  Only the lens is tracked, it means just projection.
  The view matrix is the identity matrix,
  it doesn't depend on a location or camera direction.
- **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

Projection Center

- **On** - Fragment is rendered if object lies close to a observer (it's Z-coordinate is smaller than Z-coordinate in depth buffer). This option ensures the correct visibility of 3D object surface and its mutual location with other objects.
  Default value.
- **Always** - Fragment is rendered always independently of depth buffer.
- **Never** - Fragment isn't rendered ever.
- **Equal** - Fragment is rendered if Z-coordinate at a given point is equal to Z-coordinate from depth buffer. Appropriate for n-pass drawing of the same object.
- **Less than or Equal** - Fragment is rendered if Z-coordinate is less or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects.
- **No Write** - Similar to option "ON" with difference of Stealth attribute.
  Object is rendered under the rule visibility, but it isn't placed in depth buffer in itself.
-
- **Greater than or Equal** - Fragment is rendered if Z-coordinate is greater or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects. Use just for special purposes!

Light Enabled

Double Sided

Depth Function

Priority

Transform Properties

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

Origin: Move the Origin Position of the object in X, Y or Z

Surface Properties

Opacity

Set the opacity on the surface object

Cylinder Properties

Diameter

Depth

Angle

Hole

Tessellation

Alignment

- **Center**
- **Clockwise**
- **Counter Clockwise**

UV Mapping

- **Planner**
- **Polar**

Bevel Properties

Size

Cuve

Scale

Tessellation

Back

Inside

Freehand

Transform Properties

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

Origin: Move the Origin Position of the object in X, Y or Z

Data:

Point X-Y: 33

Data: CSV data in format: "x1,y1\nx2,y2" ... . \n is a new line character.
You can use pipe "|" character instead of new line.

Freehand:

Color: Stroke color

End Fade: Position on the stroke where to apply alpha gradient from 1 to 0.

End Length: The length of end part of the stroke which is made thinner.

Thickness: Half thickness of the stroke

Filter Step: Filter step affects finer (lower then 1.0) or coarse (higher then 1.0) sampling of input data.

Texture:

Texture: Filename of image file used as a texture on stroke.
If set to empty string or undefined then no texture is used.
The texture is always drawn in REPEAT mode.
To shift the texture along the stroke use TextureMatrix effect and change Offset.X

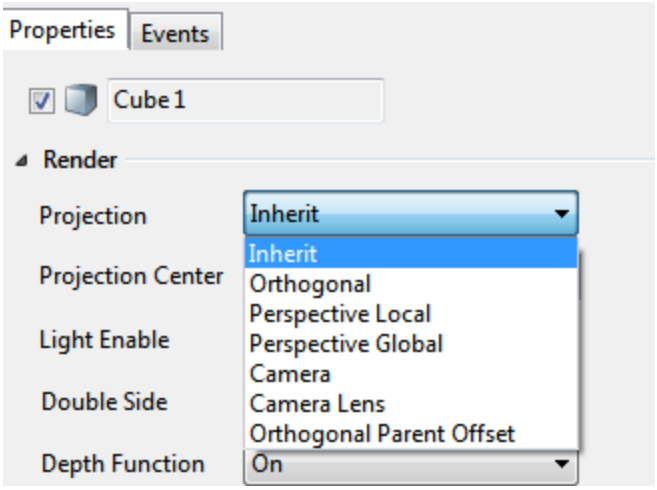
Stretch: When undefined the texture is repeated over the stroke.
Otherwise the parameters define range in which the texture is stretched over the stroke.
The parts outside the range is not stretched.

Group Object

The default shortcut to add a group to your scene is Ctrl+G. Selecting objects in your scene tree using Ctrl and then pressing Ctrl+G will add a new group to your scene and automatically move the selected objects inside the new group. The default shortcut ungroup is Ctrl+U.

Render Properties

Projection



- **Inherit -** inherits from the parent group. If there is no parent group, then it defaults to Perspective Global
- **Orthogonal** - Orthogonal projection.
- **Perspective local** - Central projection. The mid-point of projection is affected by an object.
- **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
- **Camera** - Projection in line with an external camera.
- **Camera Lens** - Special kind of projection in line with an external camera.
  Only the lens is tracked, it means just projection.
  The view matrix is the identity matrix,
  it doesn't depend on a location or camera direction.
- **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

Projection Center

- **On** - Fragment is rendered if object lies close to a observer (it's Z-coordinate is smaller than Z-coordinate in depth buffer). This option ensures the correct visibility of 3D object surface and its mutual location with other objects. Default value.
- **Always** - Fragment is rendered always independently of depth buffer.
- **Never** - Fragment isn't rendered ever.
- **Equal** - Fragment is rendered if Z-coordinate at a given point is equal to Z-coordinate from depth buffer. Appropriate for n-pass drawing of the same object.
- **Less than or Equal** - Fragment is rendered if Z-coordinate is less or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects.
- **No Write** - Similar to option "ON" with difference of Stealth attribute.
  Object is rendered under the rule visibility, but it isn't placed in depth buffer in itself.
- **Greater than or Equal** - Fragment is rendered if Z-coordinate is greater or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects. Use just for special purposes!

Light Enabled

Double Sided

Depth Function

Priority

Transform Properties

The **Transform** subcategory allows for the manipulation of the Clip Objects **Position, Scale, Rotation** and **Pivot** along the XYZ axis

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

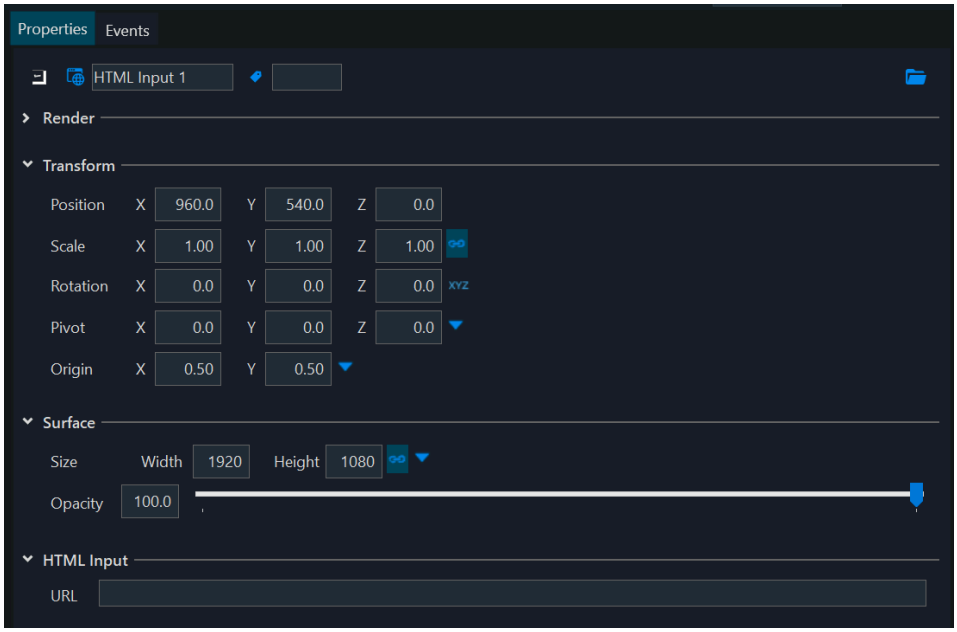
Origin: Move the Origin Position of the object in X, Y or Z

Surface Properties

Opacity: Set the opacity of the children in the group

HTML Input Object

The HTML Input Graphic Object allows users to render a webpage within Prime Scenes and deliver it to any output channel. The webpage URL is defined through the HTML Input properties.



HTML Input's Intended Use and Performance

The HTML Input feature is currently intended for static or minimally animated webpages, as part of a Prime Scene design.

Performance may vary depending on the system demands of the website being displayed. Prime's official 3RU System supports displaying up to two HTML Inputs simultaneously, subject to the performance requirements of the rendered webpages.

At this time, we do not recommend displaying webpages with frequent or complex animations, particularly those requiring sustained 60 fps playback to render correctly or sites with video clips.

Currently Not Supported

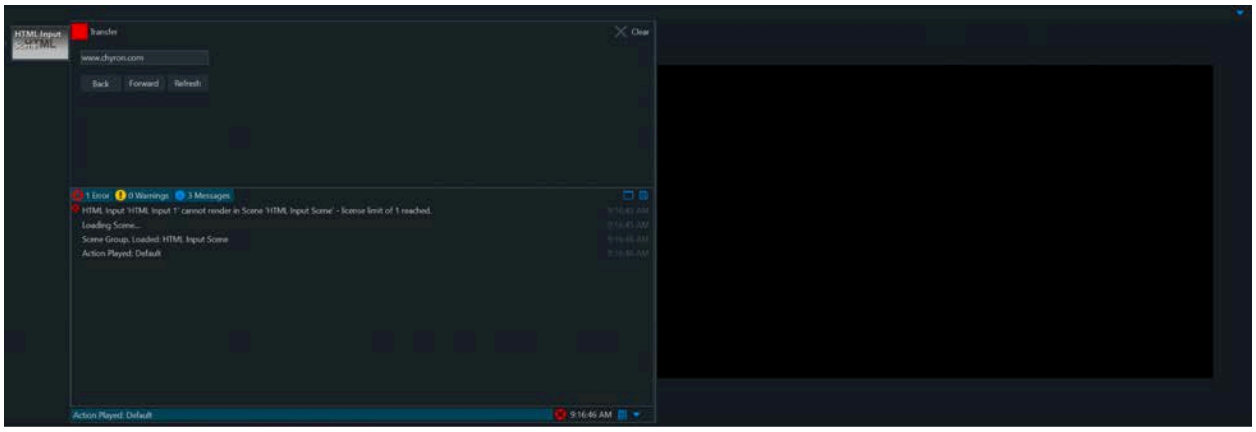
- Prime Touch Effects / Touch screen interactivity
- Website-based video playback, including video codecs and players such as MP4 (H.264)
    - Additional codecs and third-party video players (not guaranteed)
- Hardware acceleration
- Audio Playback
- Mouse and Keyboard

HTML Input Licensing and Playout

Use of HTML Input requires the purchase of HTML Input channel licenses. Users may purchase up to four HTML Input channels per Prime license, sold in quantities of two, (up to 4 / 2 on output max).

While Prime Scene Designer allows designers to build scenes containing more than two HTML Inputs, only up to two licensed HTML Inputs may be played out simultaneously. HTML Input licenses must be purchased in pairs to maintain back-to-back playout workflows.

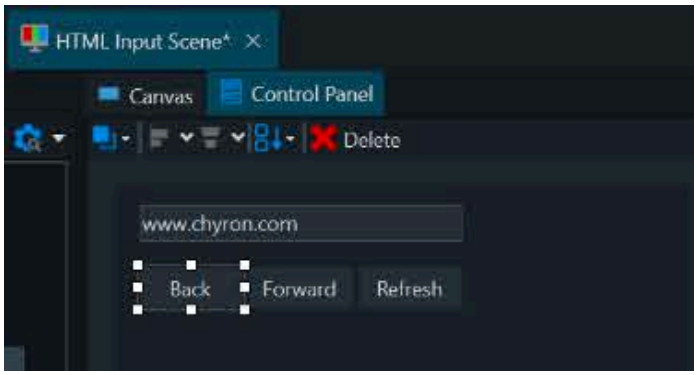
An HTML Input license is consumed whenever a webpage is loaded into either Preview or Program.



If a user attempts to use more HTML Inputs than are licensed in Preview or Program, an error message will be displayed, such as that shown above, and the HTML content will not render. To avoid this, users should limit the number of HTML Inputs, purchase additional licenses (up to 4 / 2 on output max), or follow best practices by effecting out the current HTML Input scene on Program before loading the next scene into Preview and taking it to air.

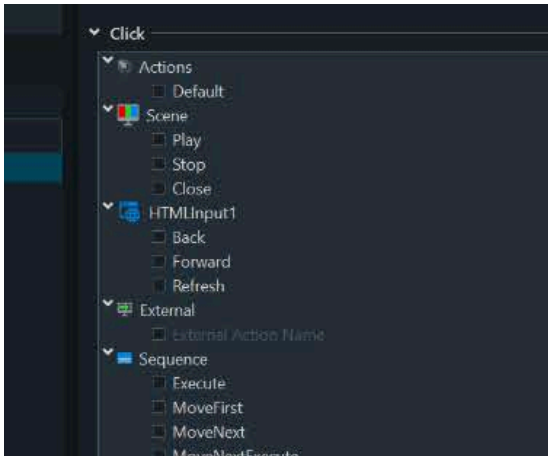
Furthermore, if all available HTML Input licenses are in use on Program and the user attempts to load additional HTML Inputs into Preview, the HTML content will not be displayed in Preview and the HTML Input licensing error will appear. This occurs because each HTML Input loaded into Preview or Program creates a new browser instance, consuming a license. This is the reason users must license HTML inputs in pairs. If Preview displays a blank HTML Input due to licensing, Program will behave the same way when the scene is played to air.

Prime HTML Input Control Panel Example and Setup Steps



HTML Input provides the following control properties:

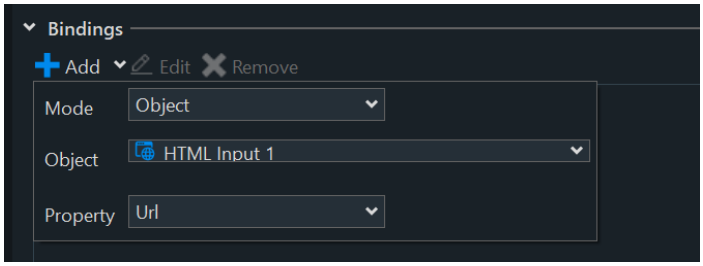
- Back
- Forward
- Refresh

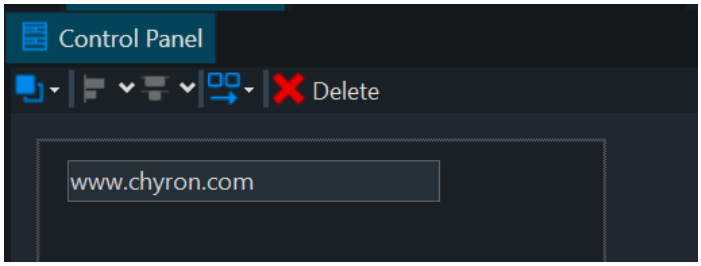


Setting Up HTML Properties

Adding the URL Replaceable Text Field

Designers can link the HTML Input URL as a replaceable and to a Control Panel Text Box by binding the replaceable to the URL and then dragging and dropping your Text Replaceable onto the Control Panel.





Adding the Back, Forward, and Refresh Buttons

To add navigation controls, create three buttons on a Control Panel. For each button, configure the Click Properties to bind it to the corresponding HTML Input property (Back, Forward, or Refresh).

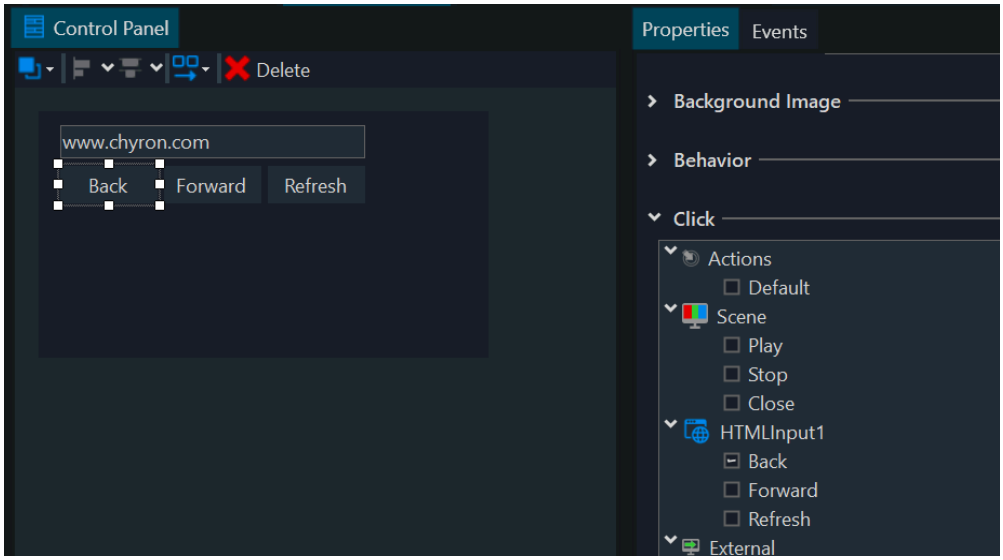
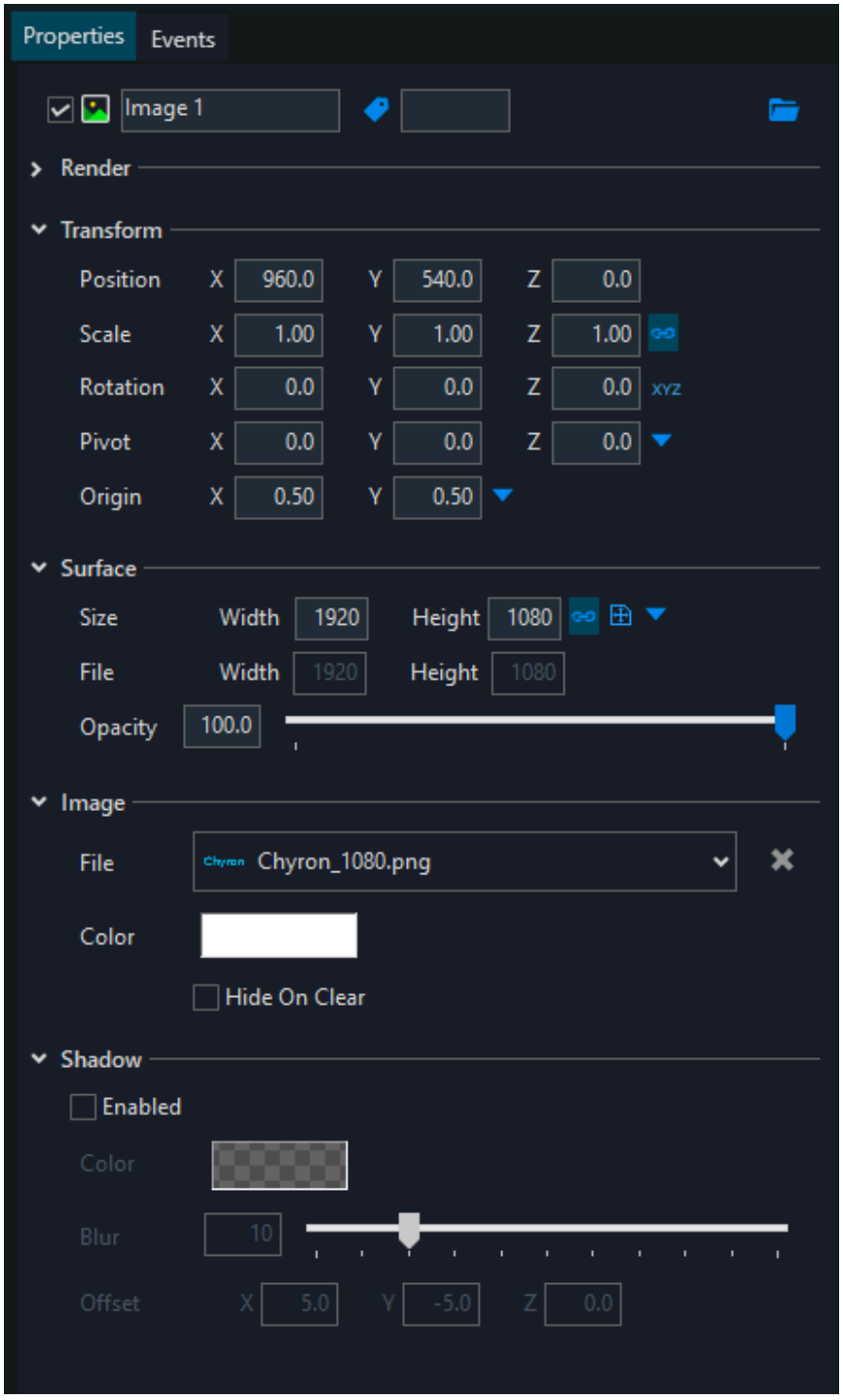


Image Object

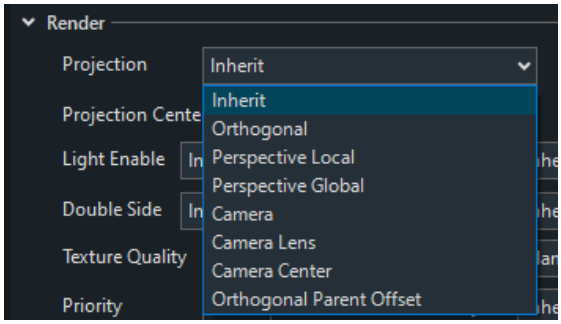


The following settings may be configured on the **Image Properties** window:

- **Name –** The name to be referenced throughout the scene

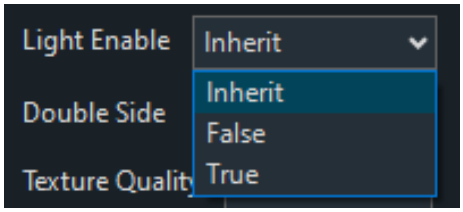
Render Properties

The **Render** subcategory includes:



- **Projection -**
    - **Orthogonal** - Orthogonal projection.
    - **Perspective local** - Central projection. The mid-point of projection is affected by a object.
    - **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
    - **Camera** - Projection in line with an external camera.
    - **Camera Lens** - Special kind of projection in line with an external camera. Only the lens are tracked, it means just projection. The view matrix is the identity matrix, it doesn't depend on a location or camera direction.
    - **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

- **Projection Center -** Center of projection. (Position on the screen where all lines meet in infinity.)
- **Light Enabled -** Enable use of lights. Applies only to object with generated normals. This feature is ignored when using shaders.
- **Double Sided -** Double side visibility.
- **Depth Function-** Function for making decision whether it will write to scene according to z-buffer.



    - **OFF** - Disabled writing to depth buffers. Suitable for flat object which doesn't collide with any other objects.
    - **ON** - Fragment is rendered if object lies close to a observer (it's Z-coordinate is smaller than Z-coordinate in depth buffer). This option ensures the correct visibility of 3D object surface and its mutual location with other objects. Default value.
    - **ALWAYS** - Fragment is rendered always independently of depth buffer.
    - **NEVER** - Fragment isn't rendered ever.
    - **EQUAL** - Fragment is rendered if Z-coordinate at a given point is equal to Z-coordinate from depth buffer. Appropriate for n-pass drawing of the same object.

- **EQUAL** - Fragment is rendered if Z-coordinate is less or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects.
- **NOWRITE** - Similar to option "ON" with difference of Stealth attribute.
  Object is rendered under the rule visibility, but it isn't placed in depth buffer in itself.
- **GEQUAL** - Fragment is rendered if Z-coordinate is greater or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects. Use just for special purposes!

- **Priority-** Rendering priority within a layer. The higher number the later the object gets rendered.
  Use with care! Rather use Position.Z instead.
  The priority change doesn't work well if objects use depth buffer.
- **Texture Quality**
- **Texture Wrap**

Transform Properties

The **Transform** subcategory allows for the manipulation of the Image Objects **Position, Scale, Rotation** and **Pivot** along the XYZ axis.

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

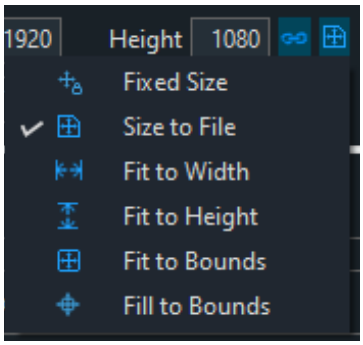
Origin: Move the Origin Position of the object in X, Y or Z

- To keep the Scale Aspect fixed to its current dimensions, click the lock icon to Lock Aspect Scale.

Surface Properties

The **Surface** subcategory includes:

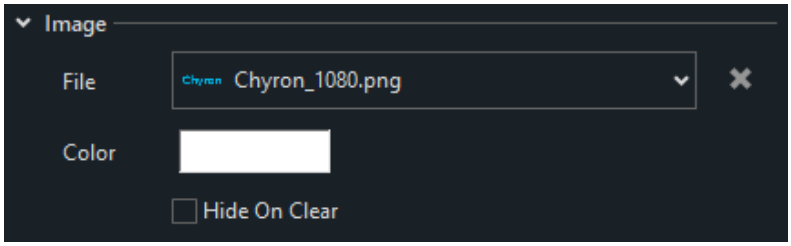
The red arrow button will allow you to set the Size Mode to determine what happens when the image is replaced. This option gives you many choices.



- **Fixed Size:** Image will use the Width and Height defined in the properties regardless of the file size
- **Size To File:** When the File property changes, Width and Height will be set to the File dimensions
- **Fit To Width:** The Width will be set to the specified Fit Bounds Width, and the Height will be calculated to maintain the aspect of the File Size
- **Fit To Height:** The Height will be set to the specified Fit Bounds Height, and the Width will be calculated to maintain the aspect of the File Size
- **Fit To Bounds:** The Size is set to fit within the Fit Bounds, while maintaining file aspect
- **Fill To Bounds:** The Size is set to fill within the Fit Bounds, while maintaining file aspect

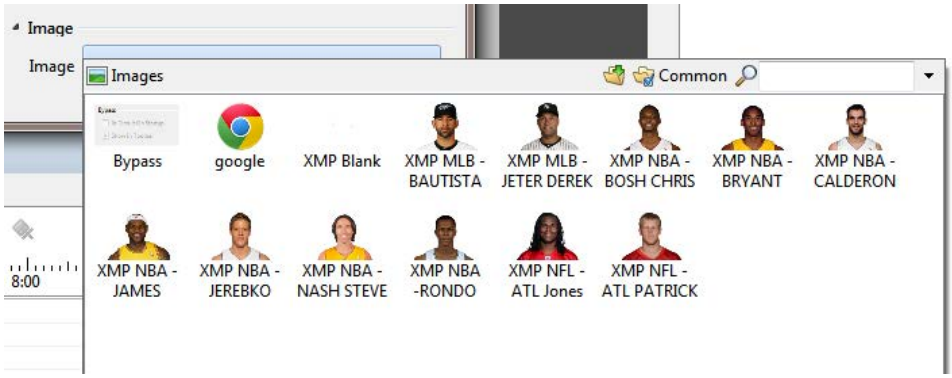
Image Properties

The **Image** subcategory includes

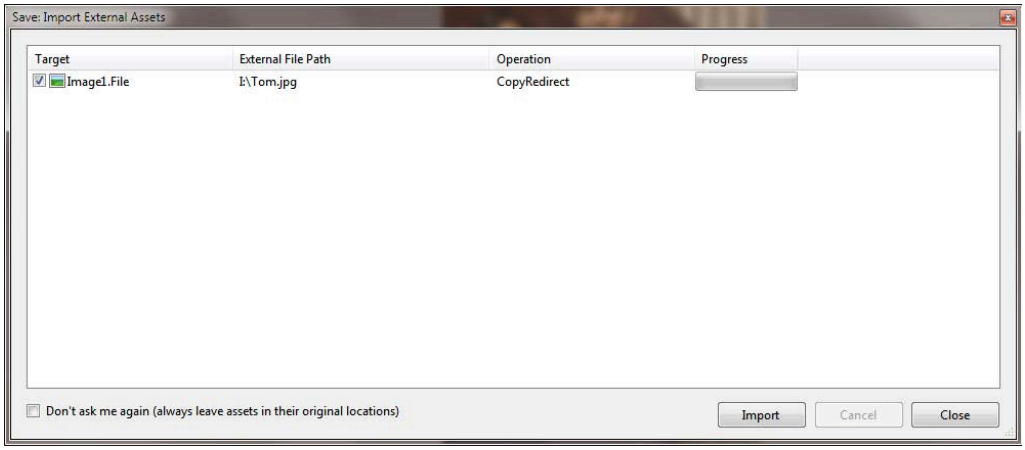


File

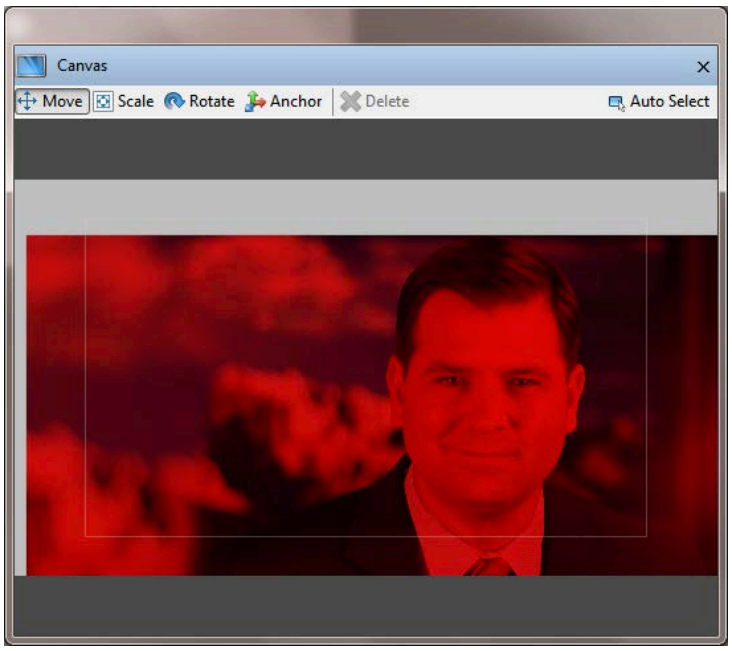
- Image Browser -



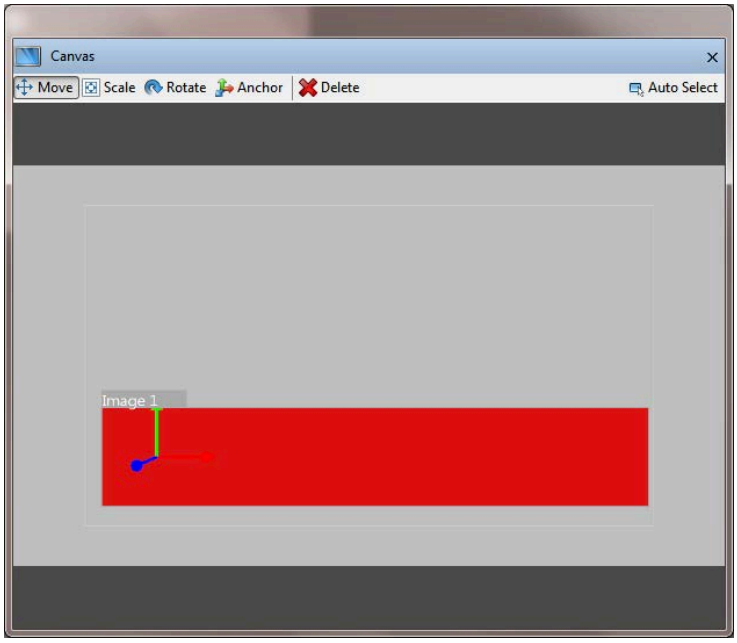
Selecting images from folders outside the project will prompt you to import or not import the selected image to the project.



Color



Or use as a solid color, ramp or quad:



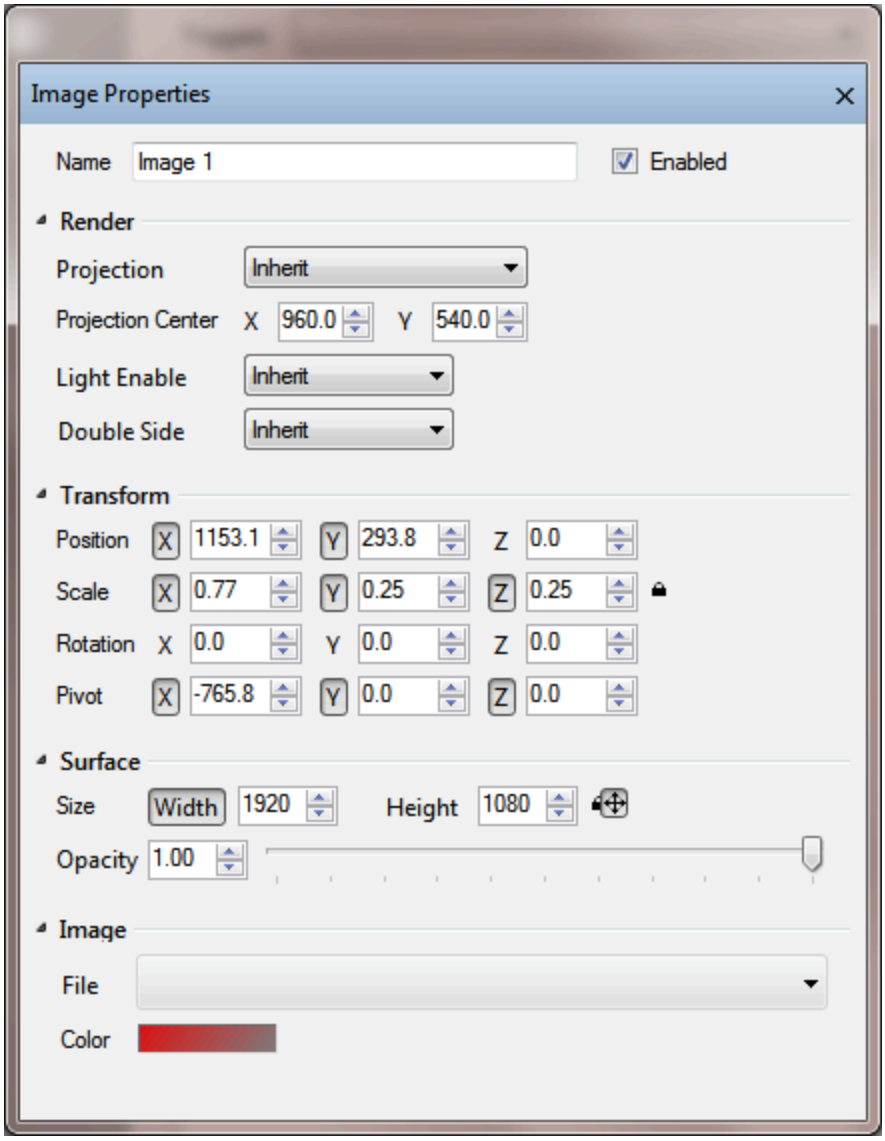
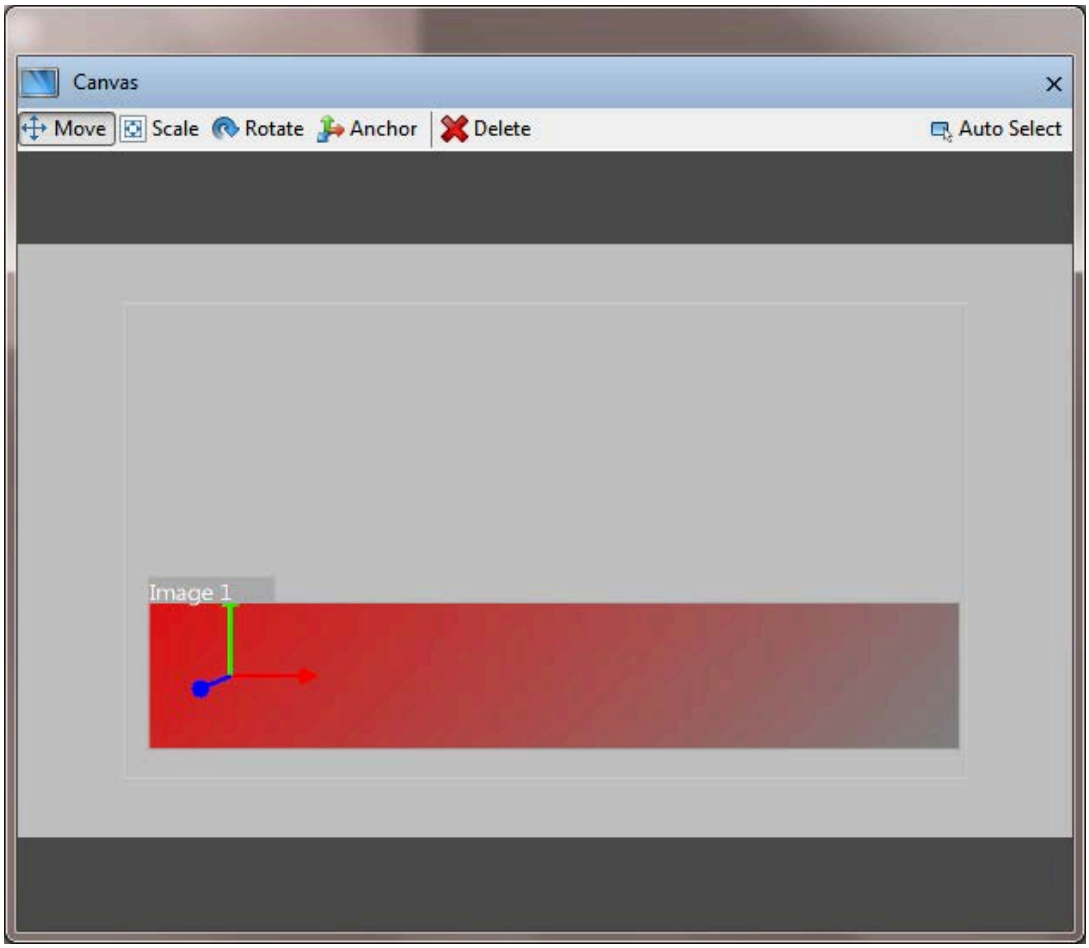


Image Properties
Name
Image 1
Enabled
Render
Projection
Inherit
Projection Center
X
960.0
Y
540.0
Light Enable
Inherit
Double Side
Inherit
Transform
Position
X
1153.1
Y
293.8
Z
0.0
Scale
X
0.77
Y
0.25
Z
0.25
Rotation
X
0.0
Y
0.0
Z
0.0
Pivot
X
-765.8
Y
0.0
Z
0.0
Surface
Size
Width
1920
Height
1080
Opacity
1.00
Image
File
Color


Canvas
Move
Scale
Rotate
Anchor
Delete
Auto Select
Image 1

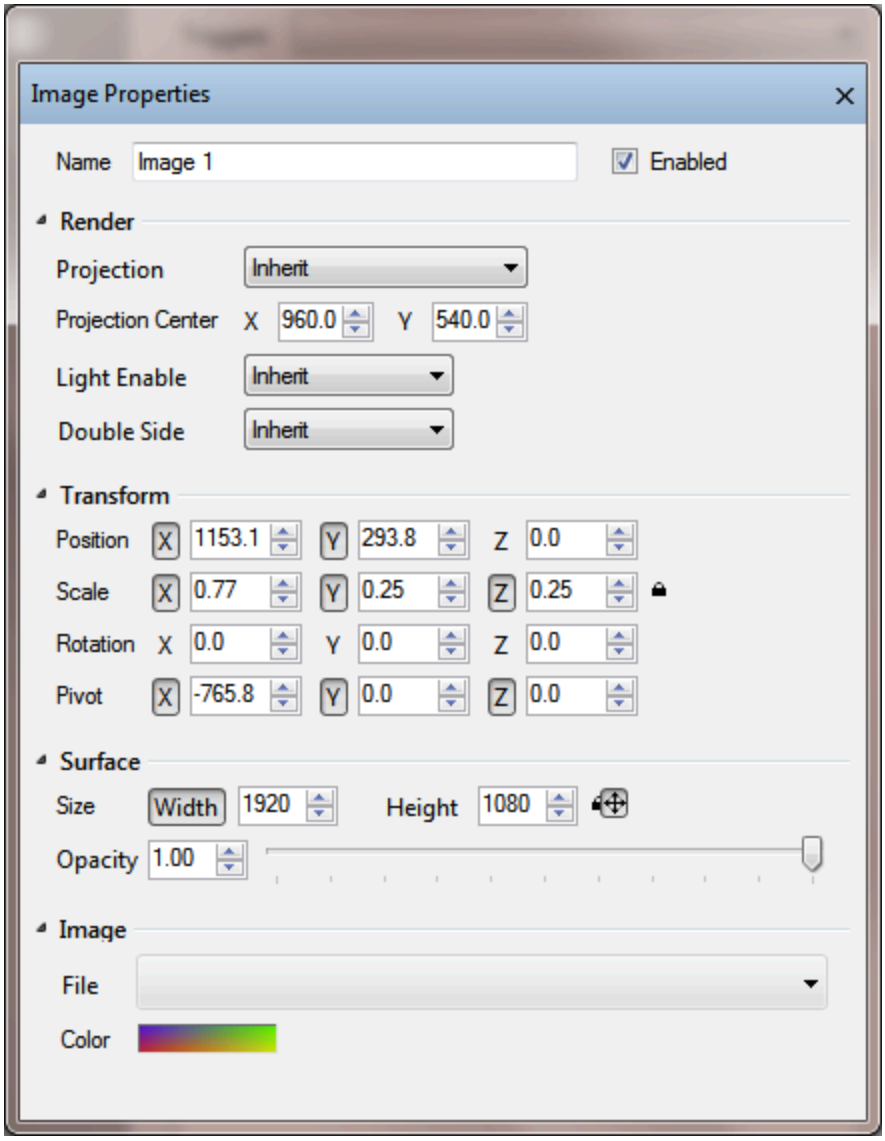
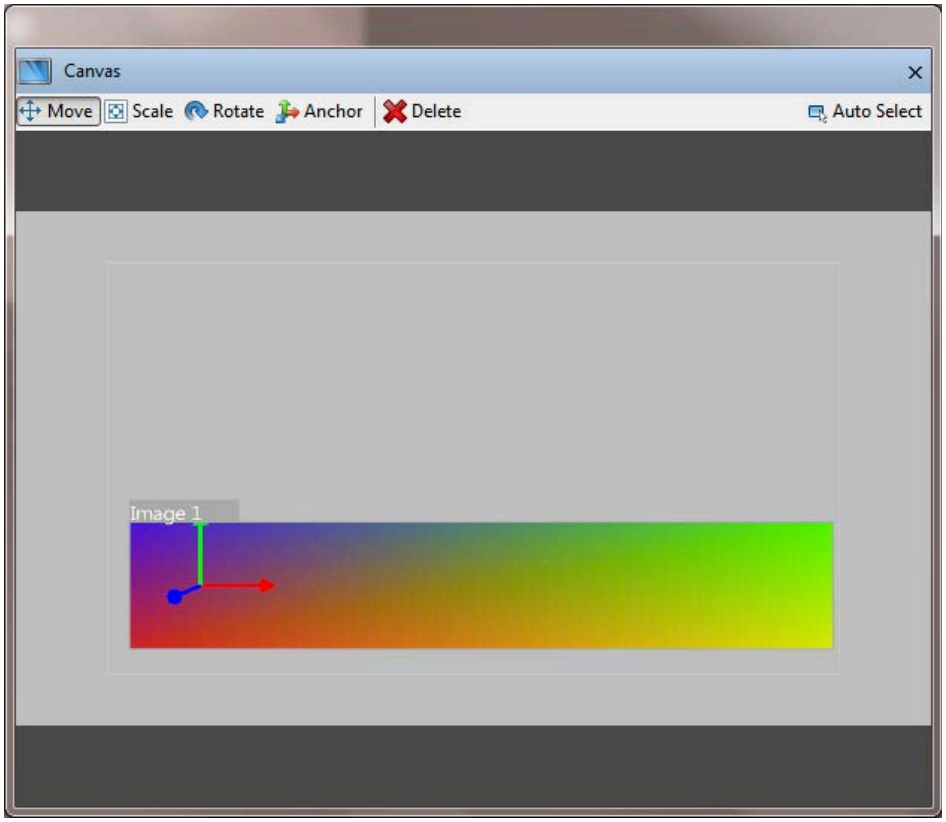


Image Properties
Name
Image 1
Enabled
Render
Projection
Inherit
Projection Center
X
960.0
Y
540.0
Light Enable
Inherit
Double Side
Inherit
Transform
Position
X
1153.1
Y
293.8
Z
0.0
Scale
X
0.77
Y
0.25
Z
0.25
Rotation
X
0.0
Y
0.0
Z
0.0
Pivot
X
-765.8
Y
0.0
Z
0.0
Surface
Size
Width
1920
Height
1080
Opacity
1.00
Image
File
Color

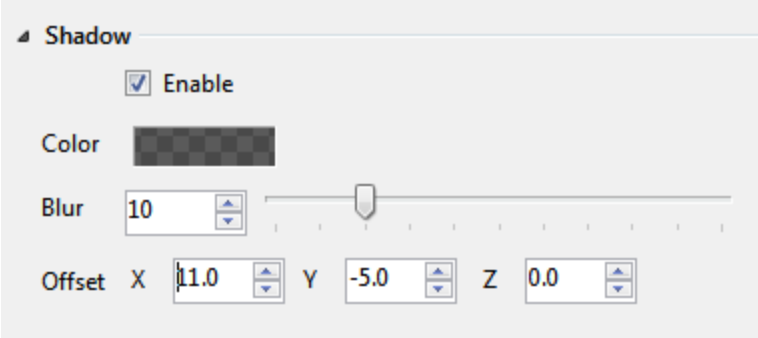


Shadow Properties

Hide on Clear

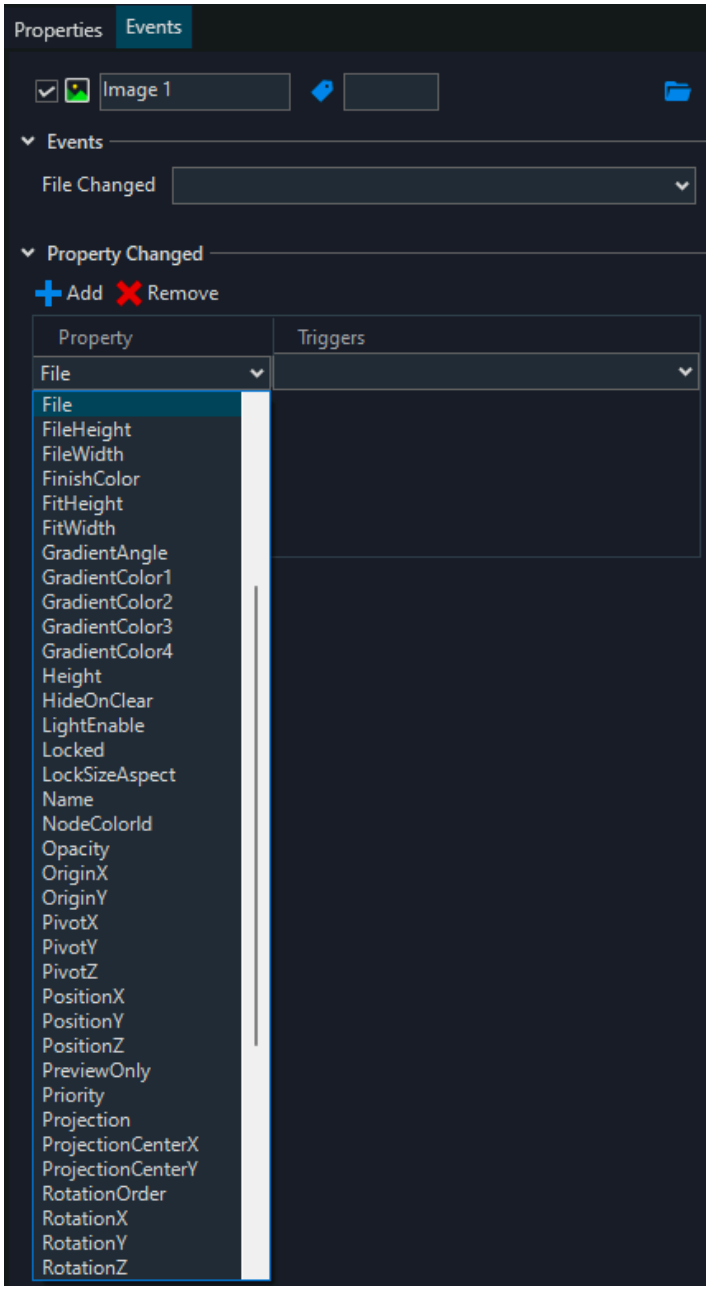
When the image is cleared make the image object Transparent.

Shadow



- **Hide on Clear**
  When enabled this option will clear the image placeholder. When not enabled it will use the default color to fill the image placeholder.

Image Events



Model

The supported file types are .**iv, .rtg, .3ds, .obj and FBX.**

Polygon Object

Render Properties

Projection

- **Orthogonal** - Orthogonal projection.
- **Perspective local** - Central projection. The mid-point of projection is affected by an object.
- **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
- **Camera** - Projection in line with an external camera.
- **Camera Lens** - Special kind of projection in line with an external camera.
  Only the lens is tracked, it means just projection.
  The view matrix is the identity matrix,
  it doesn't depend on a location or camera direction.
- **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

Projection Center

- **On** - Fragment is rendered if object lies close to a observer (it's Z-coordinate is smaller than Z-coordinate in depth buffer). This option ensures the correct visibility of 3D object surface and its mutual location with other objects.
  Default value.
- **Always** - Fragment is rendered always independently of depth buffer.
- **Never** - Fragment isn't rendered ever.
- **Equal** - Fragment is rendered if Z-coordinate at a given point is equal to Z-coordinate from depth buffer. Appropriate for n-pass drawing of the same object.
- **Less than or Equal** - Fragment is rendered if Z-coordinate is less or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects.
- **No Write** - Similar to option "ON" with difference of Stealth attribute.
  Object is rendered under the rule visibility, but it isn't placed in depth buffer in itself.

- **Greater than or Equal** - Fragment is rendered if Z-coordinate is greater or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects. Use just for special purposes!

Light Enabled

Double Sided

Depth Function

Priority

Transform Properties

Position: Position the object in X, Y or Z

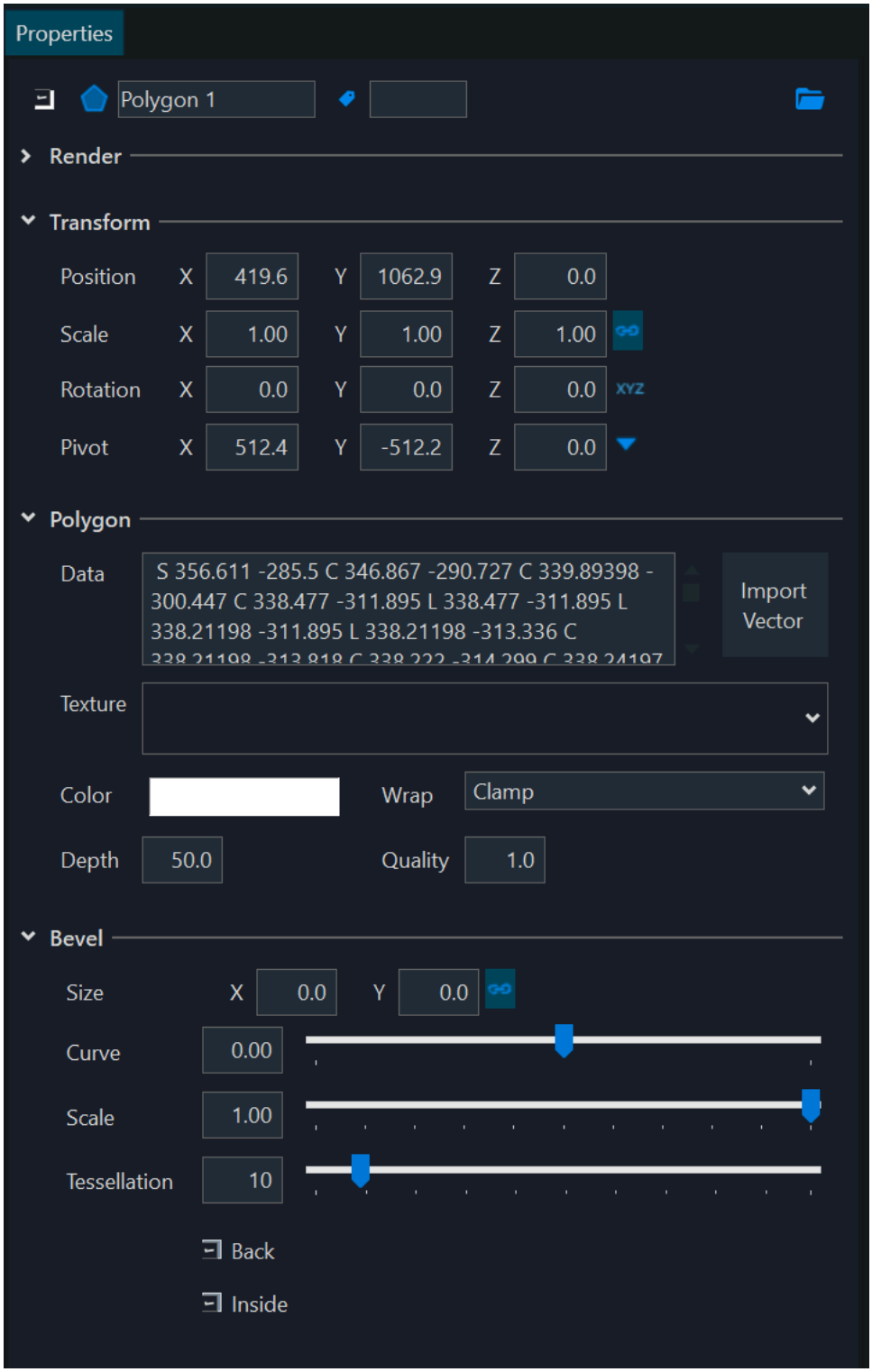
Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

Origin: Move the Origin Position of the object in X, Y or Z

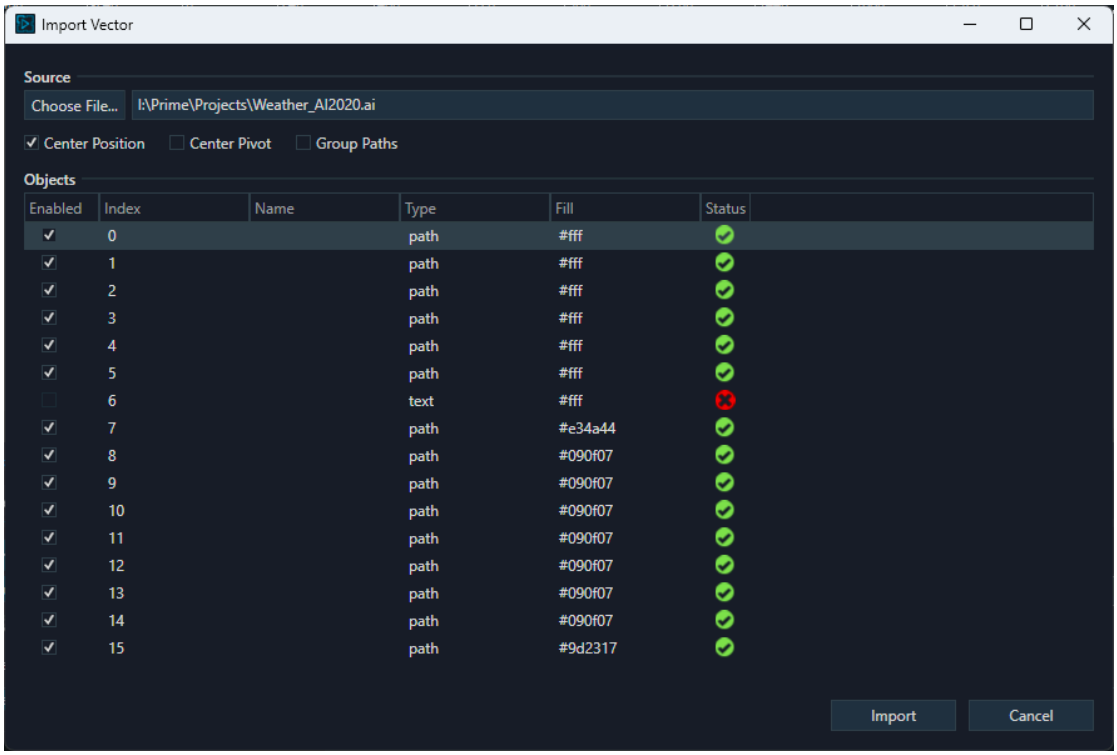
Polygon Properties



Data

- The data section is a string representation of the data needed to display a polygon in the designer or scene.
- Data for a polygon can be directly imported from an existing AI, PDF, or SVG vector file by using the Import Vector button
    - Once the button is pressed and open file dialog will be presented where the user can select their desired file.

    - Once a file is selected the Import Vector dialog is shown.



***Please Note -** Importing vector files through the Polygon Object directly will import the entire vector image file as a single layer. Individual vector layer import requires users to import the vector file by going to File > Import Vector. Please see the Importing Vector Files section for details about that import method.

The user can then select the polygons in the file they would like to import by selecting the check box next to the object.

- The Center Paths option will center the polygons in the scene.
- The end result will be one polygon object in the scene create from all the data in the vector file.

Texture
Selects the texture for the polygon

Color
The color of the polygon

Wrap
Defines how the texture is wrapped on the polygon

- Clamp – Clamps the texture to the polygon geometry
- Repeat – Repeats the texture multiple times to fill polygon

Depth
Depth of the polygon along the Z-axis

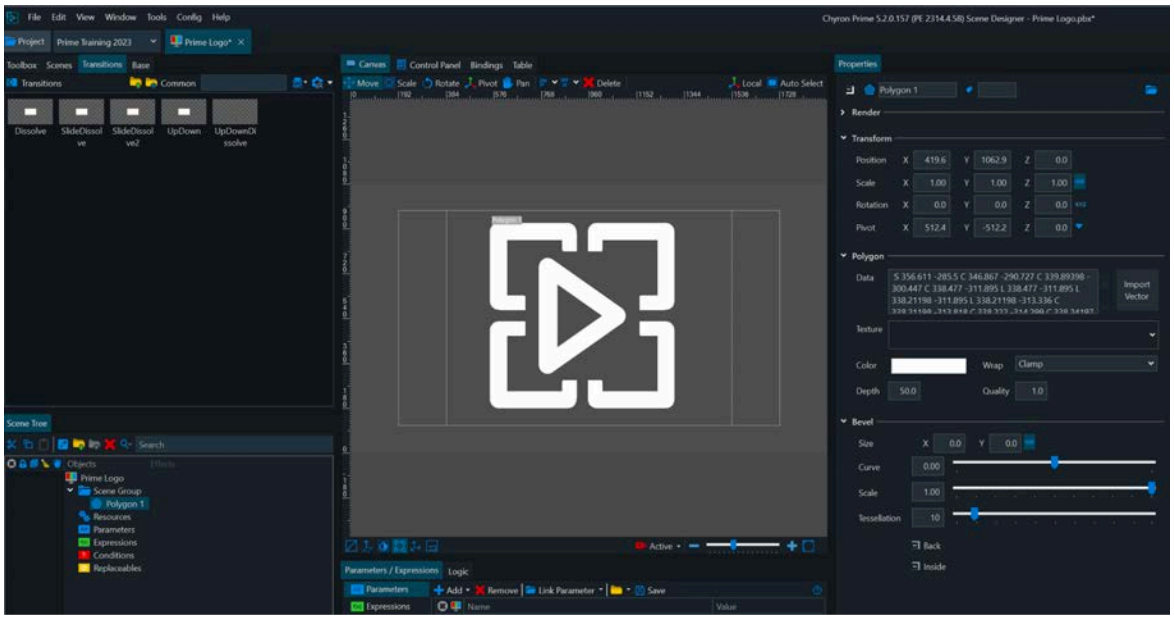
Quality
Represents the level of detail on the edge of the polygon

Bevel
The type of bevel to apply.

- None
- Chamfer

Size
The size of the bevel

Polygon Object Import Vector Example:



Pod Object

Render Properties

Projection

- **Orthogonal** - Orthogonal projection.
- **Perspective local** - Central projection. The mid-point of projection is affected by an object.
- **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
- **Camera** - Projection in line with an external camera.
- **Camera Lens** - Special kind of projection in line with an external camera.
  Only the lens is tracked, it means just projection.
  The view matrix is the identity matrix,
  it doesn't depend on a location or camera direction.
- **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

Projection Center

On - Fragment is rendered if object lies close to a observer (it's Z-coordinate is smaller than Z-coordinate in depth buffer). This option ensures the correct visibility of 3D object surface and its mutual location with other objects.
Default value.
Always - Fragment is rendered always independently of depth buffer.
Never - Fragment isn't rendered ever.
Equal - Fragment is rendered if Z-coordinate at a given point is equal to Z-coordinate from depth buffer. Appropriate for n-pass drawing of the same object.
Less than or Equal - Fragment is rendered if Z-coordinate is less or equal to Z-coordinate from depth buffer.
The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects.
No Write - Similar to option "ON" with difference of Stealth attribute.
Object is rendered under the rule visibility, but it isn't placed in depth buffer in itself.

Greater than or Equal - Fragment is rendered if Z-coordinate is greater or equal to Z-coordinate from depth buffer.
The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects. Use just for special purposes!

Light Enabled

Double Sided

Depth Function

Priority

Transform Properties

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

Origin: Move the Origin Position of the object in X, Y or Z

Surface Properties

Size

X,Y and Z size

Opacity

Set the opacity on the surface object

Pod Properties

- **Color**
- **Top Left**
- **Top Right**
- **Bottom Left**
- **Bottom Right**
- **Corner Shape**
- **Skew**
- **Outline**
- **Tessellation**

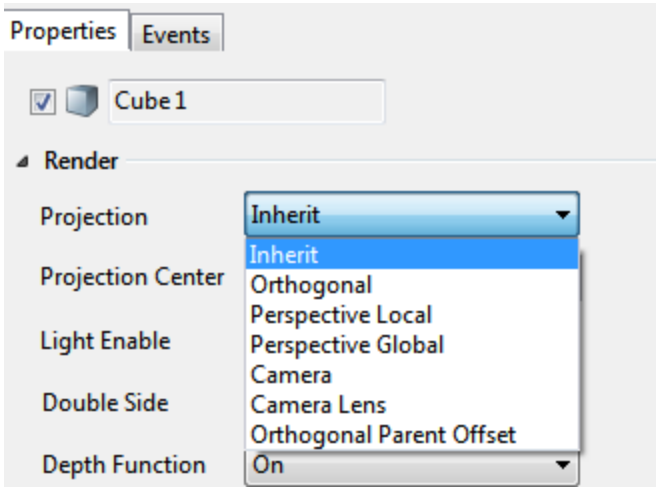
Bevel Properties

- **Size**
- **Cuve**
- **Scale**
- **Tessellation**
- **Back**
- **Inside**

Rectangle Object

Render Properties

Projection



- **Orthogonal** - Orthogonal projection.
- **Perspective local** - Central projection. The mid-point of projection is affected by an object.
- **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
- **Camera** - Projection in line with an external camera.
- **Camera Lens** - Special kind of projection in line with an external camera.
  Only the lens is tracked, it means just projection.
  The view matrix is the identity matrix,
  it doesn't depend on a location or camera direction.
- **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

Projection Center

- **On** - Fragment is rendered if object lies close to a observer (it's Z-coordinate is smaller than Z-coordinate in depth buffer). This option ensures the correct visibility of 3D object surface and its mutual location with other objects.
  Default value.
- **Always** - Fragment is rendered always independently of depth buffer.
- **Never** - Fragment isn't rendered ever.
- **Equal** - Fragment is rendered if Z-coordinate at a given point is equal to Z-coordinate from depth buffer. Appropriate for n-pass drawing of the same object.
- **Less than or Equal** - Fragment is rendered if Z-coordinate is less or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects.
- **No Write** - Similar to option "ON" with difference of Stealth attribute.
  Object is rendered under the rule visibility, but it isn't placed in depth buffer in itself.

- **Greater than or Equal** - Fragment is rendered if Z-coordinate is greater or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects. Use just for special purposes!

Light Enabled
Double Sided
Depth Function
Priority

Transform Properties

- **Position:** Position the object in X, Y or Z
- **Scale:** Scale the object in X, Y or Z
- **Rotation:** Rotate the object in X, Y or Z
- **Pivot:** Move the Pivot Position of the object in X, Y or Z
- **Origin:** Move the Origin Position of the object in X, Y or Z

Surface Properties

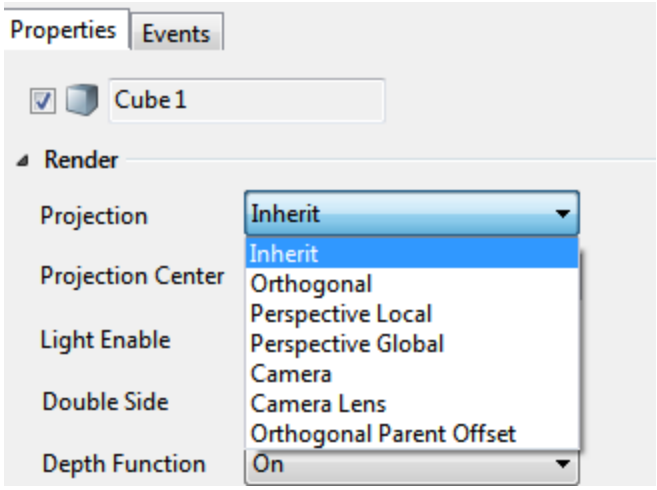
- **Size**
- **File**
- **Opacity**

Rectangle Properties

- **File**
- **Color**
- **Skew -** Skew angle in degrees from -90Â° (left) to 90Â° (right).
- **Tessellation -** Number vertices on the circle perimeter.
  Higher tessellation makes the circle smoother but consumes more resources to render.
- **Corner Shape -** Value -1 is flat, 0 is round, 1 is just a corner.
- **Top Left**
- **Top Right**
- **Bottom Left**
- **Bottom Right**

Sphere Object

Render Properties



Projection

- **Orthogonal** - Orthogonal projection.
- **Perspective local** - Central projection. The mid-point of projection is affected by an object.
- **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
- **Camera** - Projection in line with an external camera.
- **Camera Lens** - Special kind of projection in line with an external camera.
  Only the lens is tracked, it means just projection.
  The view matrix is the identity matrix,
  it doesn't depend on a location or camera direction.
- **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

Projection Center

- **On** - Fragment is rendered if object lies close to a observer (it's Z-coordinate is smaller than Z-coordinate in depth buffer). This option ensures the correct visibility of the 3D object surface and its mutual location with other objects.
  Default value.
- **Always** - Fragment is rendered always independently of depth buffer.
- **Never** - Fragment isn't rendered ever.
- **Equal** - Fragment is rendered if Z-coordinate at a given point is equal to Z-coordinate from depth buffer. Appropriate for n-pass drawing of the same object.
- **Less than or Equal** - Fragment is rendered if Z-coordinate is less or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects.
- **No Write** - Similar to option "ON" with difference of Stealth attribute.
  Object is rendered under the rule visibility, but it isn't placed in depth buffer in itself.
- **Greater than or Equal** - Fragment is rendered if Z-coordinate is greater or equal to Z-coordinate from depth buffer.
  The later rendered objects in case of equality in Z-coordinate overlay previous rendered objects. Use just for special purposes!

Light Enabled

Double Sided

Depth Function

Priority

Transform Properties

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

Origin: Move the Origin Position of the object in X, Y or Z

Surface Properties

Opacity

Set the opacity on the surface object

Sphere Properties

File

Applies a file to the sphere

Angle

Visible angle in degrees from 0Â° to 360Â° around Y axis.
Value below 360Â° increases open angle in the sphere.

Diameter

Sphere diameter.

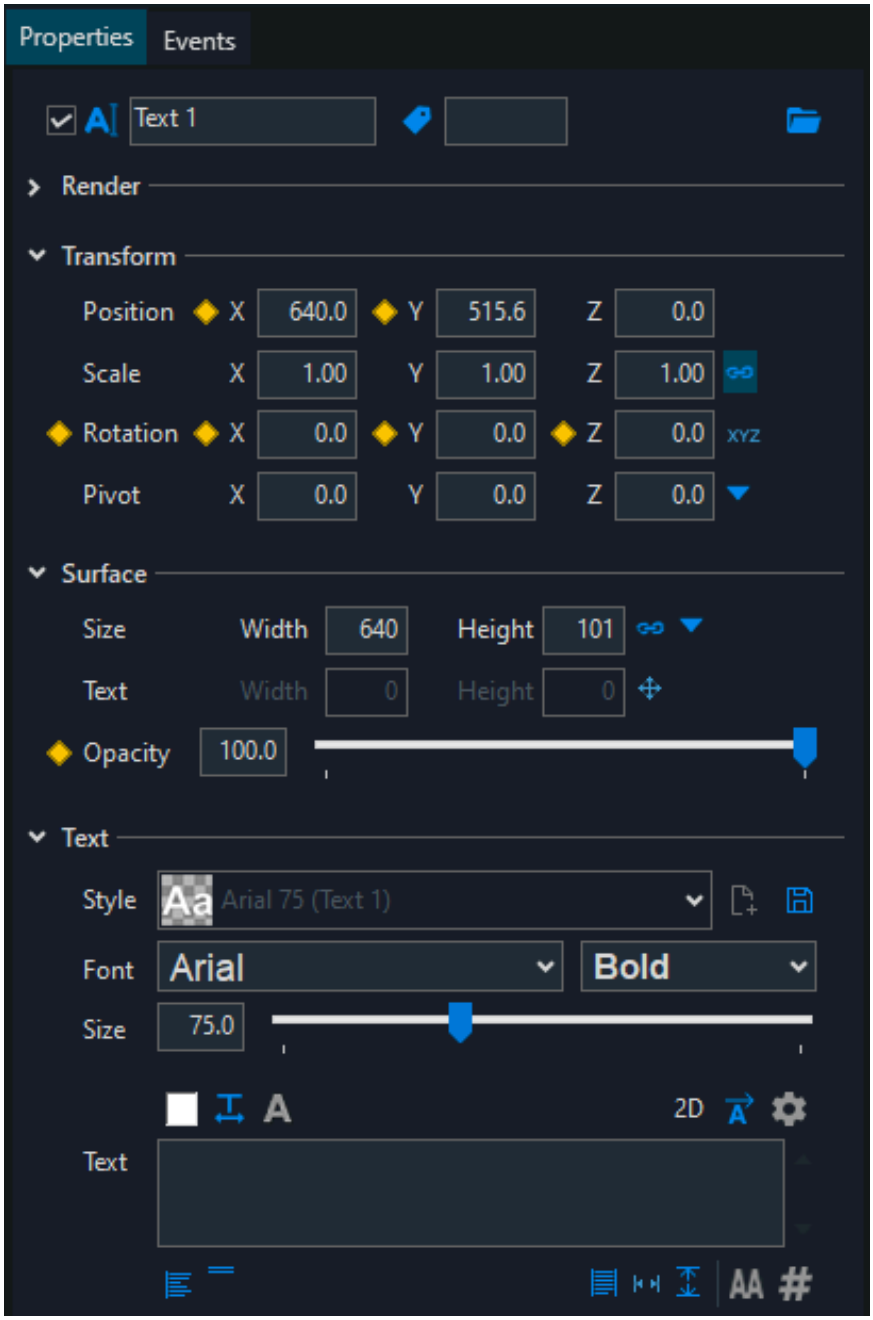
Tessellation

Sphere degree of detail.
Higher tessellation makes the sphere smoother but consumers more performance to render.

UV Mapping:

- **Absolute** - Texture stretches over visible angle.
- **Relative Left** - Texture is anchored at the left end and cut at the right side end.
- **Relative Right** - Texture is anchored at the right side end and cut at the left side end.
- **Centered** - Texture is centered to the middle of visible angle and cut at both ends.

Text Object

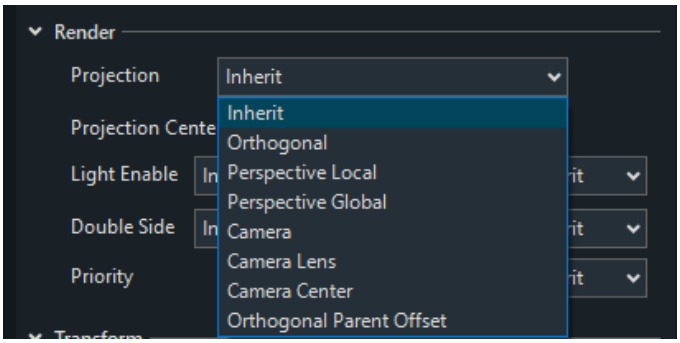


The following settings may be configured on the **Text Properties** window:

- **Name –** The name of the object that will show everywhere throughout the application.

Render Properties

Projection - It is method how to map 3D objects to 2D screen plane



- **Orthogonal** - Orthogonal projection.
- **Perspective local** - Central projection. The mid-point of projection is affected by a object.
- **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
- **Camera** - Projection in line with an external camera.
- **Camera Lens** - Special kind of projection in line with an external camera. Only the lens are tracked, it means just projection. The view matrix is the identity matrix, it doesn't depend on a location or camera direction.
- **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.

- **Projection Center -** Center of projection. (Position on the screen where all lines meet in infinity.)
- **Light Enabled -** Enable use of lights. Applies only to object with generated normals. This feature is ignored when using shaders.
- **Double Sided -** Double side visibility.

Transform Properties

The **Transform** subcategory allows for the manipulation of the Text Objects **Position, Scale, Rotation** and **Pivot** along the XYZ axis.

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

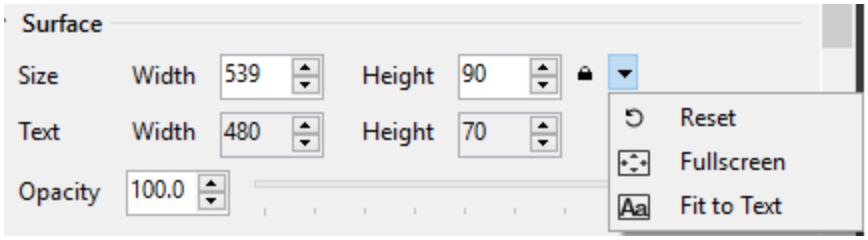
Origin: Move the Origin Position of the object in X, Y or Z

- To keep the Scale Aspect fixed to its current dimensions, click the lock icon to Lock Aspect Scale.

Surface properties

The Surface subcategory includes settings for:

- Size – Sets the height and width of the bounding box. The dropdown gives the following choices:



-Reset: Resets the bounding box
-Full screen: Makes the bounding box full screen
-Fit To Text: Wraps the bounding box around the bounds of the text
Example:

- Text- Read only property that shows the actual text bounds

- Opacity – Sets the opacity level from 0 to 100%

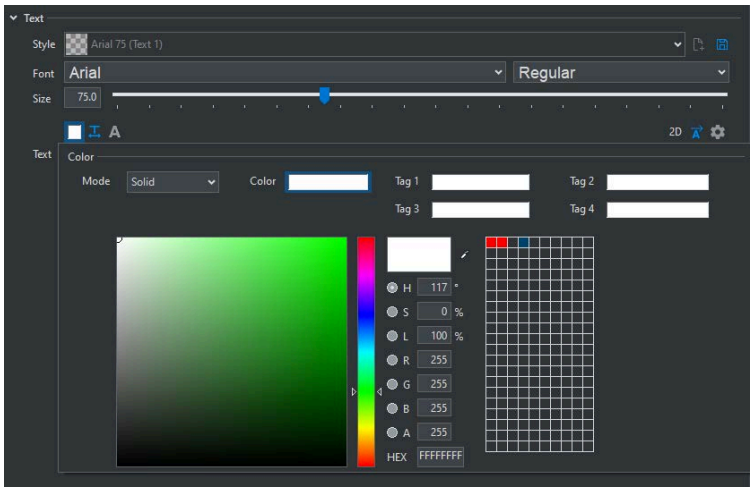
Text Properties

The **Text** subcategory allows for the selection of the **Font, Font Size, Opacity** and a variety of other font attributes.

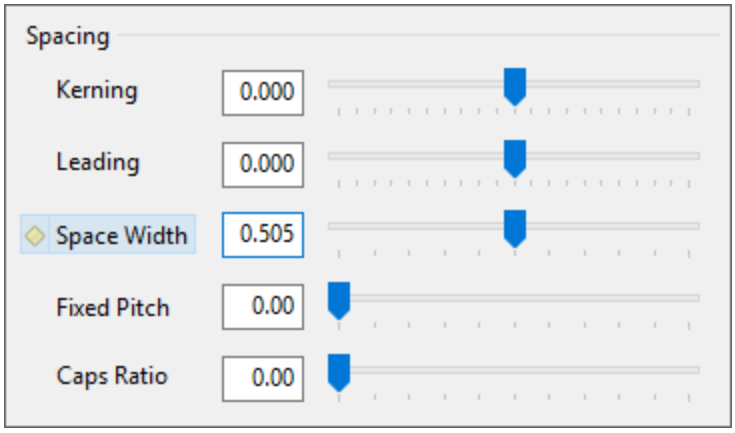
The following “In-Line” text attribute tags are available:

Text content.
Text can contain special sequences starting with character \ .
Sequence \ = Decrease kerning space between surrounding characters.
Number of characters modifies the amount of extra kerning.
Sequence \> = Increase kerning space between surrounding characters.
Number of > characters modifies the amount of extra kerning.
Sequence \\ = Backspace itself.
Sequence \s = Non breaking space (see LineFlowPolicy).
Sequence \n = New line.
Sequence \u *XXXX* = unicode character with hex value *XXXX* .
Sequence \iu = Following text will be rendered as upper index.
Sequence \il = Following text will be rendered as lower index.
Sequence \in = Following text will be rendered as normal text (no index).
Sequence \u0082 = Special character "BREAK ALLOWED HERE". Soft break is allowed at this positions.
Sequence \c0 = Reset color to default.
Sequence \c *N* = Set color index. Values 1,2,3,4 can be used.
Colors specified in BaseColorP1..P4.
Sequence \t *style_name* ; = Set style by given style node name.
For base style, leave style_name empty.

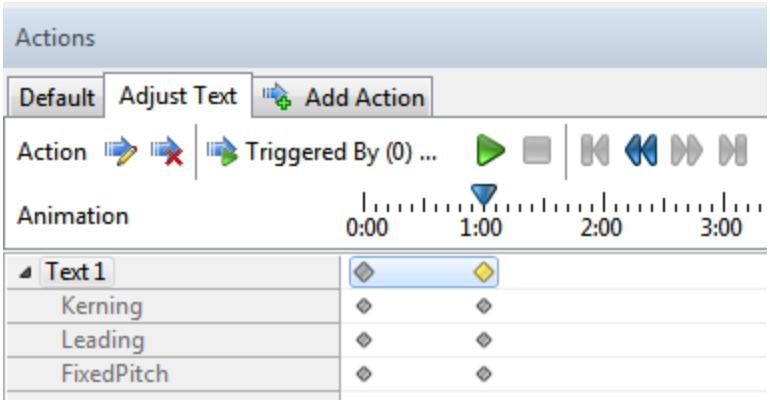
- **Color Picker -**



- **Kerning** - Adjusts the spacing between characters
- **Leading** - Adjusts the spacing between lines of text
- **Space Width** – Sets the width of the default space character
- **Fixed Pitch** – Each character will occupy the same amount of horizontal space. This is good for clocks so the text will not “breathe”
- **Caps Ratio** - Sets text to all uppers and adjusts the ratio between capital letters



Note that Kerning, Leading, Fixed Pitch and Caps Ratio are all keyframeable.

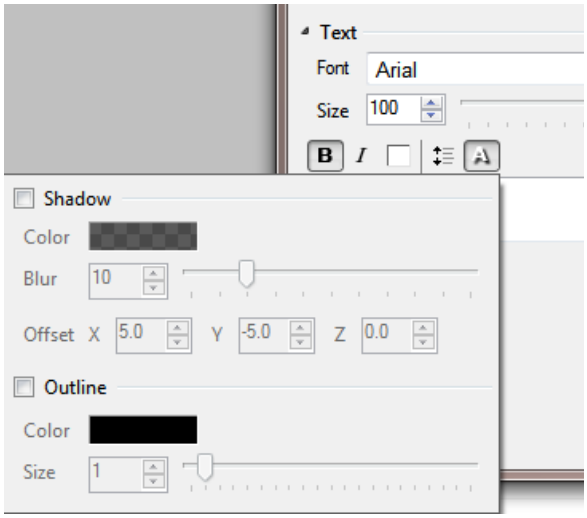


Text Shadow
adds a shadow to text

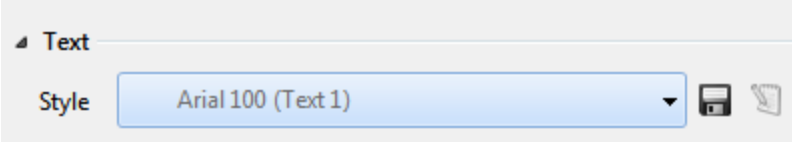
- When Shadow is Enabled, Depth Function will be set to On.
  The Depth function can be changed by selecting a different Depth Function option under Render properties.

Text Outline (Border)
adds an outline to text

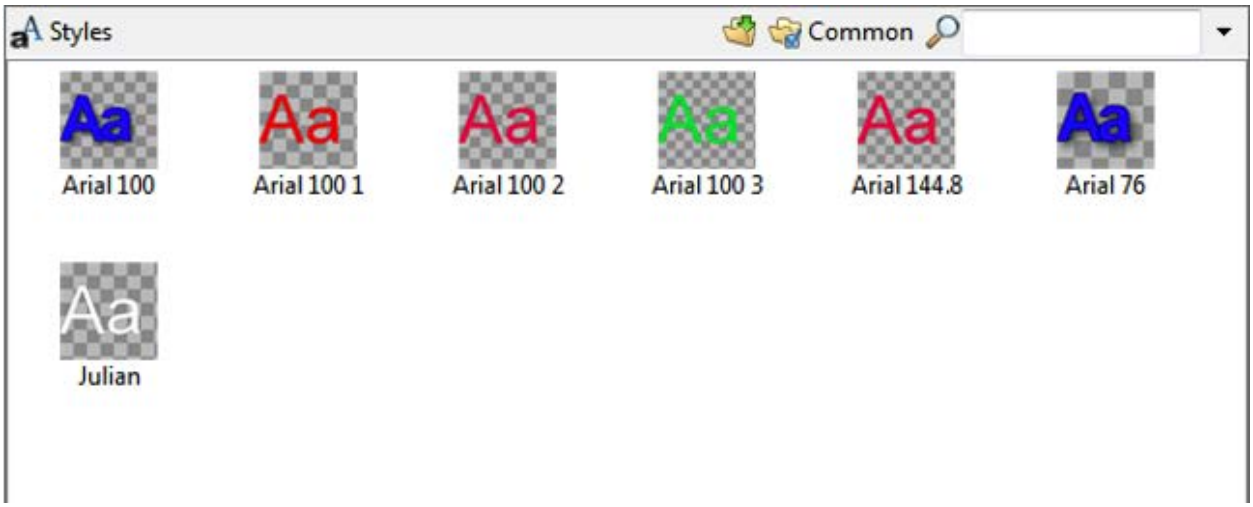
****Please Note** - when Shadow and Outline are enabled at the same time on the same object, Designers should limit the Outline Size to no more than 10. Anything past 10 with Shadow turned on will greatly reduce system performance.



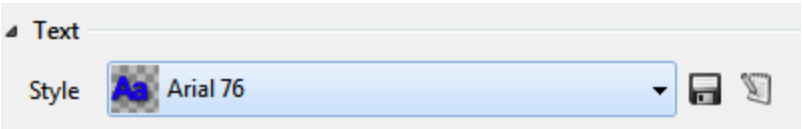
- **Text Style Browser**



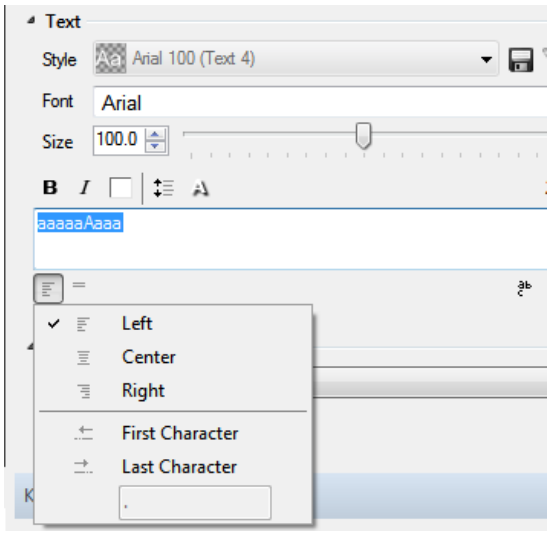
Text styles may be “referenced.” This means that changing the style of a text affects all other text objects in the scene or project.



If the Style is referenced, you will see an image of the style in the Style drop down box.



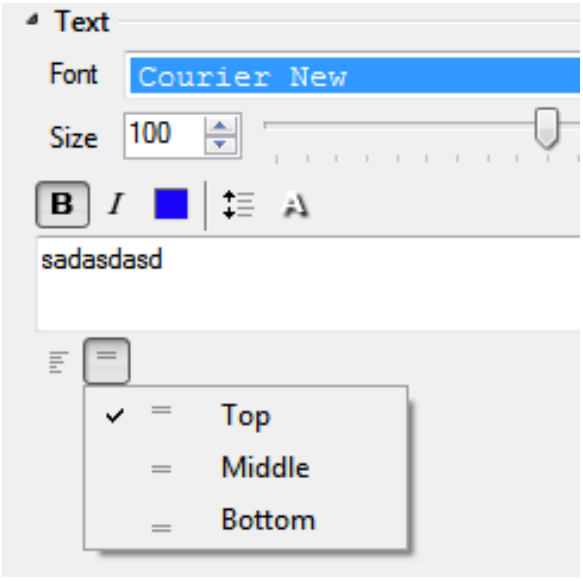
- **Alignments**



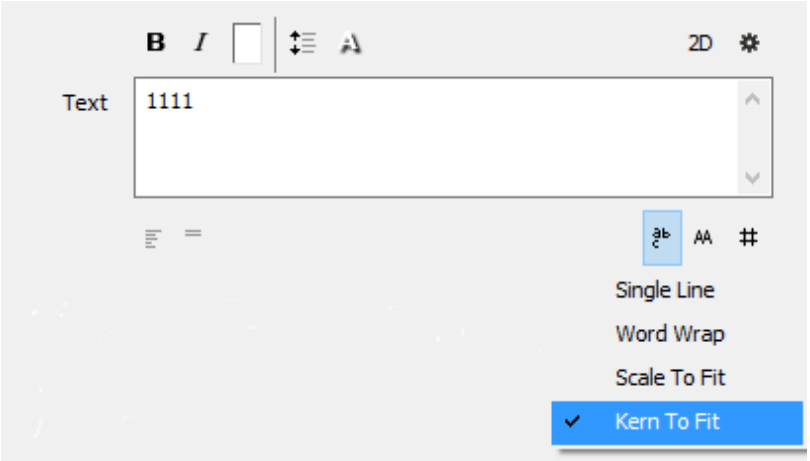
First Character aligns column data by the first character it finds by the defined character in the text.

Last Character aligns column data by the last character it finds by the defined character in the text.

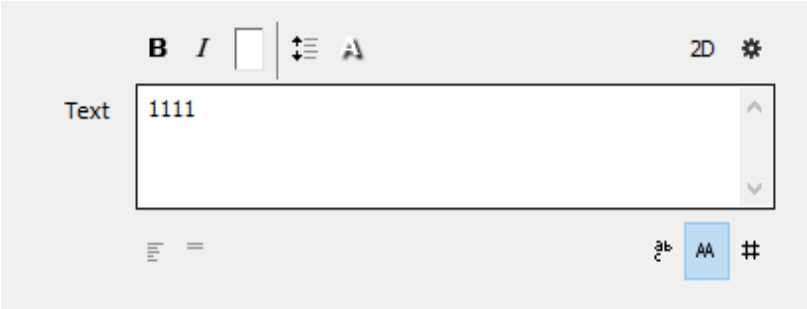
In this example we set the First character to the comma character:



- **Line Flow**



- **All Caps**

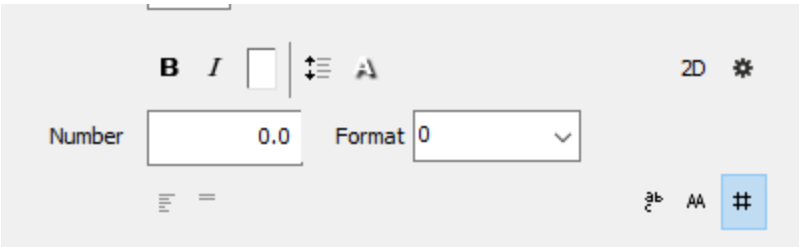


When All Caps is enabled, inputted text on output will be forced to capitalization. When a user types in the same text whether it is lowercase or uppercase, Prime will not see this as two different values when Behavior is set to On Change.

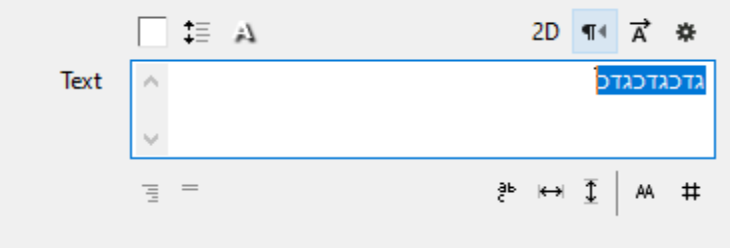
e.g. hello vs Hello vs HELLO will not trigger a Transition with the Behavior set to On Change

German Language Only - When All Caps is enabled, the German letter Eszett (Sharp S) will automatically change from ß to ß if provided for by the font used.

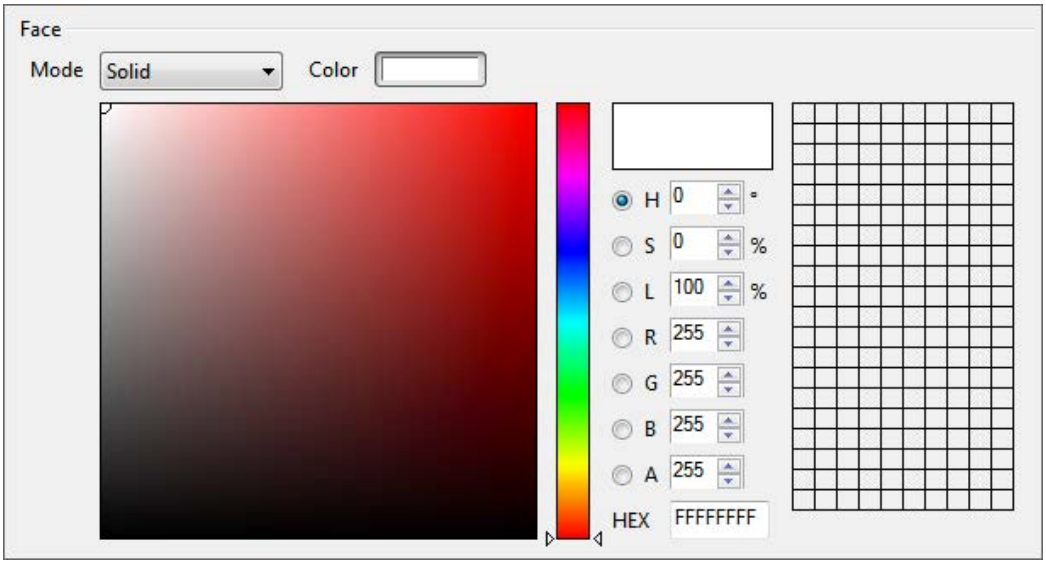
- **Numbers**



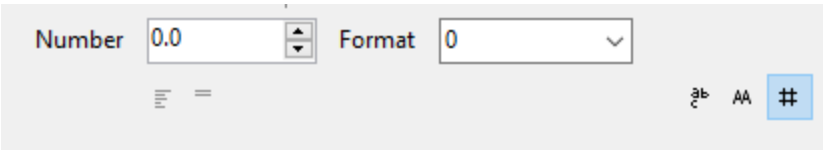
- **Direction**
  Based on the Windows language setting the “Direction” icon will appear. This allows orientation and support for Right to Left languages



- **Gradients**

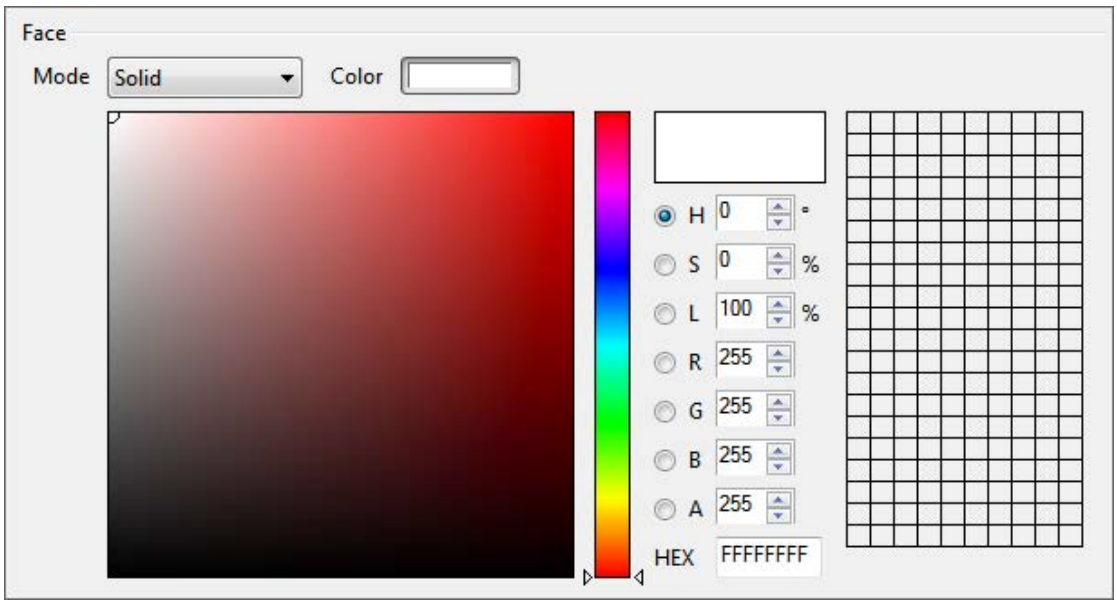


- Number Format

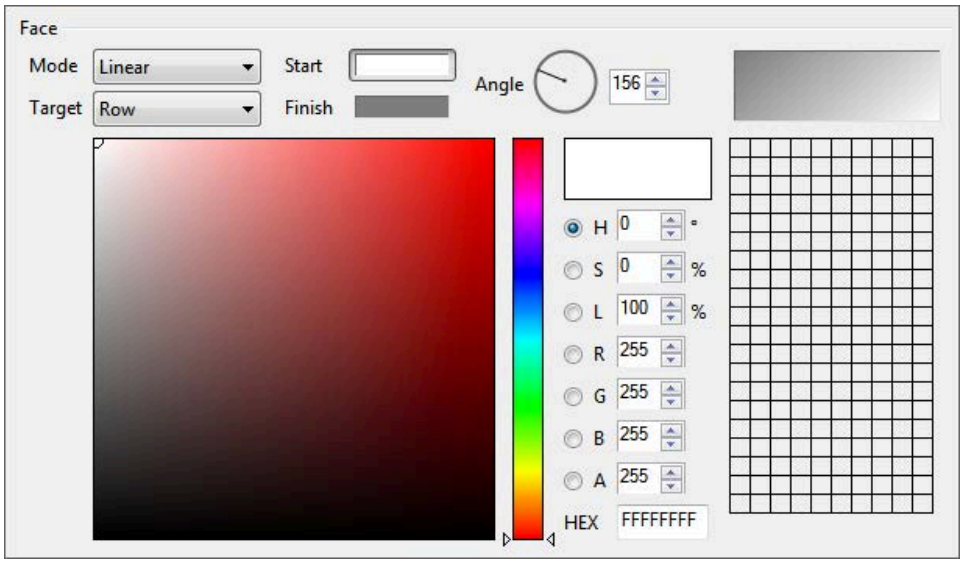


When added to keyframes the numbers will animate from their current value to the next value

- Gradients

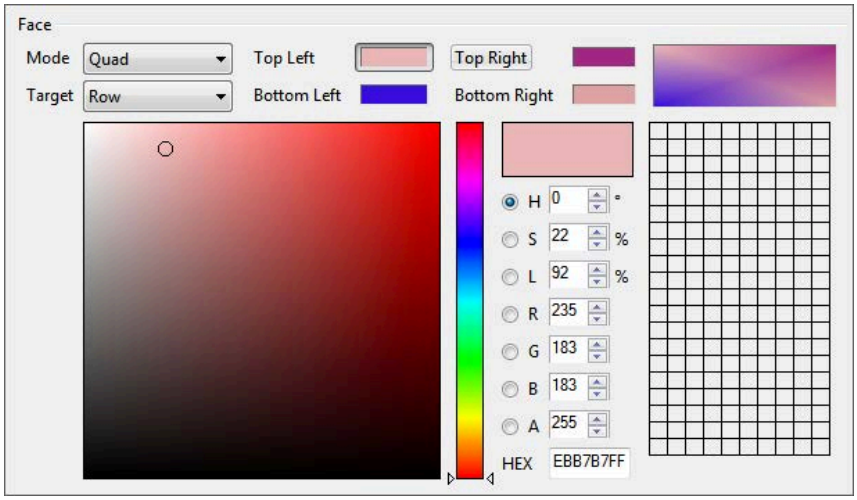


- **Linear**

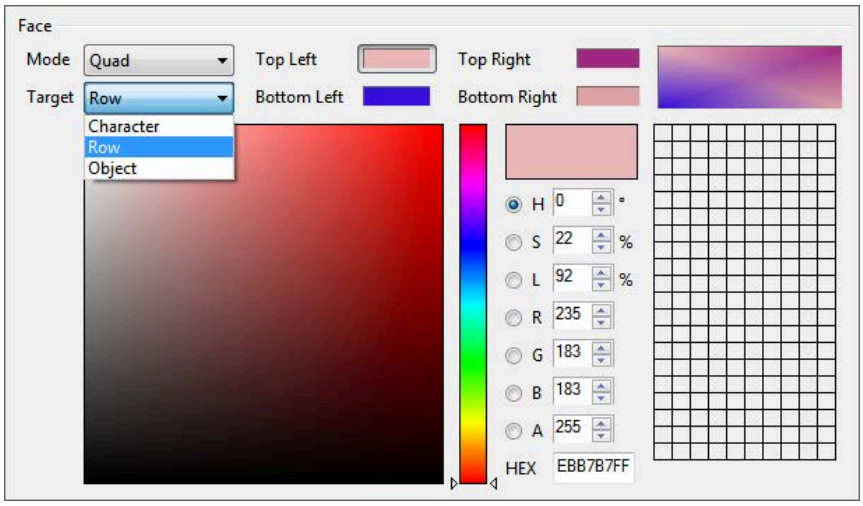

Face
Mode
Linear
Start
Angle
156
Target
Row
Finish
H 0 °
S 0 %
L 100 %
R 255
G 255
B 255
A 255
HEX
FFFFFFFF

Text 1
Hello

- **Quad**

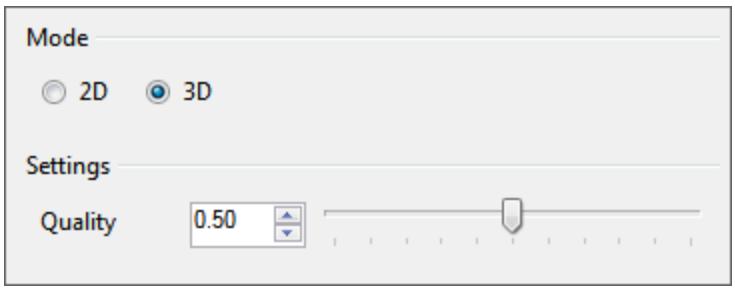

Face
Mode
Quad
Top Left
Top Right
Target
Row
Bottom Left
Bottom Right
H 0 °
S 22 %
L 92 %
R 235
G 183
B 183
A 255
HEX
EBB7B7FF

- **Target**

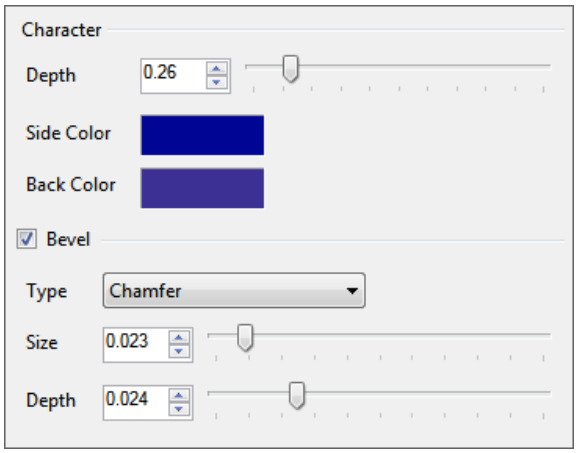

Face
Mode
Quad
Top Left
Top Right
Target
Row
Bottom Left
Bottom Right
Character
Row
Object
H 0 °
S 22 %
L 92 %
R 235
G 183
B 183
A 255
HEX EBB7B7FF

Text 1
Hello

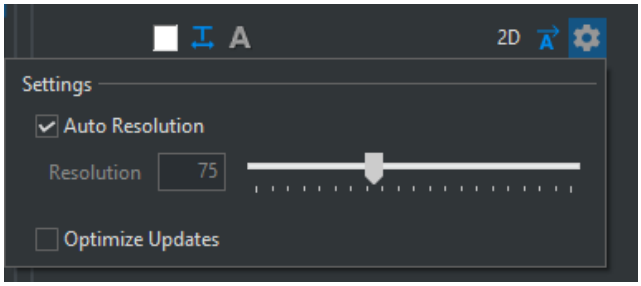
3D Text


Mode
2D
3D
Settings
Quality
0.50

WQEWQE


Character
Depth
0.26
Side Color
Back Color
Bevel
Type
Chamfer
Size
0.023
Depth
0.024

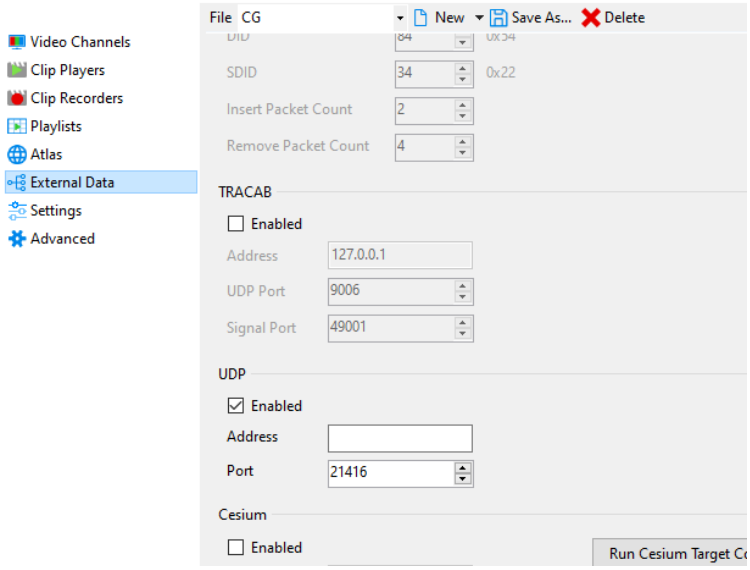
Advanced Text Settings



- **Auto Resolution** - When checked, renders text at optimal resolution striking a balance between visual quality and engine output performance.

- **Optimize Updates** - When enabled along with UDP setting, optimizes text data for real time rendering. Text Size updates and Transitions will not be supported with this option enabled.
    - Scene Example Use Case - Enable for any text objects that are being updated frequently such as 10ths of a second on a timer to ensure updates are prioritized.

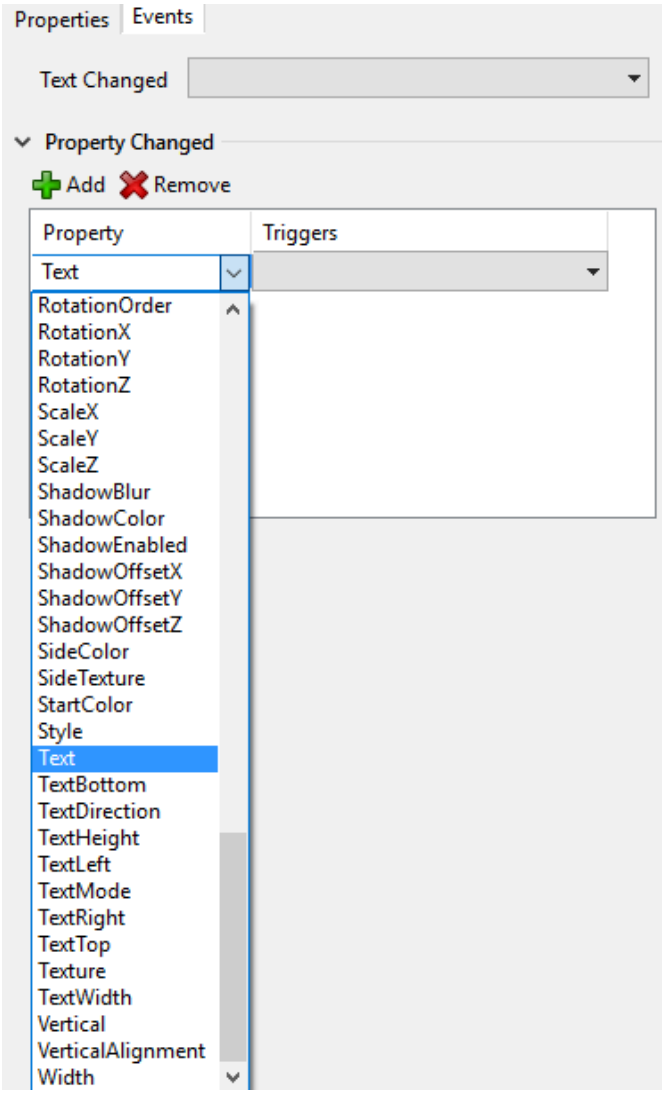
*Users must enable UDP in playout configuration in order to enable Optimize Updates for real time rendering. If UDP is not enabled and user selects optimize text for real time rendering they will see warning in UI to enable UDP.



Text Events

You can trigger other objects methods whenever the text changes.

All of the Text objects properties have events when these properties change:

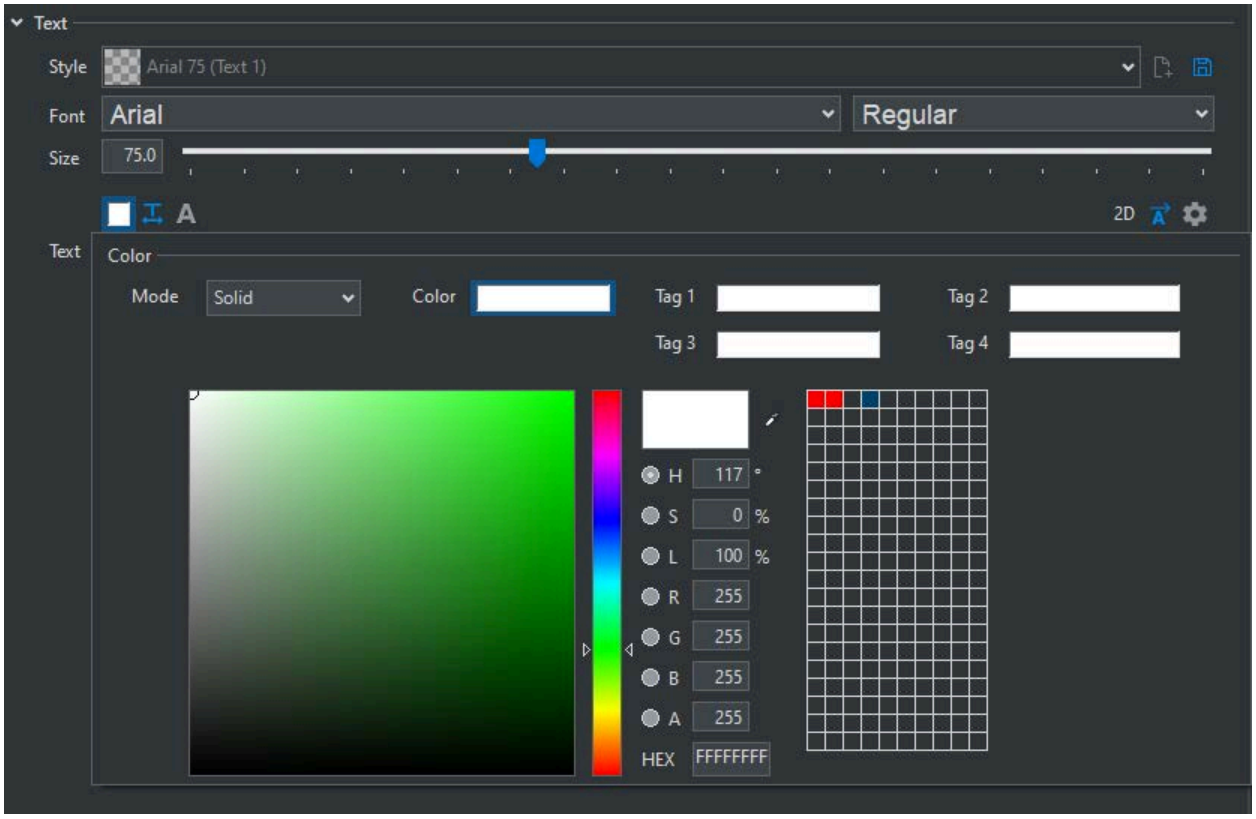


Text Tags

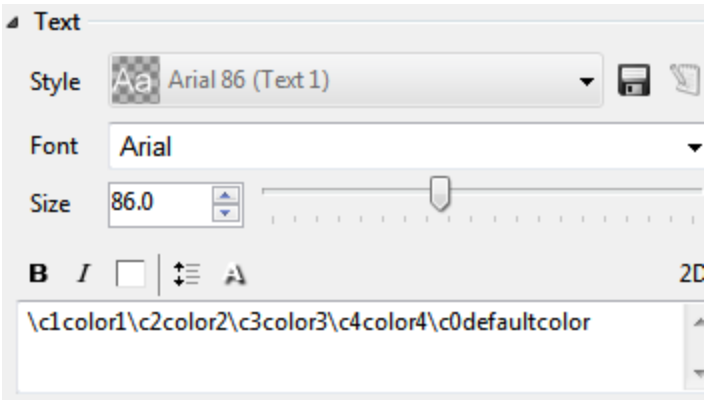
You can use Text Tags to change the color attributes of the text within a single text object.

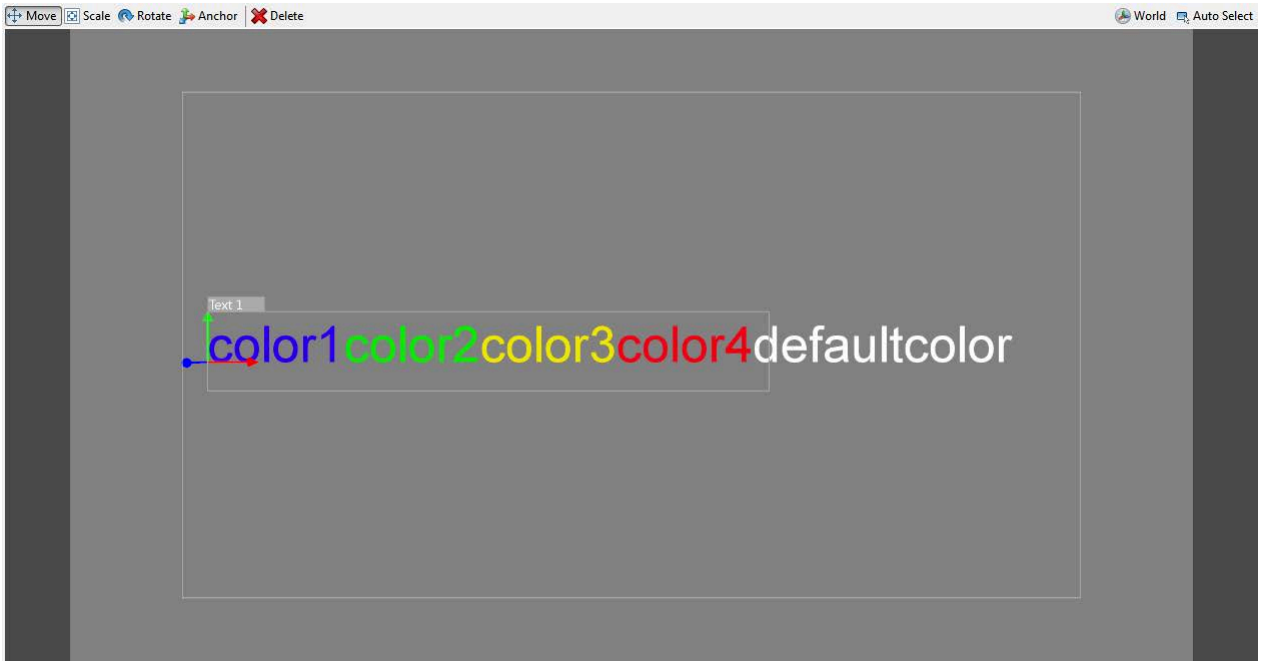
Available Tags:

- Tag 0 (\c0) will reset the text color back to the text objects default color
- Tag 1 (\c1)
- Tag 2 (\c2)
- Tag 3 (\c3)
- Tag 4 (\c4)



Text Tags require “Solid” mode to be selected





Style Tags

Style tags are effects. See the section on “Style Tags” in the effects section.

Tube Object

Transform Properties

The **Transform** subcategory allows for the manipulation of the Video Input Objects **Position, Scale, Rotation** and **Pivot** along the XYZ axis.

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

Origin: Move the Origin Position of the object in X, Y or Z

Data Properties

Point: Adds or removes a data point

Data: CSV data in format: "x1,y1,z1\nx2,y2" ... . \n is a new line character.
You can use pipe "|" character instead of new line.

Path Length: Limit length of the tube. Value is relative. 0 is no tube drawn, 1 is full tube drawn.

Texture Map: Type of V texture coordinate mapping.

Texture V mapping type:

ABSOLUTE - V goes from 0 to path's length.
Unless the extrusion is very small, this length will probably be much larger than 1.0.

RELATIVE - V goes from 0 to 1 over the whole path.

SEGMENTED - Integer part is equal to segment's index (from 0) and fractional part goes from 0.0 to 1.0 on every segment.

Contour Properties

Aspect: Higher value makes it wider.

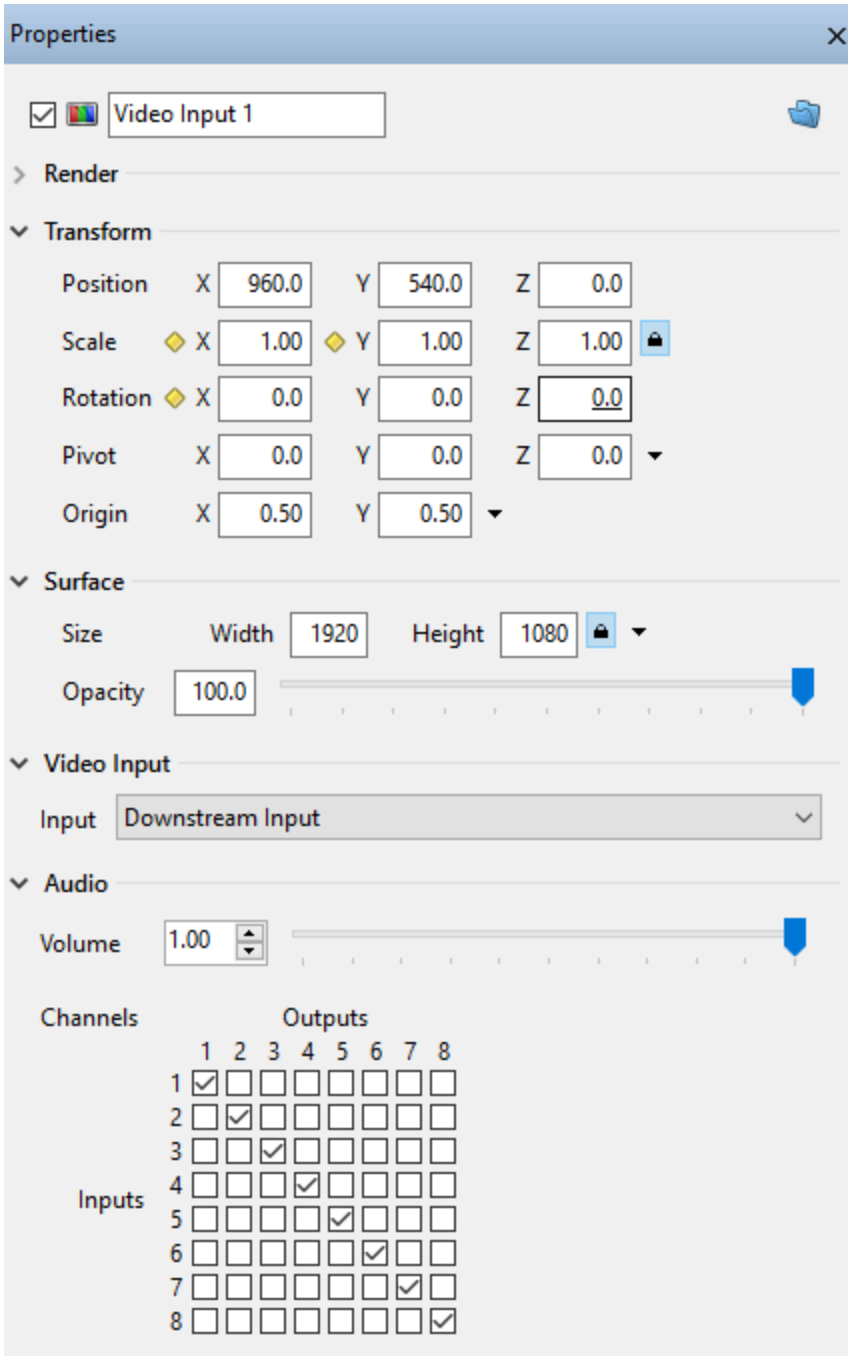
Rotation: Contour rotation in degrees.
Useful for low tessellation settings. Applied before Aspect!

Diameter: Contour diameter (tube thickness).

Tessellation: Higher tessellation makes the contour smoother but consumes more resources to render.

Smooth: Set to checked to make the contour faceted.
Set to unchecked to make it smooth.

Video Input Object



The following settings may be configured on the **Video Input Properties** window:

- **Name –** The user-friendly name to refer to the object throughout the application

Render Properties

The **Render** subcategory includes:

- **Projection** – Projection mode. It is method how to map 3D objects to 2D screen plane.
    - **Orthogonal** - Orthogonal projection.
    - **Perspective local** - Central projection. The mid-point of projection is affected by an object.
    - **Perspective Global** - Central projection. The mid-point of projection is immovable in screen coordinates.
    - **Camera** - Projection in line with an external camera.
    - **Camera Lens** - Special kind of projection in line with an external camera. Only the lens are tracked, it means just projection. The view matrix is the identity matrix, it doesn't depend on a location or camera direction.
    - **Ortho Parent Offset** - Orthogonal projection. The center of coordinate system is offset by current node position in the view of parent projection and transformations.
- **Projection Center** – Center of projection. (Position on the screen where all lines meet in infinity.)
- **Light Enabled** – Enable use of lights. Applies only to object with generated normals. This feature is ignored when using shaders.
- **Double Sided** – Double side visibility.

Transform Properties

The **Transform** subcategory allows for the manipulation of the Video Input Objects **Position, Scale, Rotation** and **Pivot** along the XYZ axis.

Position: Position the object in X, Y or Z

Scale: Scale the object in X, Y or Z

Rotation: Rotate the object in X, Y or Z

Pivot: Move the Pivot Position of the object in X, Y or Z

Origin: Move the Origin Position of the object in X, Y or Z

- To keep the Scale Aspect fixed to its current dimensions, click the lock icon to Lock Aspect Scale.

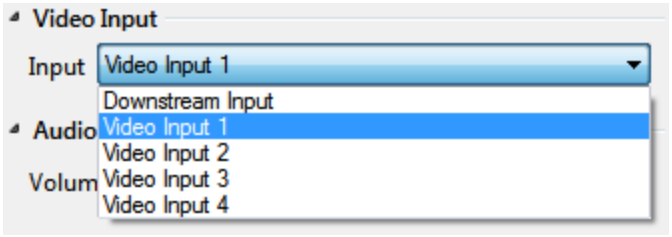
Surface Properties

The **Surface** subcategory includes:

- **Size Width**
- **Size Height**
- **Opacity**

Video Input Properties

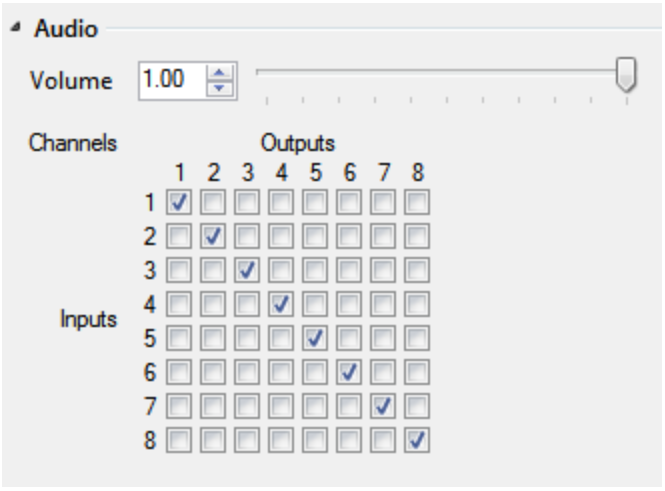
The **Video Input** subcategory allows the user to select the SDI Input.



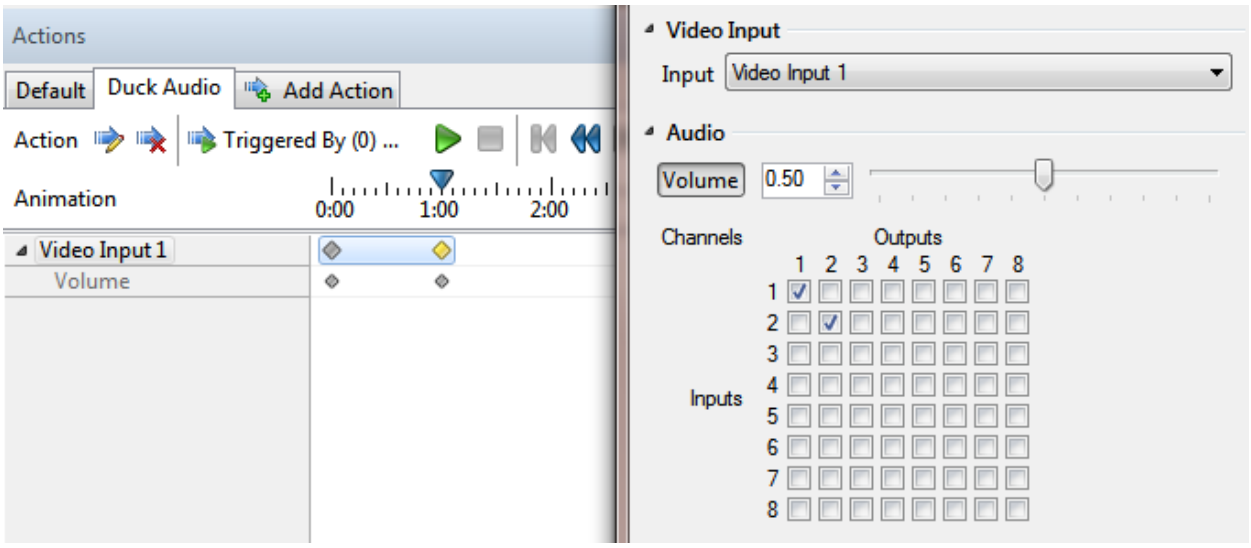
Audio Properties

The **Audio** subcategory includes:

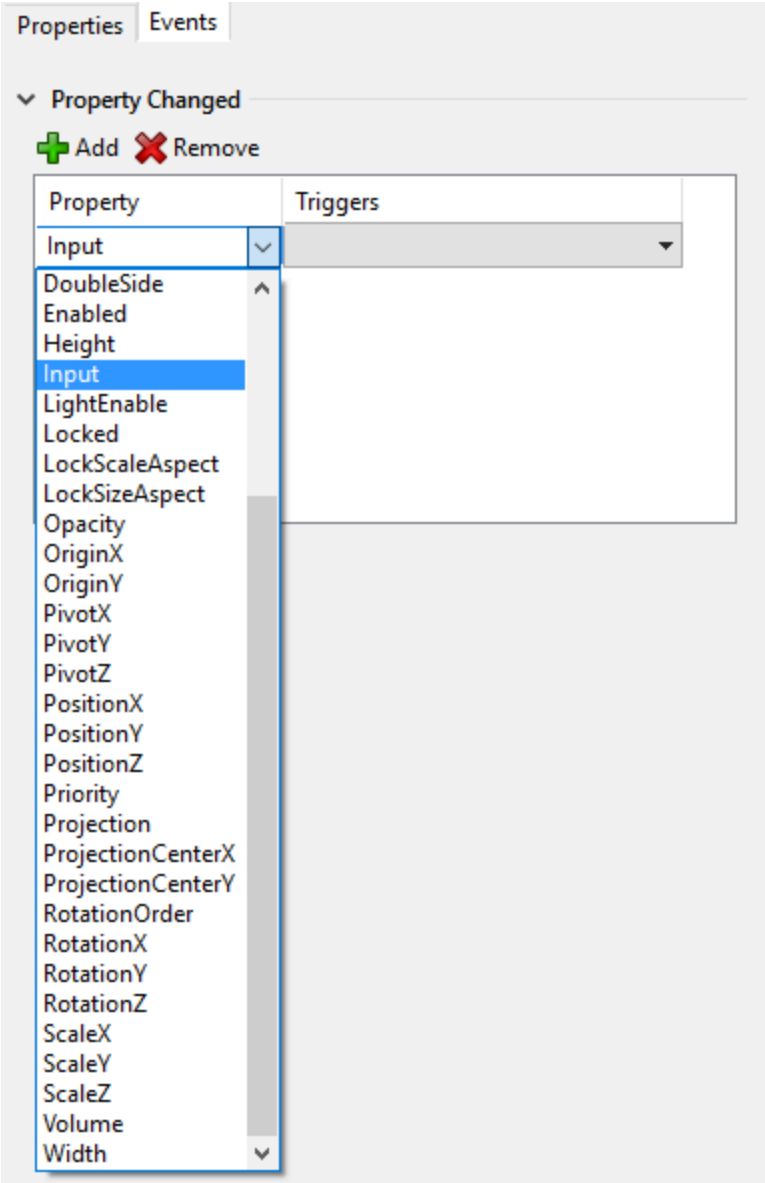
- **Volume –** Decibel levels
- **Channels** – The Audio Router is a matrix for routing inputs to outputs. The default is 1 to 1 etc.



- Duck Audio Channels 1 & 2 example action:

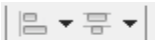


Video In Events



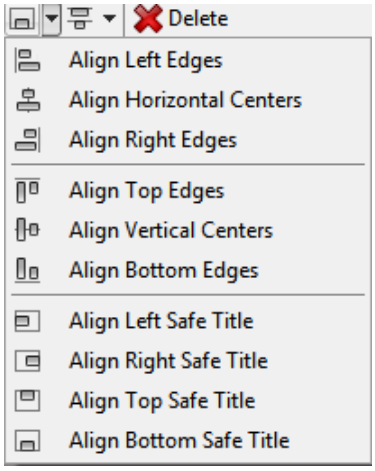
Alignment Tools

Accessible by the toolbar.



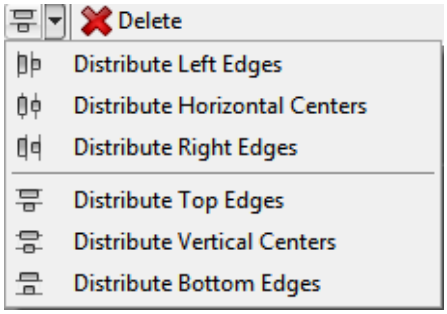
Align

- Align Edges – Aligns the bounding boxes.
- Align to Safe Title – Aligns the bounding boxes to safe title.

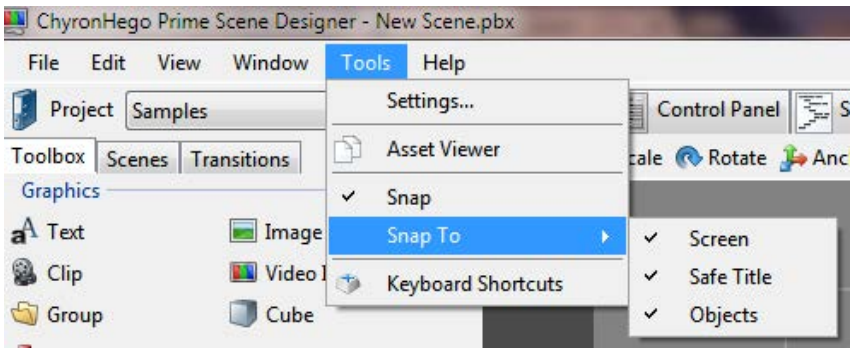


Distribute

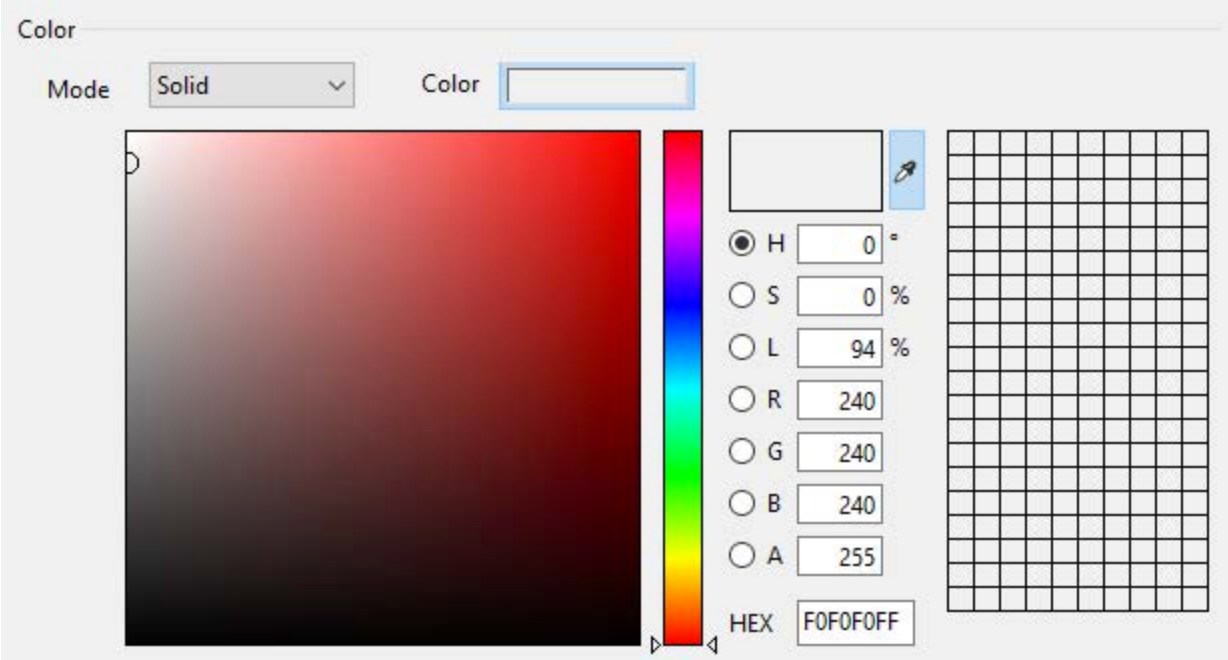
- Evenly distributes three or more selected items evenly



Snap to Grid



Color Picker-Eye Dropper



The color picker can do RGBA or HSL or HEX.

The eye dropper is a mode when selected gives you use of the eye dropper cursor to select colors from the screen. Users can pick colors from any application running.

Color swatches are saved globally with the color picker tool.

Pressing the eye dropper toggles the mode.

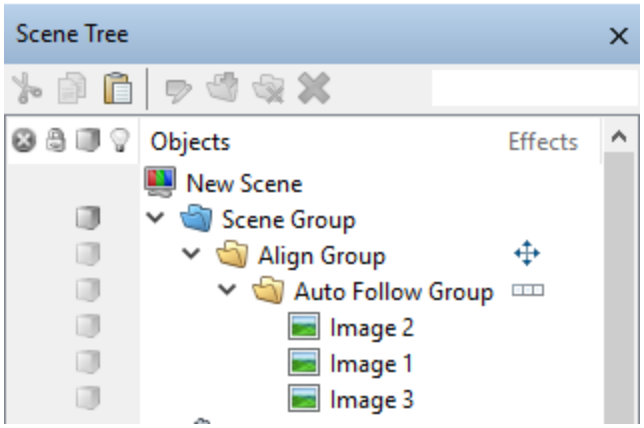
Effects

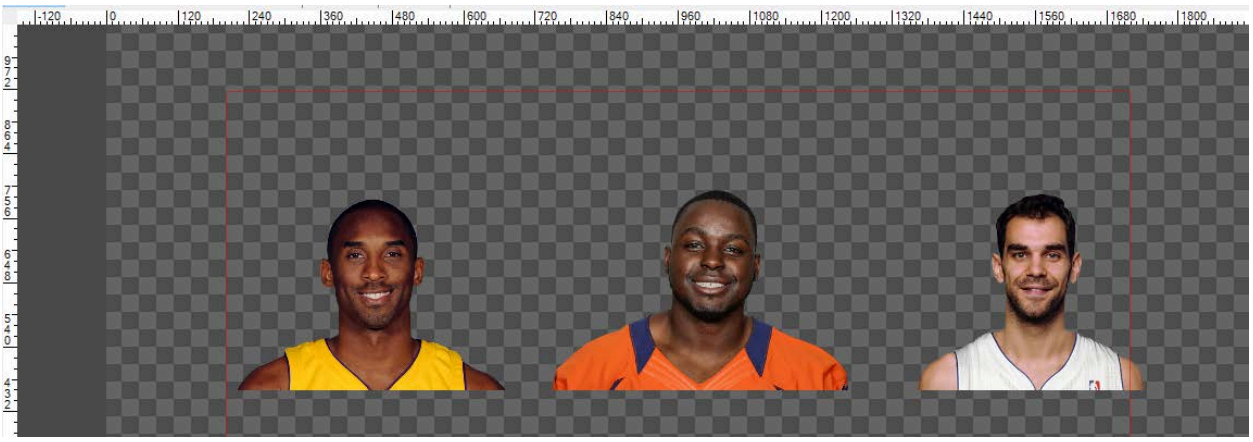
Align

The Align effect will automatically distribute all child objects dynamically at run time.

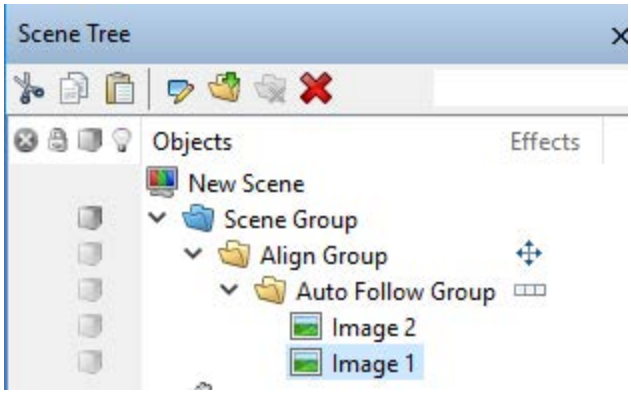
The Align effect will most likely be used with the Auto Spacing effect.

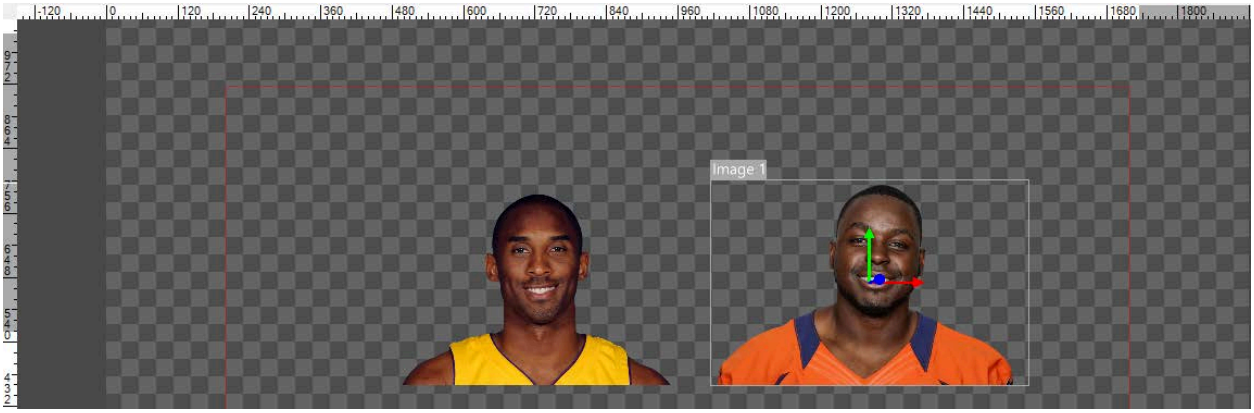
The Align effect can only be applied to Group objects





Removing an image object will create this result



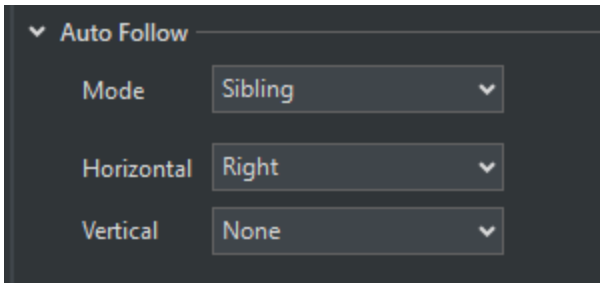


Horizontal: Align children horizontally

Vertical: Align children vertically

Auto Follow

Sibling Mode



The Auto Follow rules of sibling mode are NOT Master/Follower necessarily. Based on the position of the elements in the scene The Auto Follow Effect is basically an Auto Align effect. Consider the object the effect is placed on as the **following** object. It will follow any of its parents.

The “Parent” is not defined. The “Parent” is the nearest object to the Follower. The Parent object can change dynamically.

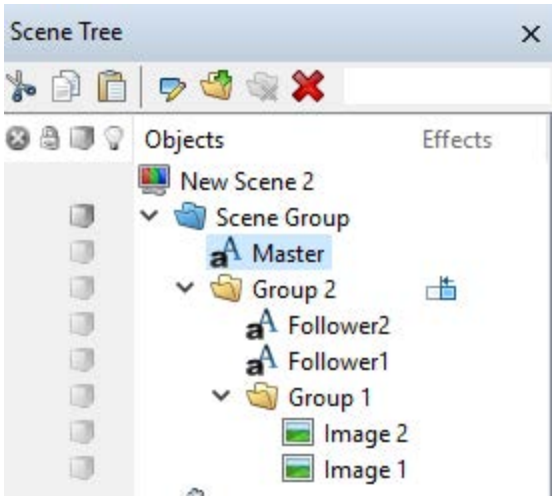
Horizontal:

- None:
- Left: Follows the left edge of the nearest object maintaining distance
- Center: Follows the center position of the nearest object
- Right: Follows the right edge of the nearest object

Vertical:

- None:
- Top: Follows the top
- Middle:
- Bottom:

In the following example the effect is placed on a group that will follow its siblings:



The result is whenever the “Master” Text is moved on the X position the follower groups, both Group1 and Group 2 will follow.

Source Mode

Different to Sibling mode, Source mode allows you to select a specific object or group that you wish to follow and size to.

- Position
  - X: Enable and select appropriate source to follow on X axis
  - Y: Enable and select appropriate source to follow on Y axis
    - X & Y source can be different
  - Source: Select source available in scene
    - Source from Base scene is not accessible
  - Anchor
    - X: Select Source Origin, Left, Middle or Right

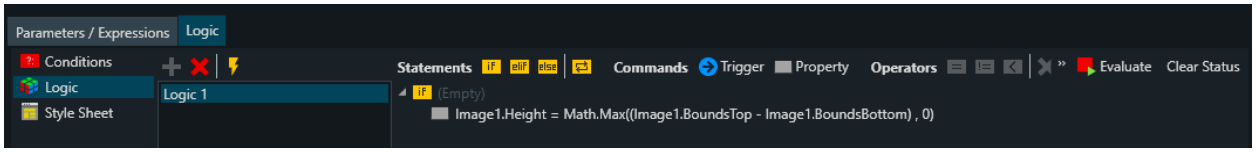
        - Y: Select Source Origin, Top, Middle or Bottom
    - Target
        - X: Select Source Origin, Left, Middle or Right
        - Y: Select Source Origin, Top, Middle or Bottom
    - Offset: Apply numeric value if offset is desired
- Size
    - Width: Enable and select appropriate source to size scale width
    - Height: Enable and select appropriate source to size scale height
    - Padding: Apply numeric value if padding is desired
    - Minimum: Apply numeric value of smallest width and height values you wish to size to. If source object is smaller than minimum, then minimum value will be honored.
- Advanced
    - Include Source Position
    - Include Source Scale
    - Use Parent Virtual Bounds
- Expressions: *(This is Read only and not editable)*
    - Visual representation for each position and size selection made, and the corresponding expression syntax, calculated value and binding.

Starting in PRIME 5.2.0, users can now copy and paste autofollow expressions into Logic, Conditions, or another Expression.

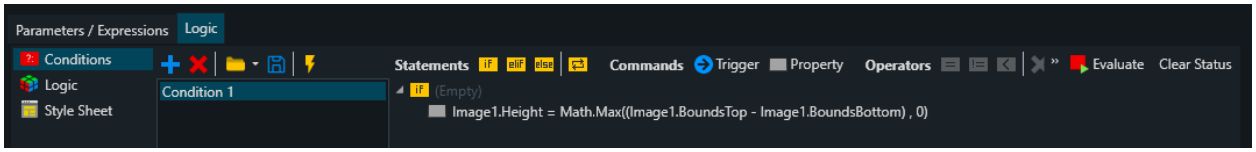
Autofollow copy and paste or drag and drop for Expressions

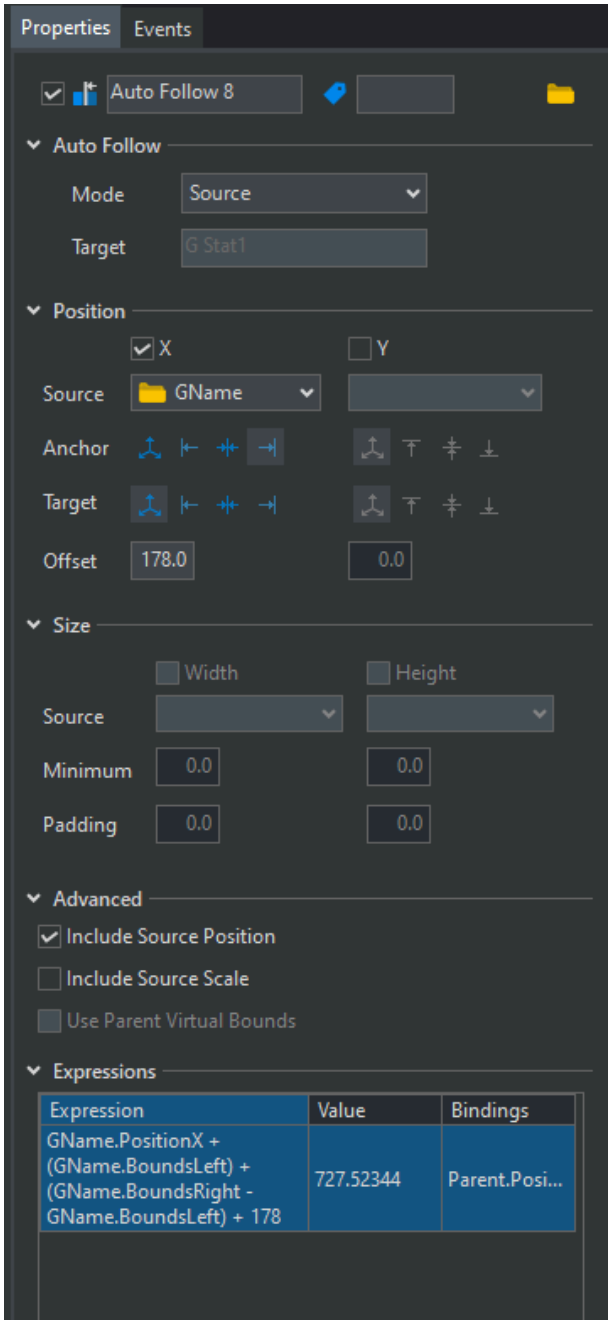
To Drag and Drop - left click and hold on an expression, drag and drop it into the Expressions area

Autofollow copy and paste into Logic



Autofollow copy and paste into Conditions

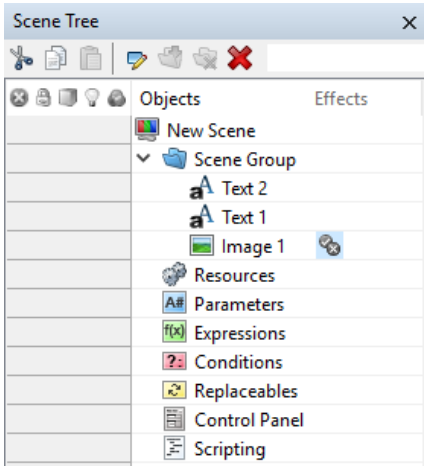




Auto Hide

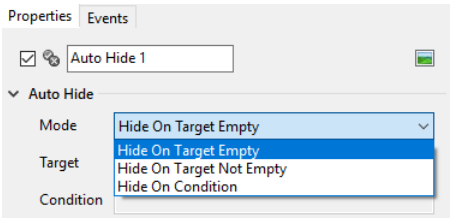
The Auto Hide effect allows users to hide/show objects based on the Boolean evaluation of other objects in the scene. Ex: Hide MyImage if Text1 is empty.

Example Scene Tree where the Auto Hide effect is placed on the Image object:

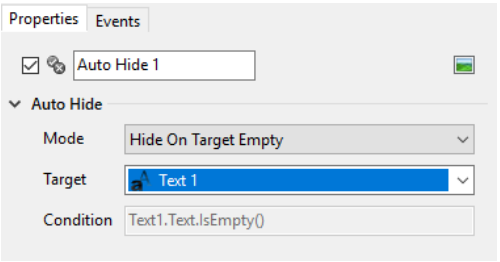


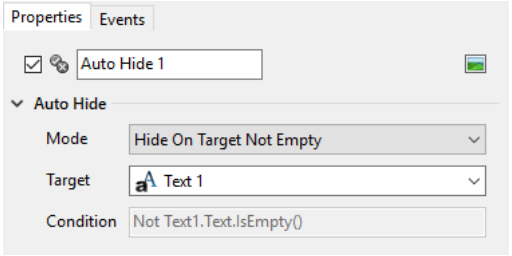
There are three modes for Auto Hide

- Hide on Target Empty
- Hide on Target Not Empty
- Hide on Condition



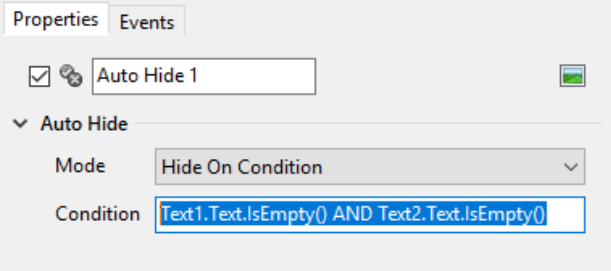
In the first example the Image object will hide if Text 1 is empty and in the second example the Image object will hide if Text 1 is NOT empty:





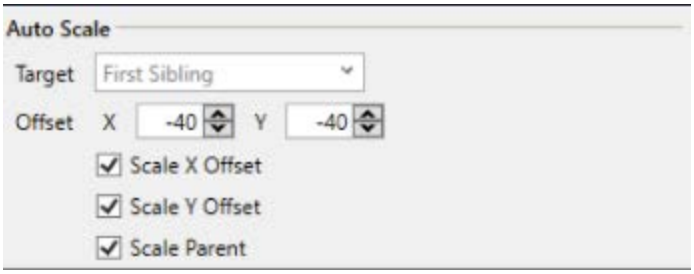
Note that the "Condition" property will always show you what the actual condition is that will be evaluated. The condition property will only be enabled when "Hide on Condition" is selected allowing the user to manually create a condition.

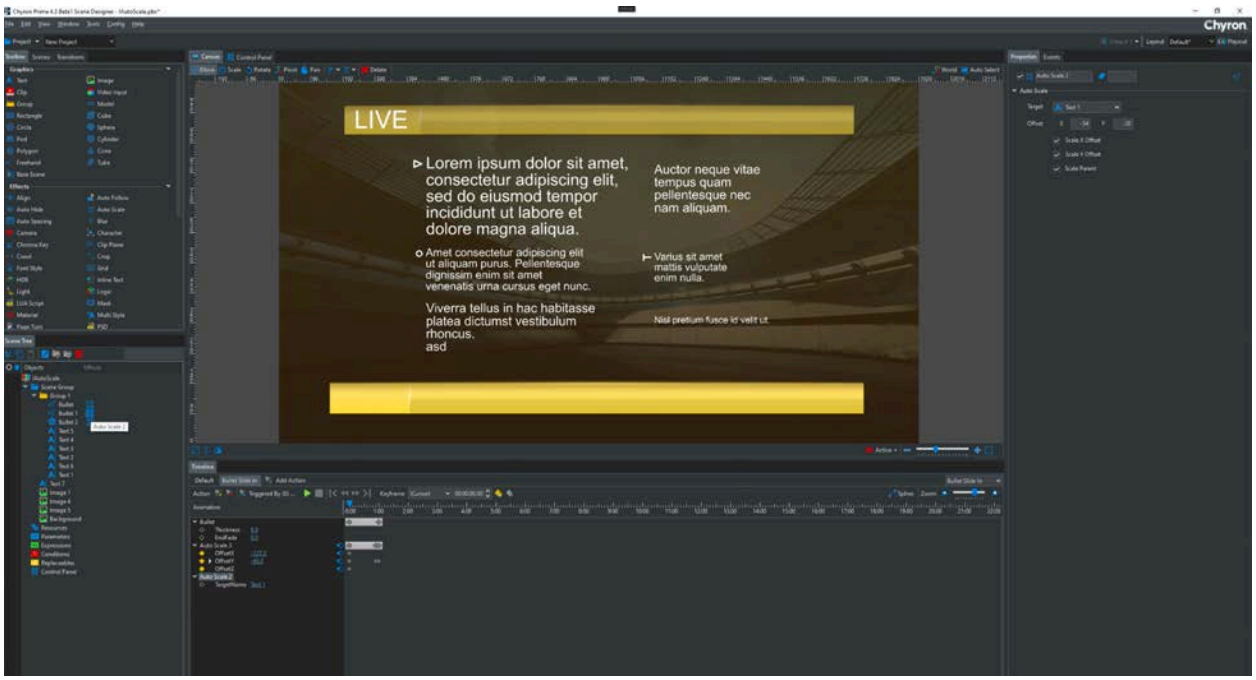
Hide on Condition allows the user to manual insert a statement that should evaluate to TRUE or FALSE is satisfy the Auto Hide condition.



Auto Scale

The Auto Scale effect can be used to scale text within its bounds. This is a useful feature for bullet point graphics.

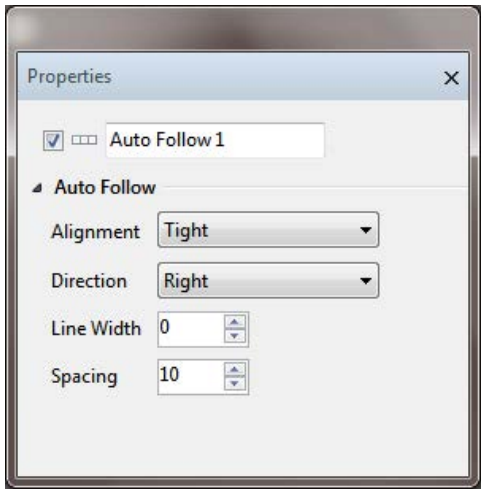




Auto Spacing

The “Auto Spacing” effect can only be applied to Groups. Objects within the groups will be linked.

Alignment Type



- **Tight** - Objects are tightly positioned side by side.
  Additional space defined by attribute Spacing is added.
- **Fixed** - Objects are placed at fixed pitch.
  The object size has no effect on positioning.
  The pitch is defined by attribute Spacing.
- **Justified** - Aligns the row to the left and to the right at the same time. The margins are [0, Line Width]. The minimal spacing between objects is defined by attribute Spacing

Direction

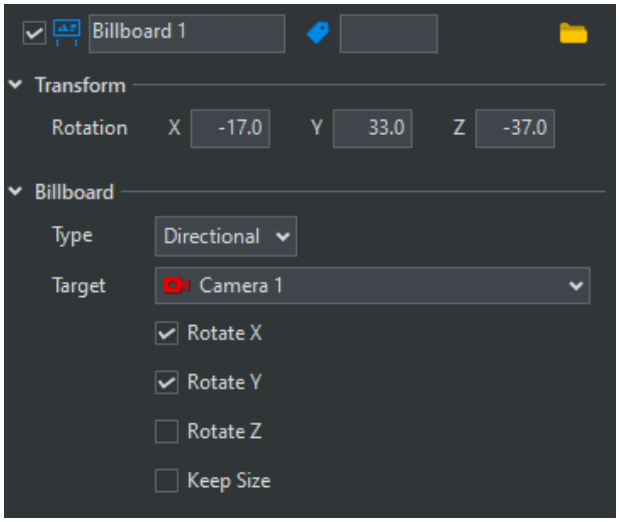
- **Horizontal** - Objects are positioned horizontally from left to right. Only X coordinate is modified.
- **Up**- Objects are positioned vertically from bottom to top. Only Y coordinate is modified.
- **Down** - Objects are positioned vertically from top to bottom. Only Y coordinate is modified

Line Width- Defines maximal size of row/column.
When total size exceeds this limit then the objects are scaled down.
Size of objects before pivot is not counted for the size

Spacing- The value defines pitch or additional space. See Alignment type.

Billboard

Billboard effect allows you to define the rotation of an object(s) within your scene towards a specified camera



Transform

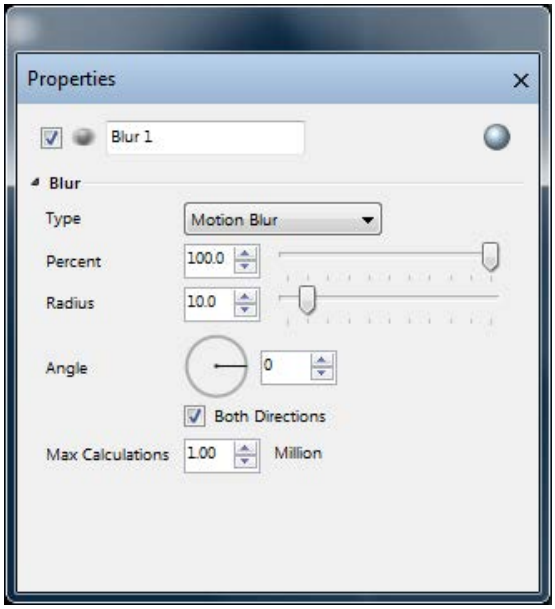
- Rotation: Sets additional rotation which replaces rotation overridden by Billboard effect.

Billboard controls

- Type
    - Planar: Rotates the object in the direction parallel to the camera view vector.
    - Directional (default): Rotates the object in the direction towards the camera position.
- Target: Selects target camera for billboard effect. If empty, the object is rotated towards the active camera, which is the default target for billboard effect.
    - Rotate X: If checked, rotates the object in the X-axis towards the camera (default true).
    - Rotate Y: If checked, rotates the object in the Y-axis towards the camera (default true).
    - Rotate Z: If checked, rotates the object in the Z-axis towards the camera (default false).
    - Keep size: If true, maintains the size of the object normalized regardless of how close it is to the camera. The normalized size is the size that the object appears at when its Z position is at 0, and the camera is at its default Z position (default false).

Blur

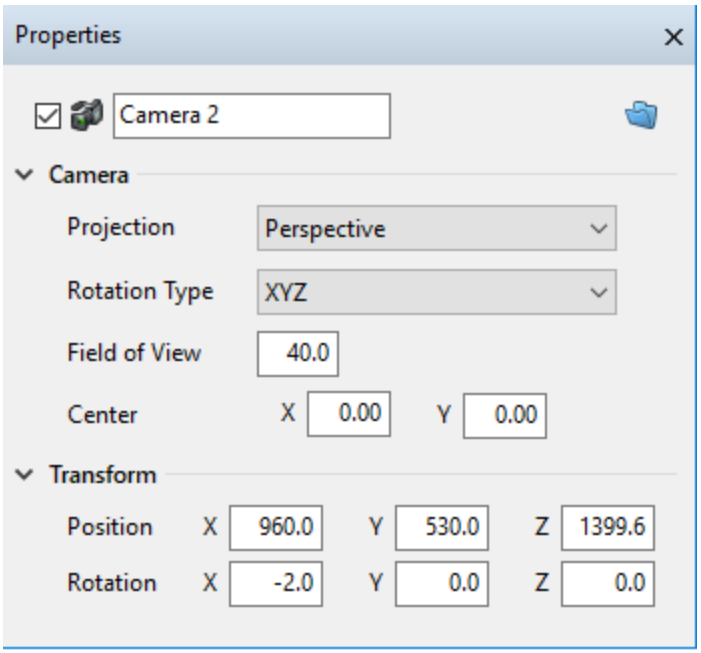
Motion Blur: Performs a blur in one direction or two opposite directions based on the desired Angle
Compound Blur: Uses Level of Detail and neighbor pixel sampling to perform a blur in all directions



Camera

Scene cameras can be added to the scene group only. Scenes can have multiple cameras.

All properties of the Camera effect are keyframable.



Projection

Perspective:

Orthogonal:

Rotation Type

XYZ:

Pan, Tilt, Roll:

Field of View

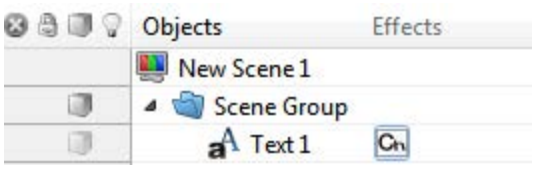
Transform

Position:

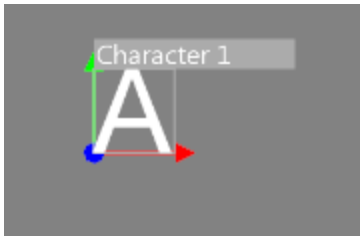
Rotation:

Character

The “Character Effect” allows animations to happen one character, one word or one line at a time. A character affect may be applied to a Text object only.



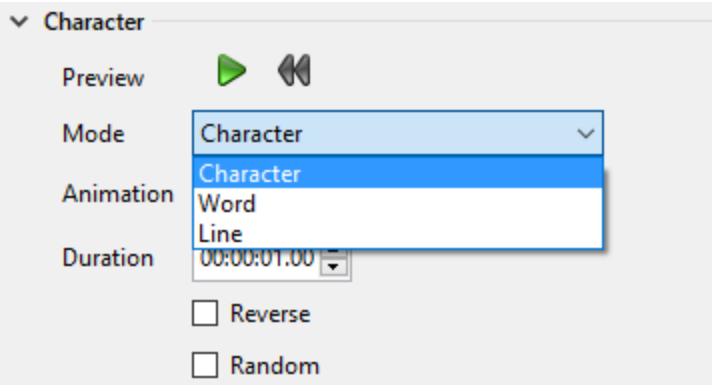
This adds a “Character to the canvas to allow you to create a character effect. The character is only in the canvas for editing purposes.



When the character is selected, the property editor for the character animation is displayed.

Mode

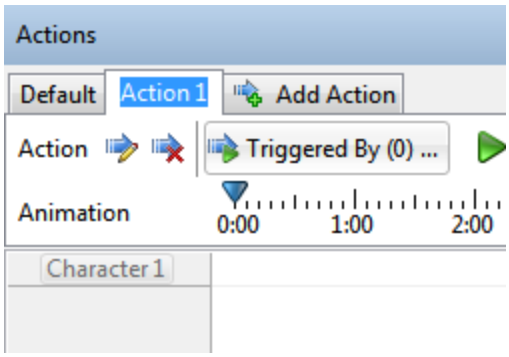
- **Character** – Each individual character will animate
- **Word** – Each word will animate as a group
- **Line** – Each line will animate as a group.



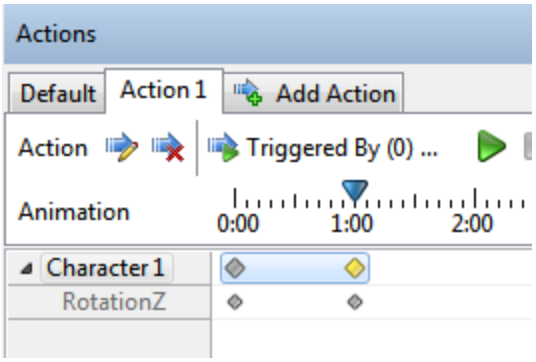
Animation

- **Total Duration** - Sets the duration of the animation regardless of the length of the text
- **Duration Between Elements** - Set the time for each character.
- **Reverse** - This will reverse the animation.
- **Random**- Elements will be animated in random order

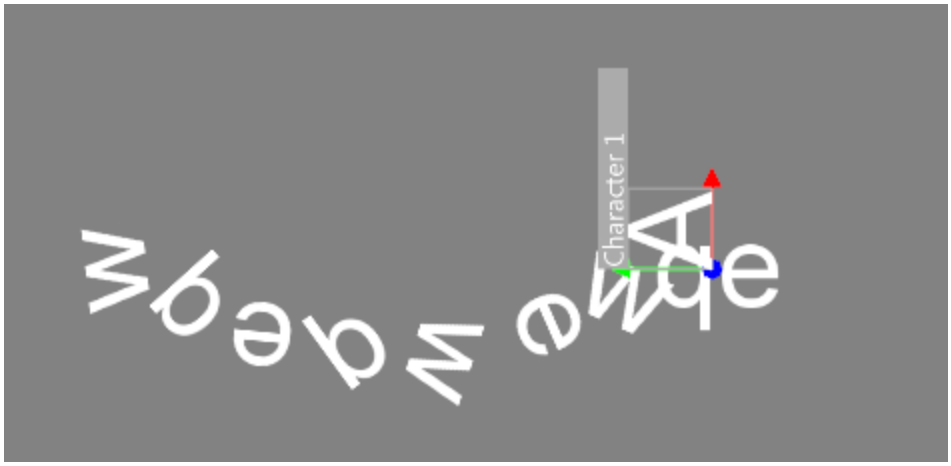
Next Add a Transition to the Timeline Editor:



Next create any type of animation on “Character 1.” For example, a 360 degree rotation on the Z axis:

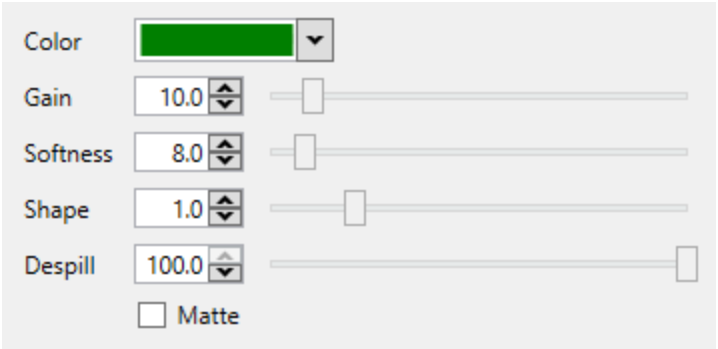


When this transition is played or previewed each character will rotate individually 360 degrees.



Chroma Key

The chroma key effect allows users to remove chromanace for an object.



Color: The target color to make transparent

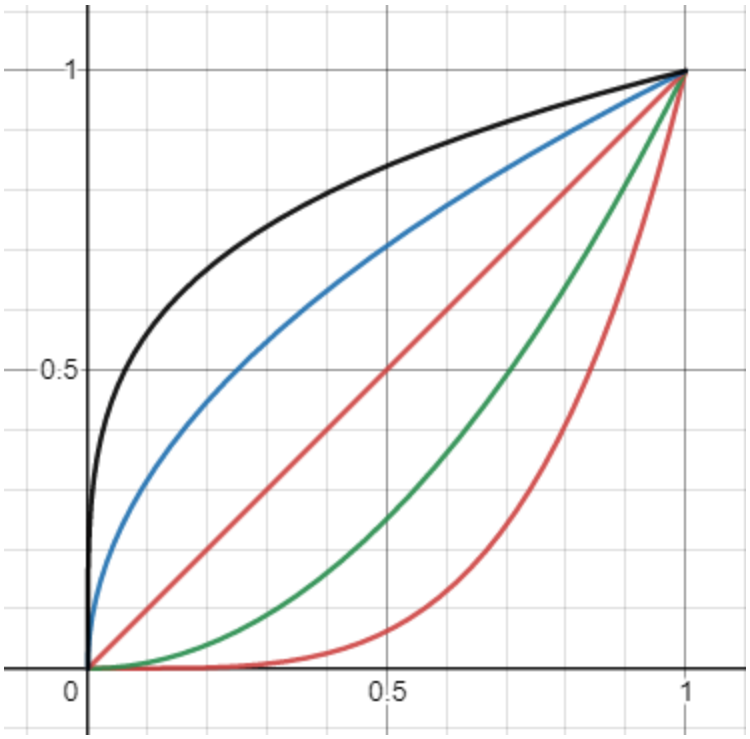
Gain: The hue threshold for the target Color. Increasing this value will make colors similar to the target Color also transparent

Softness: Sets pixels within the gain threshold to semi-transparent.

Shape: Linear to non-linear softness value adjustments

Despill: Removes some of the key color from the remaining pixels.

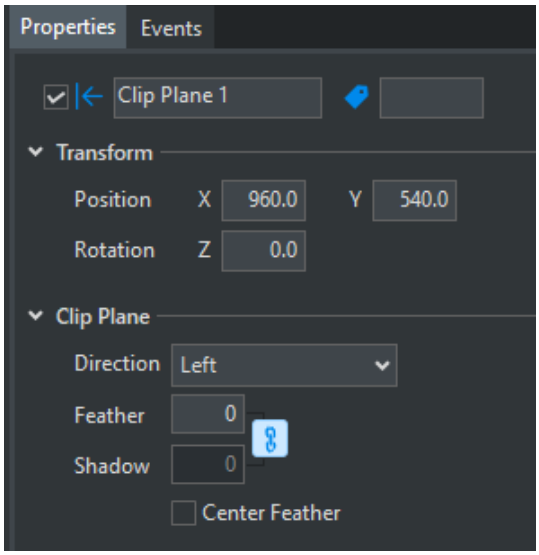
Matte: Shows the alpha values as grey scale. Select this option to fine tune your key.



Shows various softness shape graphs.

Clip Plane

The Clip Plane effect allows for clipping in a single direction: Left, Right, Top or Bottom.



*There is a limit of 6 clipping fields in one single render path.

Transform - Allows positioning and rotation of the clip plane

Clip Plane - Select the direction of the clip plane

Feather - Applies soft edges to the clip plane

Center Feather - Centers the feather of both the fill and shadow of the parent graphic.

Crawl

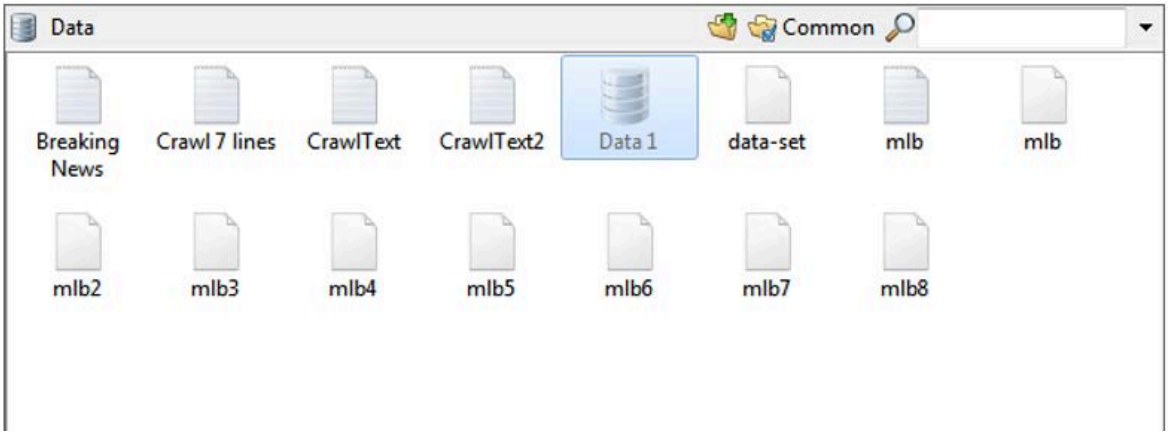
The Crawl effect will cause all objects, including any child objects, to crawl Left or Right,

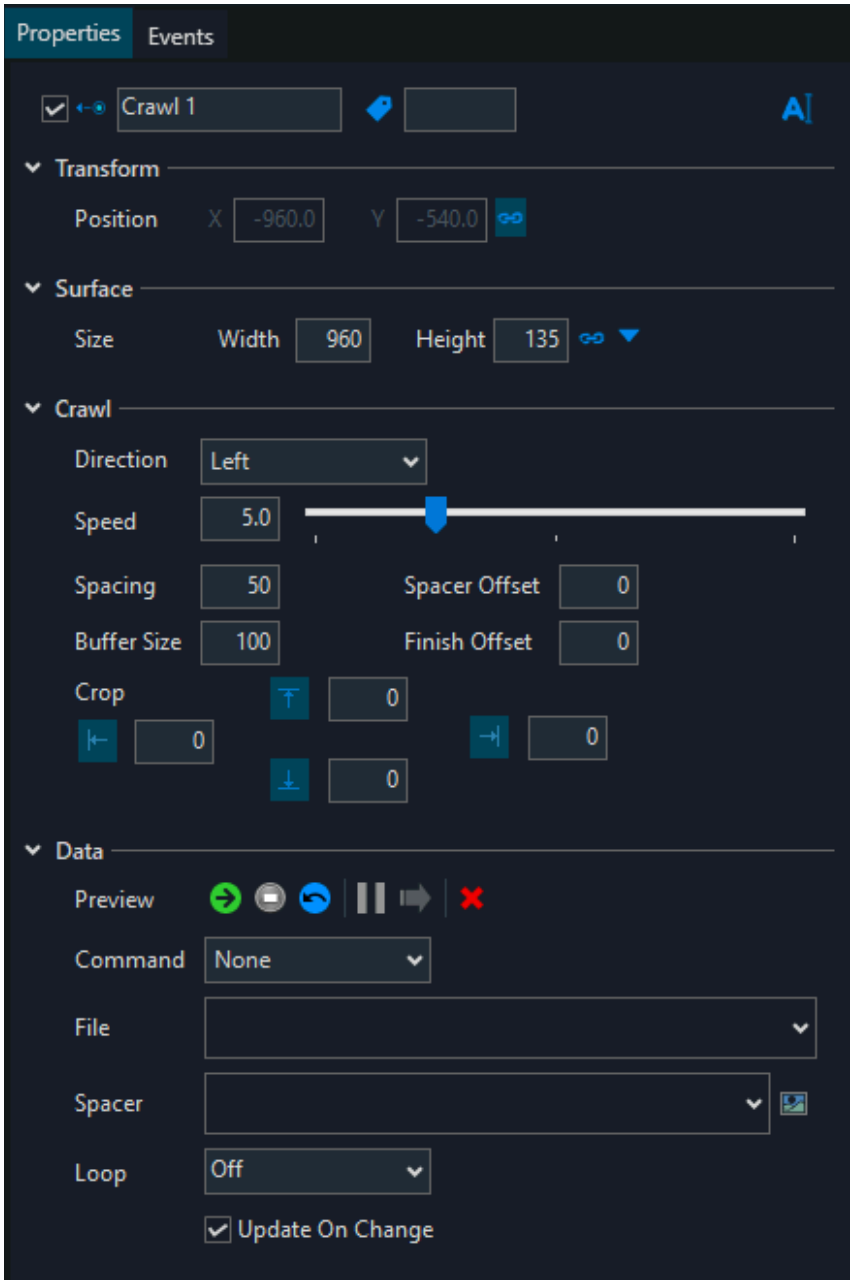
Selecting the Crawl effect creates a Crawl Box. In order for an object to be seen crawling, it must be inside the Crawl Box. The Crawl Box is similar to a crop box.

The crawl effect has two modes:

1.) Crawl from Text file or Select a Resource Data Object (This mode is automatically entered if a file is selected)
2.) Crawl from data (No file selected). Data source could be a control panel text box.

The “Data File browser” will show Text files and Data Objects in the Scene resource tree.

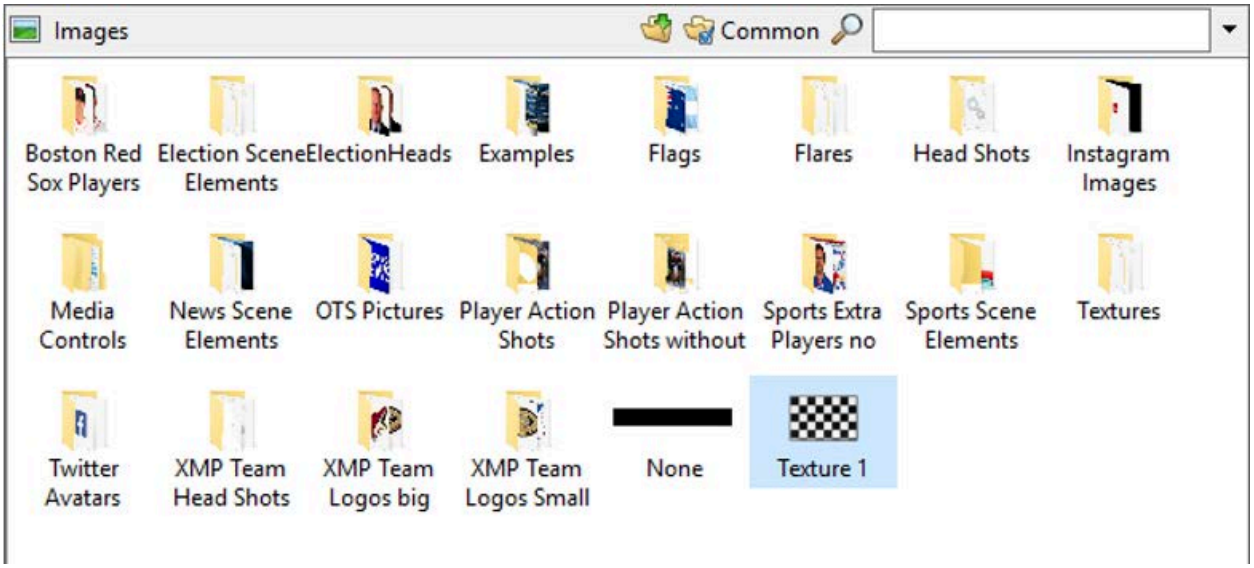




The spacer is only applied in “File Mode”

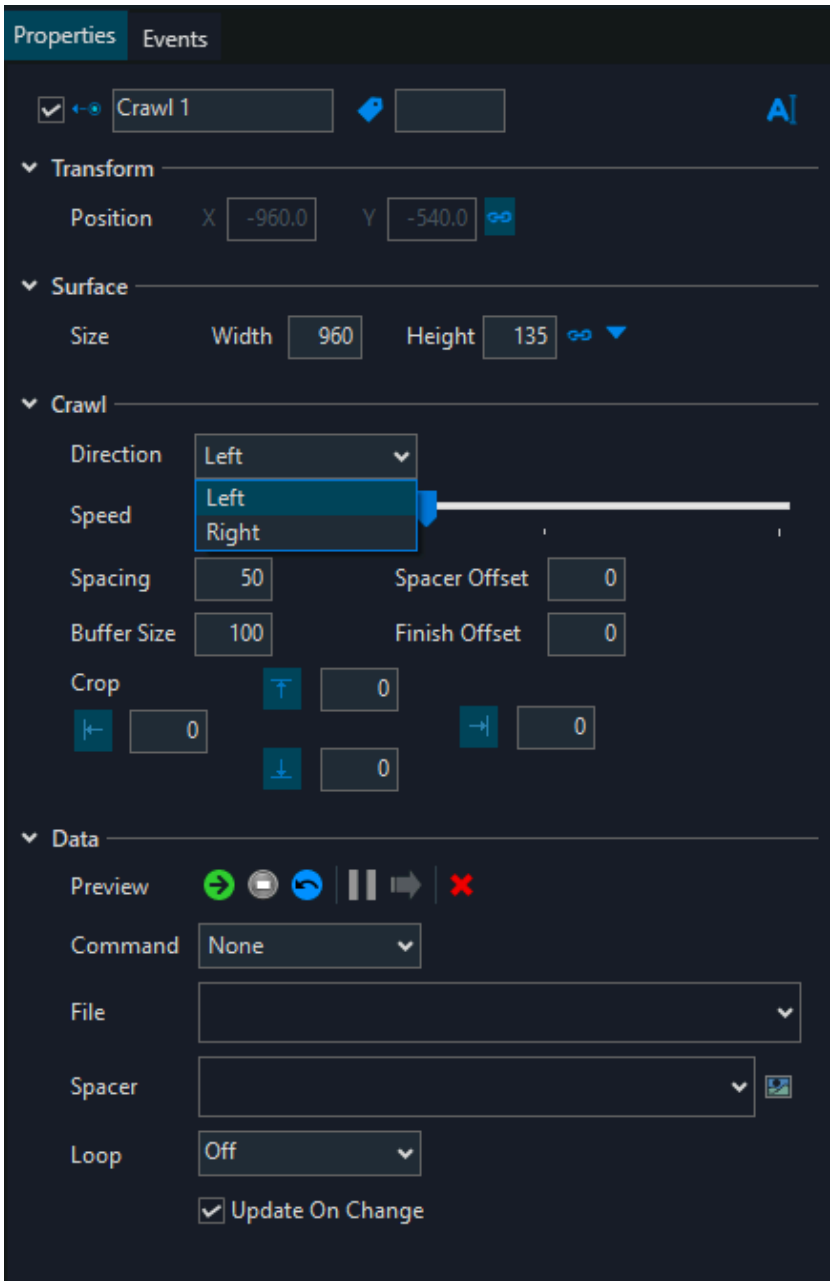
The spacer property can be an image, Text (Type text into the File drop down box) or a Render to Texture Group

With a Render to Texture Group all things can be crawled like 3D objects, Live video input etc.

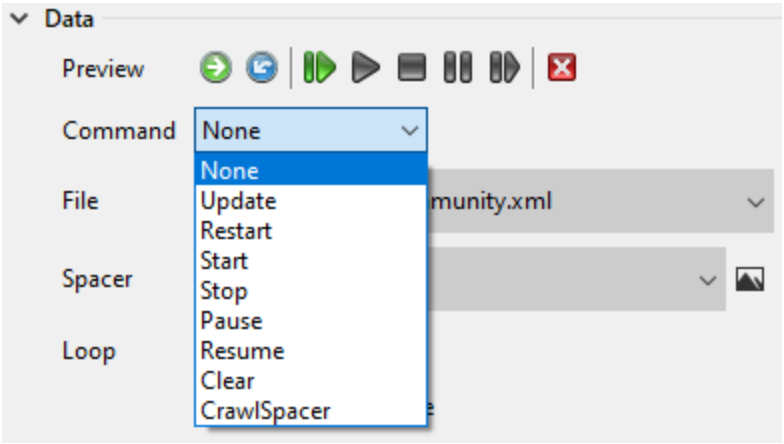


Texture 1 in this example is an image, Text and a 3D spinning logo.

The direction property allows crawling in 2 directions



Crawl Commands



None: The crawl will remain in its current state

Update: Crawl the data already in the associated text box
.

Restart: Starts the crawl from the beginning of the data

Start: Start crawling the data

Stop: Stops the crawl and clears it

Pause: Pause the crawl in position

Resume: Resumes the crawl from the current position.

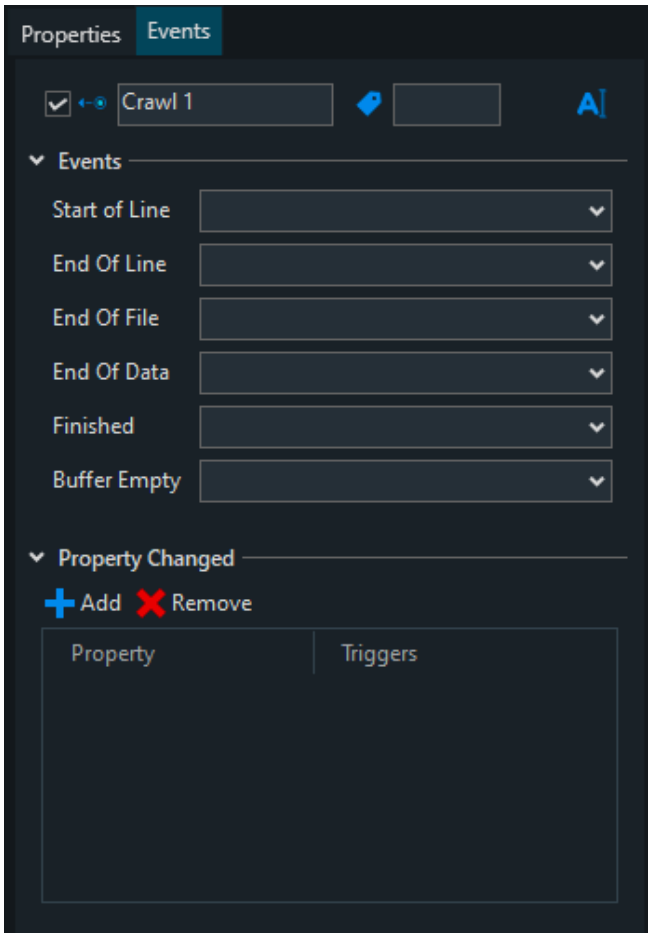
Clear: Clears the crawl

CrawlSpacer: Only displays the spacer in the crawl

Note: Only **None**, **Update**, and **Clear** will be available a data source is not present.

Crawl Events

Crawl events occur when specific conditions are met. The occurrence of an event depends on whether the crawl is associated with a text file or not.



Start of line

Occurs as the data enters the crawl box

End of line

Occurs when the data exits the crawl box

End of file

Occurs when the last piece of data has been crawled when associated with a text file.

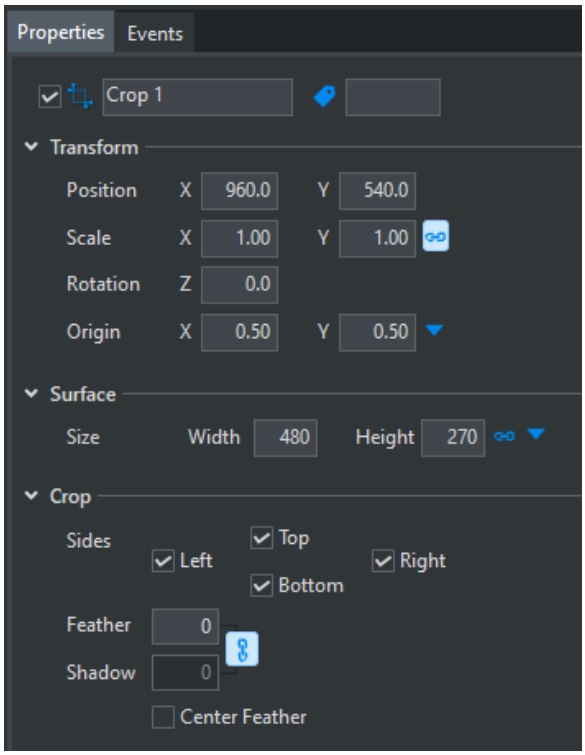
End of data

Occurs when there is no more data to crawl from an associated text file

Crop

Crop is a “Crop box” that allows cropping in 4 directions: Top, Bottom, Left and Right.

Each Crop effect is made up of 4 clipping planes. There is a limit of 6 clipping fields in one single render path.



Transform - Allows positioning and scaling of the crop

Surface - Sets the surface size of the crop box

Crop - Select the sides of the crop box

Feather - Applies soft edges to the crop

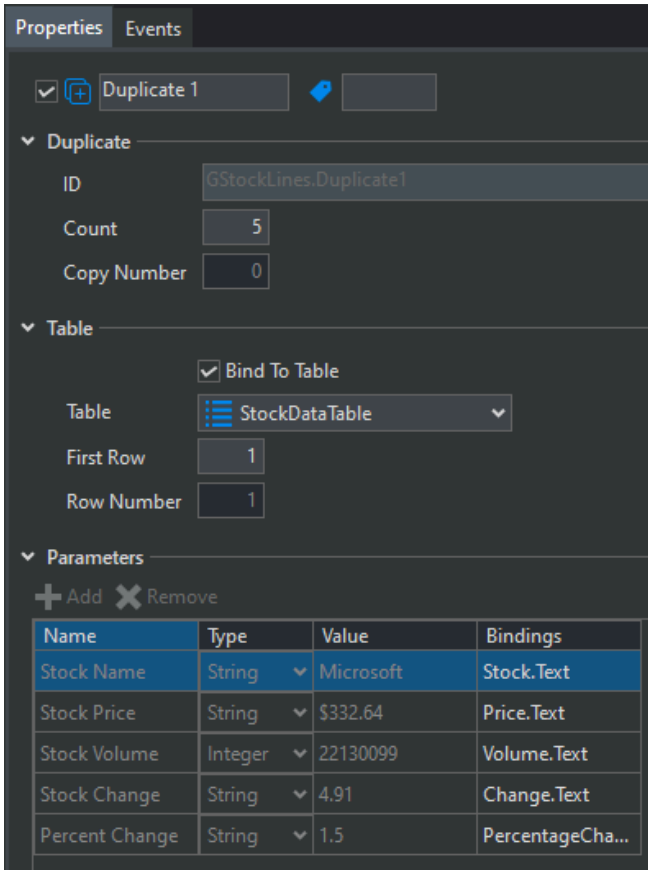
Center Feather - Centers the feather of both the fill and shadow of the parent graphic.

Duplicate

The Duplicate Effect's intended use is to be a quick method for building a data bound table graphic in a fraction of the time. Best practice is to apply the Duplicate Effect at the group level, where a group with contents is duplicated.

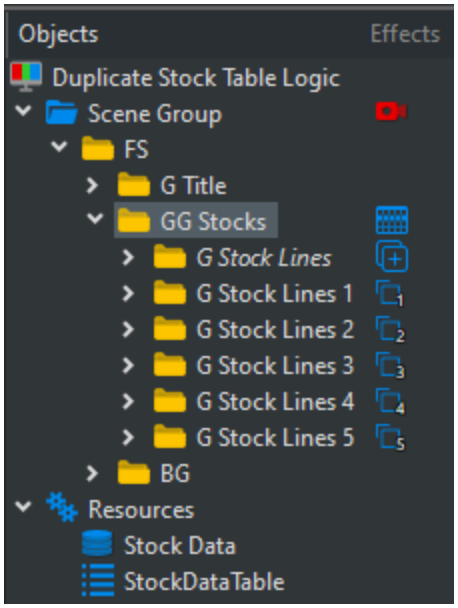
Best Practice: Use Data Object to bind to a Table Resource and then enable Bind to Table within the Duplicate Effect. Under Table - Select the same Table Resource bound to data. Data bound to Table will automatically row pop, and advance to the next row of data on each duplicate. This will save designers hours of time previously spent individually linking each cell to the corresponding data source.

*It is recommended to make changes to the Group (parent) where the duplicate effect has been applied. If you are adding objects to the group or adding new bindings then revert the duplicate number to 1, apply changes and then increase the duplicate count to desired number to regenerate the duplicates.



ID - Name of scene tree object which contains Duplicate Effect

Count - # of times Duplicate Effect replicates the object ID within the Scene Tree



Copy Number - child Duplicate Effect identifier

Bind To Table - Drop down will display table resource available in scene

Table - Select table you want to bind to

First Row - Will display data from Table's first row

Row Number - Will display data from selected row number in table

Parameters

- Add & Remove
    - Only available if Bind to table is deselected
      *If Bind to table is selected these controls are grayed out and not active.

- **Bindings -** Bind any object properties to a parameter
  *Bindings can be set even when Add & Remove are grayed out.

Grid

The Grid effect will subdivide or duplicate the child graphic into multiple graphics depending on the Rows and Columns properties. The segments can then be modified and animated individually using the Transform, Surface and Grid properties on the Grid effect.

A vertical or horizontal blind look can be created by setting Rows or Columns properties to 1 and the opposite property to the desired number of blinds.

The Grid effect can only be applied to a subset of objects: Image, Cube, Sphere, … Other graphics including Clips, Video Input and Groups can still be affected by the grid effect by using a Render To Texture effect on the desired graphic, then adding a Grid effect to an Image object that has its File property set to the render to texture output

Transform and Surface properties work the same as those in Graphic objects other than they affect the individual segments created by the Grid effect.

Grid Mode – used to set whether object is Subdivided or Replicated into rows and columns

Columns – number of columns to create

Rows – number of rows to create

Spacing – used to set and animate the spacing of the segments. 1.0 is normal spacing. 0.0 is all segments on top of each other.

Mirror Rotation – used to set opposite rotation values in X and Y for half of the grid segments

Animation Mode – used to determine the order in which grid segments are animated. Currently only Linear is supported

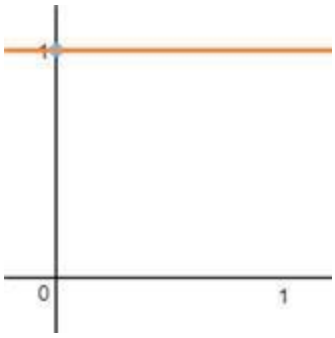
Angle – the direction in which grid segments are animated

Duration – used to add an amount of time between starting the animation of the first grid segment and the last grid segment to create a staggered animation effect. Set to 0 frames for no stagger

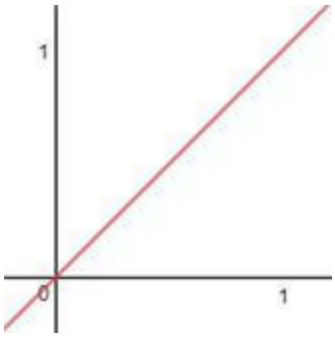
HDR

High Dynamic Range

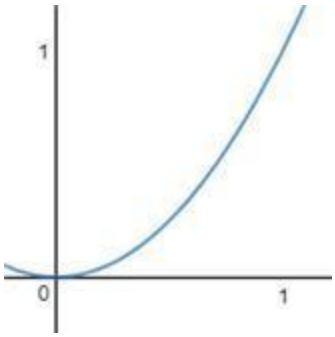
Constant: No change in the curve just add more value to the existing range.



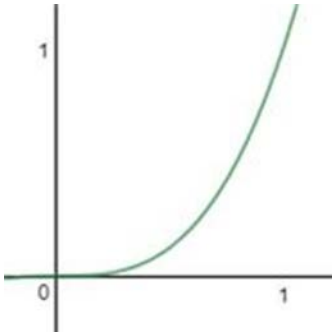
Linear: 1=No change. 2 would be 0 to 200% 3 would be 300% etc.



Squared: Curved Graph. Brighter areas become more bright. Darker areas are not as affected as much.



Cubed: Same as squared but with a more severe affect.

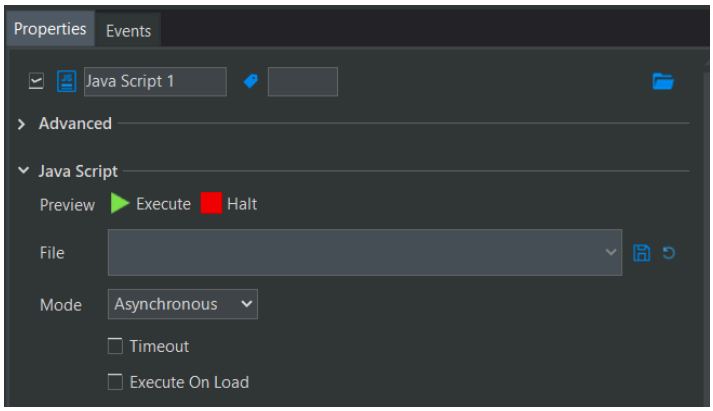


JavaScript

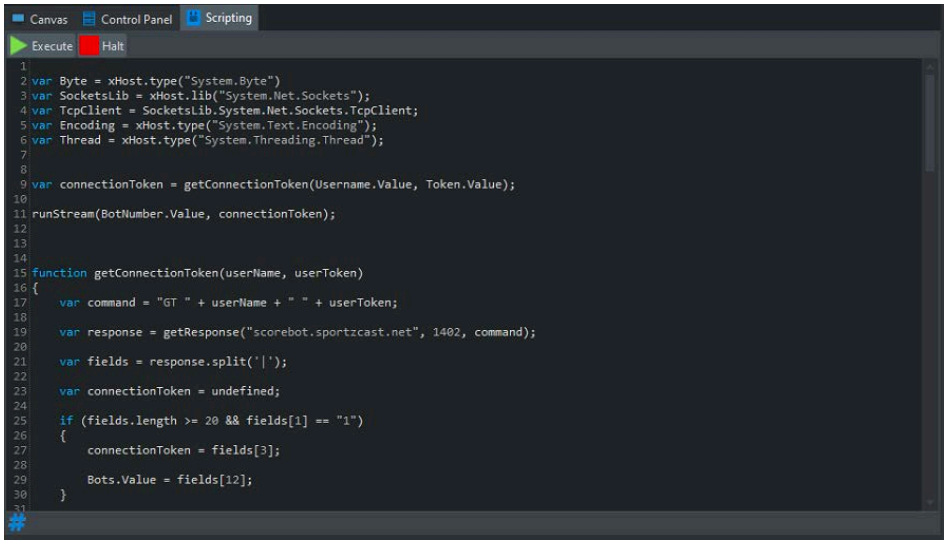
Java Script Effect can be applied to any scene Graphic Object.

Java Script Resource can be applied to the Scene, Project, and Application levels as well as Master Control Panels.

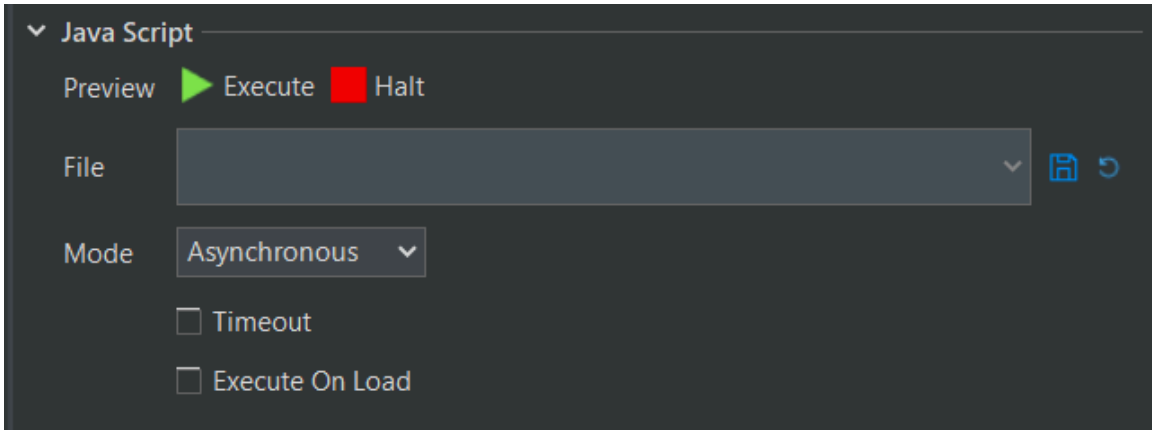
To import an existing JavaScript navigate to script file.



To add or edit a JavaScript select the edit pencil icon. This will open the Scripting panel within Prime. From here, you can Execute and Halt scripts for testing.



Press the Save icon to save any edits to the script.



Mode:

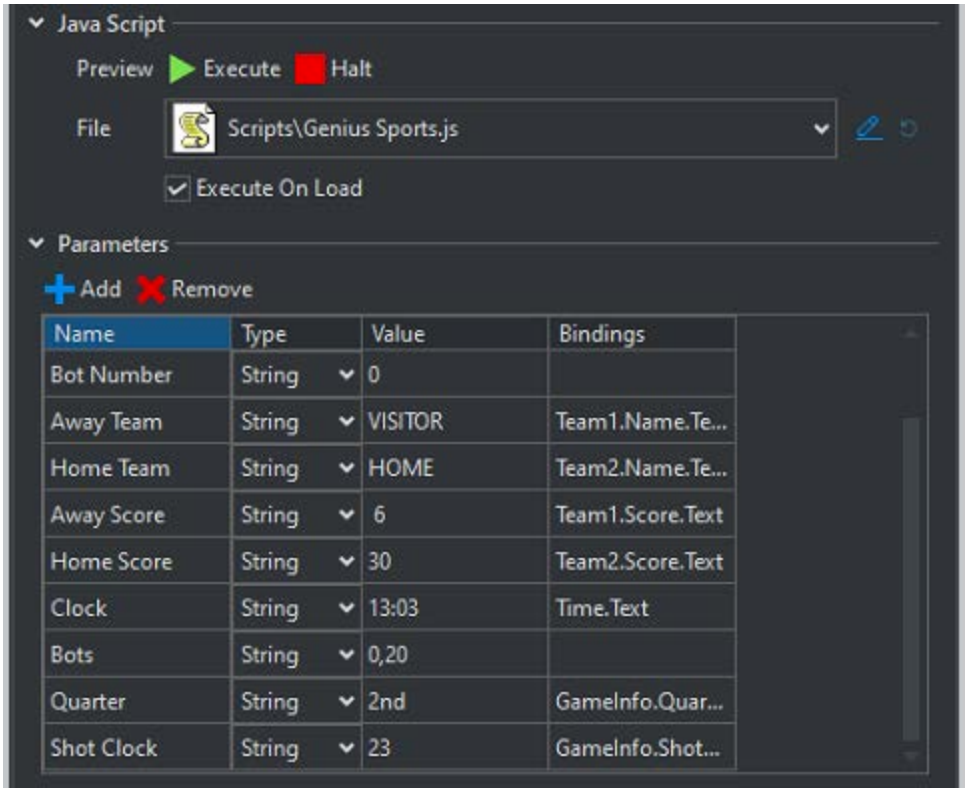
- Asynchronous - runs the script in the background and returns immediately to the context calling the script
- Synchronous - blocks execution until the script is finished, or until the Timeout duration is elapsed

Timeout: The duration of time in seconds that scripts in Synchronous mode will execute before timing out

Execute on Load: Option to enable “Execute on Load” for Script to evaluate upon Scene load in Prime playout.

***Please Note -** Starting in 4.10.1, when Synchronous and Execute on Load are both enabled, the Script will complete before the rest of a scene is loaded.

JavaScript Local Parameters: Press Add to remove Parameters to a JavaScript Effect. Any Parameters added to the JavaScript effect will be saved with the effect itself. Option to bind any scene object to the JavaScript parameters.

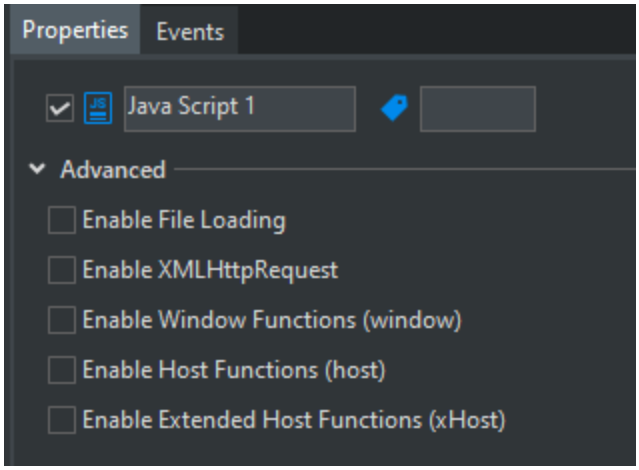


JavaScript Advanced Options: (settings are saved with the script)

Enable XMLHttp Request: Allows you to download data

Enable Window Functions: allow you to pop up windows.
For example - alert, confirm, prompt and message boxes.

Enable Extended Host functions: Enable for TCP clients, and other advanced objects.
Without these checked functions, Prime is kept in a Sandboxed mode.



JavaScript Keywords, Properties, and Objects

Further documentation can be found within the PRIME_JavaScript_User_Guide

Inline Text

The Inline Text effect can be added to Group objects only. When added to a group object the objects within the group will no longer be part of the composited objects in the scene tree meaning that group stands alone. The object within the group are cached in memory and can be referenced as text tags in the Text Object. Text tags start with a backslash and are terminated with a semi colon. The letter “o” is an indicator that this is an “Object” tag followed by the name of the object. This method is the same as “Style Tags”. Refer to the “Style Effect”.

Example: Hello\oImage1;

The benefits of this approach is the objects can be animated individually. So, a crawl can have an animated Cube for example. A crawl “Trigger” can trigger an action that animates any of the objects in the “Inline Text” group.

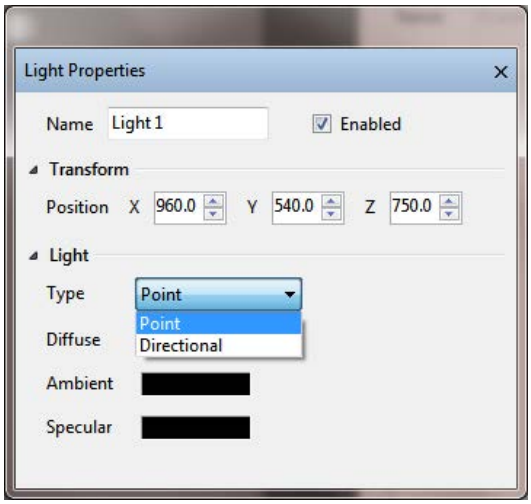
Light

Type: Point or Directional

Diffuse: Light color

Ambient: Ambient color applied to the material

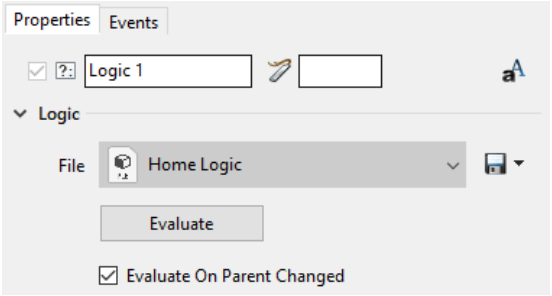
Specular: Specular color applied to the material



Logic

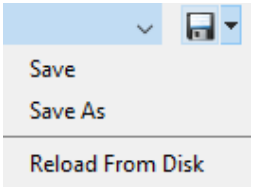
The Logic effect is a collection conditional and property statements which are applied to a Graphic Object. It is similar to Conditions but the statements are targeted to a parent object and its children. Logic has the flexibility to be reused in a scene saving the designer time when creating similar statements.

Logic Properties Controls



- **File**: Shows the last loaded or saved Logic effect file (.PLE).
  - Asset Browser Control: Load .PLE file into existing Logic effect

- **Save** (Button): Saves Logic effect to existing or new file. By default the .PLE files will be saved to the **Scripts** folder in the project directory.
  - Save
  - Save as
  - Reload From Disk: Remove changes and reloads the file.



- **Evaluate:** Applies or Evaluates Logic Effect in Designer

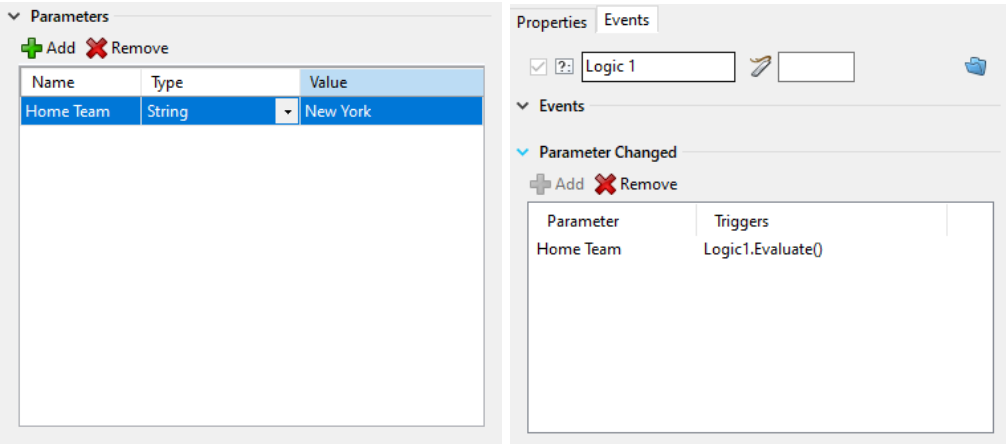
- **Evaluate On Parent Changed**: Applies the Logic effect to parent's default property changed event.
  - The binding is internal and is not shown in Object's Events Control
  - Example: If Logic effect is applied on Text Object. The Logic Effect will bind itself to the TextChanged Event. So whenever Text is changed on Text Object and the Logic effect statement will evaluate.

Logic Effect Parameters

Parameters are variables that can be used to store information like color, strings, integers, etc. Parameters can be accessed in conditional and property statements.

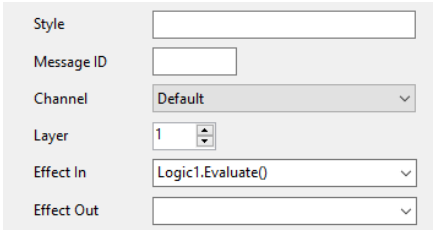
Parameter Changed Events: Logic parameters utilize Changed Events that can be used to trigger other types of commands and in methods in scene. The example below shows the

“Home Team” parameter triggers the Logic effect to evaluate when the value of the parameter value changes.



Evaluating Logic Effects

Similarly to Conditions, Logic effects should be told when to evaluate during playback. Evaluate commands can be accessed in event lists. This is an example of a Logic effect being evaluated on the Effect In event.



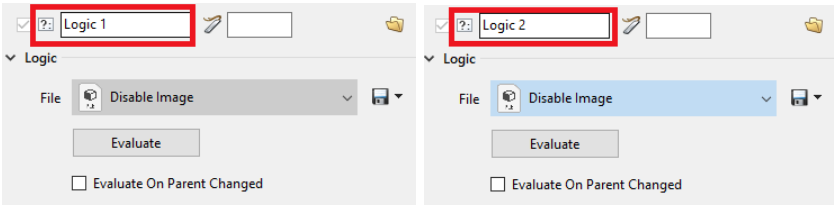
This method of evaluating Logic effects is in addition to the **Evaluate On Parent Changed** property previously mentioned.

Logic Effect Statements Editor

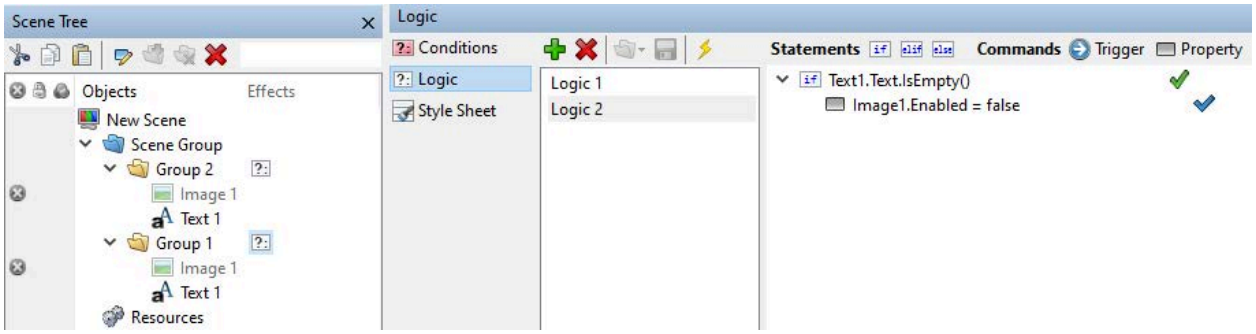
- Statements can be constructed by dragging object properties from the Property Pane (similar to Conditions). Users can also type statements with the assistance of PRIME’s auto-complete tool.

Users who wish to reuse a Logic file in the same scene should consider giving graphic objects the same name. For this to work, objects must be placed in separate groups.

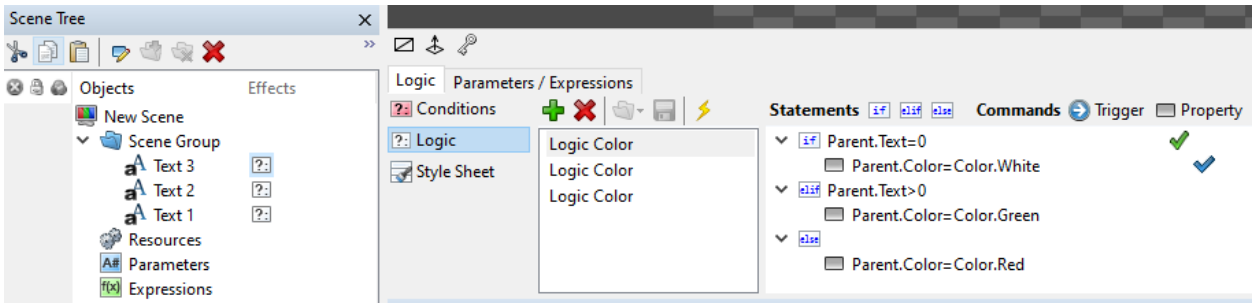
In the example below, a scene contains objects with identical names. The objects are contained in different parent groups with a Logic effect applied to the group, and both Logic effects are using the same .PLE file.



The statement contained in the .PLE file states that if “Text 1” is empty “Image 1” will be disabled. Since both parents groups contain child objects with identical names the applied Logic file will evaluate exact same.

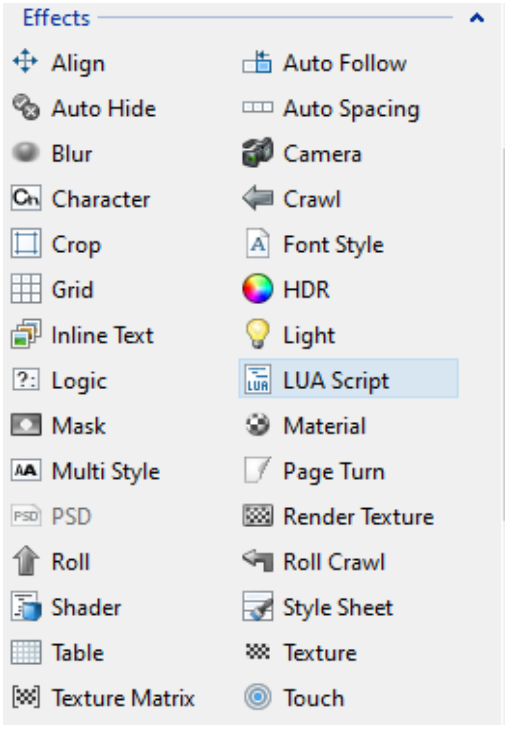


Additionally, the Logic Effect can be written to address the Parent it is applied to. This would allow for the names of the objects to be unique while still giving the benefit of duplicating the Logic. In the example below the same Logic Effect is applied to 3 different text objects. As the statement uses Parent.Text the object name does not matter, the logic statement will be applied to its parent object.

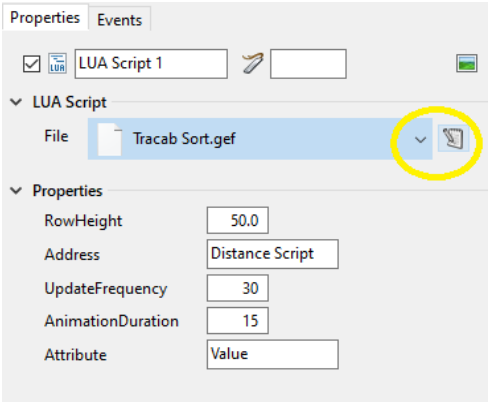


LUA

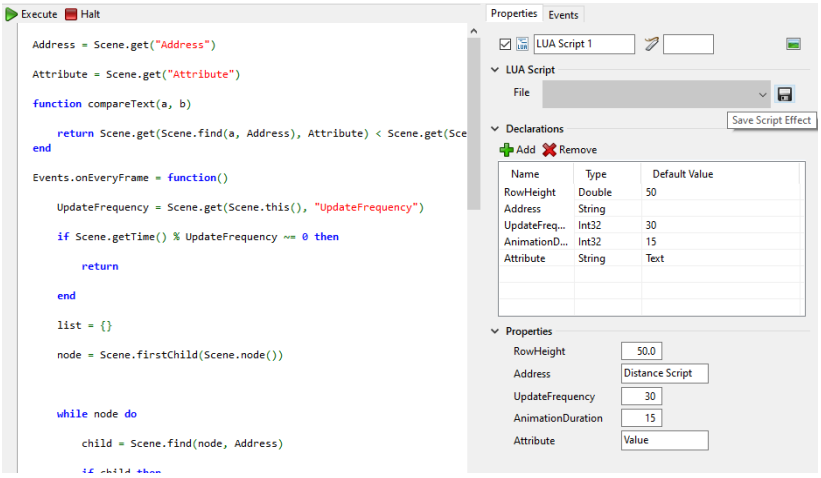
LUA scripts are scripts that run at a low level inside the render engine on a frame by frame basis unlike VB or C# scripts which run at a high level outside the render engine.



LUA Script code can be written in PRIME by adding a LUA Script Effect. They can be embedded in the scene or saved out as ". GEF Effect Files". These GEF files can be assigned to the LUA effect. The LUA property editor will show attributes defined in the LUA file; these attributes appear as properties of the LUA effect and can be keyframed on the timeline.

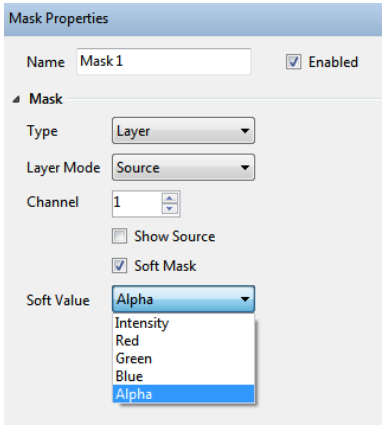


The edit button allows for the script to be edited and then saved



Mask

PRIME allows for two types of Masks: **Layer** or **Group**.



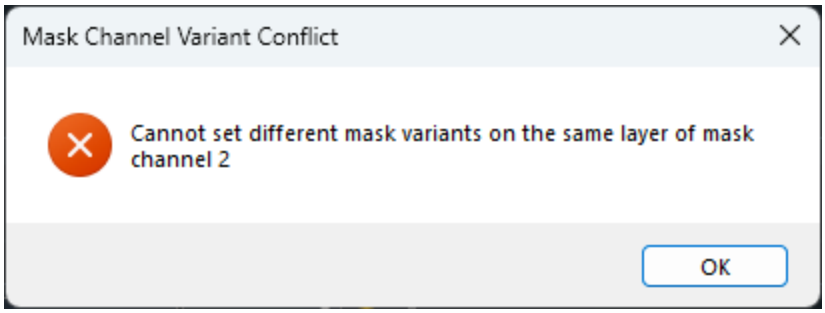
Layer Masks

Consist of “Sources” and “Targets” and can be assigned a “Channel”

“Soft Mask” settings allow you to blend between both the target and the source.

Layer Masks can be Hard (Stencil) or Soft. When Soft Mask is not checked, Hard (Stencil) Mask is being used.

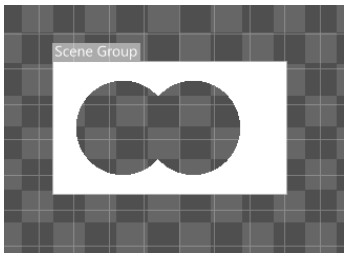
****Please Note -** Designers should not use both a Soft and Hard Mask on the same Mask Channel. Mixing and matching different Mask modes will result in unintended behavior of the software. Mask modes should always match with their associated parent/sibling layers. If a designer attempts this, PRIME will present a warning.



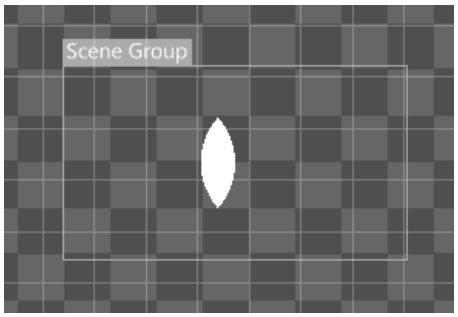
There is a limit of 7 concurrent masks per channel for hard masking and 127 per channel if soft is enabled.

A single target can only be the masked target of 8 total layers. If more than 8 layers are used on a single target, the first 8 effects with the mask layer effect will still mask. Any layer effects after that will not mask. You can have multiple objects use the same layer

With multiple Hide Targets, any part of the source that is covered by a target will be hidden



With multiple Reveal Targets, ONLY the places where all of the targets intersect will be revealed.



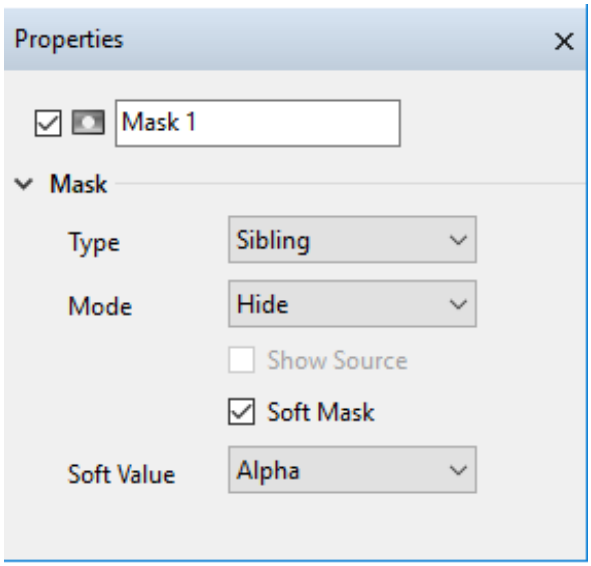
Layer Mask scope:

- Global masks will affect any other Global masks. Scene masks will only affect other
- Scene masks in the same scene (or base scene)

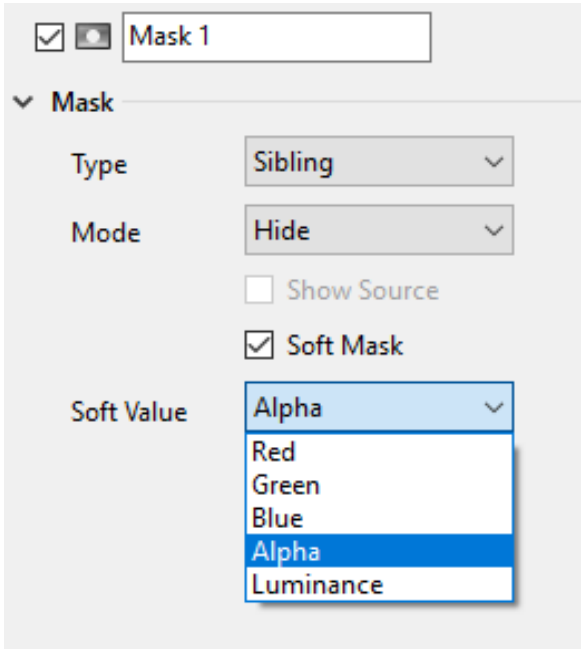
Group Masks

Group masks will mask everything within its parent group and has no notion of “target and source”.

Mode: Hide/Reveal



Soft Value:



Material

Materials can be applied to various scene objects. The material effect controls double as an editor that can be used to manipulate the current effects properties. It also has the capability of saving material effects for future use. Saved materials can then be applied later to other scene objects. A preview of the material is supplied to show the user the result of the created material effect.

Faces

Preset

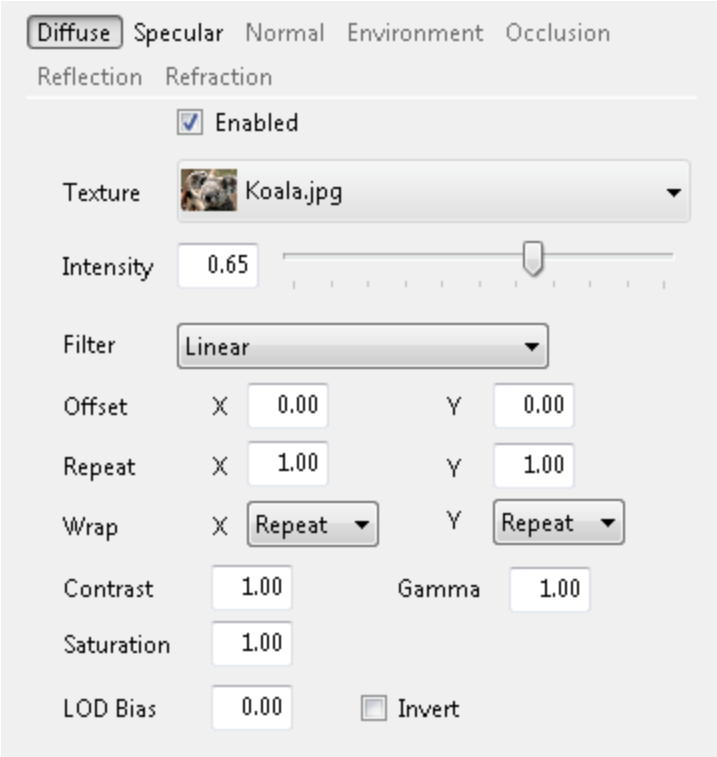
- The file that was saved or is being created. Any saved materials can be chosen from this control

Color

- Diffuse
- Emission
- Ambient
- Environment
- Specular
- Shininess

Diffuse

Diffuse lighting is used to simulate re-emission from a surface where the re-emittance isn't "ordered"(that is, the re-emitted light is diffused).



Texture

Intensity

Offset

Repeat

Wrap

Contrast

Gamma

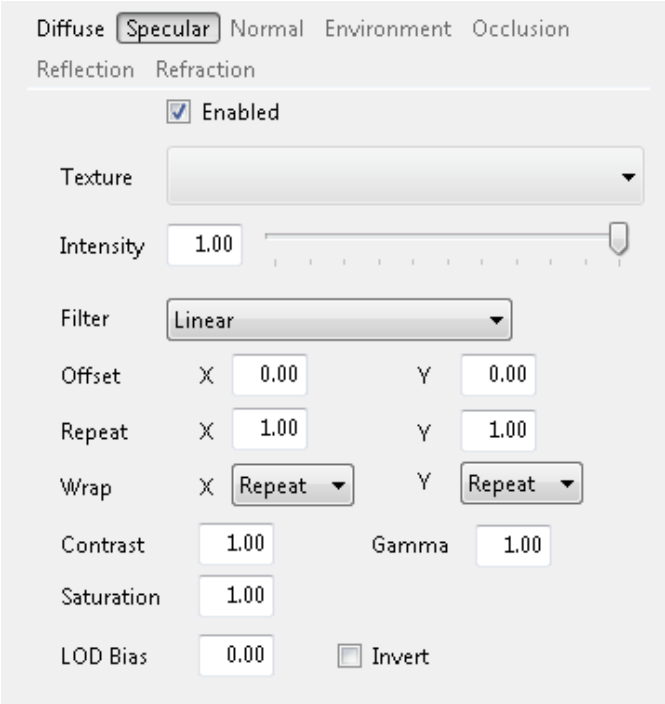
Saturation

LOD Bias

Invert

Specular

A **specular highlight** is the bright spot of light that appears on shiny objects when illuminated



Texture

Intensity

Offset

Repeat

Wrap

Contrast

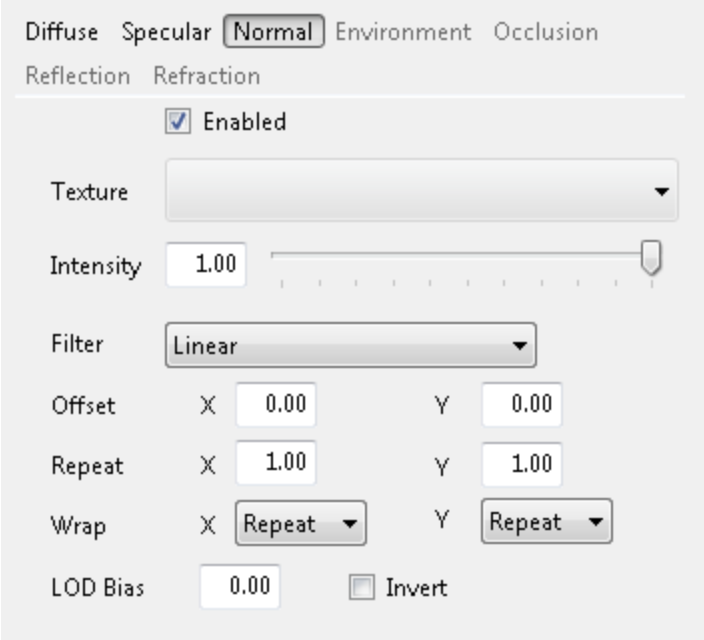
Gamma

Saturation

LOD Bias

Invert

Normal



Texture

Intensity

Filter

Offset

Repeat

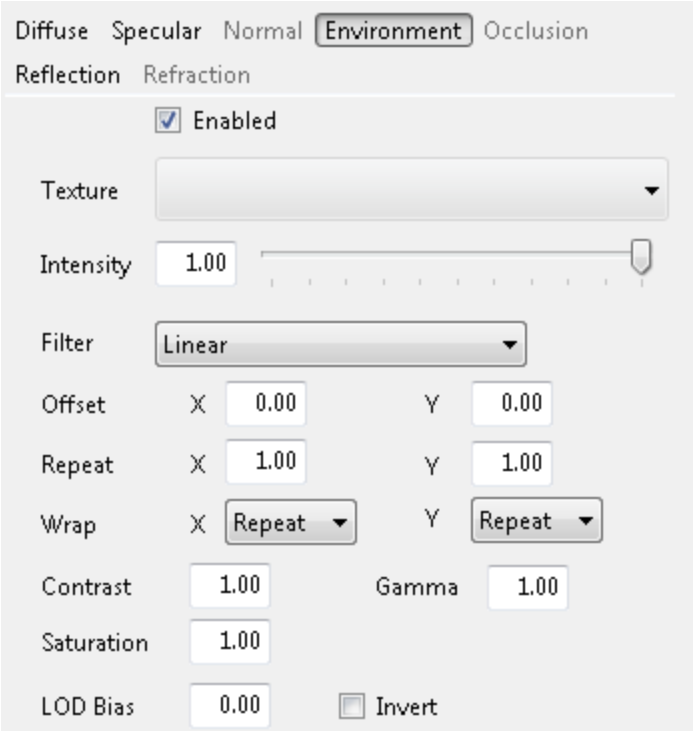
Wrap

LOD Bias

Invert

Environment

Environment lighting adds light to the scene as if it came from a sphere surrounding the scene. The light is usually colored using an image called an *environment map*. An environment map can match the lighting (and reflections) in a scene to a real-world location, or may simply be used to add interesting variation to the scene's lighting.



Texture

Intensity

Filter

Offset

Repeat

Wrap

Contrast

Gamma

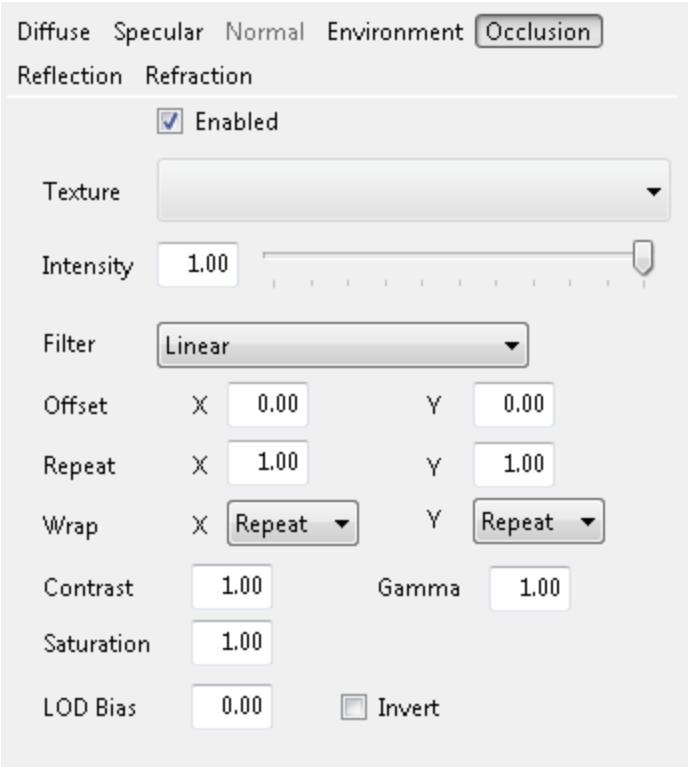
Saturation

LOD Bias

Invert

Occlusion

Ambient Occlusion is a sophisticated ray-tracing calculation which simulates soft global illumination shadows by faking darkness perceived in corners and at mesh intersections, creases, and cracks, where ambient light is occluded, or blocked.



Texture

Intensity

Filter

Offset

Repeat

Wrap

Gamma

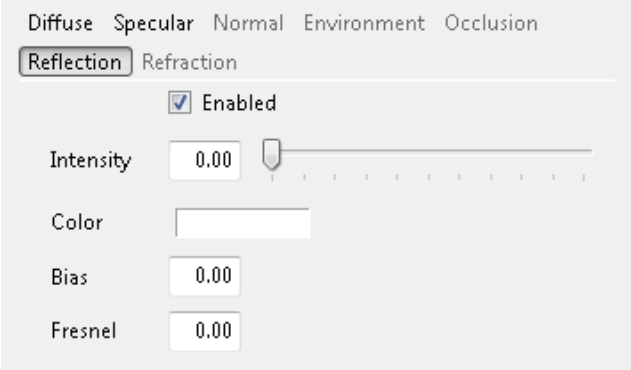
Contrast

Saturation

LOD Bias

Invert

Reflection



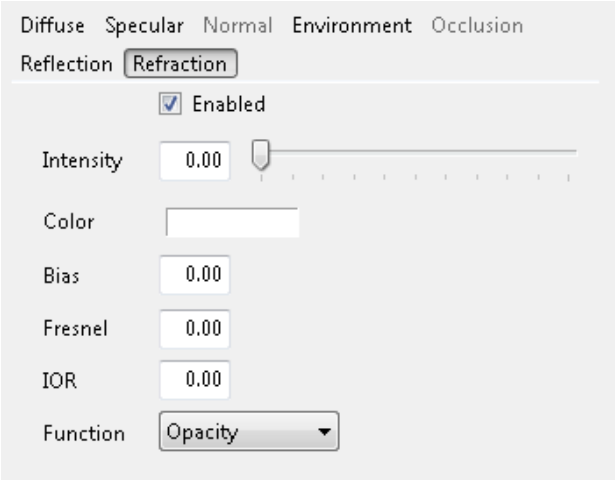
Intensity

Color

Bias

Fresnel

Refraction



Intensity

Color

Bias

IOR

Function

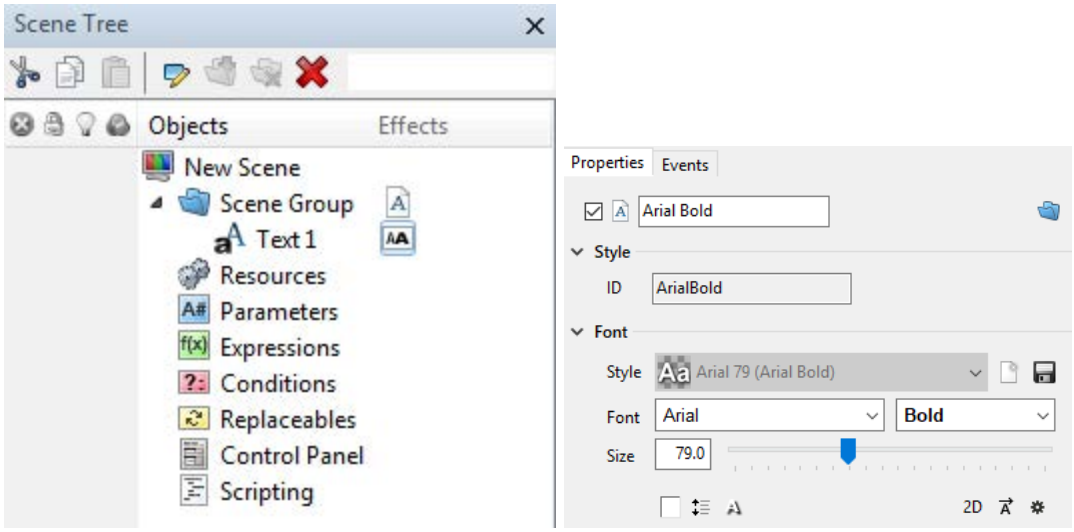
Multi Style

The Multi Style effect is a user-friendly way to allow a single text box to display two separate styles. The Multi Style effect is predicated on having existing Styles available to your scene already. Refer to the “Effects->Style” section.

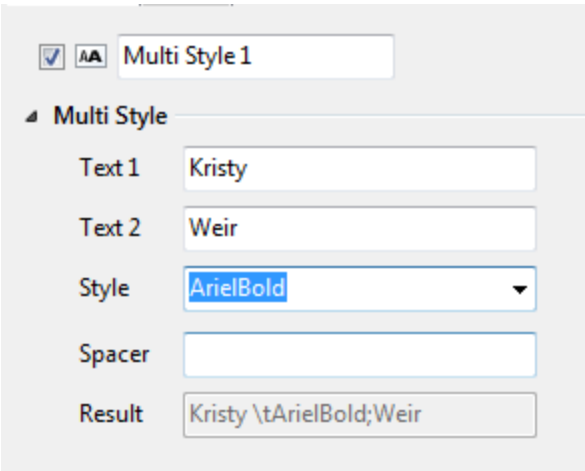
In the first screen shot I have a simple scene with a single Text object, one “Style effect” placed on the Scene object, and one “Multi Style” effect placed on the Text object itself.

The second screen shot is the “Style Effect”. See the “Style Effect” section in this guide.

The first text will use the style defined by the Text object itself and the second piece of text will use the style defined by the “Style Effect” placed on the scene object. As a note the “Style Effect” could have easily been placed on the text object as well.

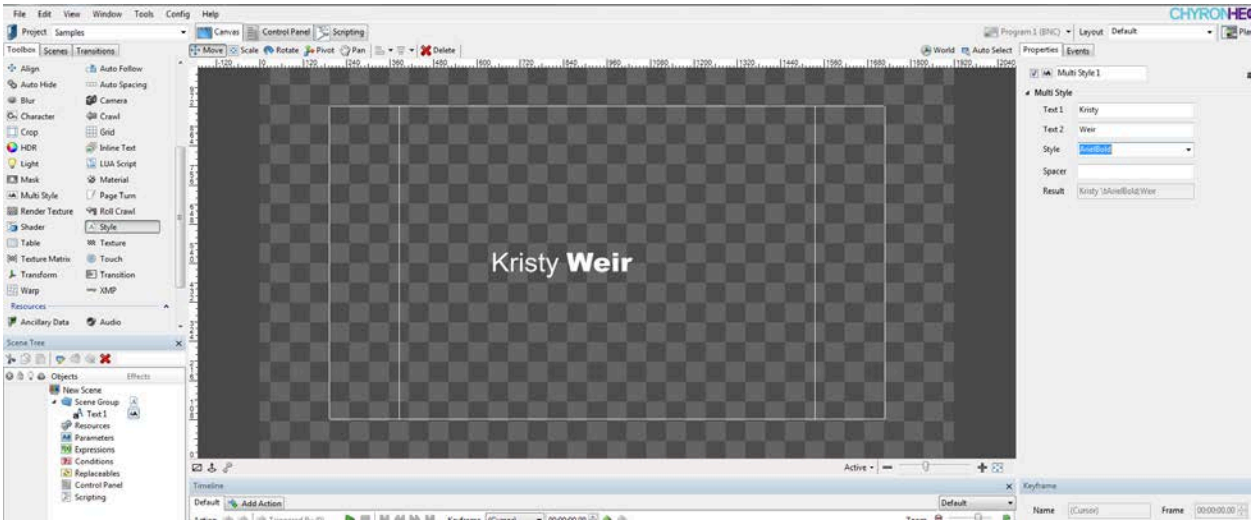


Select the Multi Style effect to show its Property Page.



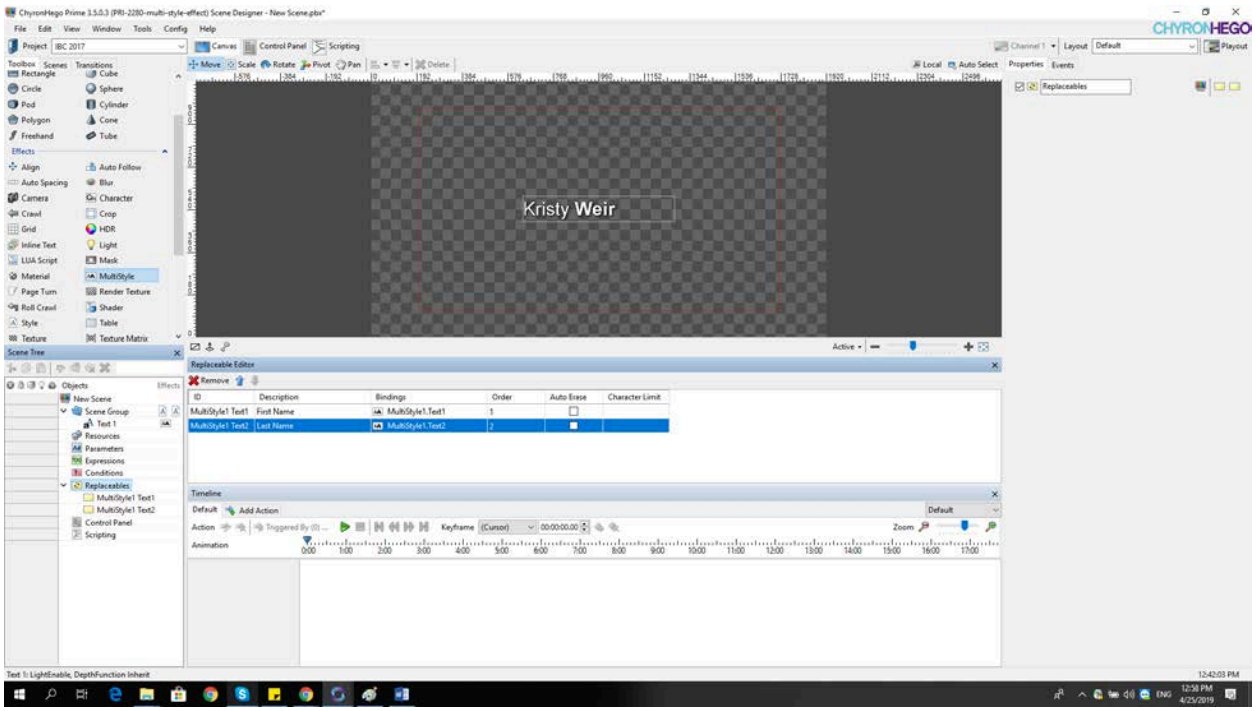
Now select the style you wish to use and enter the text for each to get the desired result.

The Styles available to the Multi Style effect will enumerate in each of the “Style” drop down combo boxes.



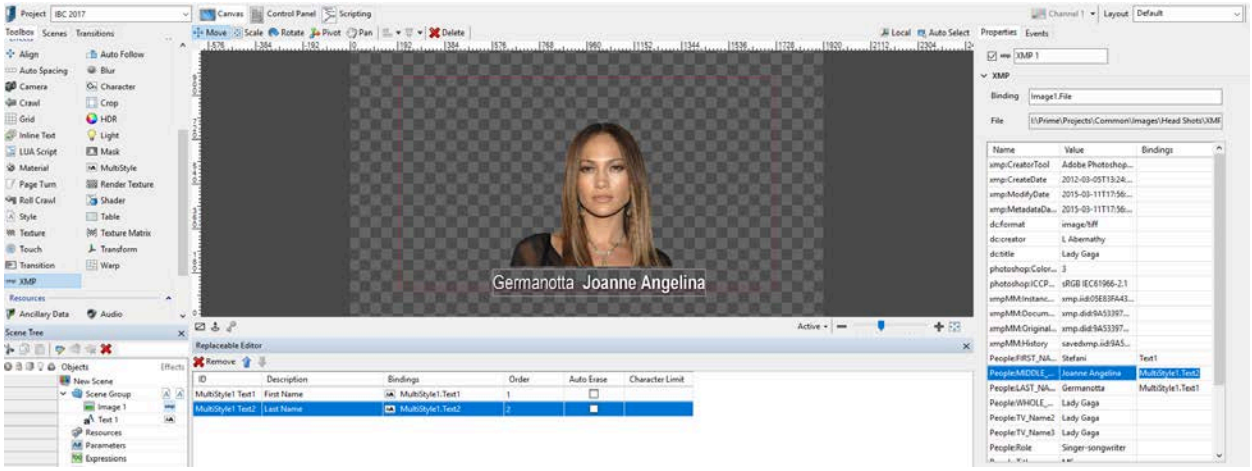
The Multi Style Text objects function the same way as a single Text object. Each can be bound to any data source like the Data Object or XMP or as a replaceable for automation or Replaceables in LUCI.

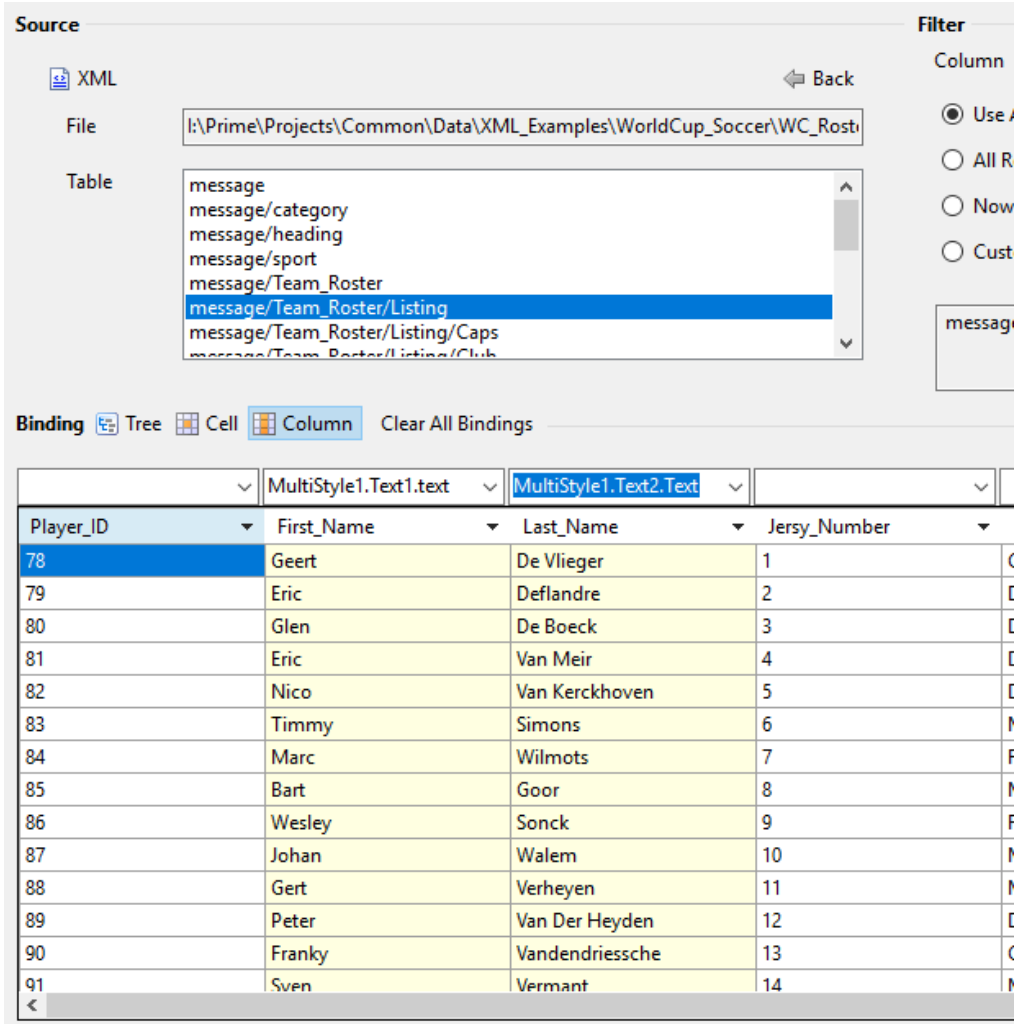
You can drag and drop each into the Replaceables for instance. Drag the Text 1 label from the Multi Select effect into the Replaceables window to expose this object to Automation.



Binding with XMP:

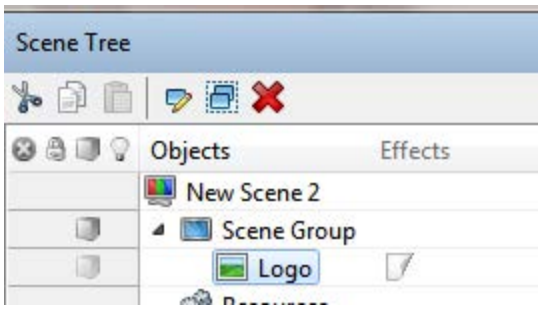
Binding with the Data Object





Page Turn

The page turn effect can be applied to any object.



Transform

Position

Surface

Size

Page Turn Properties

Angle

Inner Radius

Diameter of the roll (at the start of the roll)

Outer Radius

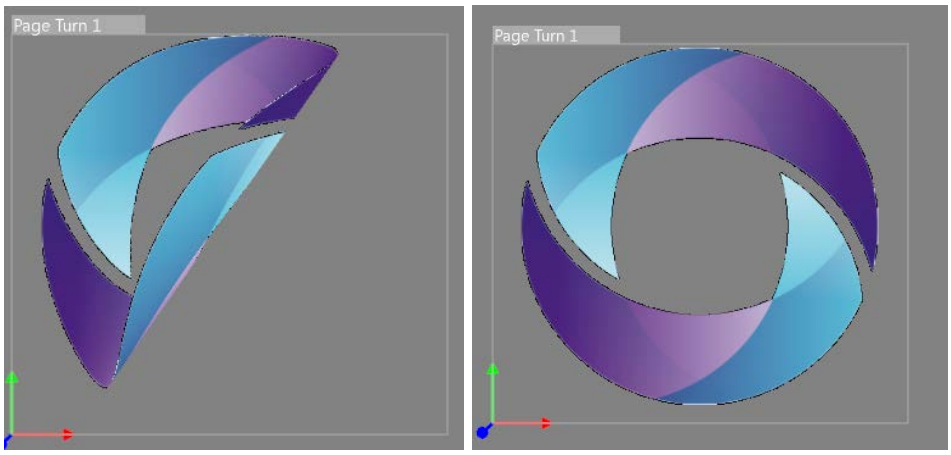
Defines how tight the roll is. With a higher value (greater then Inner Radius) there will more space between the layers of the roll.

Tessellation

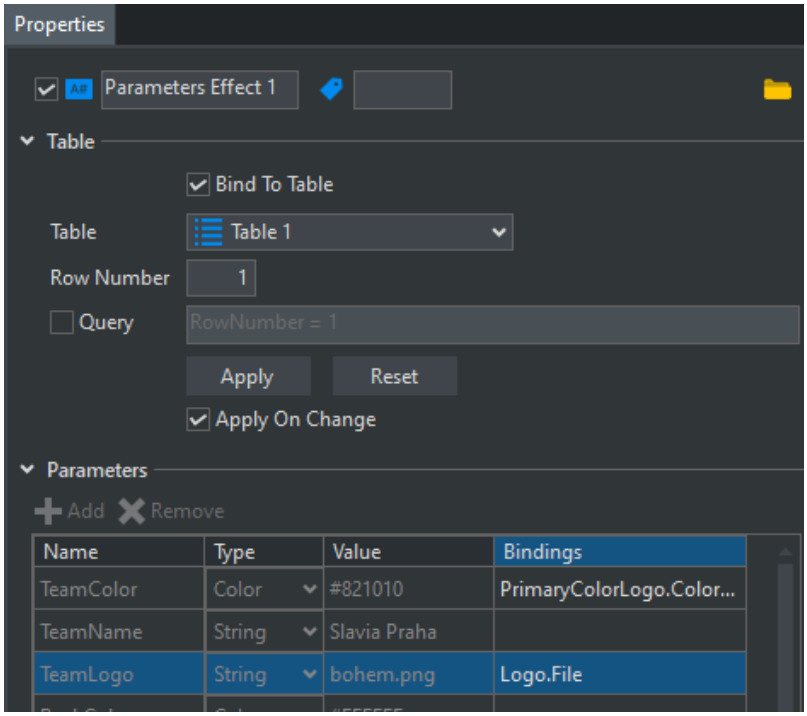
Number of points per width and/or height.

Factor

Value from 0 to 1 define roll process



Parameters Effect

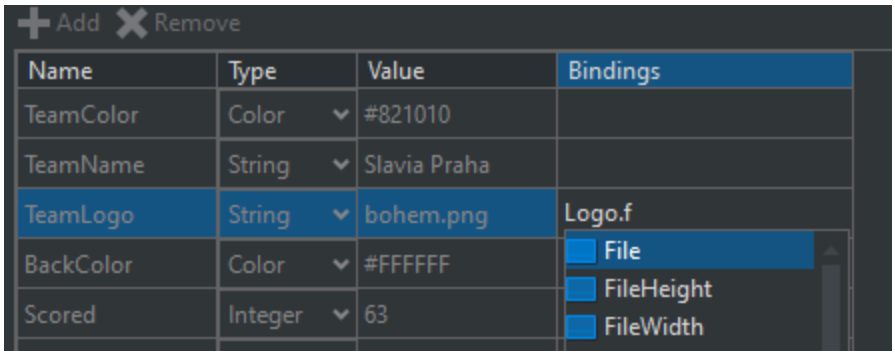


The parameters effect is intended to be used in parallel with the table resource. Best practice is to apply the parameters effect at the group level, where a group is duplicated. For example if you have a table of statics information and have designed your template with multiple rows that are individually grouped. Apply parameters effect to Row 1 Group, and the copy/paste for additional iterations, Row 2 Group, Row 3 Group ect…

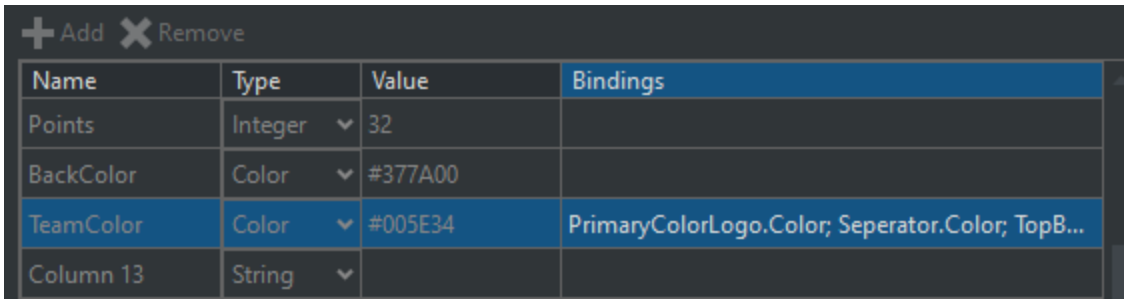
Parameters Properties

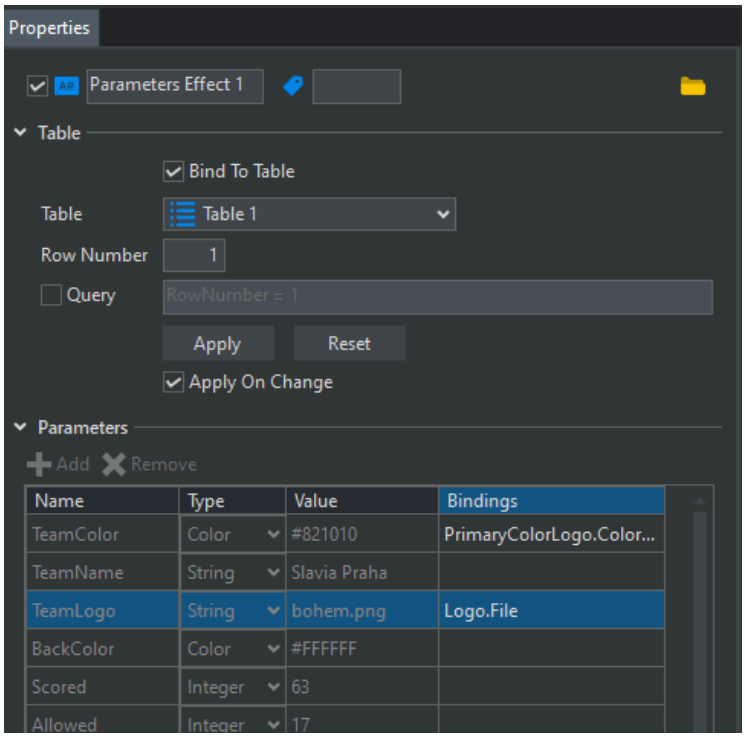
- Parameters Effect name: updatable alphanumeric text field
- Table
    - Bind to table: Drop down will display table resource available in scene
    - Row Number: Will display data from selected row number in table
    - Query: Custom Query for selecting data
        - Apply: Select to evaluate query
        - Reset: Column values will rest to default values
        - Apply on change: Enabled by default
- Parameters
    - Toolbar
        - Add & Remove
            - Only available if Bind to table is deselected
            - If Bind to table is selected these controls are grayed out and not active

- Bindings: Bind any object properties to a parameter



*use semicolon between objects if binding to more than one object





Photoshop Import

Photoshop Import feature for ChyronHego Prime

The PSD effect allows the user to import photoshop files (.psd) into prime. Photoshop layers are imported into PRIME as individual PRIME scene objects. The PSD effect can only be applied to a PRIME “Group” object. All PSD layers are imported into this PRIME “Group” object and can then be treated as native PRIME objects.

Basic usage - Add PSD effect on a group object. Select a psd file in the file box and press the ‘Import button’. Import button acts as if checkboxes ‘Reset Layer Position on Update’ and ‘Clear Group Before Update’ were checked. It imports individual layers from PSD file into PRIME.

Checkboxes:

- Reset Layer Position on Update - resets coordinates of layers on Canvas based on the PSD file.
- Clear Group Before Update - removes all objects from the group with the selected PSD effect.
- Add Crop Effect - adds crop effect to the group.

Update button usage - using the update button will not render images that were previously rendered, thus it can import the psd file quicker - this only works if you're using the same psd file multiple times. The update button will also import any new changes from the psd file.. This can be done using Import button as well, but that will automatically reset the layer coordinates and re-render all layers.

Text drop-down menu usage - if the psd file contains text layers, the drop down menu contains three ways of how to deal with text:

1. Image Only - the text layer will be imported as an image.
2. Text Only - the text layer will be imported as a text object.
3. Text With Disabled Images - the text layer will be imported as a text object and it will also be rendered as an image. The image will be disabled.

When using an option where a text object is created, the basic text information from the PSD file will be transferred to PRIME if found, including: the text value, font name, font weight, font size, font color, kerning, alignment and whether the text is all caps. The positioning of the text can be a little off due to differences between PRIME and Adobe Photoshop.

PSD effect properties

File - Image browser same as in Image Object allows you to either select a file or import it into project images folder.

Currently supported PSD elements:
PSD effect is able to import psd files that use 8 bit depth color mode and Rle image compression.

PSD effect supports importing layers, masks on layers, groups, masks on groups. Supported attributes are opacity, open/closed folders, visible/invisible layers.
Text supports both basic dropped shadow and outline PSD effects. Image supports only basic dropped shadow PSD effect.
To get the best results, it is recommended to apply effects and clipping masks in Photoshop before importing.

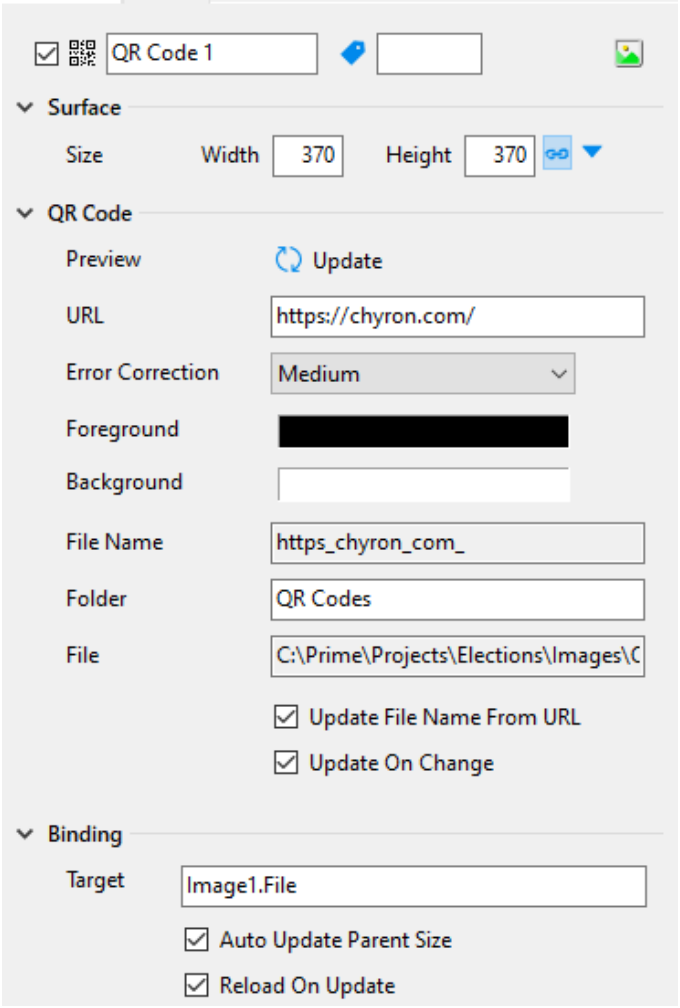
QR Code

The QR code effect allows users to assign QR properties to specific objects like Images.

Overview

QR Code effect allows users to create a QR code from URL or plain text. Once it's created, they can bind it to an image, or a texture of a graphic object.

QR Code properties controls

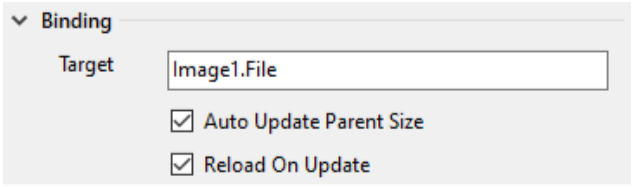


- **Size:** QR Code size can be adjusted in the Surface section of the property editor.
- **Update** (Button): Updates QR Code manually.
- **URL** (TextBox): Contains a link to the webpage QR Code represents.
- **Error Correction** (ComboBox): QR Code has error correction capability to restore data if the code is dirty or damaged. Four error correction levels are available for users to choose according to the operating environment:
    - Low
    - Medium
    - Quartile
    - High

  Raising this level improves error correction capability but also increases the amount of data QR Code size.
- **Foreground and Background** (ColorPickers): Colors can be adjusted in classic Prime Color Pickers.
- **File Name** (TextBox): By default generated from URL, but custom name can be used if Update File Name from URL is unchecked.
- **Folder** (TextBox): allows users to change the name of the folder which is stored in the project's Images folder.
- **File** (TextBox): Non Editable, shows a path to the QR Code file.
- **Update File Name from URL** (CheckBox): controls if File Name is generated automatically from URL

- **Update on Change** (CheckBox): Determines if QR Code should be updated on any given property change or if it has to be updated manually by pressing the Update button.

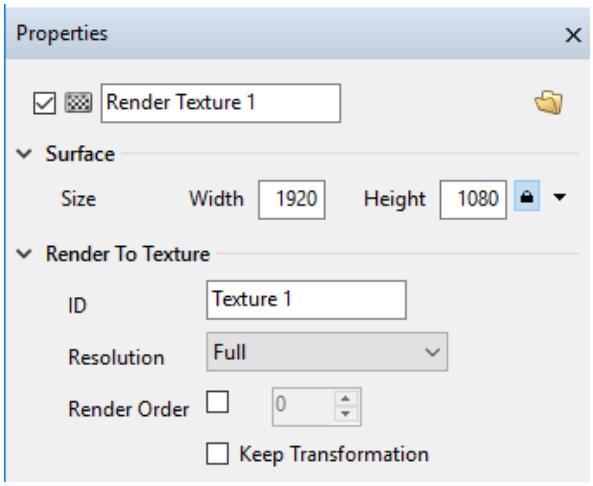
Binding controls



- **Target** (TextBox): contains a path to the property which should be overridden by QR Code.
- **Auto Update Parent Size** (CheckBox): Controls if the target object's size should be inherited from QR Code.
- **Reload on update** (CheckBox): Determines if target object should be reloaded when QR Code is updated.

All QR code effect properties are specific to industry standard QR codes.

Render to Texture



ID- User friendly name to refer to this group. This Id will show up in the images browser as well. (The texture is also accessible under file name --render: *ID* -- or --render: *channel I ID* --)

Resolution-Texture resolution. Can be used to render smaller texture when full size would be too large.
Having smaller texture can have positive effect on performance.
The resolution of one RTT name should be consistent among all RTT effects in the scene.

- **Full** - Texture resolution and antialiasing is the same as used in the main frame buffer.

- **Half** - Texture resolution is 1/2 of both width and height of the main frame buffer resolution.
- **Quarter** - Texture resolution is 1/4 of both width and height of the main frame buffer resolution.
  Antialiasing is disabled.

Render Order- Render order of this texture among other RTTs.
Lower number is rendered first.
When undefined then the implicit order is given by depth of this effect in the scene.
Do not mix explicit ordering with implicit ones at the ordering relationship is not obvious.

Keep Transformation- By default (**Off**) the transformation applied from scene root to this object is reset.
It mimics the rendering to empty frame buffer.
Set to **On** to keep position/rotation/scale transformations applied to all parent nodes.

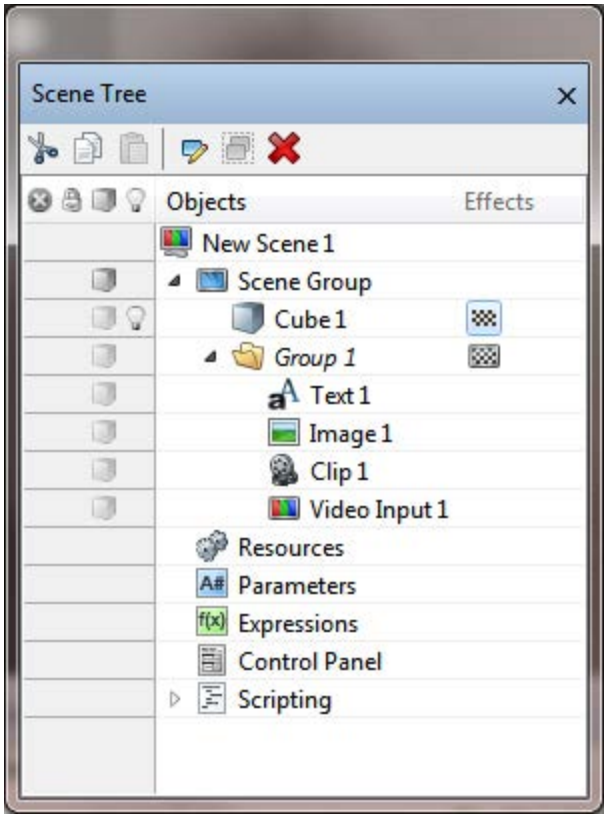
The “Render to texture” effect is a special effect that can be applied as a surface to objects.

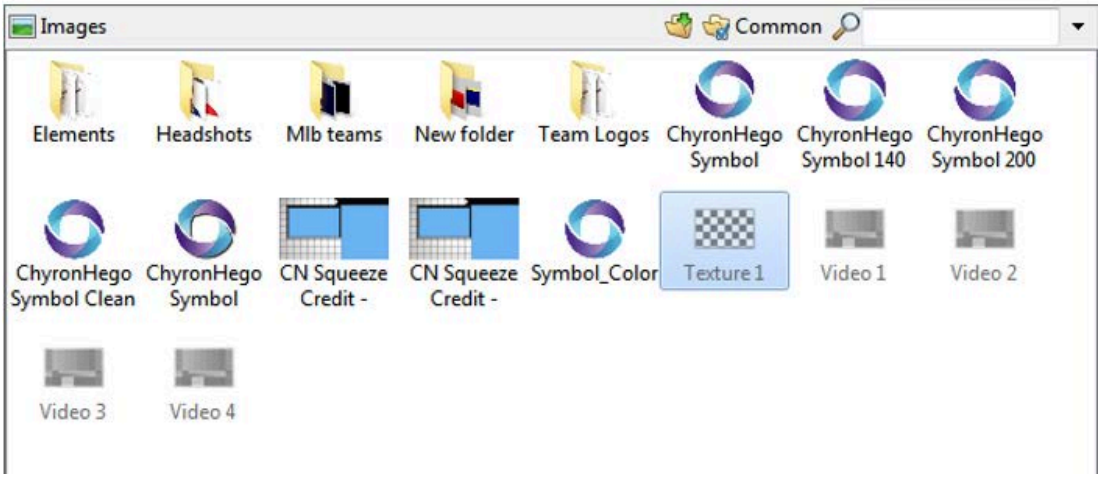
Typically, you will apply a “Render to Texture” to a group of objects. Once a “Render to Texture effect is applied to a group the group is no longer part of the scene tree although it appears to be. This “Render to Texture” group will then be available in the “Images” folder and be used as a Material on another object.

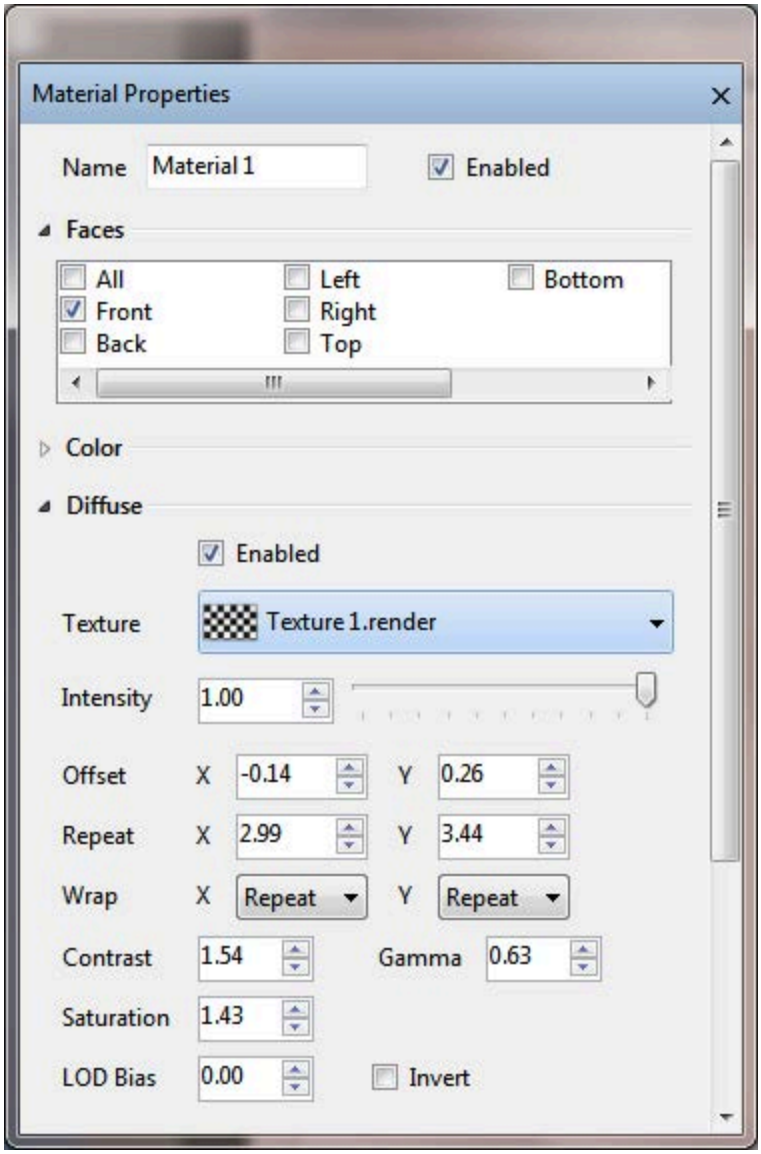
In this scene tree example, the “Render to texture” effect is applied to Group 1.

The cube has a “Material” effect applied to it. The Material effect is the “Render to texture” and is named “Texture 1 and appears in the image browser.

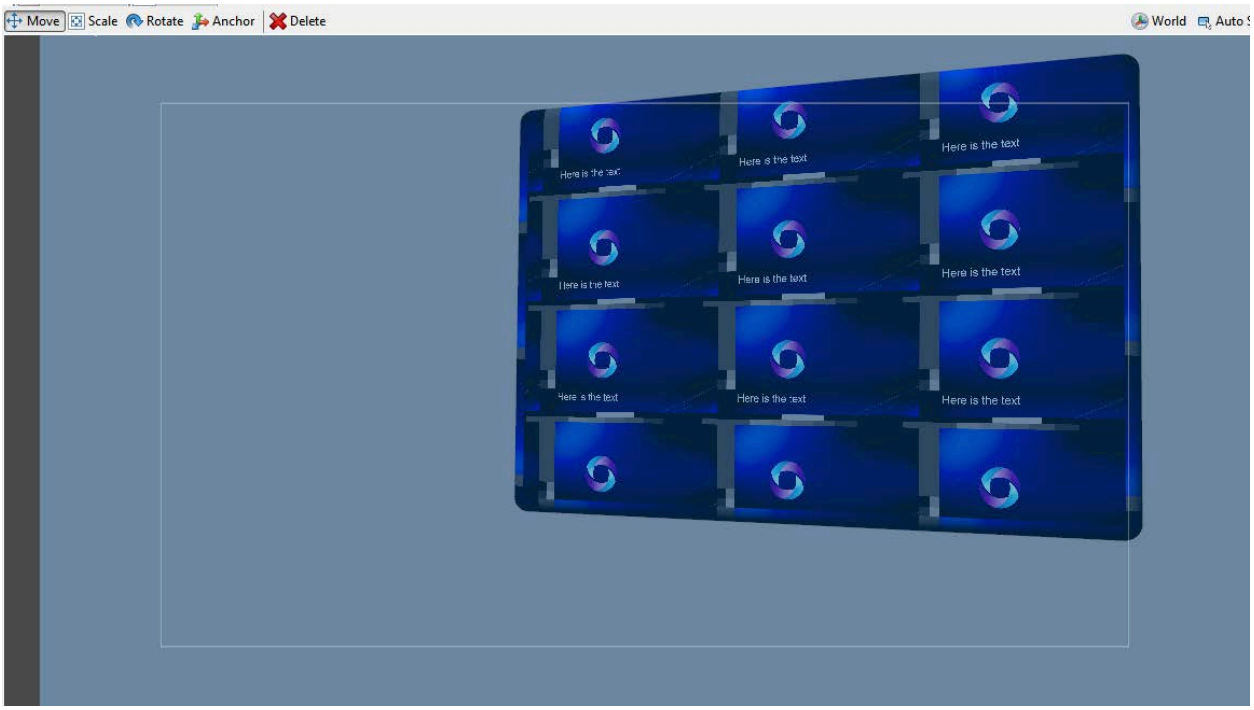
Note: The Group Name of the render to texture Group will be italicized to indicate this group is a special “Render to Texture” group.




Images
Common
Elements
Headshots
Mlb teams
New folder
Team Logos
ChyronHego Symbol
ChyronHego Symbol 140
ChyronHego Symbol 200
ChyronHego Symbol Clean
ChyronHego Symbol
CN Squeeze Credit -
CN Squeeze Credit -
Symbol_Color
Texture 1
Video 1
Video 2
Video 3
Video 4



Example output:



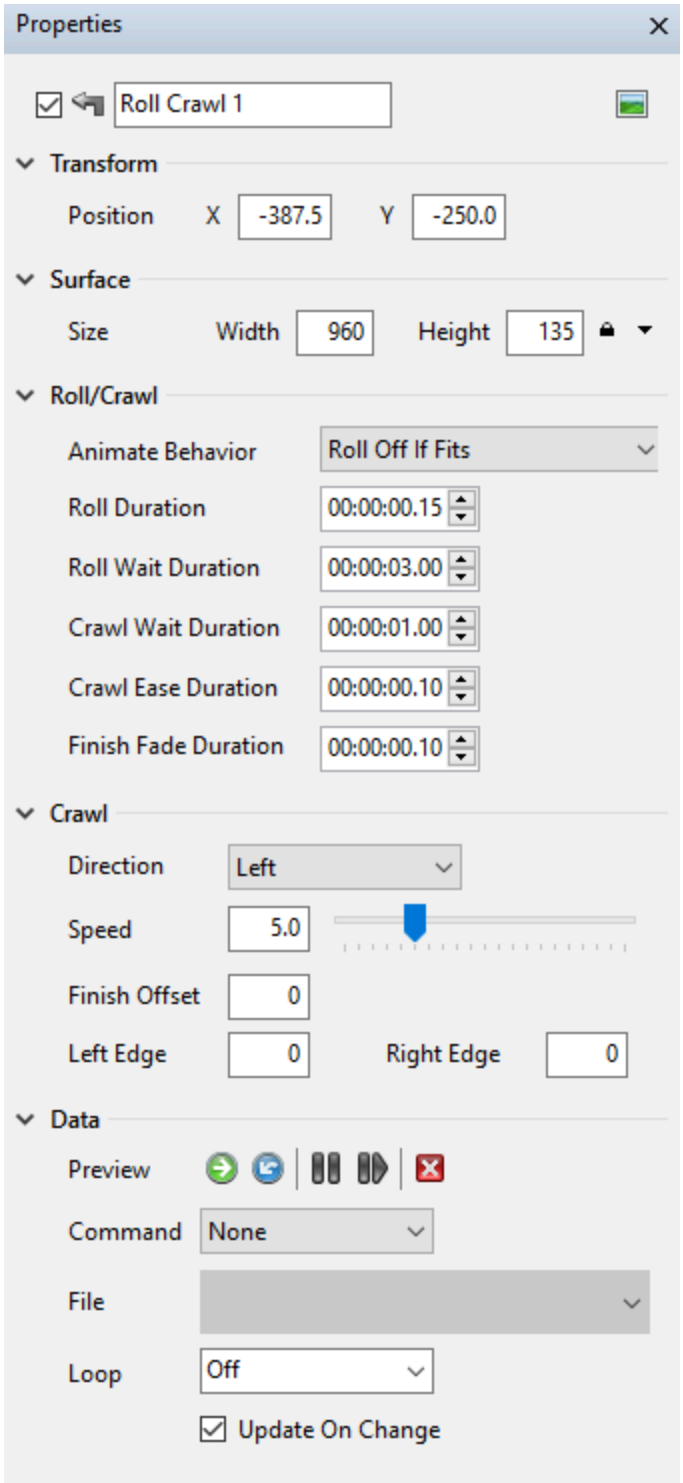
Roll

Refer to the “Crawl Effect”. A Roll is a vertical crawl. *Crawl_Effect*

Roll Crawl

The Roll Crawl effect animates an object using both the Roll and Crawl effect combined. The Roll effect is animated first followed by the crawl effect.

Ex: Text can roll up from off screen to its set position and then begin to crawl.



- **Animate behavior** –
    - **Always Crawl off**-The crawl effect will always execute
    - **Roll Off if it Fits**: Only execute the crawl effect if the text does not fit into the bounding box otherwise roll off

- **Roll Duration** – The duration speed on to off and off to on
- **Roll Wait Duration** – If the off effect is a roll (Roll off only if it fits mode) Wait time before next roll off begins. The Time the object is static on air.
- **Crawl Wait Duration** – – If the off effect is a crawl (Based on animation behavior) Wait time before next crawl off begins. The Time the object is static on air
- **Crawl Ease Duration**- Ease in crawl duration
- **Finish Fade Duration** –If the finish offset is greater than zero the crawl will fade offset number of pixels from the bounding box edge.

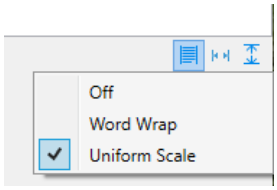
  (For other property definitions see the "Crawl" effect section)

Scale to fit options

Text Uniform Scale

With the introduction of uniform scale we changed the word wrap options on Text Object's property control and extended it with the option to uniformly scale in both horizontal and vertical directions.

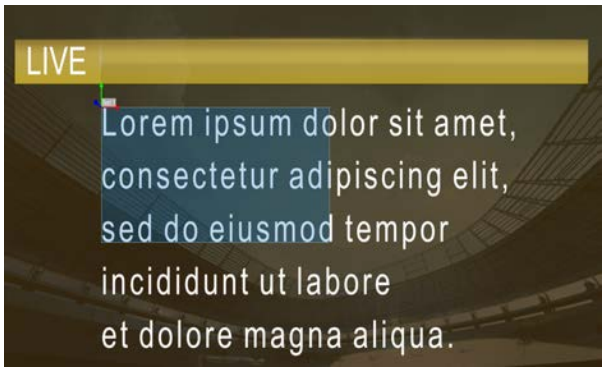
Text Uniform Scale Properties Control



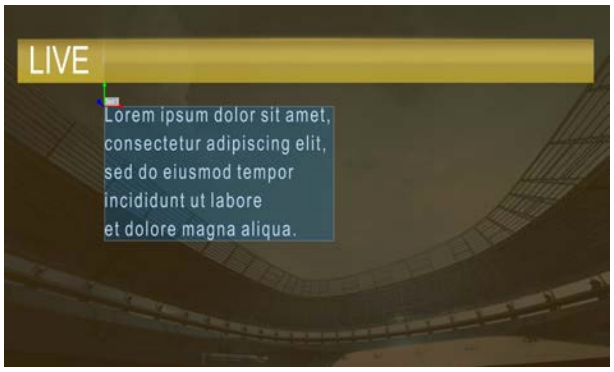
- **Off** - select this option to turn off any text word wrapping or scaling based on text bounding box size
- **Word Wrap** - breaks text line into two if it is wider than text bounding box
- **Uniform Scale** - when this option is selected text is scaled horizontally and vertically to fit into text bounds
    - It also sets vertical alignment to Top if it was set to First
    - Turns off Horizontal and Vertical Scale options if turned on

Example

Text before Uniform Scale is applied



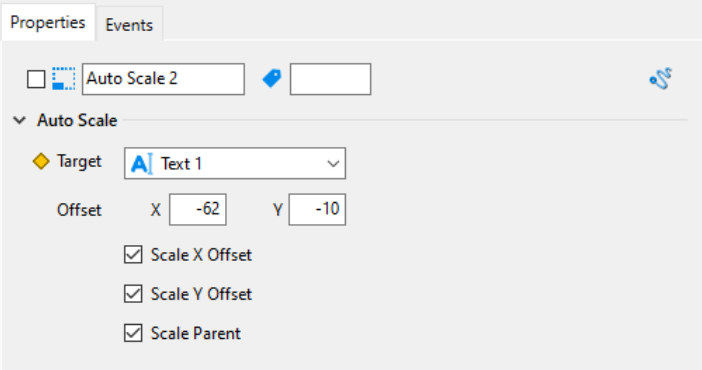
Text after Uniform Scale is applied



Auto Scale

Auto scale effect is a tool that works together with adjacent text objects and allows a scene graphic with auto scale effect applied to target one of the texts and position and scale itself accordingly. This is especially useful when designing bullet graphics.

Auto Scale Properties Control



- **Target** - dropdown that enables users to select from sibling text objects list (text objects in same group as an object auto scale is applied to) and specify target that an object will position and scale according to
    - By default target is first sibling text if it exists

- **Offset** - offsets position of auto scaled object from its target
    - Default s to [-25,-25]

- **Scale X Offset -** if enabled it scales down the Offset X value
    - True by default

- **Scale Y Offset** - if enabled it scales down the Offset Y value
    - True by default

- **Scale Parent** - if unchecked an object with auto scale applied will no longer scale itself according to target
    - Defaults to true

Example

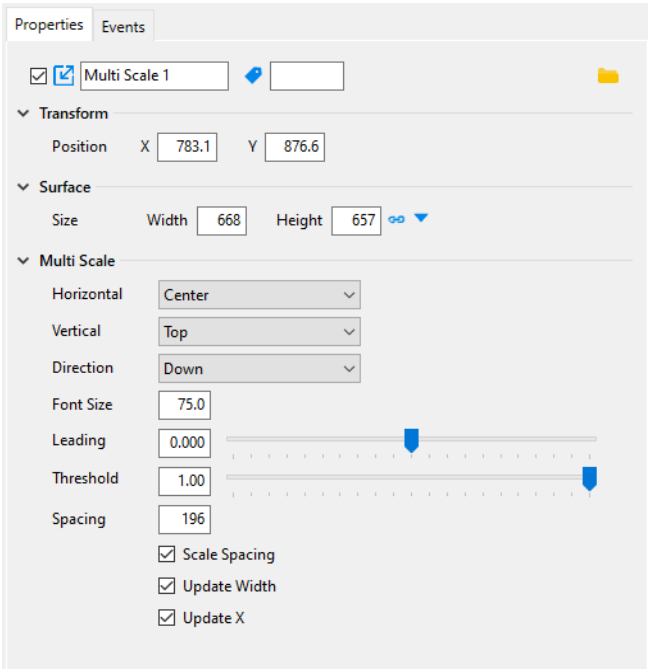
A scene with Text 1 and Bullet 1 objects and no Auto Scale applied

A scene with Text 1 and Bullet 1 objects where Bullet 1 has Auto Scale

Multi Scale

Multi Scale effect was added as an extension tool for Uniform Scale effect and can be applied to group objects. If a group object contains text objects and Multi Scale effect is applied then all text objects in that group have Uniform Scale automatically enabled.

Multi Scale Properties Control



- **Horizontal** - controls horizontal alignment for the whole text group
    - Defaults to Left with other options Center and Right

- **Vertical** - controls vertical alignment for the whole text group
    - Defaults to Top with other options Middle and Bottom

- **Direction** - allows to specify order of text objects in the group
    - Options Down and Up

- **Font Size** - sets Font Size for all text objects in group

- **Leading** - sets Leading on all text objects
    - Default value is 0

- **Threshold** - higher the threshold is set more performance is gained but multi scale loses its precision
    - Text objects are scaled most precisely at value 0
    - Defaults to 1

- **Spacing** - this property adds spacing between each text object in group
    - Defaults to 50

- **Scale Spacing** - if enabled it scales down the Spacing value
    - Defaults to true

- **Update Width** - if enabled it makes sure text objects in group are scaled horizontally according to the width of multi scale effect size
    - Defaults to true

- **Update X** - if enabled text objects are repositioned according to multi scale effect x position changes
    - Defaults to true

Example

Group with 3 text objects without Multi Scale applied

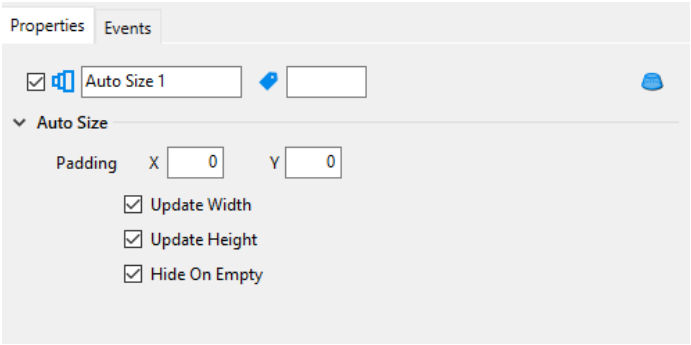
Group after Multi Scale was applied, this example illustrates bigger spacing between text objects and horizontal alignment set to Center

Auto Size

Auto size effect automatically calculates the size and sizes its parent object based on other sibling objects in the parent group. This effect was designed to work in conjunction with other Scale to Fit Options.

Auto Size Properties Control

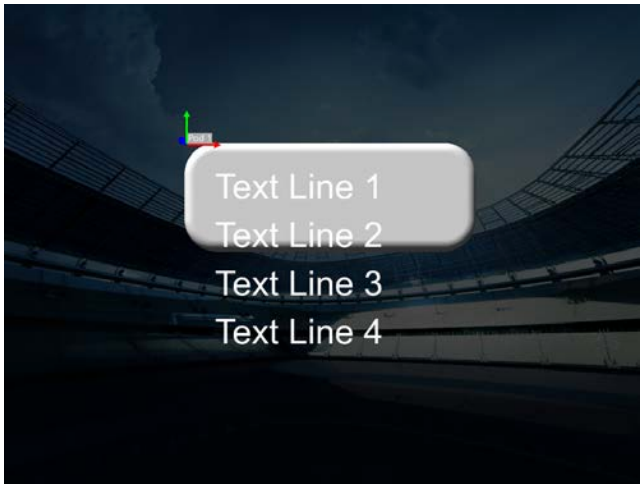
- **Padding** - this value controls the amount that is added to calculated size
    - Defaults to [0,0]



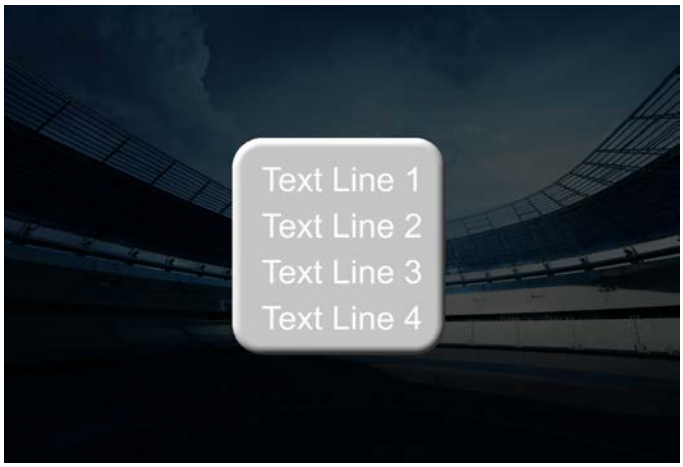
- **Update Width** - if enabled it automatically adjusts the width of auto size parent object according to newly calculated extent of sibling objects
    - Defaults true
- **Update Height** - if enabled it adjusts height of auto size parent object according to group extent
- **Hide On Empty** - hides auto sized object if there is no content inside parent group
    - This can happen e.g. when all objects in group are disabled or there are empty text objects
    - Defaults to true

Example

Multi Scaled group of text objects and Pod object without Auto Size applied



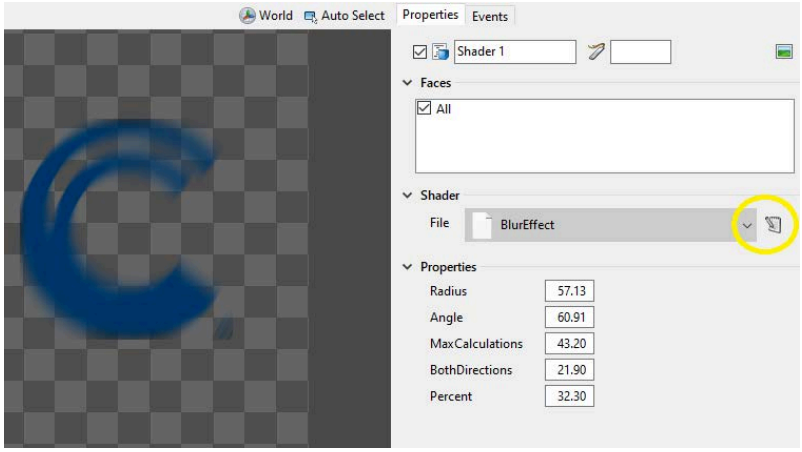
Multi Scaled group of text objects and Pod object that has Auto Size effect applied



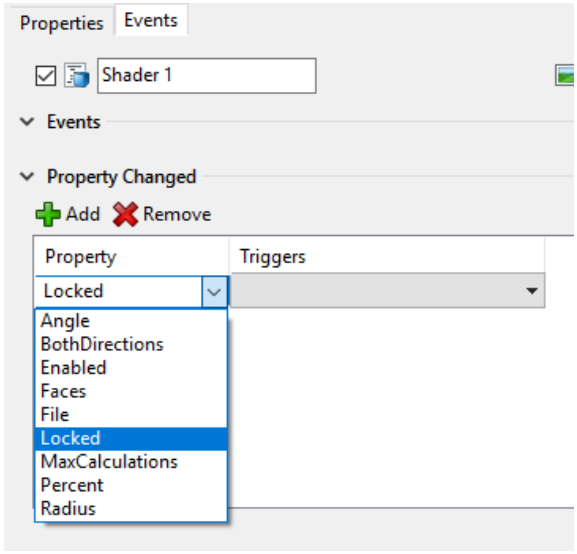
Shader

Shader effects can be added to PRIME objects. They can be loaded and saved out as “. GEF Effect Files”.

The property editor will show properties defined in the Shader file.
All Shader properties are keyframeable.



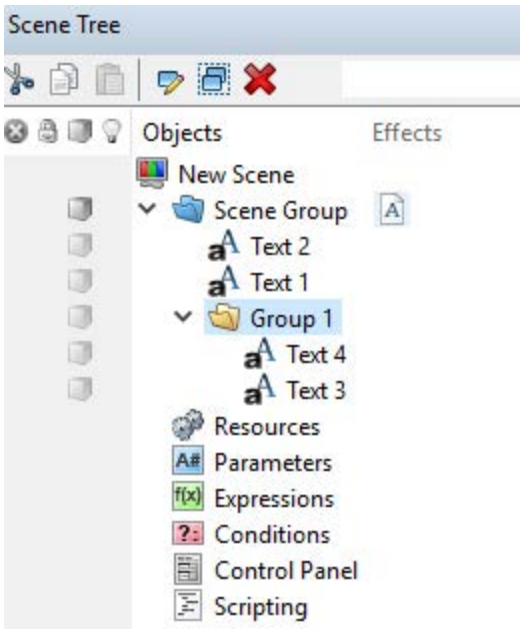
Property Changed Events will be included.



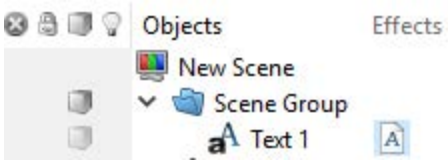
Style

The Style effect allows multiple styles to be used within a single text object. The Style effect can only be applied to a group, including the scene group or any individual text object. You can apply as many Style effects to each.

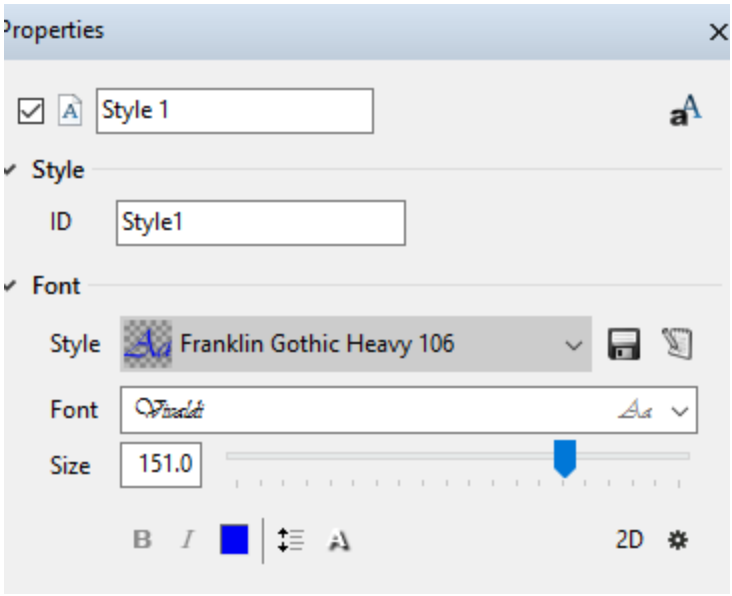
In this example, the style tag will apply to all 4 text objects



In this example the style tag applies ONLY to the Text 1 text object.



Style properties:



Id: This is the name to be used in the text string that will change the inline Style

Example: Text\tStyle 1;Text\t;Text

Results in the following

Font:

Style: This list enumerates all of the Styles available for this project. These are user created style. See the **Text Style Browser** section of the “Text Object”. The Style can be edited and save here.

Style Tag Format

Backslash “t” starts the style tag notation followed by the Style Name ending with a semi-colon:

\tStyle1;

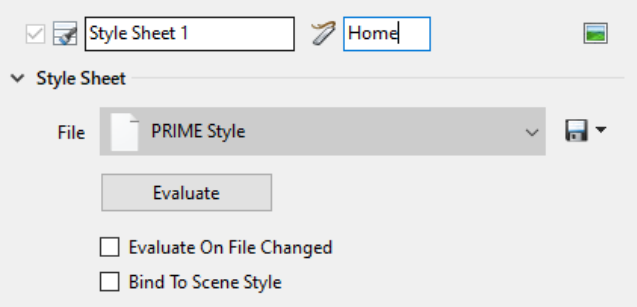
To revert the style back to the default style of the Text object leave the name blank;

\t;

Style Sheets

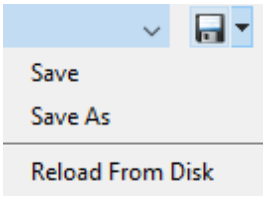
Style Sheet effects are a collection conditional and property statements which are applied to a parent object, in most cases this will be a parent group. When a Style Sheet is evaluated the conditional statements are applied to the parent object and each of its children. Only graphic objects and effects can be evaluated in a Style Sheet. Style Sheets run on when a scene object is updated.

Style Sheet Properties Controls



- **File**: Shows the last loaded or saved Style Sheet file (.pse file)
    - **Asset Browser Control**: load Style Sheet files into the existing Style Sheet effect.

- **Save** (Button): Saves a Style Sheet to existing or new file. By default, Style Sheets will be saved to the **Styles** folder in the project directory. The dropdown consists of the following options:
    - Save
    - Save As
    - Reload From Disk: Remove changes and reloads the file.

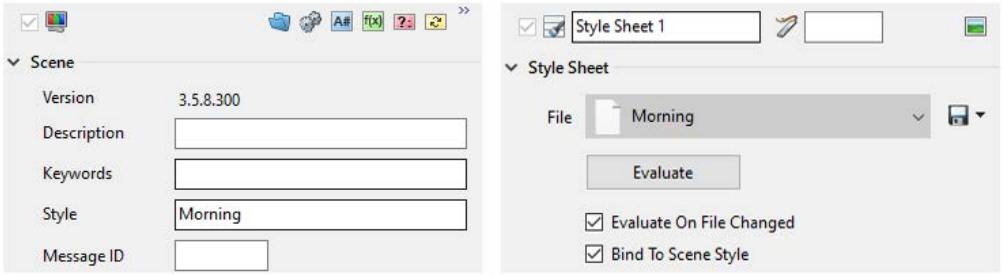


- **Evaluate**: Evaluates Style Sheet on the active Scene
    - Same functionality as the Evaluate button in the Logic window

- **Evaluate On File Changed**: Automatically applies the Style Sheet to the scene when the .pse file is changed
    - This will evaluate the Style Sheet after the scene is loaded during playback.

- **Bind to Scene Style** : Binds the Style Sheet File property to scene's Style property
    - The binding is internal and is not shown in the scene's **Style Changed Event**.
    - If the scene's **Style** property is changed, the **Style Sheet** will load the .pse file with the same name as scene **Style** property value.
    - See **Style** and **Style Changed Event** for more.

In the example below, a morning news broadcast uses the scene Style “Morning”. Because **Bind To Scene Style** is checked, the Style Sheet automatically loads “Morning.pse”. With **Evaluate On File Changed** checked, “Morning.pse” will be automatically evaluated.

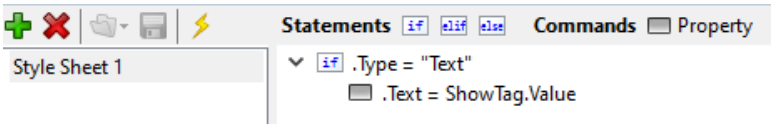


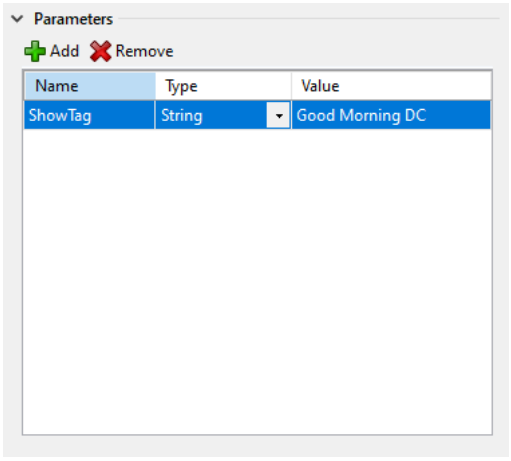
Note: **Evaluate On File Changed** and **Bind To Scene Style** are saved to the **Style Sheet** object and not to the .pse file. For instance, if “Morning.pse” was saved with **Bind To Scene Style** checked and “Morning.pse” were to be loaded with **Bind To Scene Style** unchecked, **Bind To Scene Style** would remain unchecked.

Style Sheet Parameters

Parameters are variables that can be used to store Style information like Color, string, Int, etc. Parameters can be accessed in conditional and property statements.

Notice the “ShowTag” parameter is being accessed in the property statement below.

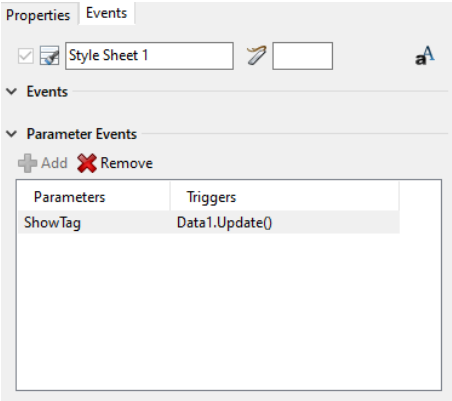




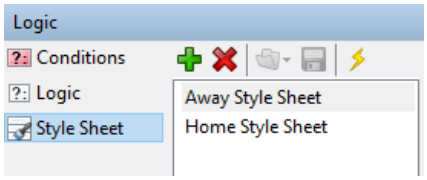
Style Sheet Events

Parameters Change

Add Triggers to listen to Parameter Change Event for particular Style Sheet’s parameter. In this case the Data Object will update when the “ShowTag” value parameter changes.



Style Sheet Statement Editor



Style Sheets can be edited, added and removed using Logic pane's Style Sheet tab or in the Effects toolbox.

- The Style Sheet statement editor supports conditional (If Else) as well as property statements
    - Triggering actions, conditions and other methods are prohibited in Style Sheets

- Style Sheets can be created using With statements:
    - With statements begin with Dot "." (ex. ".PositionX = 30) and attempt to evaluate if an object shares the matching property, in this case PositionX.

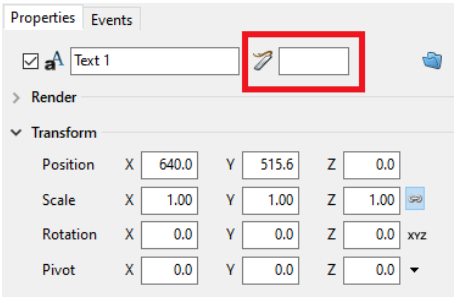
    - With statements are created by dragging keyframable properties from an object's Properties Pane to Style Sheet Statement Editor.

    - With statements can also be typed but note that AutoComplete is not available in the Style Sheet Statement Editor.

- The **Type** property can be evaluated by the type of object in the statement i.e. .Type = "Text". These can be constructed by dragging the object from Graphics Toolbox to the Style Sheet Statement Editor.

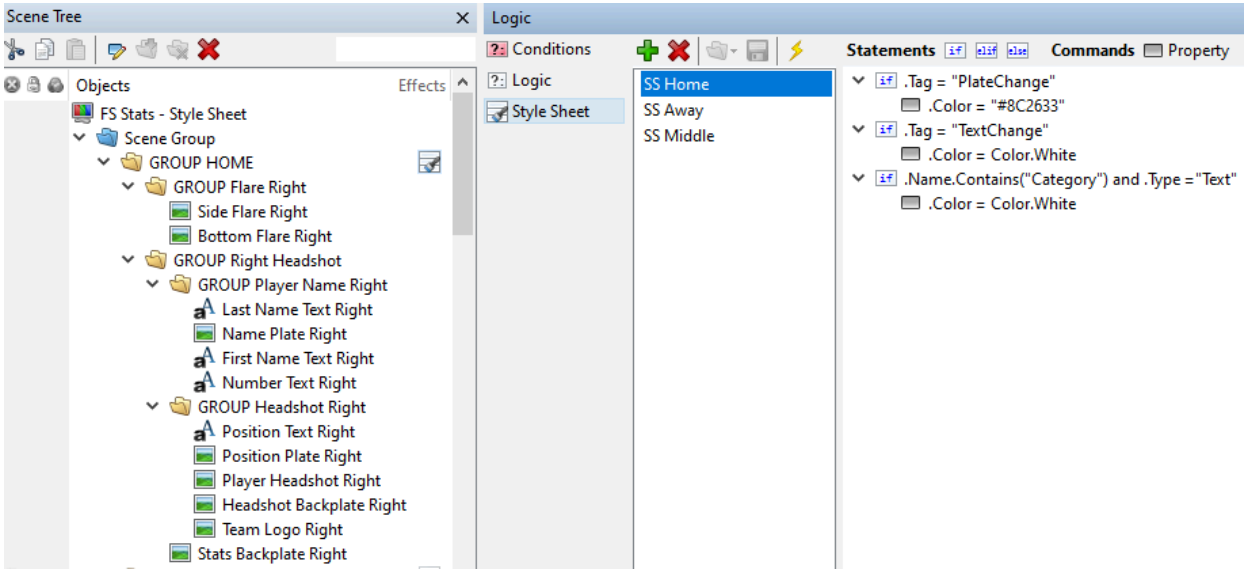
- The **Name** property allow users to evaluate objects based its name. These can be dragged from the Scene Tree

- The **Tag** property has been introduced to each scene object and can be changed in the Properties tab. Tags serve as an alternative to the **Type** and **Name** properties if users wish identify objects in batches. Multiple objects can share the same tag.

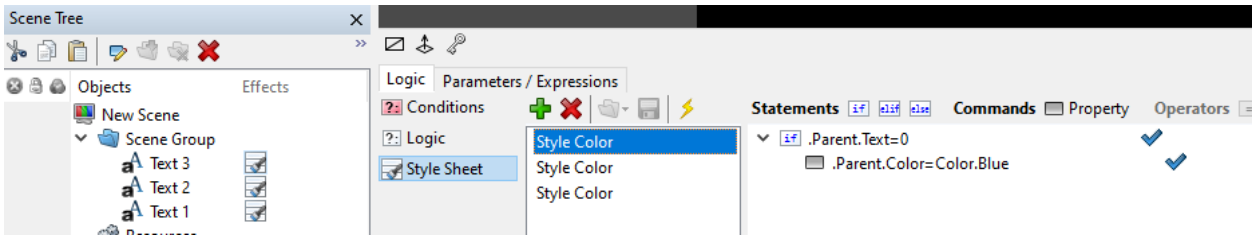


The following example shows a Style Sheet effect applied to a parent object, "GROUP HOME". When the Style Sheet is evaluated it will evaluate over the parent object and all of its child

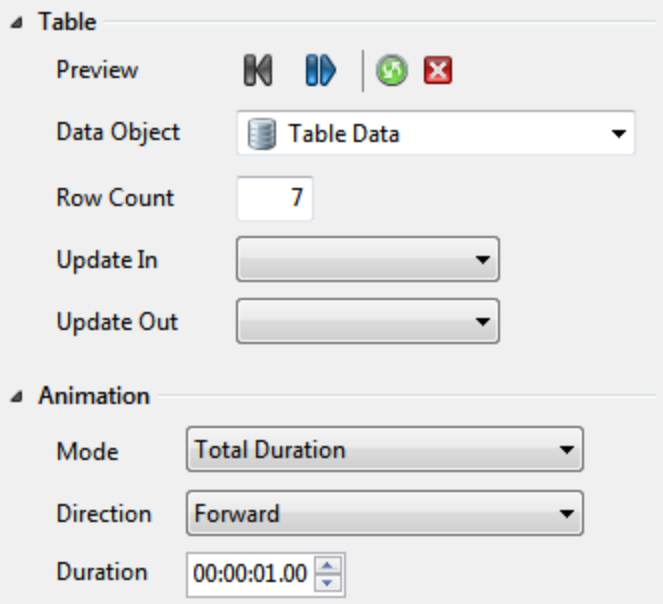
nodes. The property statements will be applied to the corresponding child objects in the conditional statement.



Similar to .Tag using .Parent is another method of applying the same statement to multiple objects. Using .Parent avoids addressing the object by it's name as the statement evaluates against the Parent Object that the Style Sheet is applied to.



Table



The Table effect can be used to duplicate a graphic multiple times with the purpose of binding multiple rows of a data source to the duplicated graphics.

By default, the duplicated graphics will all appear in the same location. An Auto Spacing effect, or some Lua effect with positioning logic must be placed higher in the scene tree in order to position the duplicated graphics.

Row data is populated in the duplicated graphics by using the navigation commands in the Data object (Move Next, Update). If the number of rows available in the Data object is more than the Row Count property, the additional data can replace the current data in the duplicated graphics by executing a Move Next on the Data object.

Data Object – a Data object in Columns mode that contains the rows of data to duplicate

Row Count – the maximum number of graphics to duplicate.

Update In / Update Out – animations to play when new data is displayed or hidden

Animation Mode – controls animation stagger when rows are animated

Disabled – no stagger: all rows will animate at the same time

Total Duration – rows stagger animation using the Duration property as the total duration from first to last

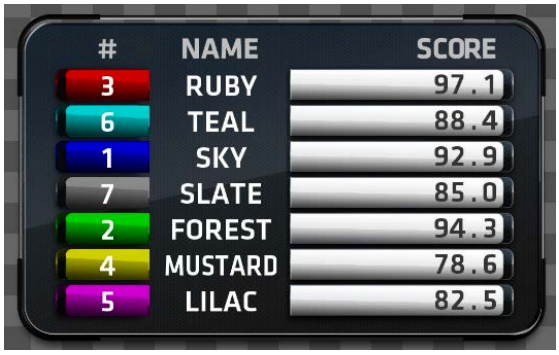
Duration Between Rows - rows stagger animation using the Duration property as the duration between individual rows

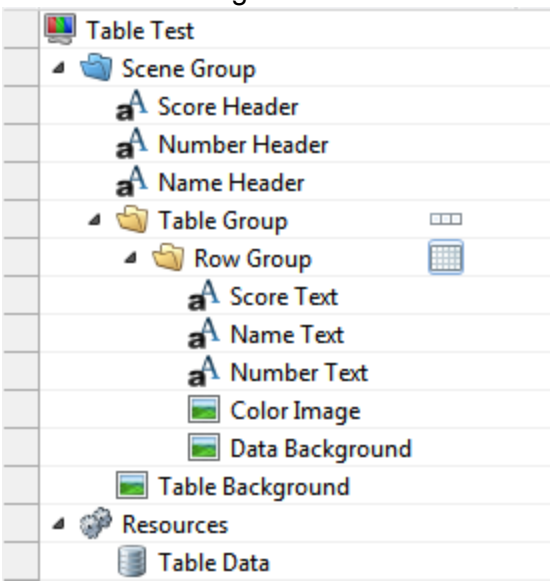
Direction – the direction of the animation stagger

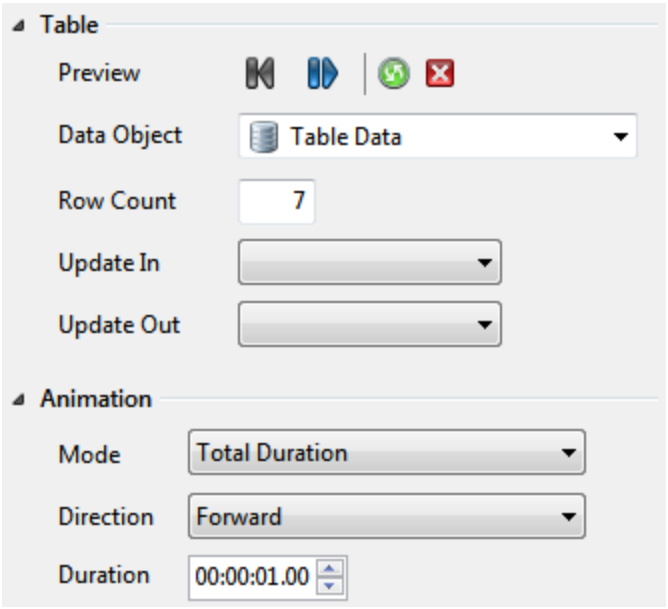
Duration – the duration of the animation stagger as specified in the Animation Mode property

Table Effect Example

In the example to the right, a Table effect is placed on a Group that contains 3 Text objects and 2 background Images. This Group is then duplicated 7 times as specified by the Row Count property on the Table effect. The duplicated graphics are then spaced out evenly using an Auto Spacing effect. Each individual graphic is populated with its respective row from the Data object as specified in the column binding.







NumberText.Text	NameText.Text	ColorImage.Color	ScoreText.Text
Number	Name	Color	Score
3	Ruby	#FF0000	97.1
6	Teal	#00FFFF	88.4
1	Sky	#0000FF	92.9
7	Slate	#AAAAAA	85.0
2	Forest	#00FF00	94.3
4	Mustard	#FFFF00	78.6
5	Lilac	#FF00FF	82.5

Texture

Textures can be applied to various scene objects. Textures use the “Images” folder.

Faces

Only one face per texture

Texture Properties

Mapping: Texture wrap in X and Y dimensions.
Method of texture application outside it's dimension.

Wrap:

Clamp - Edge pixels are repeated.
Repeat - The whole texture is repeated.

Filter: Texture filtering mode.

Point - Pixel sampling, no interpolation.
Linear - Linear interpolation.

Mipmap - TriLinear interpolation of mipmap levels during minification. Linear interpolation is used for magnification.
Mipmap Anisotropic - MIPMAP with enabled anisotropic filtering.
♥This mode helps when texture get blurred because of viewing angle or non-uniform scale.

LOD Bios

Specifies a value that is to be added to the level-of-detail parameter for the texture sampling.
This parameter has effect only for mipmap texture filtering.
Value less than zero makes the image blurry. Value greater than zero makes the image sharper.

Unit

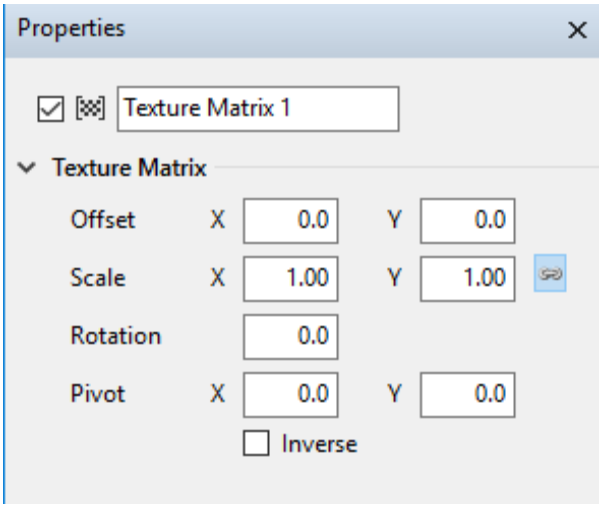
Texture unit.

File

File name which contains an image for texture.

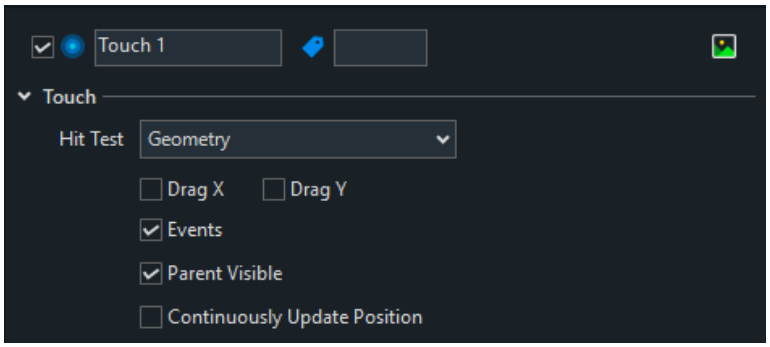
Texture Matrix

Texture Matrix Properties



Offset: Offset defined in normalized coordinates.
Scale Factor: Same as Pivot
Rotation: Rotation in degrees. See also Pivot attribute.
Pivot: Rotation and scale pivot.
Inverse: Setting true makes the transformation inverse.
The inverted transformation makes it easier to understand and is similar to node transformation

Touch



Properties

Hit Test:

- **Geometry:** Raise the touch event only when the object itself is touched.
- **Bounding Box:** Raise the touch event when touch is within the bounding box of the object.

Drag X: Allows the object to be dragged on X axis

Drag Y: Allows the object to be dragged on Y axis

Events

- **Touch Down:** Triggered on touch down
- **Touch Up:** Triggered on touch release (tap or slide)

- **Touch Move:** Triggers during drag
- **Tap:** Triggers on touch up (not slide).
    - If the touch point is more than 3 pixels, then prime will assume this is a slide, not just a tap.
    - Tap threshold can be modified through Logic condition. For example Touch1.TapThreshold = 5

Parent Visible: If disabled, parent object is not drawn but still available for picking

Continuously Update Position: Enable real-time position updates while dragging

Touch Setup:

Use Windows Control Panel “Tablet PC Settings” found in the “Hardware and Sound” section to configure your touch screen device.

Transform

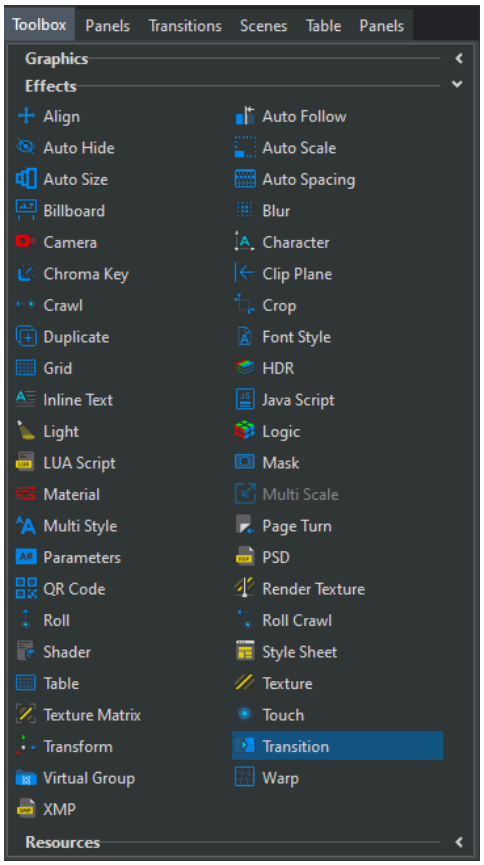
The Transform object allows you to add an additional transform to an object. This allows you to separate the transform of your object from your animations. Using the Transform effect reduces the number of groups you'll require to achieve the same result.

Example: Add an image to a scene and position it. Add a transform effect to the image. Create an Action that animates the transition effect Position X. Now move the Position X of the image somewhere else in the scene and play the action again. The animation is the same and is relative to the position of the image. Being relative to the object it is applied to is the importance of a separate Transform effect

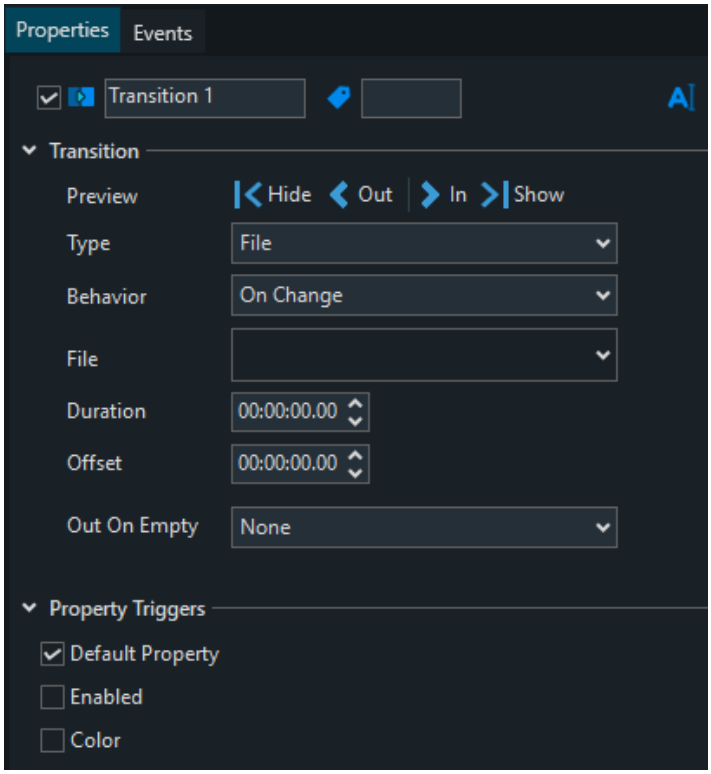
Update Parent Bounds setting: Disabling this check box, prevents the parent object graphic bounds from applying any transform effect offsets. This behavior can be applied when Auto Follow Source mode and Transform effect are used together, and you want to avoid an auto follow update from effecting the Transform effect animation.

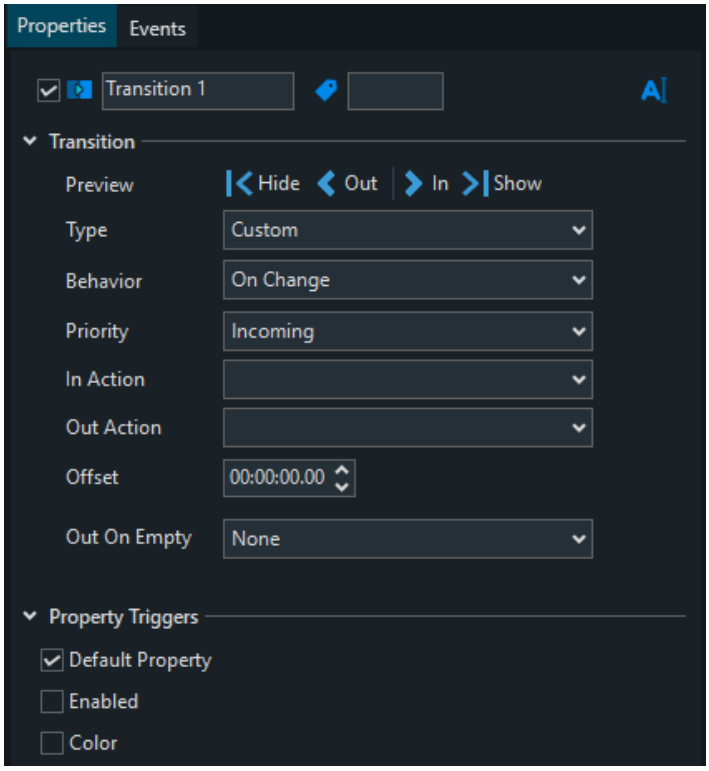
Transition

Transition effects can be used to animate graphics from one value to another. By default, the transition will occur when any child graphic default property changes (such as the Text property of a Text object, or the File property of an Image or Clip object), but can also be configured to trigger when child graphics are Enabled or Disabled, or when their Color changes.



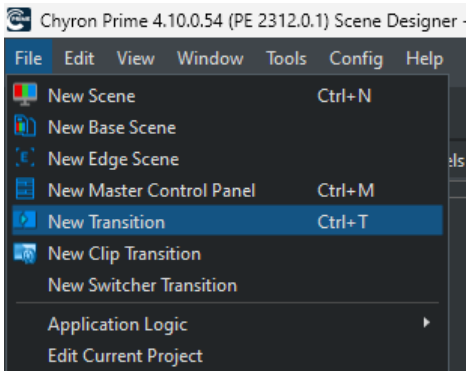
There are two types of transition that can be applied to a group or Object: **File** or **Custom**.



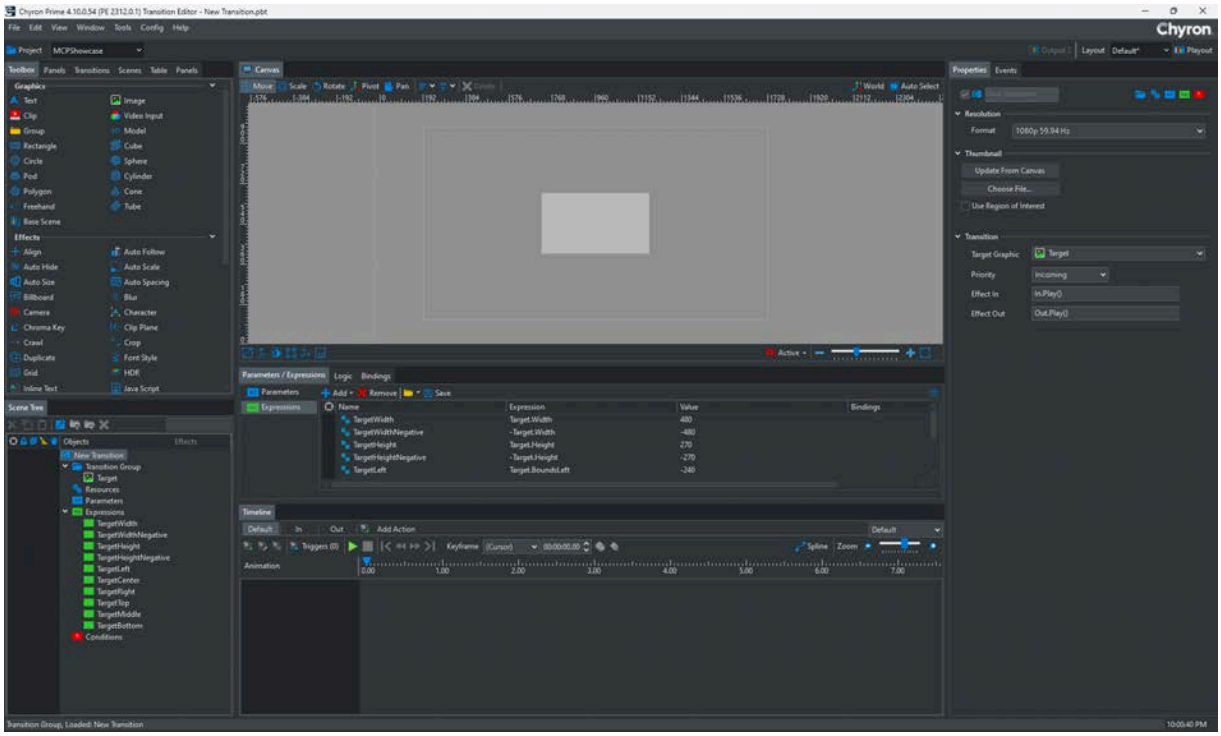


File Based Transitions

To create a new **File Based Transition**:



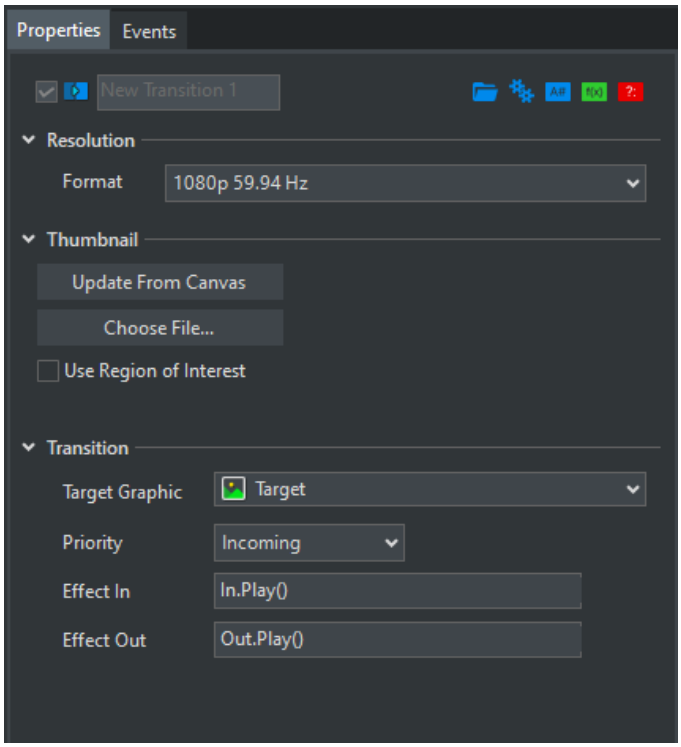
This will open the Transition Editor:



From this UI you can create transition effects. This UI begins with In and Out actions.

There is a surrogate scene tree object named “Target”. The target will be replaced by the actual scene object where the transition is applied.

Transition Properties:

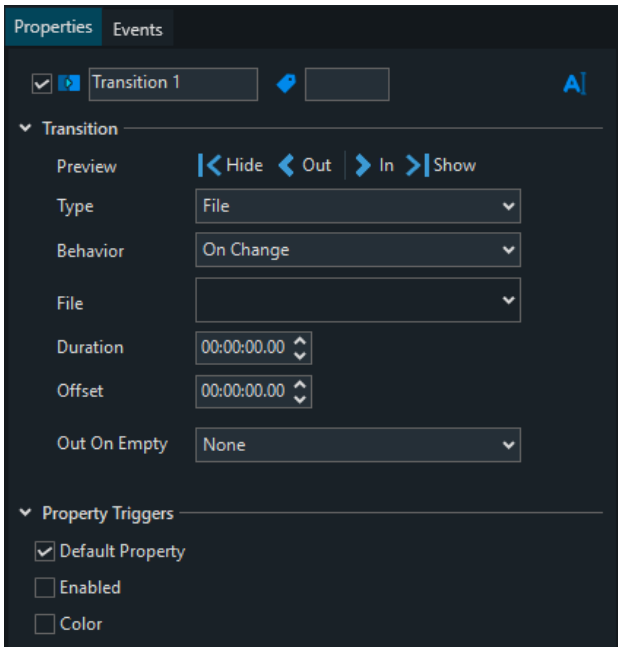


You can add many scene objects to the transition, like sound effects, flares etc. so you need to define the “Target Object” The Target object can be an Image object or a text object. When the transition is applied to a scene object it will inherit the “Target Objects’ properties.

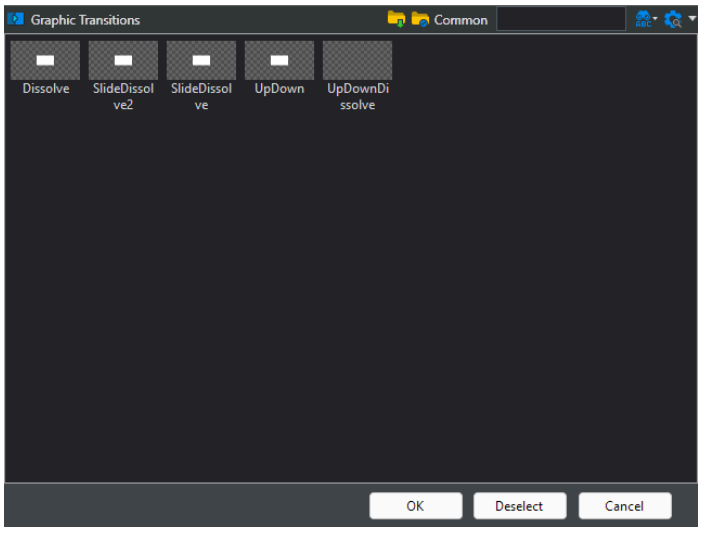
Saving the transition will allow it to show up in the transition browser.

To use a created transition:

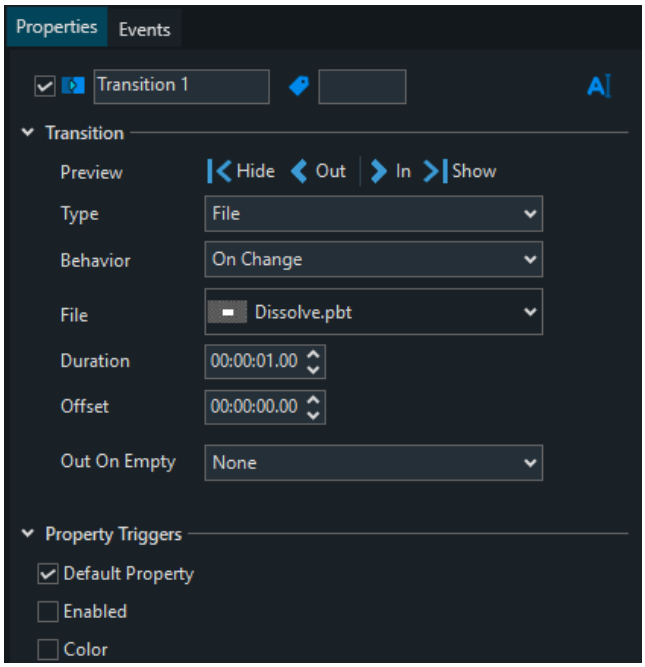
1. Within a Prime Scene, apply a Transition Effect from the toolbox onto an object
   Select the transition effect from the Scene Tree and the **Transition Properties** panel will be shown:

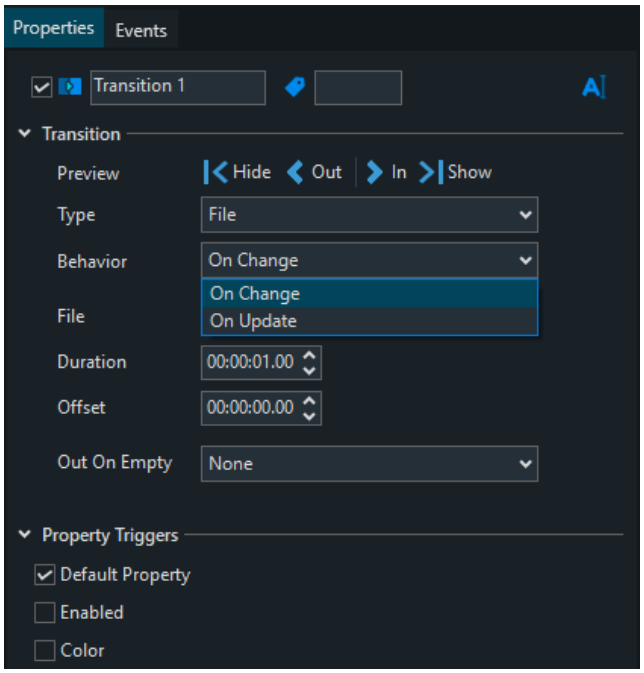


2. Once a new transition is created it will show up in the browser.



3. Select the previously created transition from the browser.





- **Preview**
    - Hide - hides the content being transitioned
    - Out - plays the specified Transition Out Action
    - In - plays the specified Transition In Action
    - Show - shows the content being transitioned

- **Behavior -** sets when the transition will fire. Your choices are “On Update” or “On change:”
    - On Update will fire for each update regardless if the data is the same or different.
    - On Change will fire ONLY on an update if the new value is different than the current value.

- **Duration -** may be modified from its original value. This will allow for applying the same effect on multiple objects and creating a “staggered” effect.

- **Offset -** Creates a Duration delay prior to the Transition playing

- **Out on Empty**
  Performs the specified Out Animation when content is changed to an empty value

    - **None** - Out On Empty is disabled
    - **Any** - any object in the group blanked out will trigger Out
        - (legacy behavior - version 4.4 and prior)
    - **All** - all objects in the group being blanked out will trigger Out
        - (New behavior - version 4.5.0+)
    - ***Please Note**
        - Scenes created before version 4.5.0 will be grandfathered to the Any option if out on empty was checked
        - Scenes created in versions 4.5.0 or later will be set to the All option if out on empty was checked

- **Property Triggers**

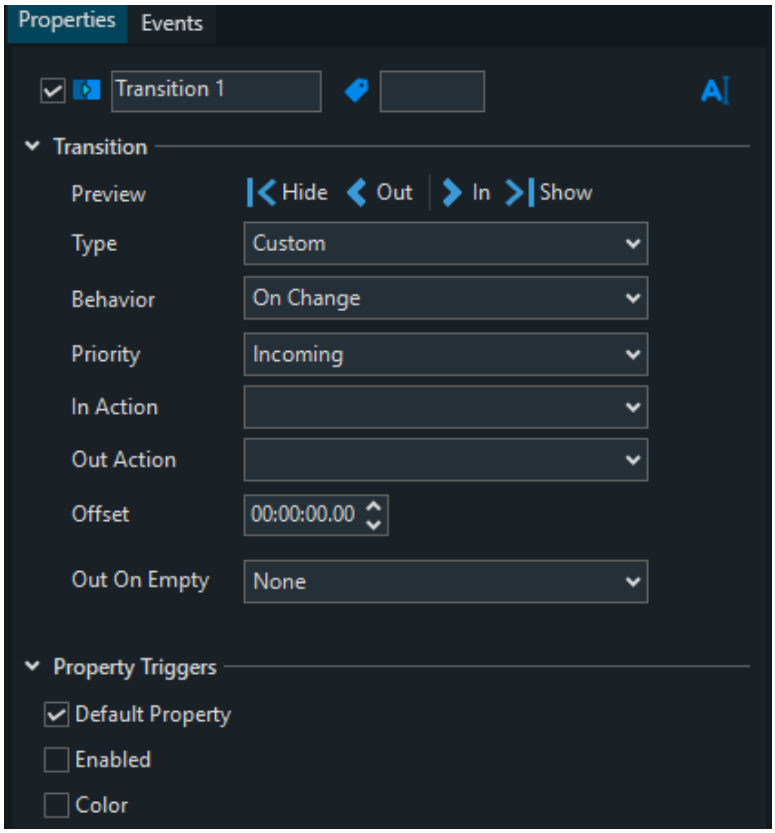
    - Default Property - If checked, the transition will be triggered when any child graphic default property changes (ie, Text property for a Text object, File property for Image or Clip objects…)

    - Enabled - If checked, the transition will be triggered when any child graphic Enabled property changes

    - Color - If checked, the transition will be triggered when any child graphic Color property changes

Custom Transitions

Custom transitions work the exact same way as file based except they require the transition to be in an existing “Action” in the scene. Simply choose your “In Action” and “Out Action”

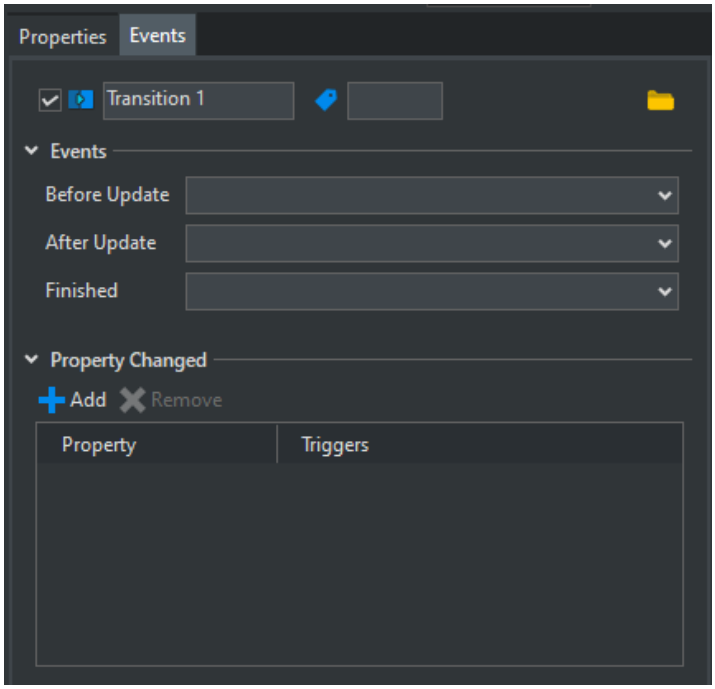


- **Priority** - specifies which graphic will be at the top during the transition: Incoming or Outgoing

- **In Action** - specifies the animation(s) to play for the incoming graphic
- **Out Action** - specifies the animation(s) to play for the outgoing graphic

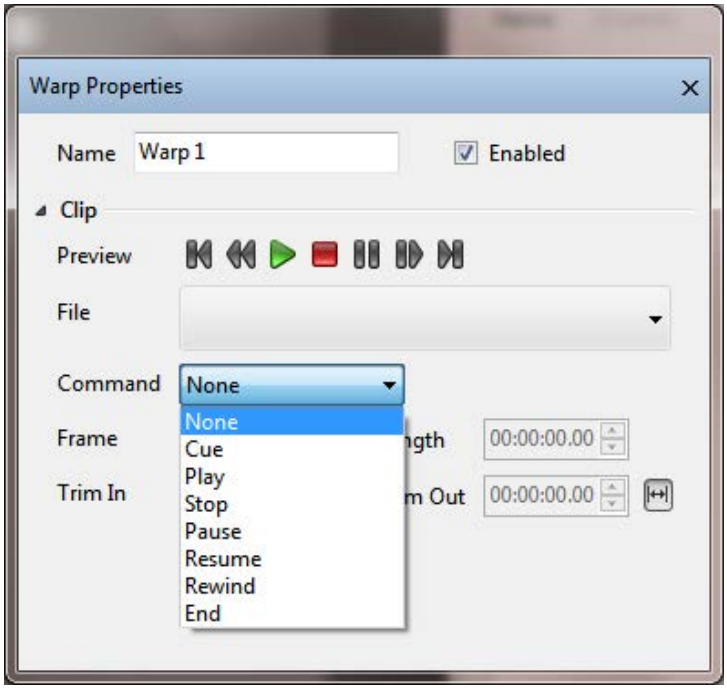
Transition Event Properties

Now you can modify the properties of the transition and hook up to its internal events.



- **Before Update** - event is triggered before the transition occurs
- **After Update** - event is triggered after the transition occurs
- **Finished** - event is triggered after the transition finishes animating

Warp

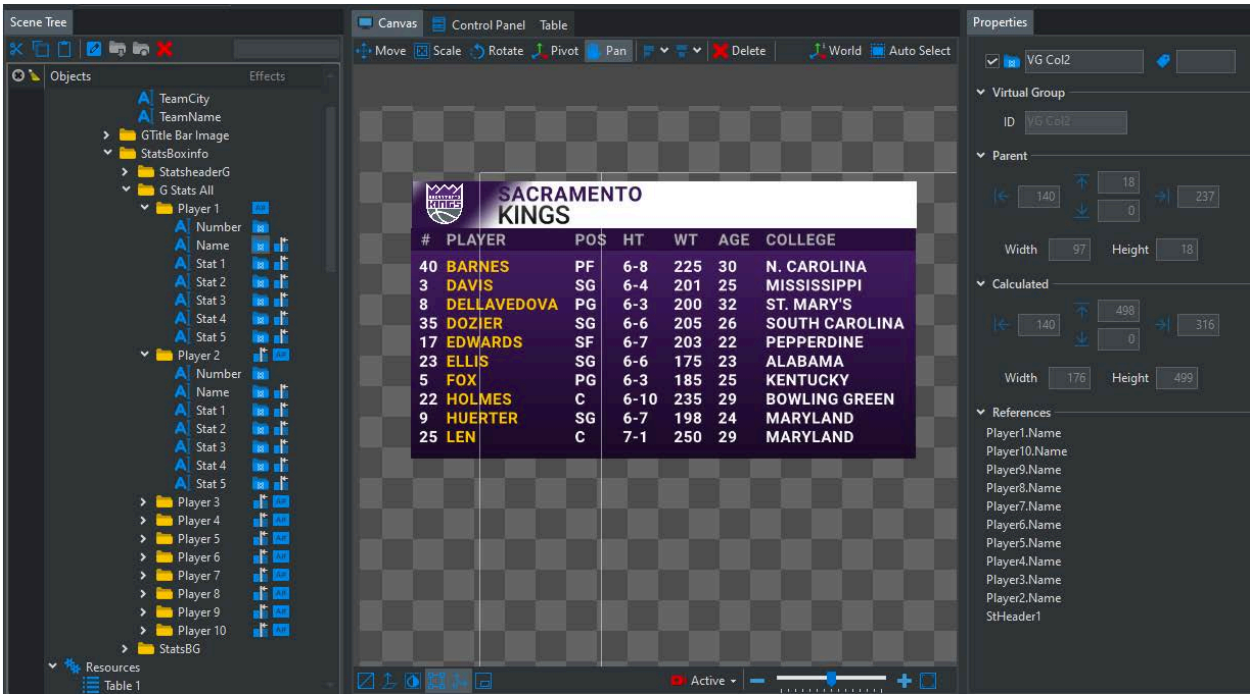


More information on Warp Clips can be found in the “Creating Warp Clips in After Effects CS6” user guide.

Virtual Group

This Effect is intended to be used in conjunction with AutoFollow Source Mode. A Virtual Group effect can be applied to multiple objects in a scene, regardless of how they have been physically grouped together in the scene tree, to “virtually” group them together. The benefit of this is the effect will give the calculated values for the Left, Top, Right and Bottom of all objects within the virtual group.

Example for using this effect: If you have a Full Screen graphic table, consisting of multiple rows and columns of data. The scene is constructed to animate each row individually. But the operator wants to change the amount of columns that display. Apply the virtual group effect to each text object, to create “virtual columns”. Then have each virtual column row autofollow the next. The virtual group will calculate the text field in the column that is the longest, making auto follow even easier. Essentially virtual groups will do math.max calculations, using the calculated property.



Virtual Group Properties

Name: Naming convention must be exactly the same for any other virtual group effects that you want to reference within the same virtual group.

ID: Read only, Prime's reference name of the virtual group

Parent: Left, Top, Right and Bottom values of the object the virtual group is applied to. Width and Height of the object the virtual group is applied to.

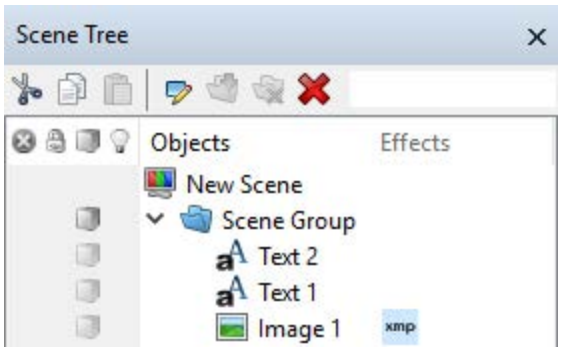
Calculated: Left, Top, Right and Bottom values of all objects within the virtual group. Width and Height of all objects within the virtual group.

References: List of all items within the virtual group.

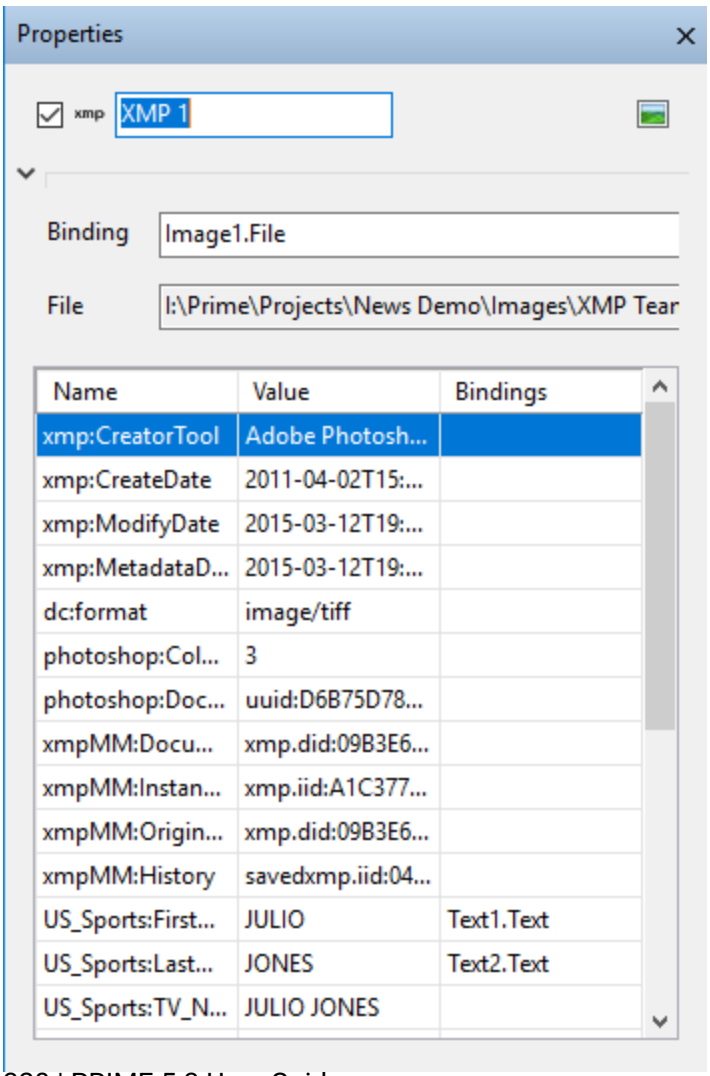
***Please Note** - Auto Spacing does not affect Virtual Group bounds.

XMP

Adobe's Extensible Metadata Platform (**XMP**) is a **file** labeling technology that lets you embed metadata into **files** themselves during the content creation process. PRIME can bind to the data stored in Image files.



Apply the XMP effect to an image object. If the Image contains XMP metadata, the data will appear in the XMP properties window:



Notice the “Bindings” column. This is where you can drag and drop other object properties to bind the data. All Object properties are bindable like Color, opacity, Position etc.

Users can alternatively type manually into this field to take advantage of PROME’s “Auto-Complete” feature as well.

The Bindings field also allows for the use of Expressions.

See the separate “Parameters & Expressions” document.

Example using an Expression:

US_Sports:FirstName	JULIO	Text1.Text = "Mr. " + value

Using Auto-Complete:

US_Sports:LastName	JONES	Text
US_Sports:TV_Name1	JULIO JONES	

Text1
Text2

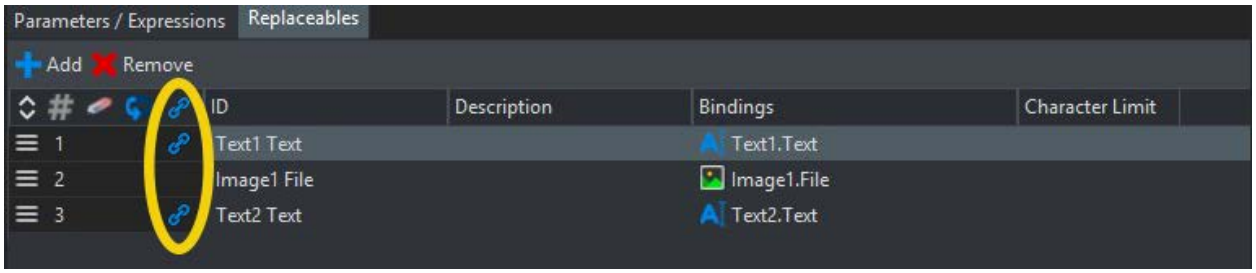
In this example we will bind the image color:

US_Sports:Position	201,35,63	Image1.Color

XMP LUCI Workflow

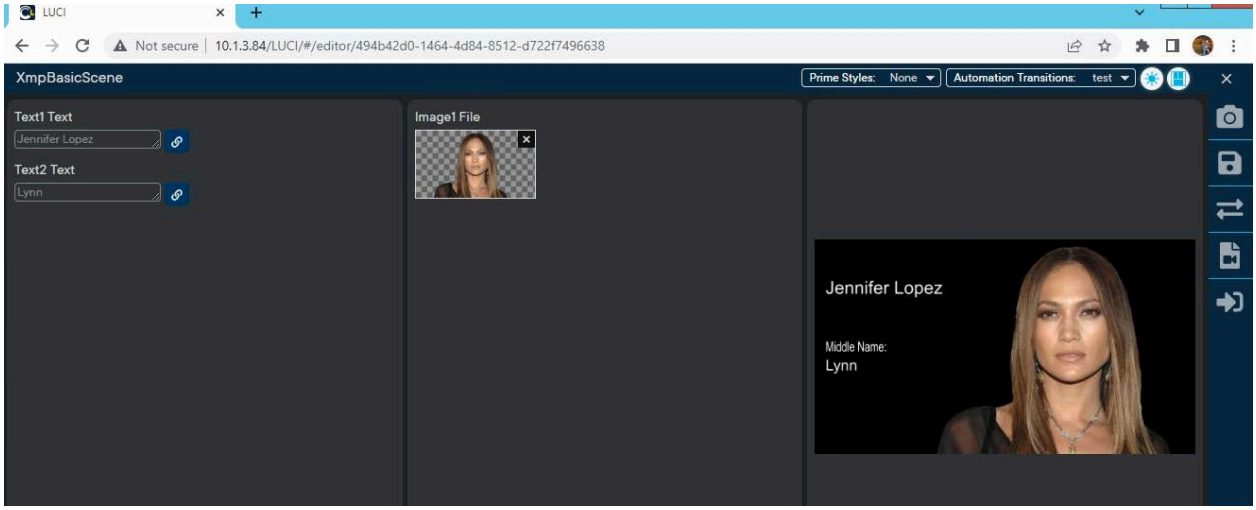
Any text, images or clip objects must be bound to a corresponding replaceable within Prime, to be visible and editable in the NRCS LUCI plug-in. In addition, for objects that are data bound to XMP, the replaceable must be flagged as databound.

In the Replacables window there is a databound column with a chain link icon. Click in the empty row space of the replaceable column to turn on the databound icon for each object that is databound to XMP.



If the databound column is not flagged for each object that is databound to XMP, then the corresponding XMP data will not be visible in the LUCI plug-in.

Example of databound XMP information visible in the LUCI plug-in

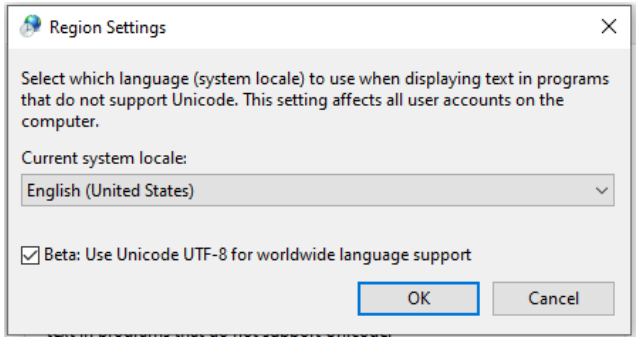


Unicode UTF-8 Region Setting for Character Accents

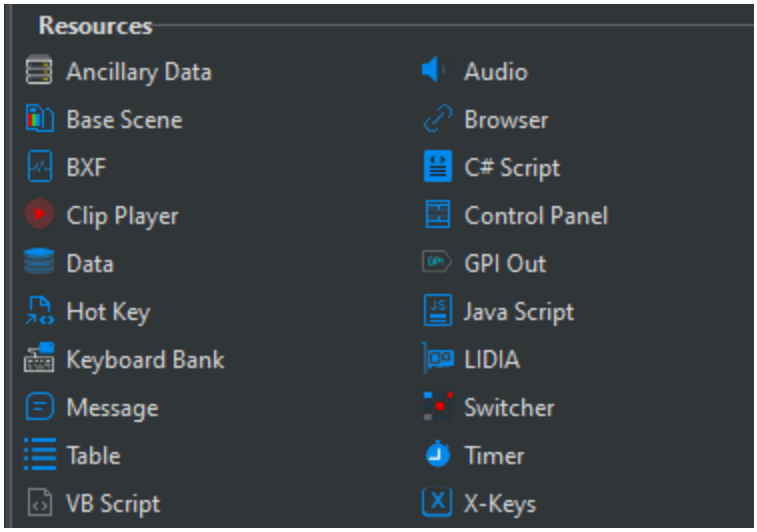
XMP can fail to return character accents properly if Beta: Use Unicode UTF-8 for worldwide language support is not enabled within Windows.

For example: without this setting turned on, cinéma would display as cinÃ©ma.

To enable this setting, go to Windows Settings > Time & language > Language & region > Administrative language settings > Change system locale…, and check Beta: Use Unicode UTF-8 for worldwide language support. Reboot the PC for the change to take effect.



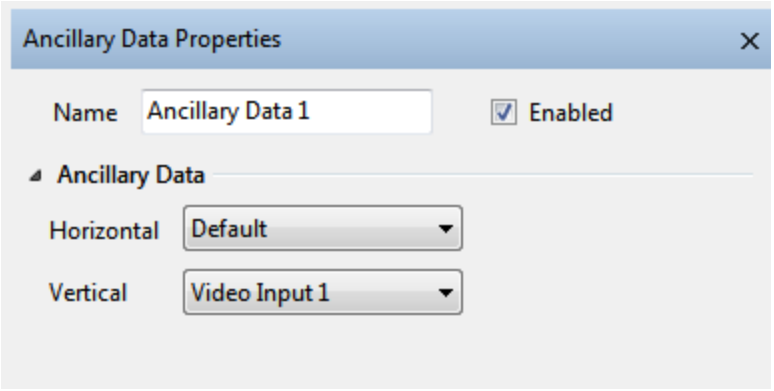
Resources

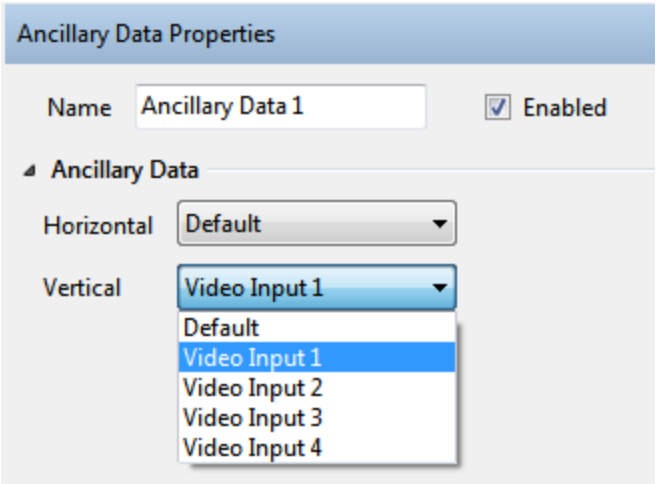


Ancillary Data

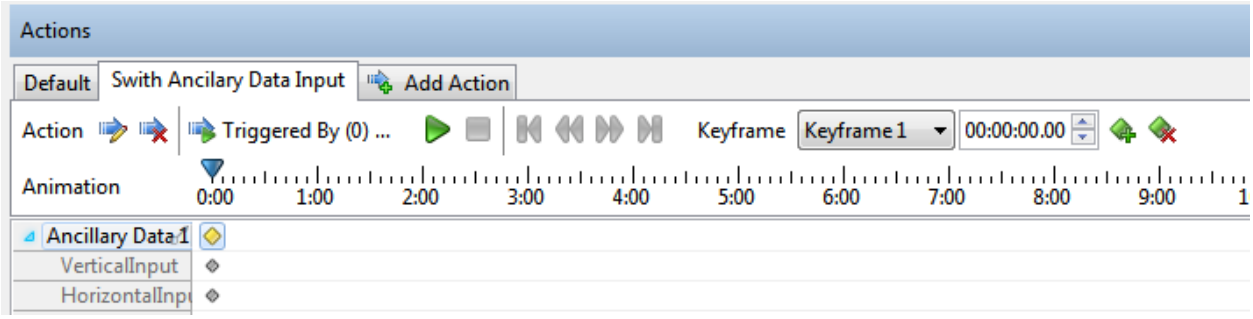
This resource provides the ability to change the routing of ancillary data on either horizontal (HANC) or vertical (VANC) intervals. This is commonly used for branding scenarios, when you have to squeeze back with 2 video sources and want to switch ancillary data (closed captioning) from source 1 to source 2.

Select the SDI Input.





Both the Horizontal and Vertical Ancillary data selections are keyframeable allowing you to dynamically switch the source of your ancillary data.

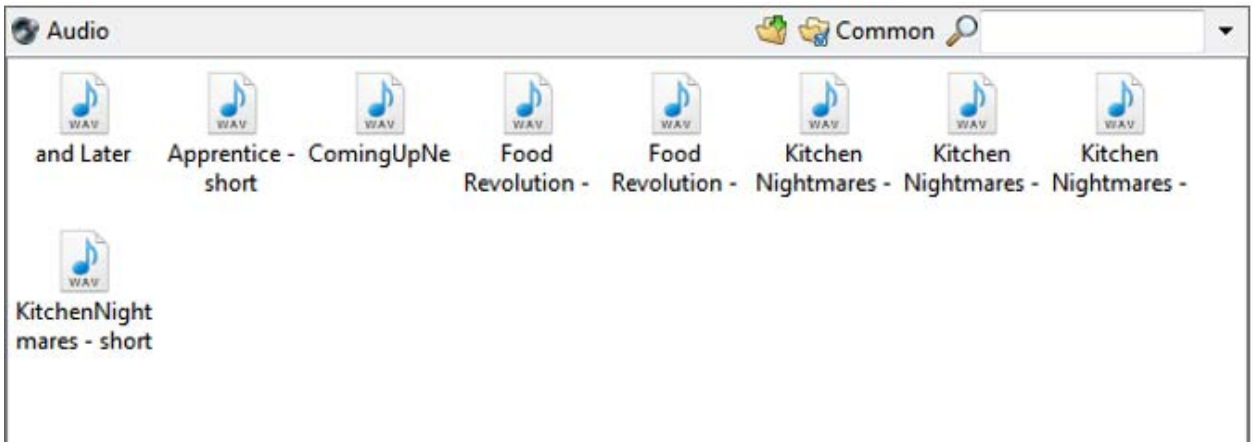


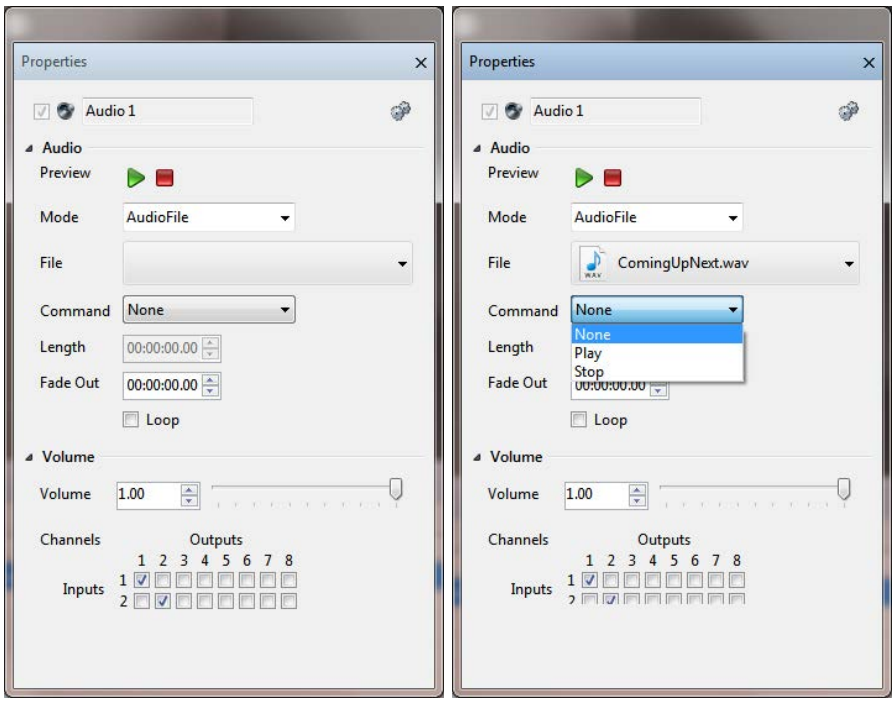
Audio

The Audio object has three modes to choose from, Audio File, Text file and Text.

Audio File

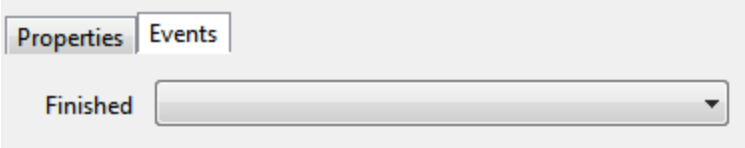
This will be a .wav file or any other supported audio file.





- **Commands**
  - None: Do nothing
  - Play: Plays the associated audio file
  - Stop: Stops playing the associated audio file
- **Volume** - Sets the volume level of any the associated audio file when played. The volume levels can be keyframed in the Timeline editor.
- **Channels** - Sets the output channel(s) the associated audio file will play out to.

Finished Event:

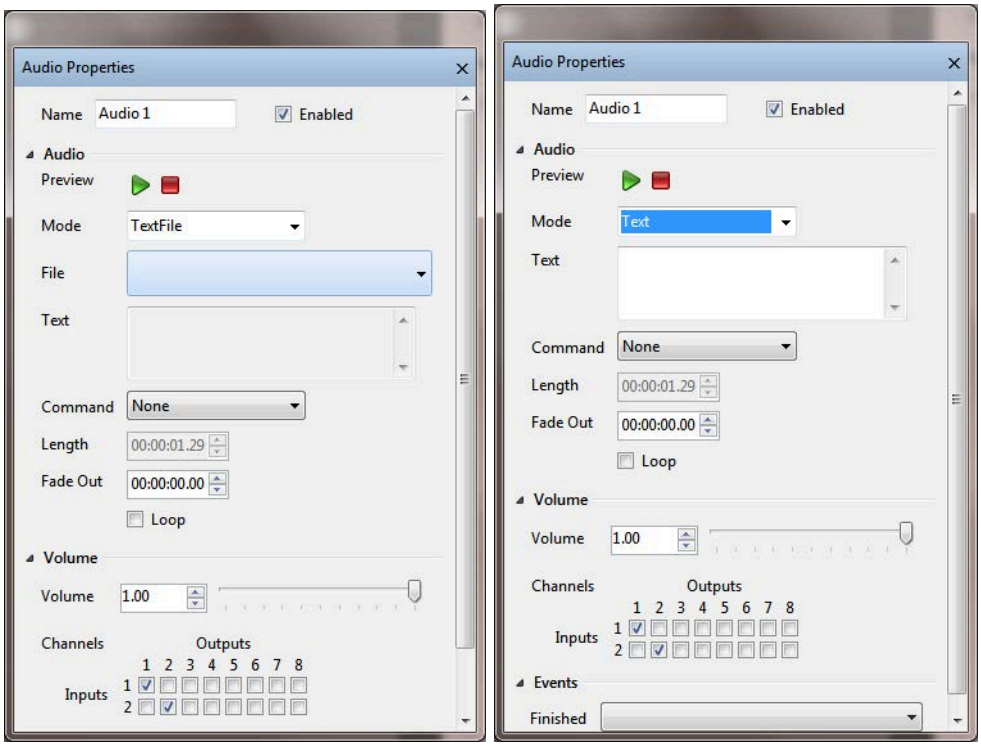


Any subscribers to this event will get notified and triggered.

Text File

A .wav file will be created based on the text file. This is “Text to Speech”

Same holds true for “Text” mode.



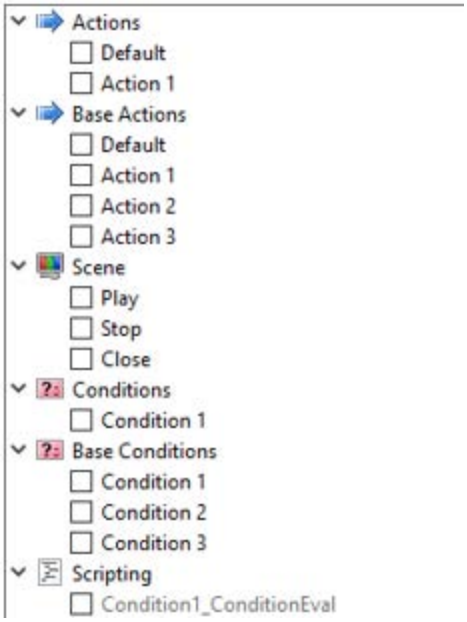
Base Scene

Base Scenes are scenes that can be referenced by other scenes. Consider Base scenes as parts and pieces that can be added to normal PRIME scenes.

This is a very powerful feature of PRIME's ability to reference scenes from within other scenes. The base scene allows for a basic building block. Example; Create a News Full Screen graphic as a base scene that all other Full Screen graphics will reference. The Base scene should contain all the graphical elements, transitions and logic that all Full Screen graphics will share. Link the base scene to all the other Standard" scenes. If you have 100 Full screen graphics, all 100 can reference the "Base Scene". Changing anything in the base scene will reflect to all 100 scenes.

You can add as many Base Scenes to a normal scene. Base Scenes can be created using the "File-> New Base Scene" menu item. Base Scenes are no different than normal scenes except they are tagged as "Base Scenes" and can be included in normal scenes.

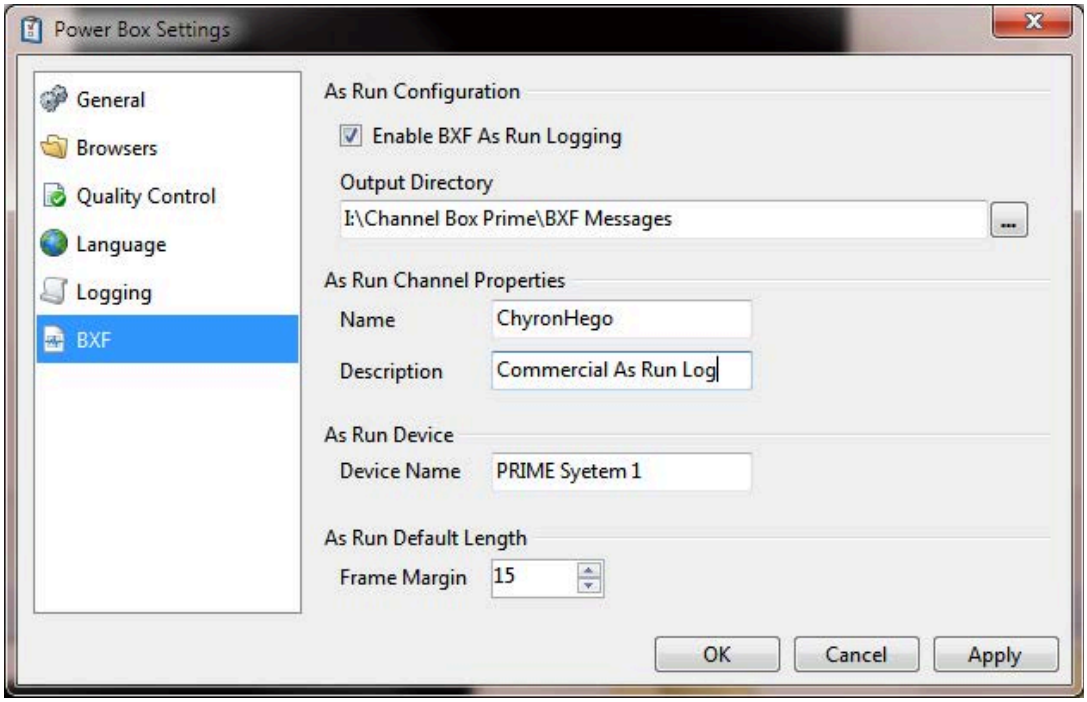
Additionally, the communication from the standard scene to the "Base Scene" is built into PRIME's "Trigger List: The Standard scene can trigger Actions and Conditions to its "Base Scene" as seen in this Triggers list screen shot:



BXF-Broadcast Exchange Format- As Run Files

PRIME allows users to create “As Run BXF Files.”

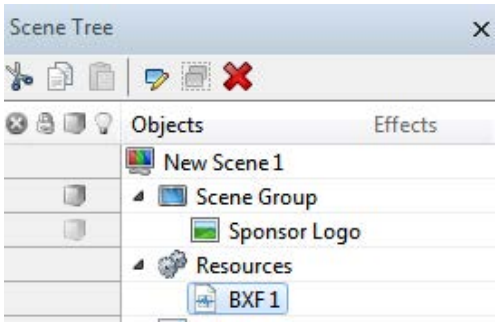
To configure the BXF Global settings, select “BXF” from the PRIME main “Settings” menu:

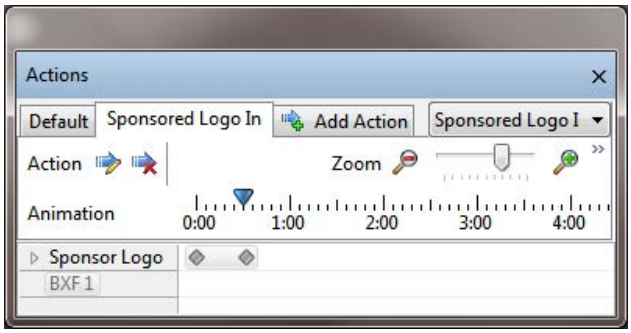


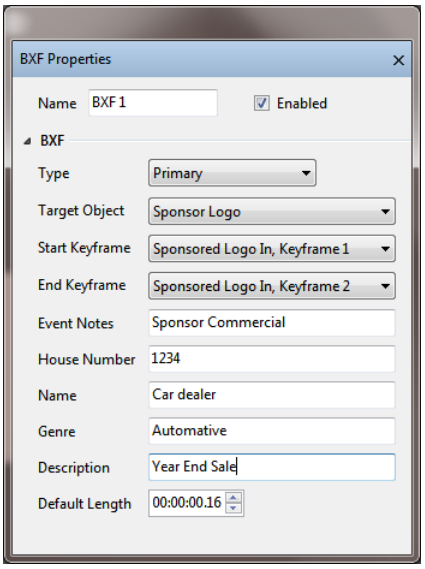
- **Enable BXF As Run Logging** – Toggle the box on/off to enable/disable BXF As Run Logging
- **Output Directory** – Specify a system location to store the BXF As Run Logging files
- **As Run Channel Properties: Name** – Specify a name for the BXF As Run channel
- **As Run Channel Properties: Description** – Enter a short description for the BXF As Run channel
- **As Run Device: Device Name** – Specify a name for the BXF As Run Device
- **As Run Default Length: Frame Margin** – The default length settings allows a margin for error when the asset is played out.

  Ex: If a sponsored logo is set to air for 15 seconds, it will be considered “Aired **Without** Discrepancy” if it airs for 14 seconds and 15 frames due to the Frame Margin being set to 15 frames. If the logo airs for 14 seconds and 14 frames, the BXF file will be reported as “Aired **With** Discrepancy.”

To add a BXF resource to your scene and configure its Properties:





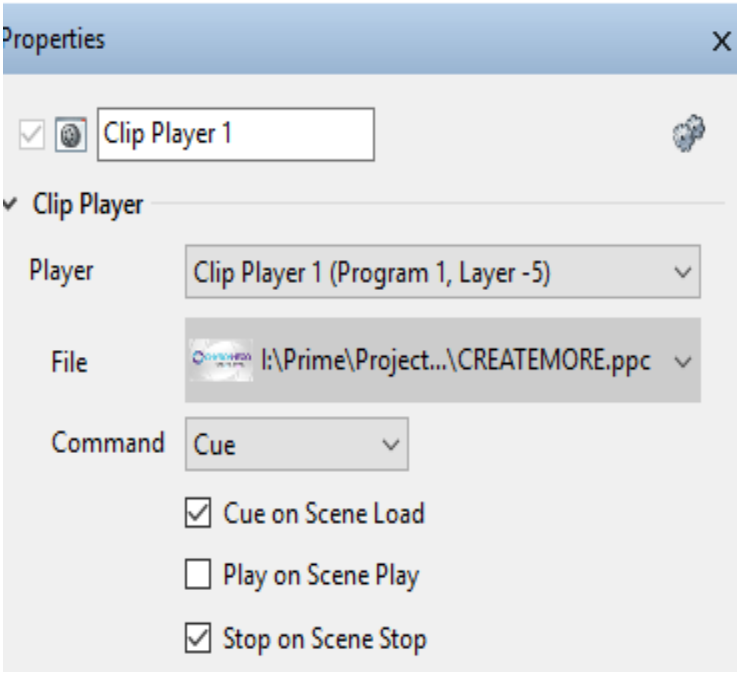


- **Name –** Object name to be referenced throughout the scene
- **Enabled –** Enable/disable this object
- **Type** – Map this to the type defined in your traffic system
- **Target Object –** Object in the scene this BXF refers too
    - **Start/End** Keyframe – Start/End keyframes that brings this on/off air
- **Event Notes –** User friendly notes
- **House Number –** Match the traffic system house ID
- **Name –** Traffic system name for this House ID
- **Genre –** Type in a genre for this House ID
- **Description –** User friendly description
- **Default Length –** Minimum duration on air this items is required to air

When the action to bring in the sponsored logo is played a BXF file will be created in the folder defined in the global settings.

Clip Player

The Clip Player resource allows users to have access to any “Clip Controllers” defined in the PRIME Playout Configuration:



Player: Enumerates the clip players defined in the PRIME Playout Configuration “Clip Players” section.

Each clip player has an output channel and a layer number assigned to it. (Program Channel 1, Layer -5)

File: Associates a clip to this player

Command: These commands control the clip player and can be keyframed. The Clip Players commands are automatically added to Primes “Trigger List” for access everywhere.

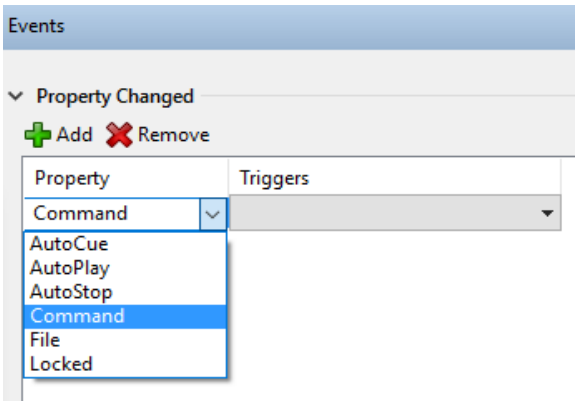
Cue on Scene Load: When the scene is loaded into preview cue the clip.

Play on Scene Play: When the scene is taken to air play the clip.

Stop on Scene Stop: When the scene is taken off air stop the clip

Clip Player Events:

Allows triggering items from the triggers list



Control Panel

A single Control Panel resource can be added to each individual scene or base scene.
See Scene Control Panel in this user guide for more information.

Data

The Advanced Data Object is documented in the Prime Data Object Guide

GPI Out

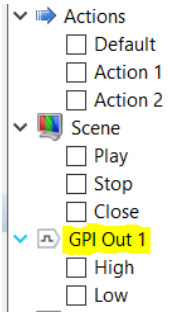
GPI Out can be added to any scene as a resource within the scene.

GPI Out Properties:

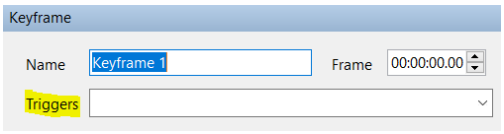
- **Device:** ID of the device. Multiple devices can be used
- **Pin:** Pin number for the out
- **Mode**
    - **Pulse:** Sends out a pulse “High to Low” or “Low to High”.
    - **Manual:** Send the “High or Low” manually. Can be assigned to a keyframe or a control panel button
- **Pulse Direction:** Set “Low to High” or “High to Low”
- **Pulse Duration:** When Pulse mode is set to “Pulse” set the duration between the “High to Low” or “Low to High”. of the pulse
- **Pulse:** Sends the pulse.

GPI Events:

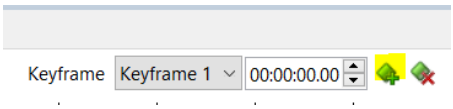
- **On Pulse:** Event happens when GPI is pulsed
- **On High:** Event is raised when GPI goes to high from some other state
- **On Low:** Event is raised when GPI goes to Low from some other state



When the mode is set to “Manual” two commands will be available in the Triggers list, “High & Low”:

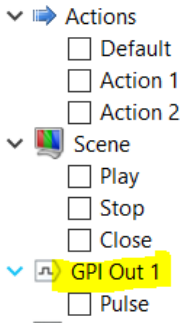


When the mode is set to “Pulse” The Triggers list will show “Pulse” only.



To trigger a GPI out from the timeline, create a keyframe in the timeline editor by clicking the “Add Keyframe” button.

From the “Keyframe Editor” select the “Triggers” combo box that will show the above (Figure 1 & Figure 2)



GPI In

GPI In resource can be applied to:

- Scene

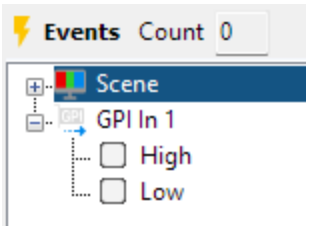
- Application
- Project

GPI In can be added to any scene as a resource within the scene.
GPI In Properties:

- **Device:** ID of the device. Multiple devices can be used
- **Pin:** Pin number for the in

GPI Events:

- **On High:** Event is raised when GPI goes to high from some other state
- **On Low:** Event is raised when GPI goes to Low from some other state



Hot Key

Hotkey resource can be applied to:

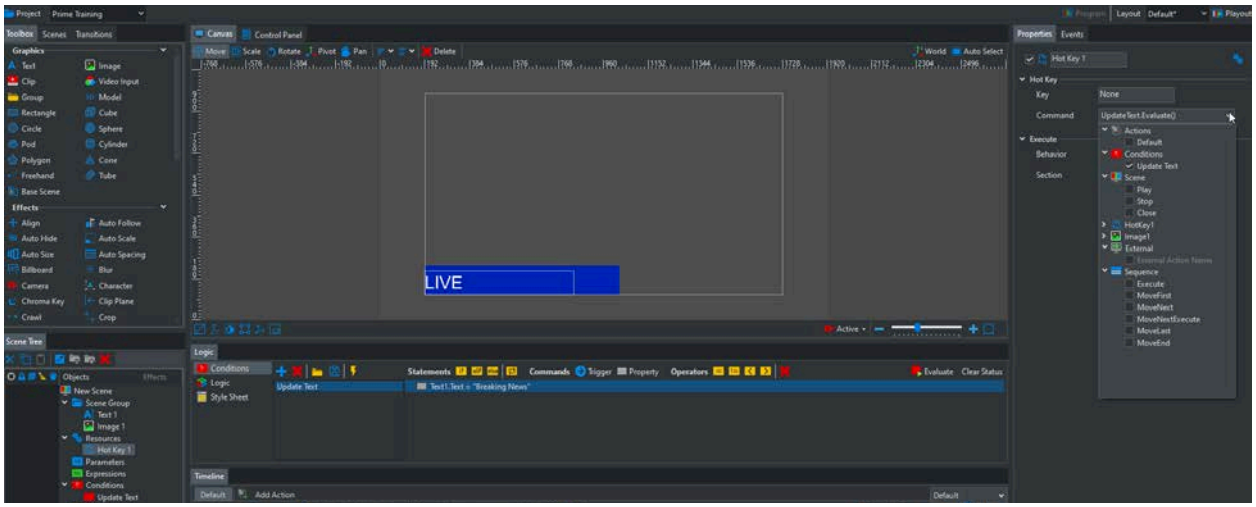
- Scene
- Application
- Project

Key

Select the Key(s) you wish to assign the Hot Key

Command

Select the command (action, condition, sequence ect.) you wish to trigger when the designated keyboard hotkey is pressed.

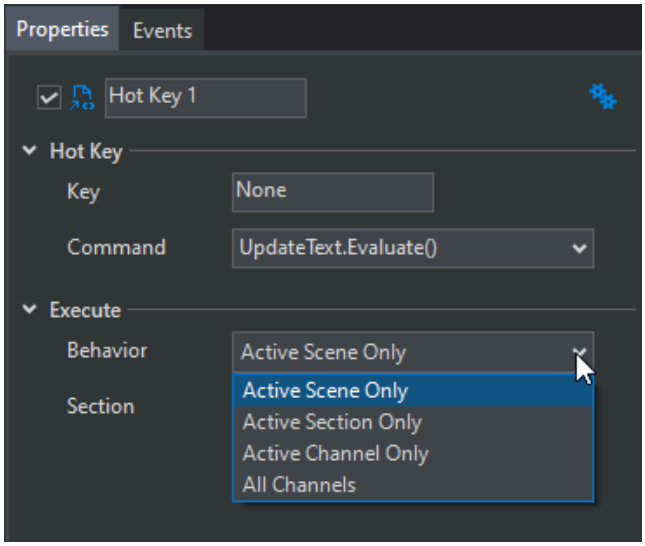


If a hot key has been assigned in multiple places all of the assigned commands will execute.

**The order of execution is the order in which they are registered in Prime. Generally this will be Application, then Project then Scene. At the scene level it will be prioritized in the order they are played to output*.

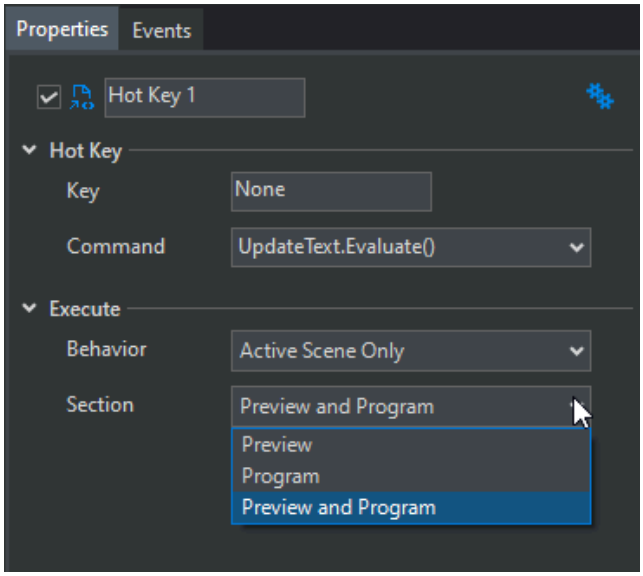
Execute Behavior

- Active Scene Only - Only executes the command if the scene is the active scene
- Active Section Only - Only executes the command if the scene is in the active section of the channel (Preview or Program)
- Active Channel Only - Executes the command if the scene is in the active channel
- All Channels - Executes the command regardless of if the scene is in the active channel or active section



Execute Section

- Preview - Only executes the command when the scene is in Preview (or not Playing)
- Program - Only executes the command when the scene is in Program (or Playing)
- Preview and Program - Executes the command regardless of whether the scene is in Preview or Program



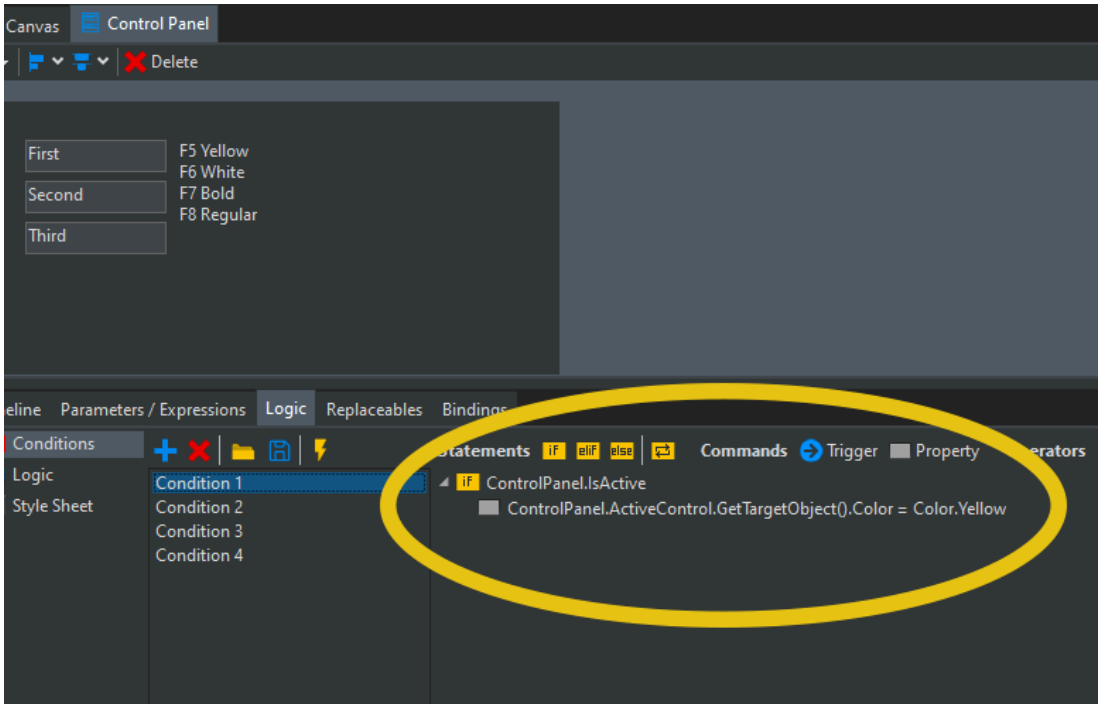
Hot Key Advanced: Control Panel Focus executes Condition with a Hotkey

This feature allows an operator to tab into a control panel object (which sets the focus) and press a hotkey to run a condition.

Logic Syntax

- ControlPanel.IsActive
- ControlPanel.ActiveControl
- ActiveControl.GetTargetObject()

Example use case is the ability to change the color or weight of the text object bound to the control panel text object that has focus.



- Parent Keyword
    - This will allow for the active control property to update graphics near selected text object
    - Parent keyword is accessible in logic statements
    - For example Text1.Parent.Background.File = “abc.png” could be used to update an Image named Background that is a sibling to Text 1

Hot Key Logging:
Hot Key triggers can be enabled in Prime workflow Logger.

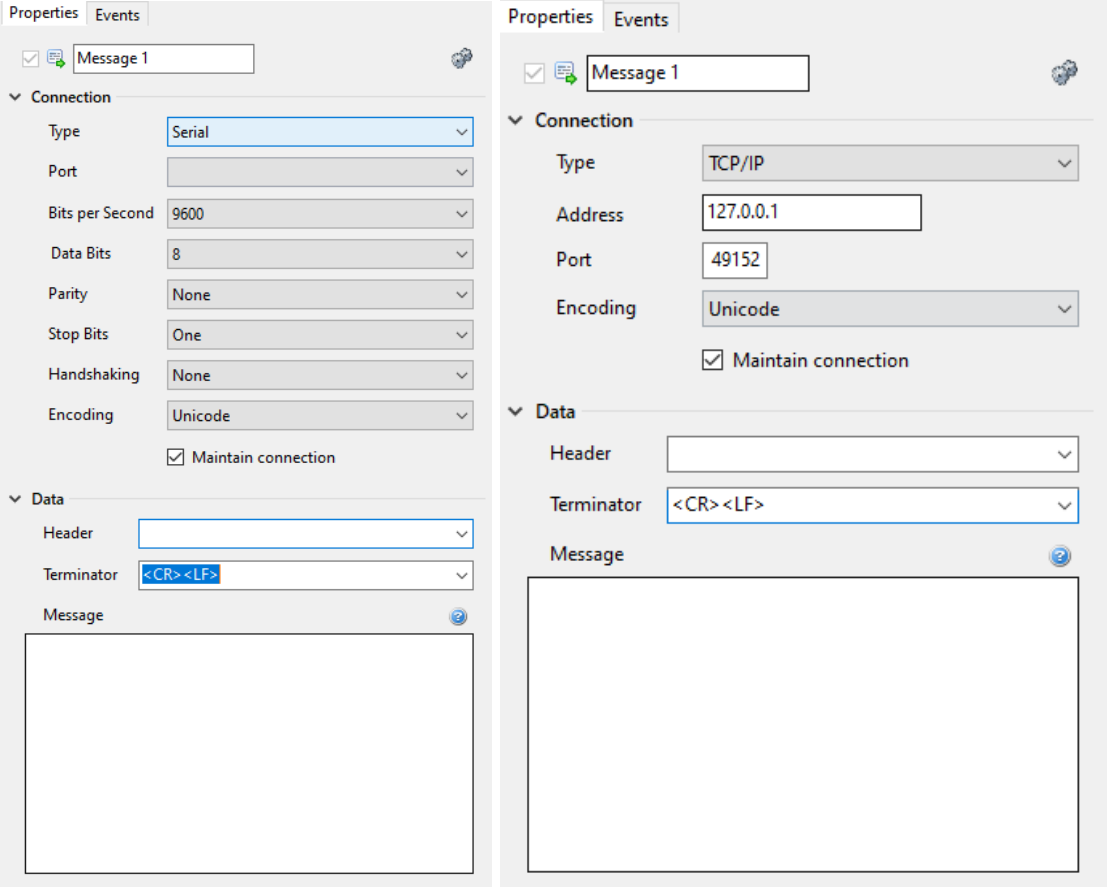
LIDIA

See the separate dedicated LIDIA Users guide. PRIME LIDIA.pdf

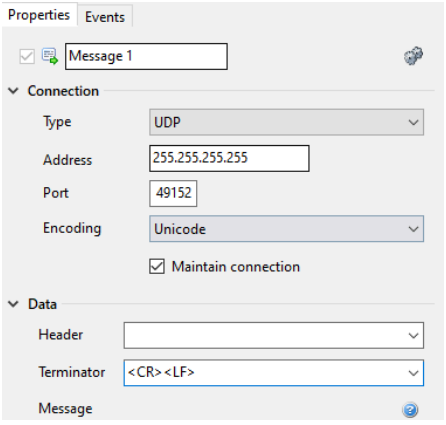
Message

The message object allows you to output messages via Serial port or by Network (Via TCP or UDP).

The “Message” property may be “keyframed” in an Action or the “Send” command can be triggered from an event. This will transmit the message out.



Maintain Connection: When checked, the Message resource connection will open on scene load and close on scene close. It will timeout after 5 seconds if a connection cannot be established.



In UDP mode to broadcast across the entire network set the “Address” property to “255.255.255.255”

The message property supports common non-printing codes, hex values, and plain text. Codes and hex values need to be surrounded in a tag (angle brackets < and >) to

be interpreted correctly. Plain text can be written anywhere and do not require tags. If a tag is not recognizable, it will be left untouched. If necessary, angle brackets can be escaped with a leading backslash (\<).

Code examples:

- <LF> will be replaced with the line feed character
- <TAB> will be replaced with the tab character
- <EOT> will be replaced with the end of transmission character

Hex examples:

- <A> will be replaced with the line feed character
- <41> will be replaced with the A character
- <7D> will be replaced with the } character

See the user's guide for more information.

Message formatting also applies to the Header and Terminator properties found in the screenshots above.

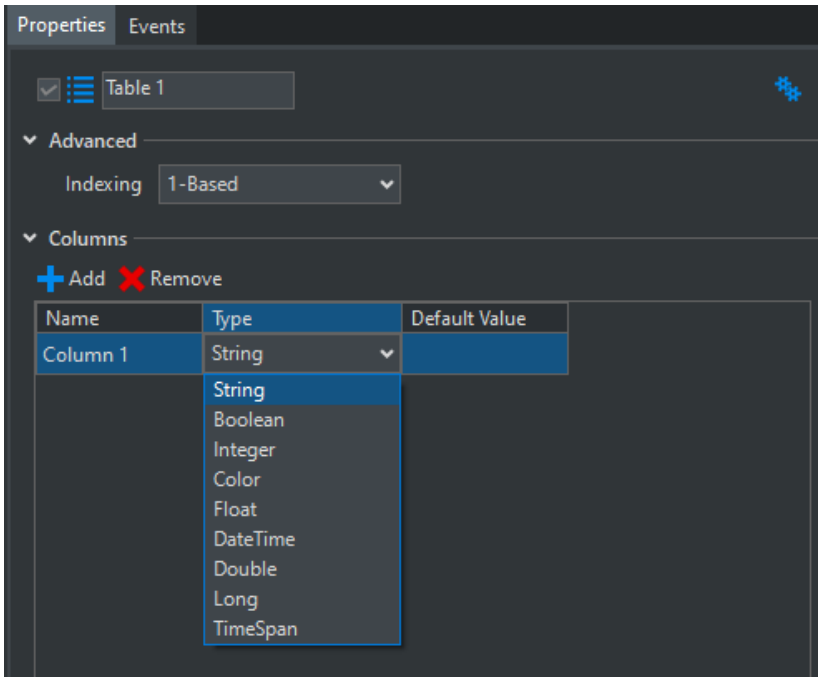
Plugins

See the separate "PRIME Plugin User Guide".

Table

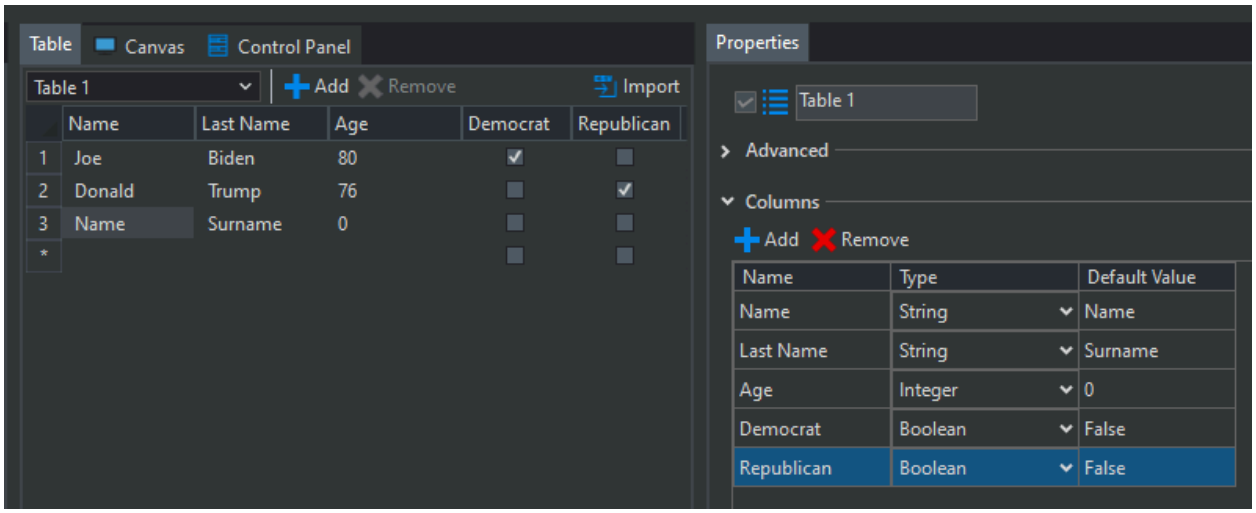
Adding a table resource to a scene will open a new table window. To toggle visibility of the dockable Table window navigate to View in the toolbar.

Table Properties



- Table Name: Editable alphanumeric text field
- Advanced:
    - Index: Option for first row to begin with 1 or 0. Select from drop down 1-Based (default) or 0-Based
- Columns
    - Add Column
        - Name: Alphanumeric column name
        - Type: Select column default type. Table cell value must adhere to column type. For example String = alphanumeric, Boolean = true or false, Color = Hex or RGB value
        - Default value

Table View



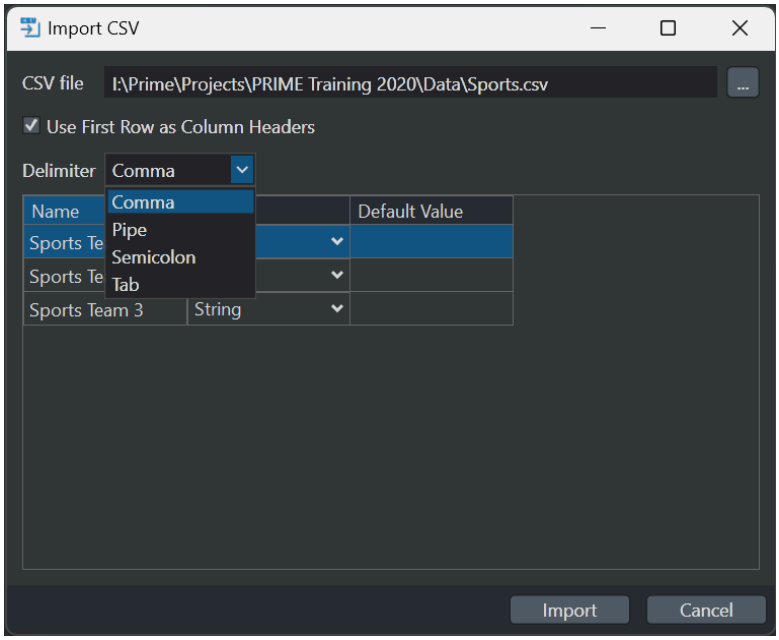
**For manual entry of data, begin with creating columns in Table properties*

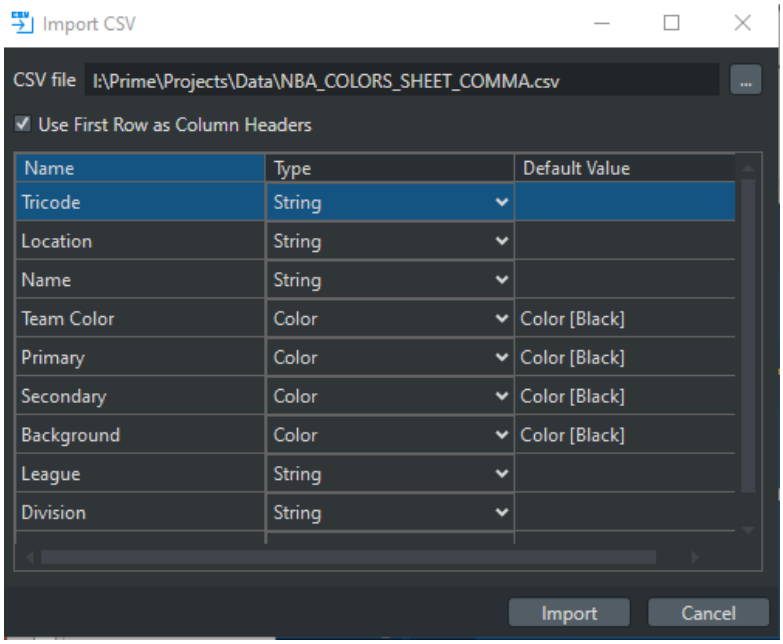
Table Toolbar

- Add: Add row
- Remove: Remove Row
- Import: Import CSV
    - Import Comma Delimited File. Format available in Excel & Google Sheets
    - Prime will automatically pre-determine column type by analyzing the data in the column.
    - Option to “Use First Row as Column Headers”
    - Delimiter Options
        - Comma
        - Pipe
        - Semicolon
        - Tab

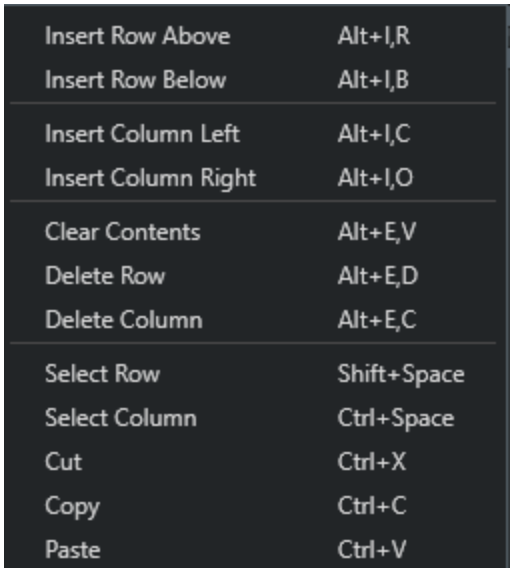
*.CSV files can be delimited with different characters (not just commas). This allows the user to specify the delimiter when importing a csv to a table.

Import CSV Examples





- Table View Shortcut Keys



- Table Arrangement in Table View
    - Column can be dragged and dropped into preferred order
    - Row can be dragged and dropped into preferred order
    - Color Type: Enter a HEX, RGB value or use color picker control

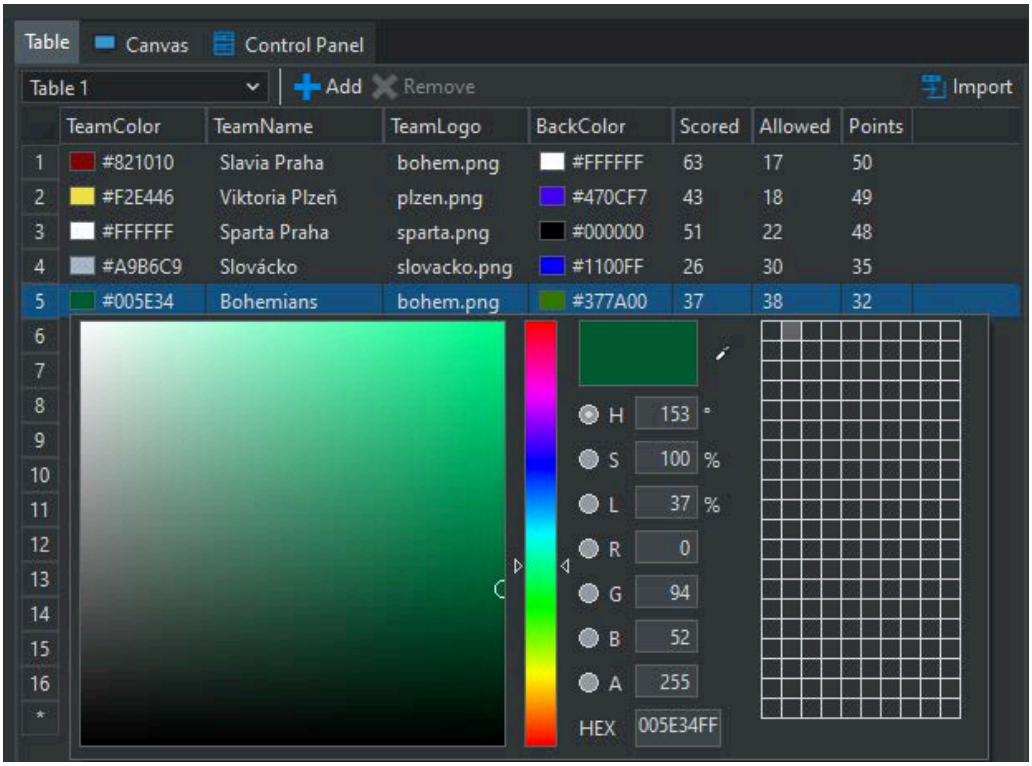


Table Resource can be added to replaceables. This allows table data to be updated through Camio workflow and/or through Intelligent Interface commands.

- Data property for Table Resource:Replaceable = Tab-delimited Data without the Column Names Rows. Tab will used as column separator, new line will used as row separator
- JSON property for Table Resource: Replaceable = JSON Data

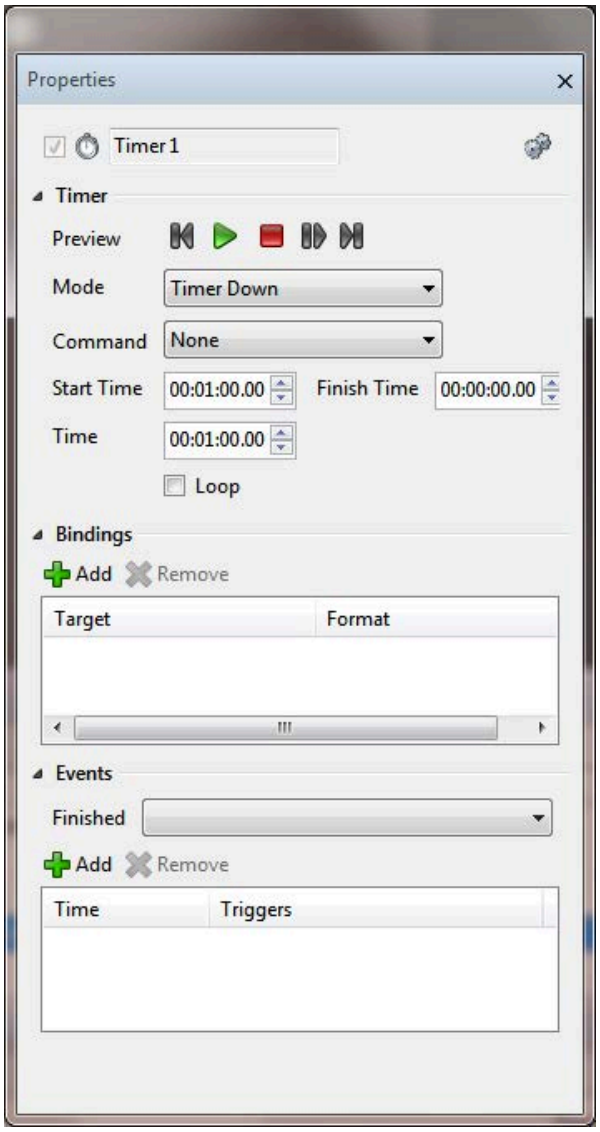
Data Object data sources can be ingested into the Table Resource.
Please see the PRIME Data Object Guide for more information.

Script

Refer to the PRIME_API_Scripting_Guide for more

The Script Resource Object allows for C# scripting to be part of the scene.
A full C# editor with intellisense (Auto Complete) becomes available. The C# Script Resource allows access to the entire PRIME API.

Timer



The **Timer Properties** panel allow users to configure:

- **Modes**:

Clock

Display the system Time of Day. Includes Time zone properties

Timer Up

Counts upwards to specified time

Timer Down

Counts downward from specified time

Time Countdown

Counts downward from specified future time

Date Countdown

Counts downward from specified future Date

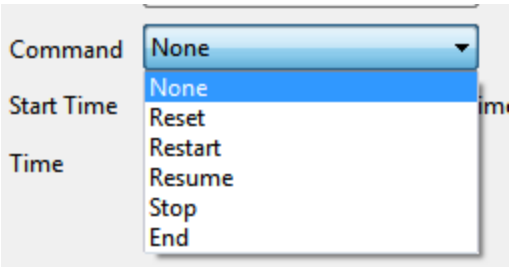
Time Countup

Counts upwards to specified time

Date Countup

Counts upwards to specified Date

Timer Commands

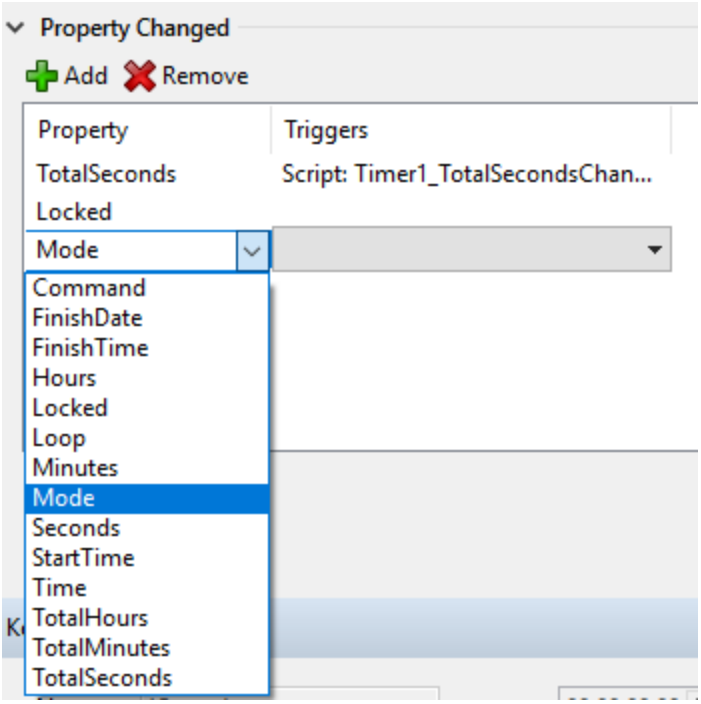


- Bindings **-** Binds the clock value to the scene object(s)

Events

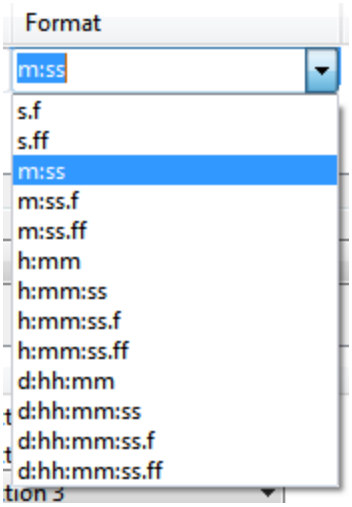
- Started
- Stopped
- Finished
- Users defined events may be added as well to the “Time Elapsed” event list

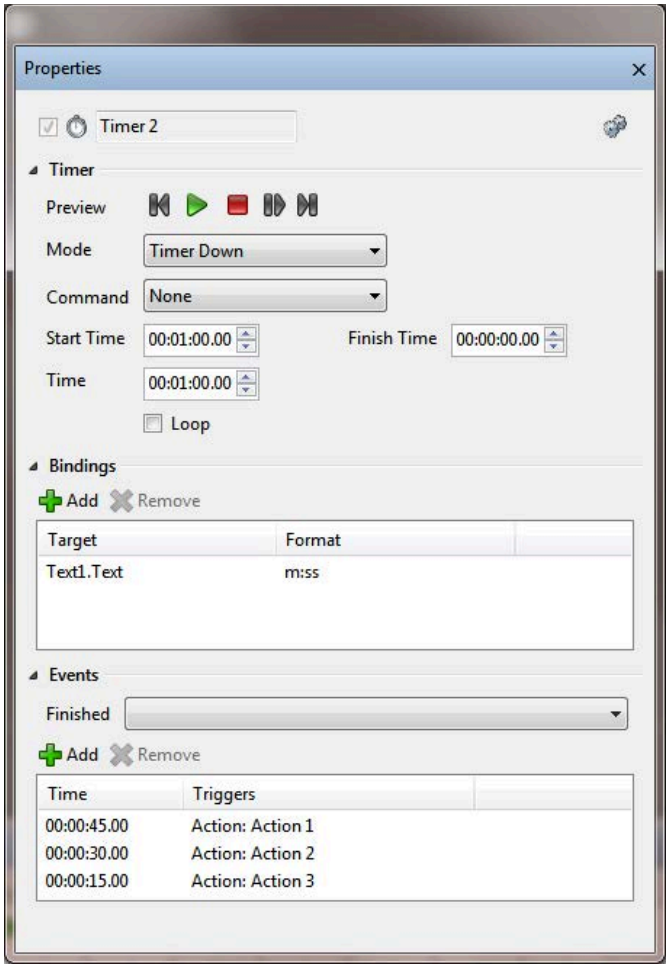
Property Changed Events



Formats

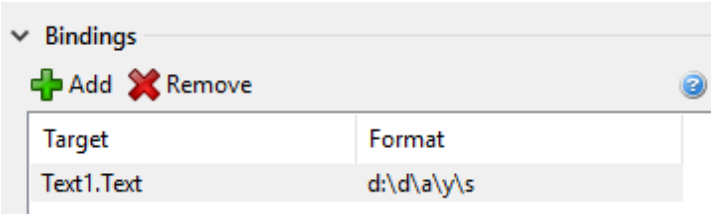
- Days, Hours, Minutes, Seconds, Frames



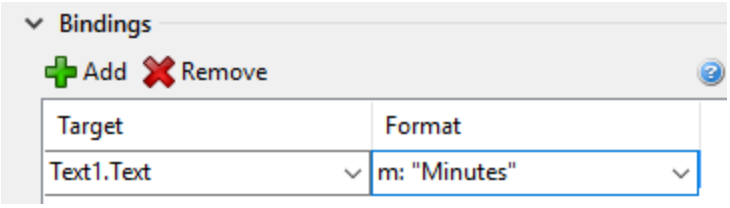


String literals can be applied in the format using the backslash character

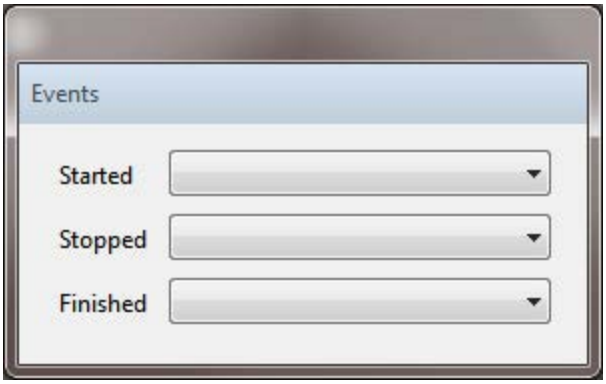
So d:\D\a\y\s will display the “4 Days” if d=4.



Or quote the text you wish to display this way:



- **Events**
  - Started: Triggered when the time starts
  - Stopped: Triggered when the clock stops
  - Finished: Triggered at the defined finish time

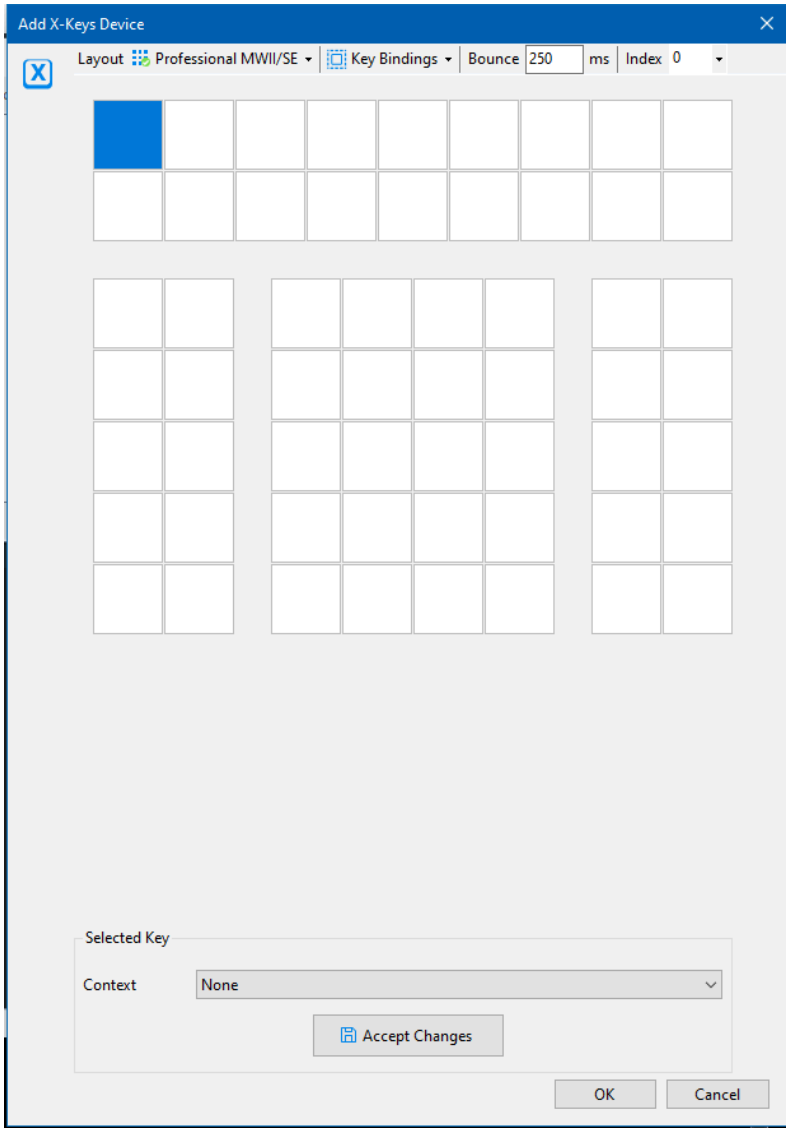


XKeys

XKeys can be set up globally in PRIME Playout module or can be scene based.

Playout

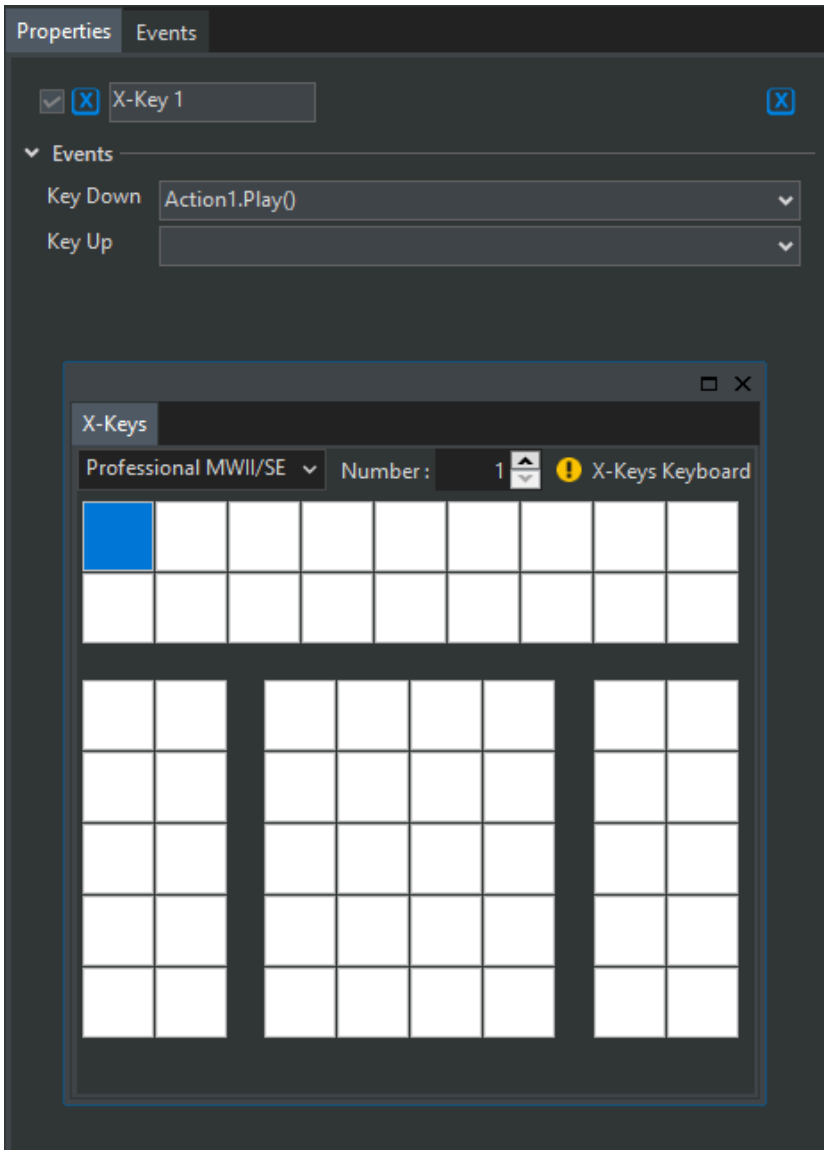
If users configure XKeys from the Runtime user interface, these button presses will act globally regardless of any scenes being currently opened.



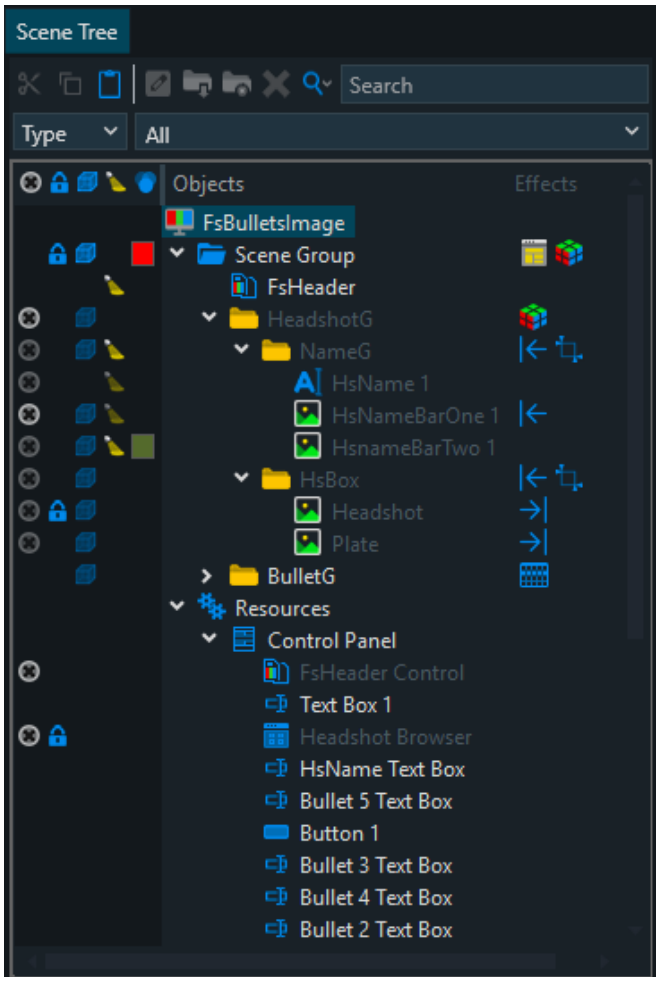
The “Index” property allows for multiple XKeys devices to be daisy chained. If multiple devices of the same type are plugged in PRIME will allow users to target each separately by using the “Index” property.

Scene based

Key up-Down properties will expose the Triggers list for users to hook up events to the key presses



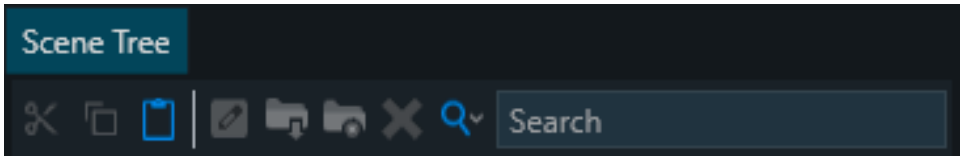
Scene Tree



The **Scene Tree** is divided up into several sections:

- **Quick Functions and Search Bar**
- **Advanced Search by Type and Tag**
- **Object Properties Column**
- **Objects Column**
- **Effects Column**

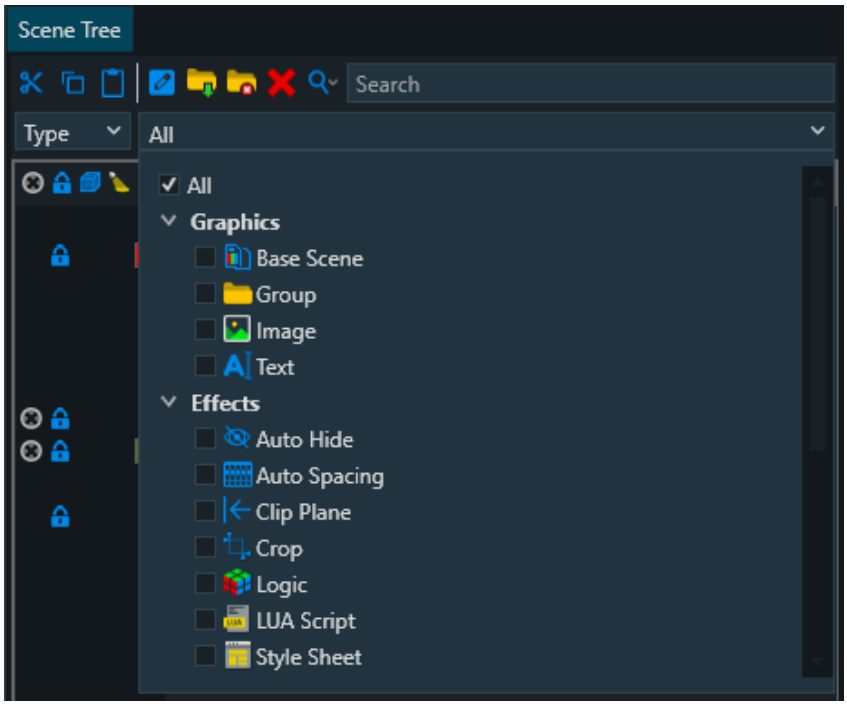
Scene Tree Quick Functions and Search Bar

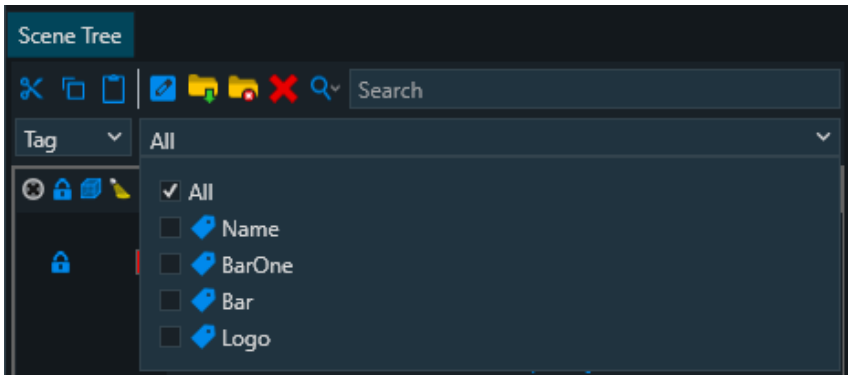


- Cut
- Copy
- Paste
- Rename
- Group Selected
- Ungroup
- Delete
- Search Properties
    - Filter
    - Highlight
    - Advanced
- Search Bar

Scene Tree Search by Type or Tag

Left click the magnifying glass and select Advanced to toggle searching by Type or Tag



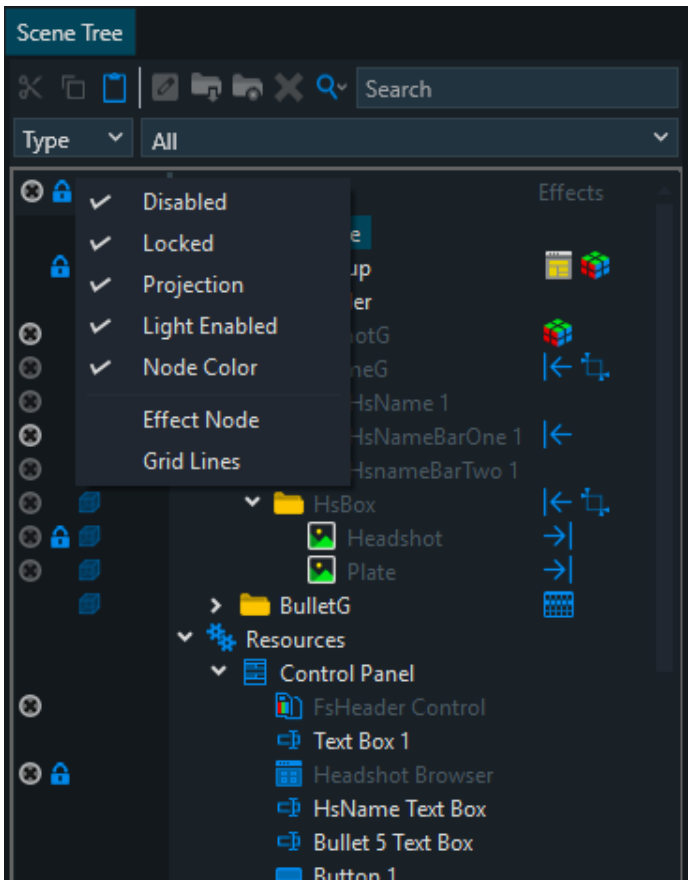


Designers can search for and see all added Objects in a Scene. By selecting one or more objects at a time, designers can quickly search for certain objects such as Graphics, or Graphics + Effects, or Graphics + Effects + Resources for example.

Click the left menu from Type to Tag to Search by Tag. This allows designers to see all Tags within a PRIME Scene and also filter or highlight objects with only the specified tag.

Search by Type and Tag uses the same Filter or Highlight Search Modes like when searching by name. Users can also combine Search by Type or Tag along with Searching by Name if needed.

The Objects Properties Column



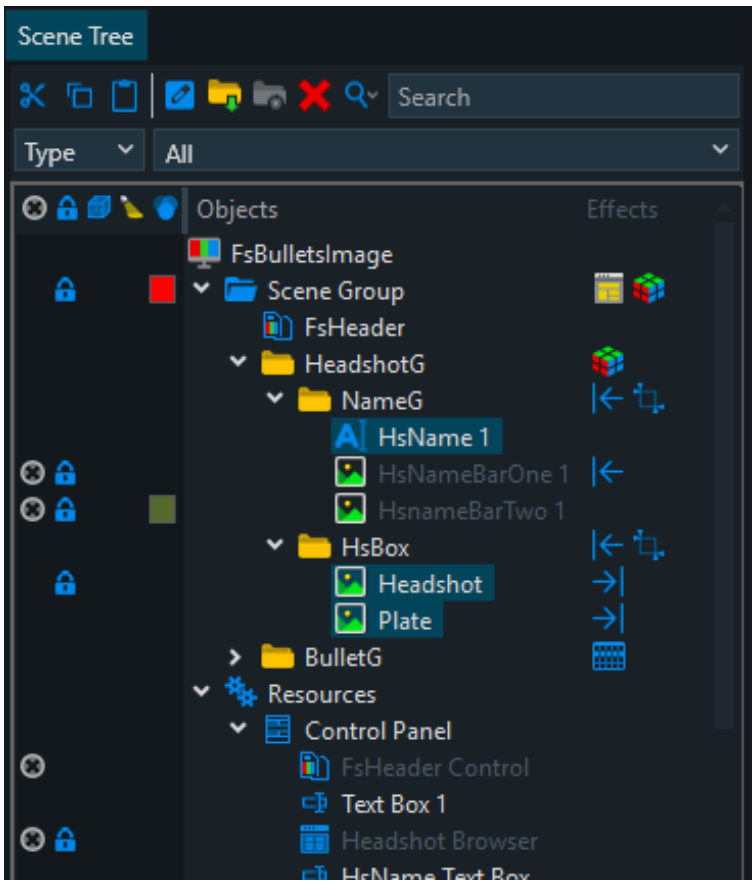
The Left Column allows for toggling on and off the Object properties
*Right click on the left column toolbar to hide/show these properties

Objects Properties

Each object has properties to the left of the object in the darker section:

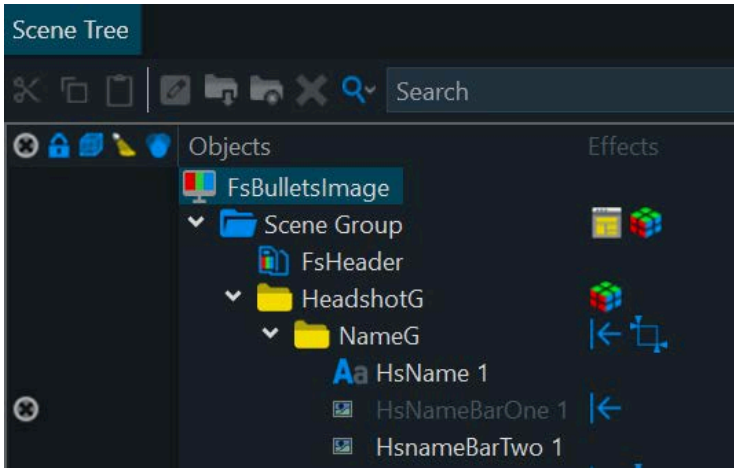
- Disabled, Locked
- Locked
- Projection
- Lighting
- Node Color

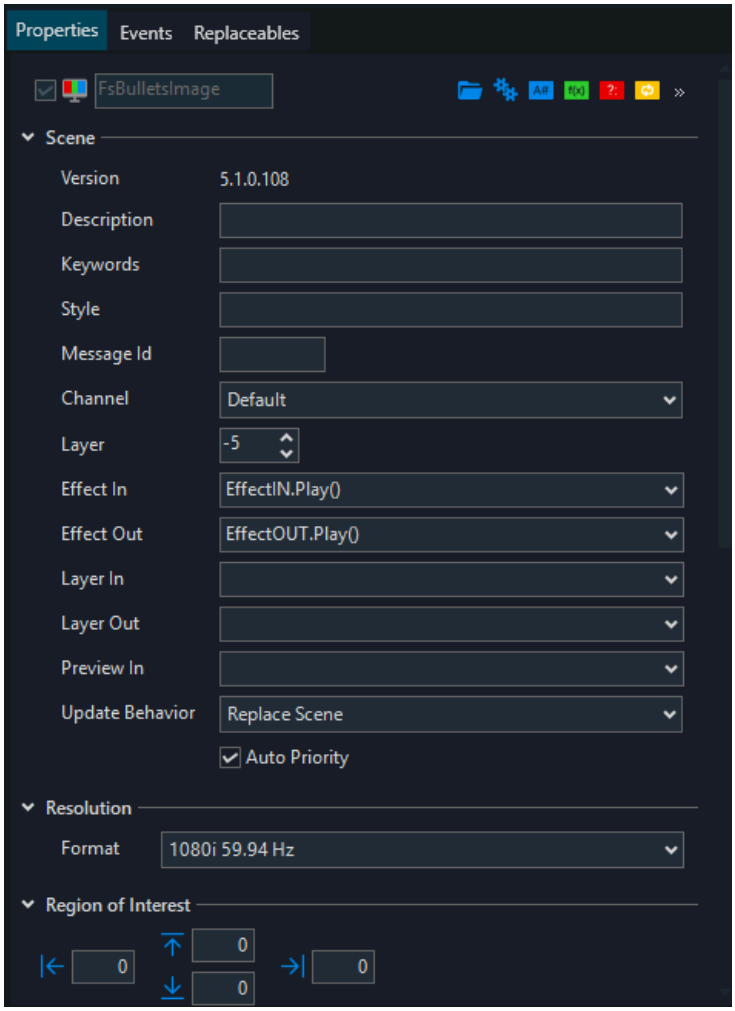
The Objects Column



Shows all added Scene Toolbox Objects (Graphics, Effects, and Resources), Control Panel Controls, Parameters, Expressions, Logic, Conditions, and Replaceable objects from top to bottom.

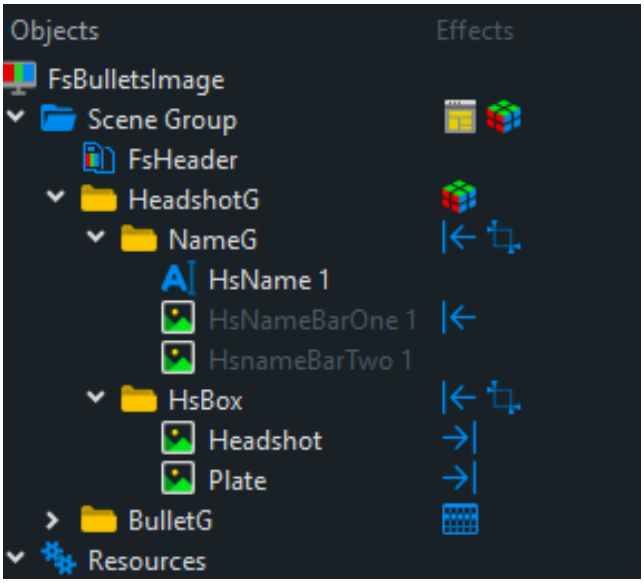
Selecting an object or effect will show its properties





The Effects Column:

- Allows for the dragging and dropping of **Effects** from the **Toolbox**



Parameters/Expressions/Conditions/Replaceables:

See the separate sections and documents for descriptions.

Timeline Editor

The timeline editor allows the creation of **Actions**

Actions are groups of **Animations**

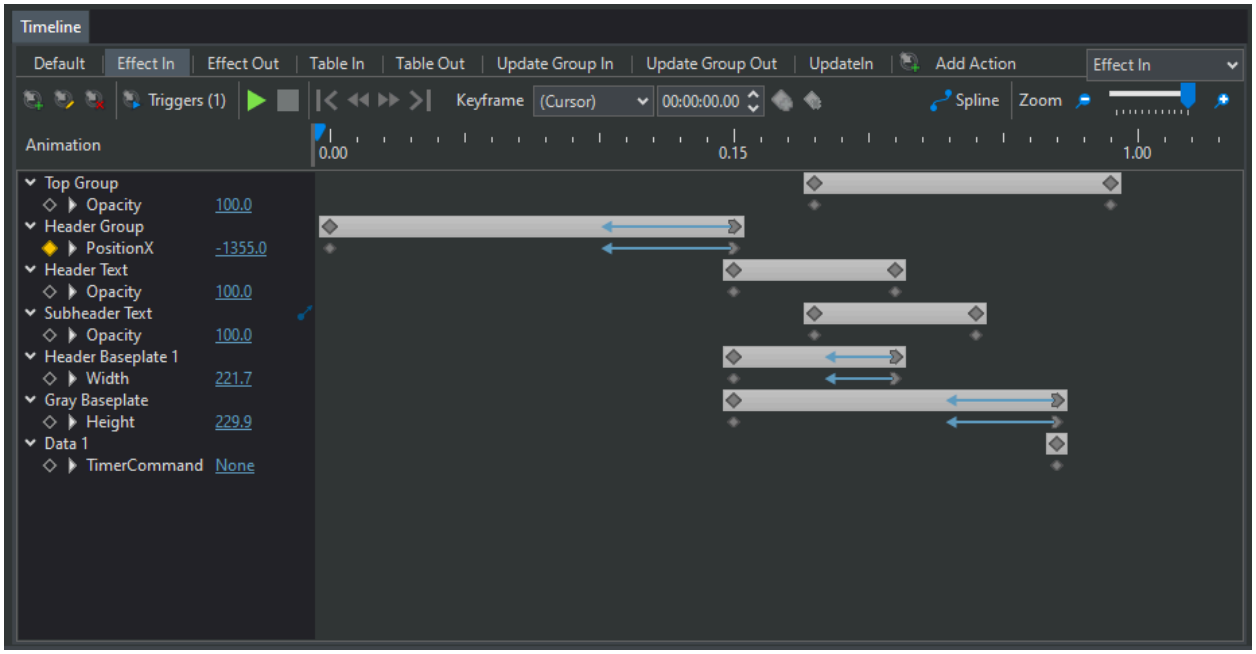
Animations consist of **Animation Tracks.**

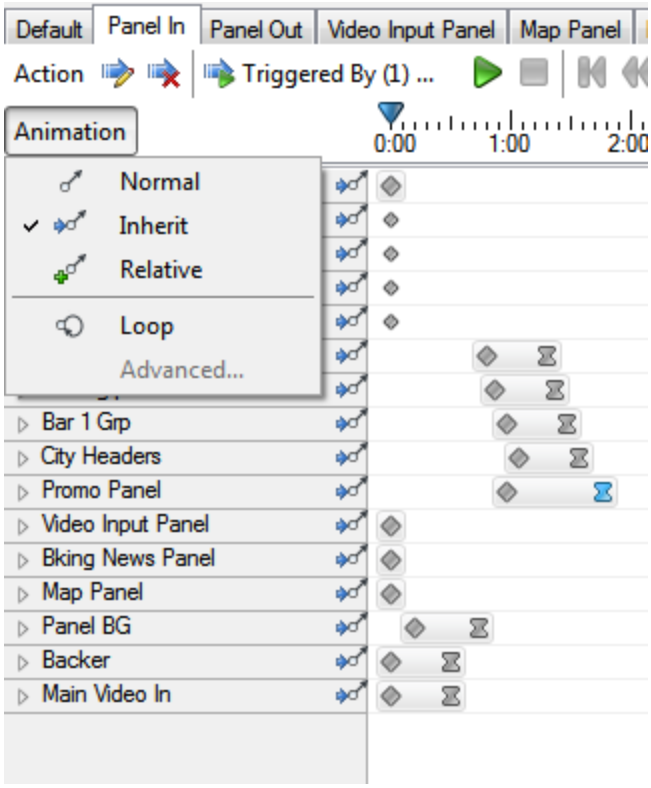
An **“Animation Track”** is made up of **Track Keyframes**.

Note: **“Transitions”** are individual effects that may be applied to objects. See the “Transitions” section.

Proportional Scaling of the timeline: Select 3 or more keyframes, then hold down the Alt key and drag one

The left-hand column is a list of scene objects that can be animated by creating object animations





Animation Track Properties

Normal:

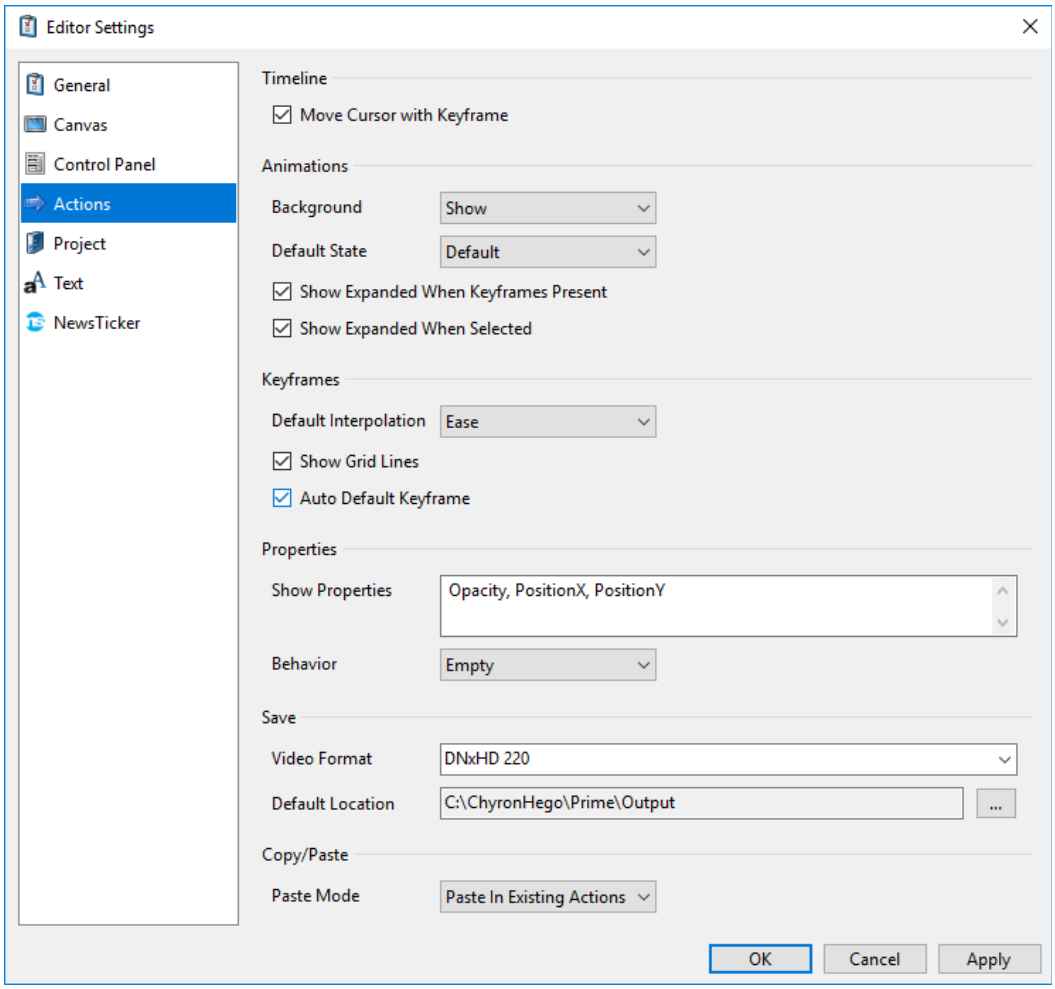
Inherit The animation starts from or finishes in the current attribute value. It is like setting the value of the first or last keyframe to the value of the animated attribute at time the animation is started. This comes handy when you want to animate to/from defined state but the current state is unknown. Using this mode minimizes the number of animations you would have to create from all possible states.

Relative: The animation evaluates a number that is added to the current attribute value. Available for before looping only

Loop: Loops the Animation Track

Default Action

There is a setting that determines the behavior of keyframes in the Default action. The Default action will play when the scene is loaded to Preview, and will play on Program only when an Effect In event is not present. Please see the Scene Events section for more information.

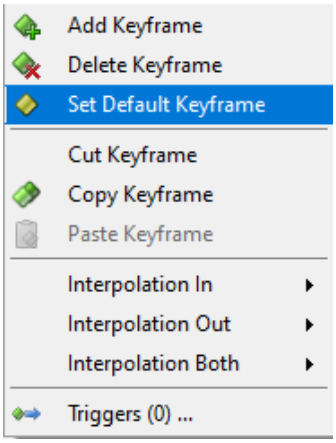


When “Auto Default Keyframe” is checked keyframes will automatically be added to the Default action as keyframes are added in other Actions.

Ex: If I create an action “Dissolve Off” for scene object “Image1”, an opacity keyframe for Image1 will be added to the Default Action.

Set Default Keyframe

“Auto Default Keyframe” only sets the Default keyframe once and is not updated each time the property value is changed in other actions. Users might find it helpful to use “Set Default Keyframe”. This will copy the selected keyframe value and paste it automatically to the Default action. “Set Default Keyframe” is accessible in the context menu by right-clicking on the keyframe.

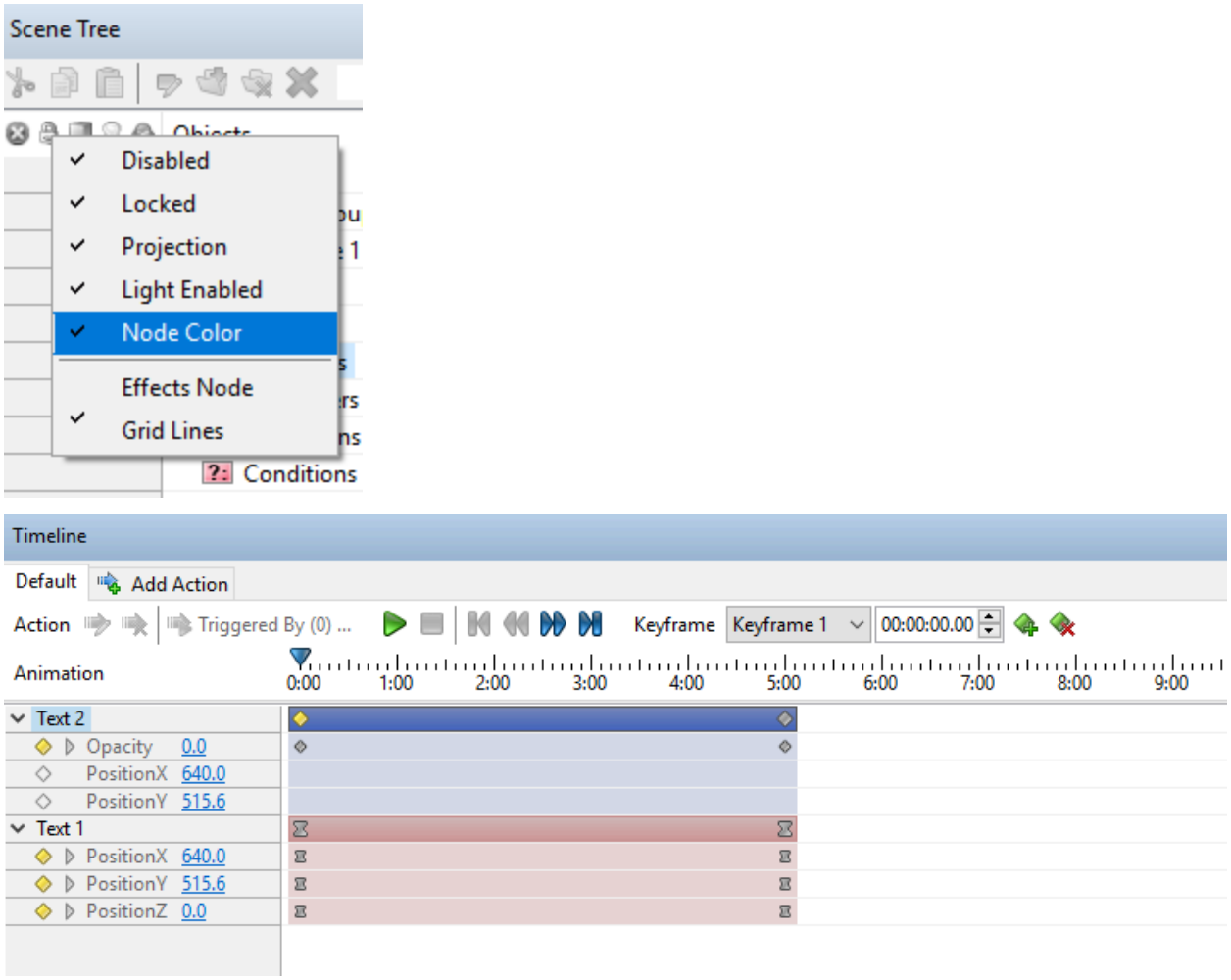


Ex. Continuing with the previous example, if I had accidentally set the opacity keyframe in “Dissolve Off” to 0, the Default action would also be 0. This might provide me with incorrect previews. Instead of copying and pasting the correct value from the “Dissolve Off” action into the “Default” action I could simply right-click on the keyframe in “Dissolve Off” and click “Set Default Keyframe”

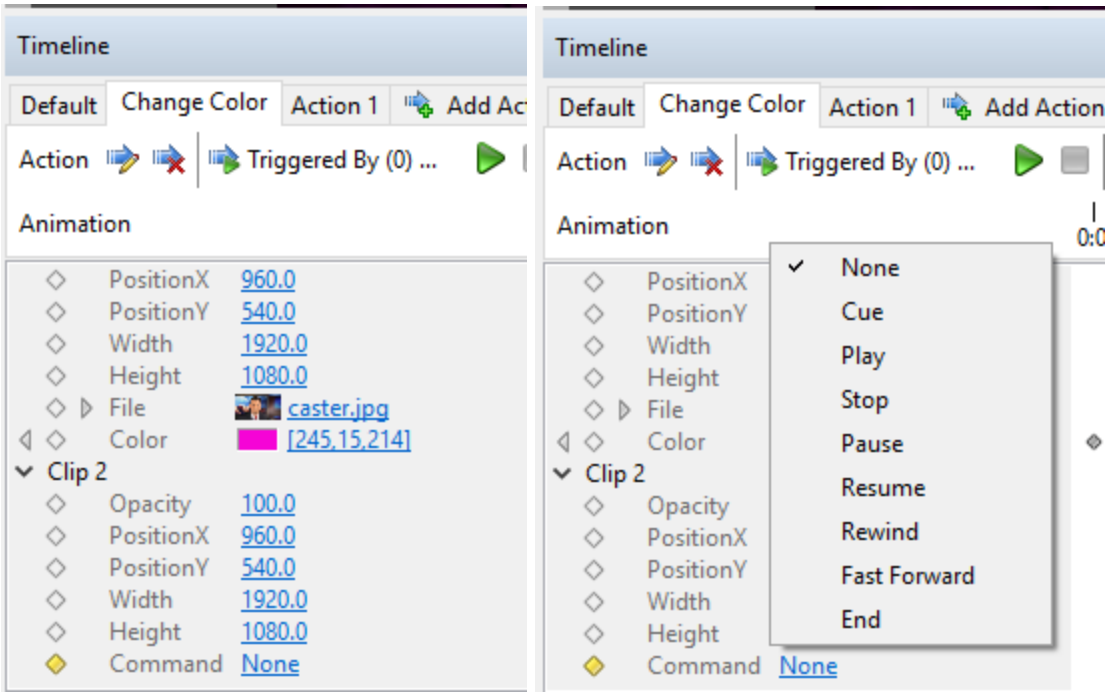
When “Auto Default Keyframe” is disabled, at no time will keyframes be automatically added to the Default Action.

Color Coding the Timeline

Select “Node Color” from the Scene Tree



Keyframe Property Values



The above screen shots show keyframe navigation per track and applying property value changes from the Timeline editor.

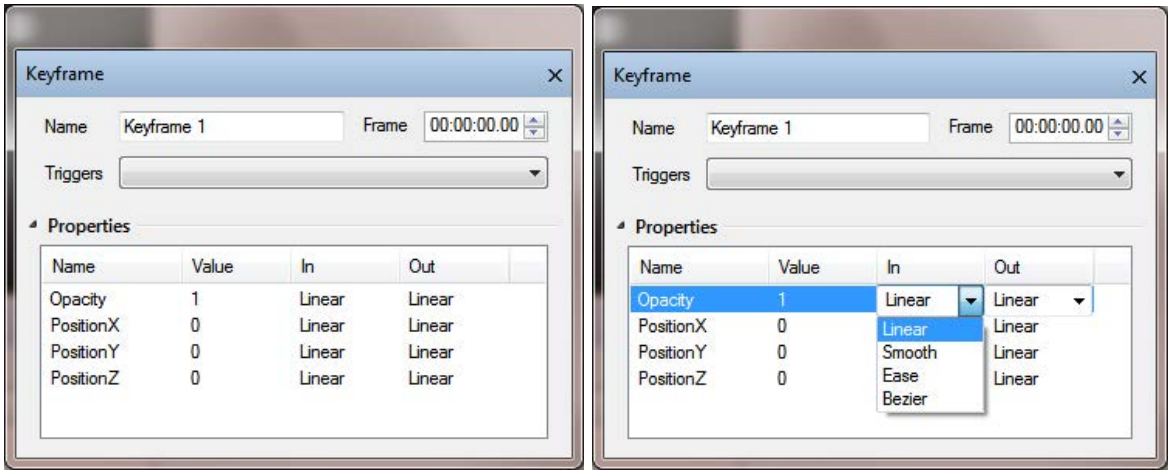
Click on the color chicklet to open the color picker.

Click on the Thumbnail image to change the filename

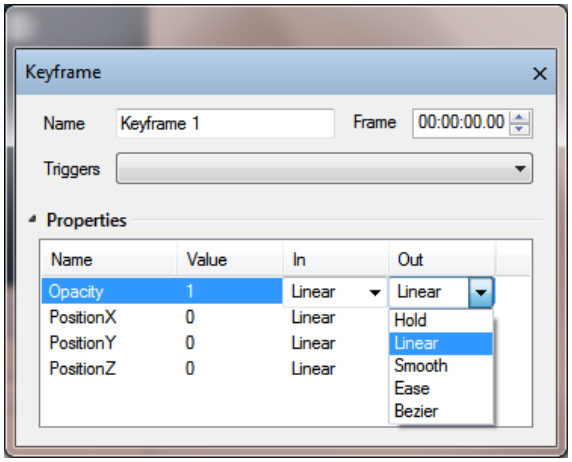
Click on any Command property to select any command associated with that object

Click on any blue link to modify the objects property value.

Keyframe Interpolations:

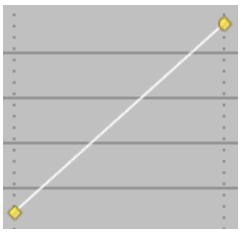


See the "Timeline Triggers" section for executing triggers from the timeline.

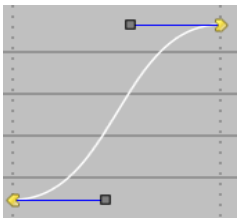


"In" interpolations can be Linear, Smooth, Ease or Bezier

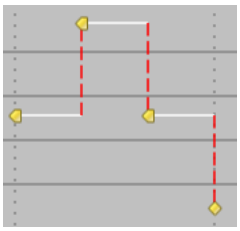
"Out" interpolations can be Hold, Linear, Smooth, Ease or Bezier



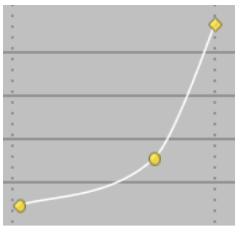
Linear: Proportional average between 2 adjacent values. This is the default interpolation unless changed in the settings.



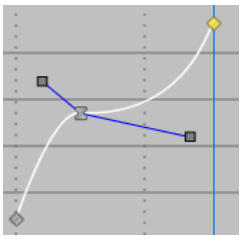
Ease: In and Out tangents are horizontal in the keyframes.



Hold: The value from the previous keyframe is kept until it is redefined by the next keyframe. The only interpolation for attributes with discrete values. This might give some animations a jumping effect, depending on the properties keyframed.



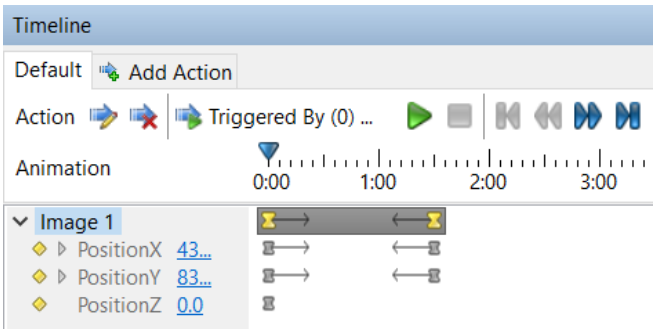
Smooth: In/Out tangents are synced to maintain a smooth continuity of a curve.



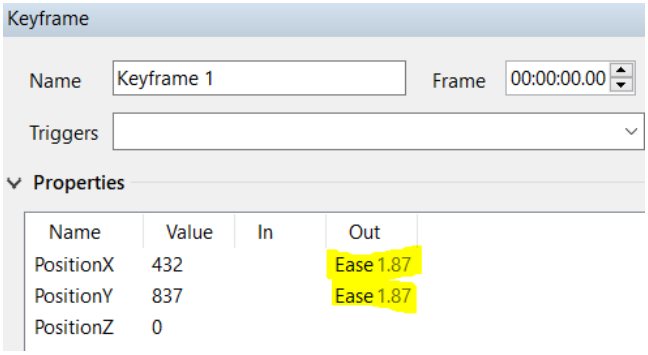
Bezier: Similar to the Smooth interpolation, with the distinction that the In/Out tangents are not synced.

NOTE: Clicking a Keyframe in the Timeline Editor with the Ctrl button down will cycle the different Keyframe types.

Keyframe Timeline Ease Editor



When a keyframe is set to “Ease” arrows will appear in the User Interface allowing designers to modify the ease values. The same can be achieved in the Keyframe editor by entering the numeric values. The arrows allow for a nicer experience.

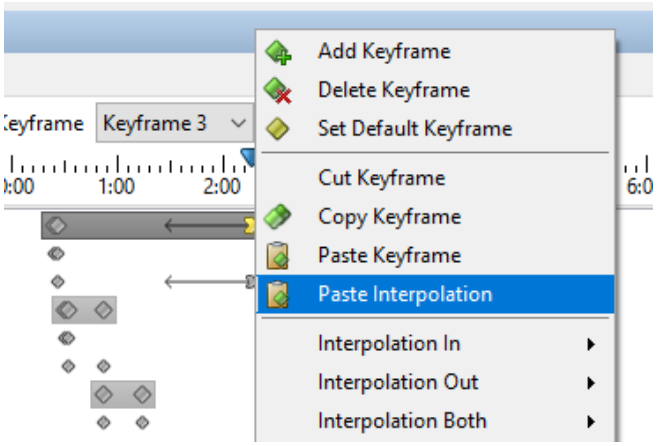


Dragging the arrows inward or outward will modify the numeric values in the Keyframe editor.

Default Ease value can be set in “Config->Settings->Action”

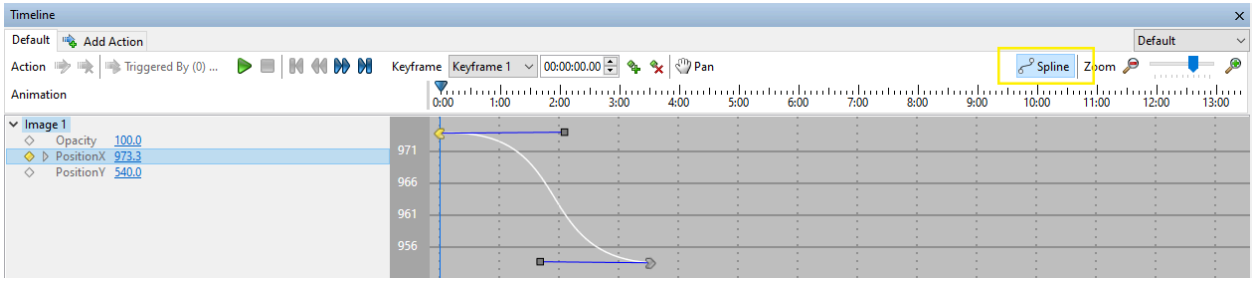
Copy/Paste Interpolation

When pasting a copied keyframe, the user can decide to paste the interpolation information only. This means the same smooth motion can be applied to different properties.

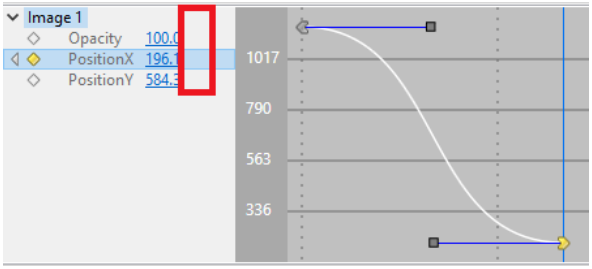


Keyframe Spline Editor

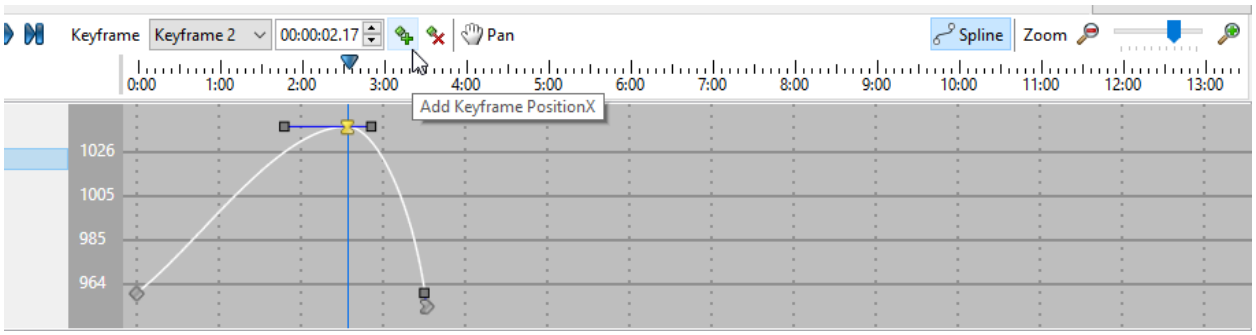
The **Spline Editor** offers users more control over their animations. Click on “**Spline**” to toggle between the **Timeline** view and the **Spline Editor.**



Only one property can be displayed at any given time. To change which property is displayed click in the region to the right of the property values.



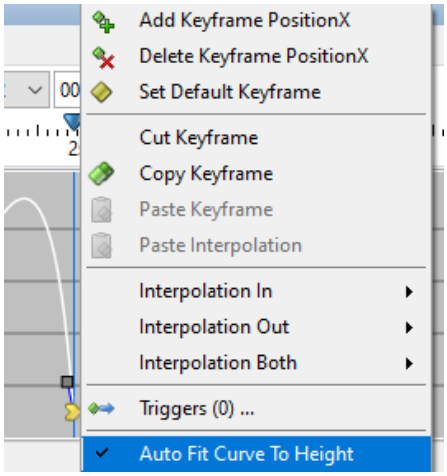
Keyframes can be added and removed on the selected property at the selected point on the curve.



The zoom tool in **Spline Editor** mode only affects the x-axis.

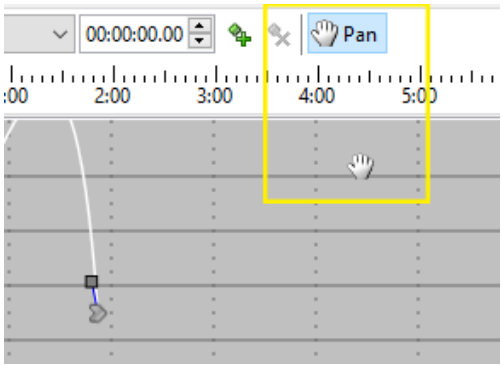
Auto Fit to Height

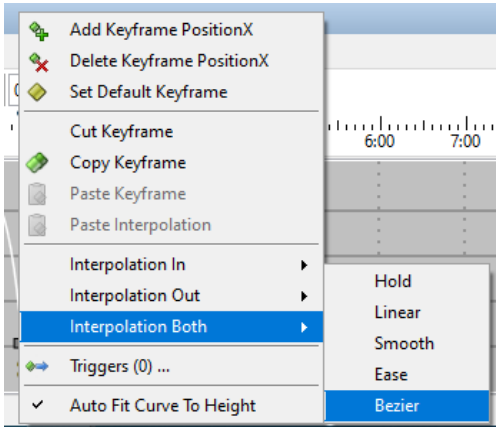
The y-axis will automatically scale to contain all keyframes in view when Auto Fit Curve toHeight is enabled.



With Auto Fit to Height disabled the curve may appear outside the viewing area.

To **Pan** around the timeline on both the X and Y axis hold the middle mouse toggle wheel down and move the mouse in all directions. Pan mode can also be entered by clicking the pan icon.





Interpolation

Interpolation modes are accessed via the context menu by right-clicking on the keyframe

Interpolation Both: Sets both the In and Out interpolation of the keyframe.

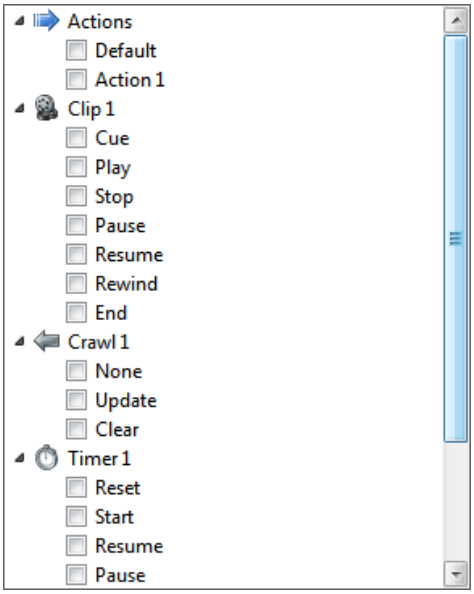
Interpolation In: Sets only the In interpolation of the keyframe

Interpolation Out: Sets only the Out interpolation of the keyframe

Triggers

The event driven model of PRIME allows users to trigger methods of any scene object. The “Triggers List” lists all objects that have commands. These commands may be triggered from any event within the scene, including a Keyframe event in the timeline. The trigger list is also available to the Control Panel controls. The trigger list is available from any “Event” list.

Trigger List

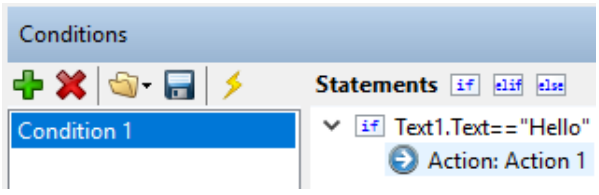


Triggered by List

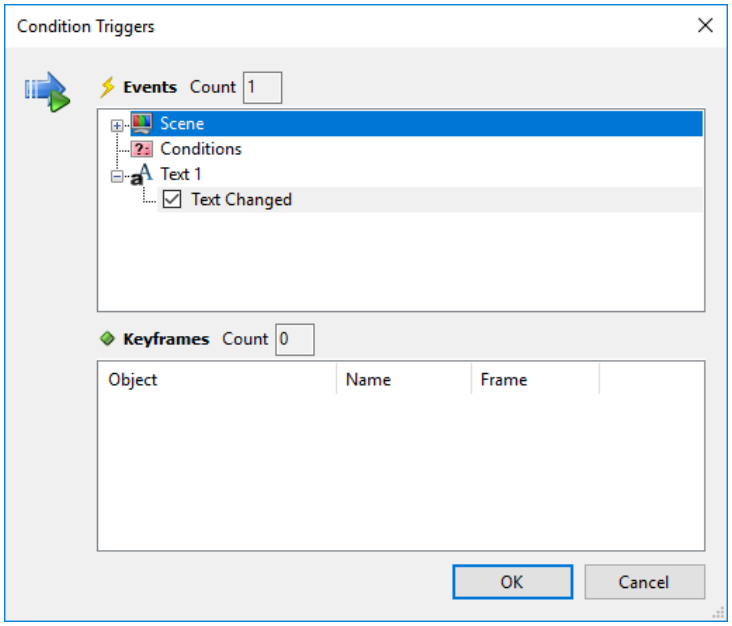
In the event driven model sometimes it’s difficult to determine which event triggered the condition, Action, script or any other trigger. PRIME has a “Triggered” by liust that will show you what events will trigger your Condition, Action or Script or any other Trigger.

Usually the Lighting Bolt icon on a tool bar will open the “Triggered By” list to show you what will be the trigger.

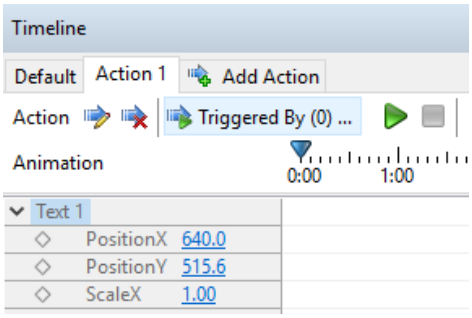
For example, in the “Condition” Editor:



Clicking on the Lightning bolt will bring up the “Triggered By” dialog showing what event will trigger “Condition1” in this example: In this example it shows that the “Text1 TextChanged” event is the event that will trigger “Condition1”. Multiple events could hooked up to the same trigger.



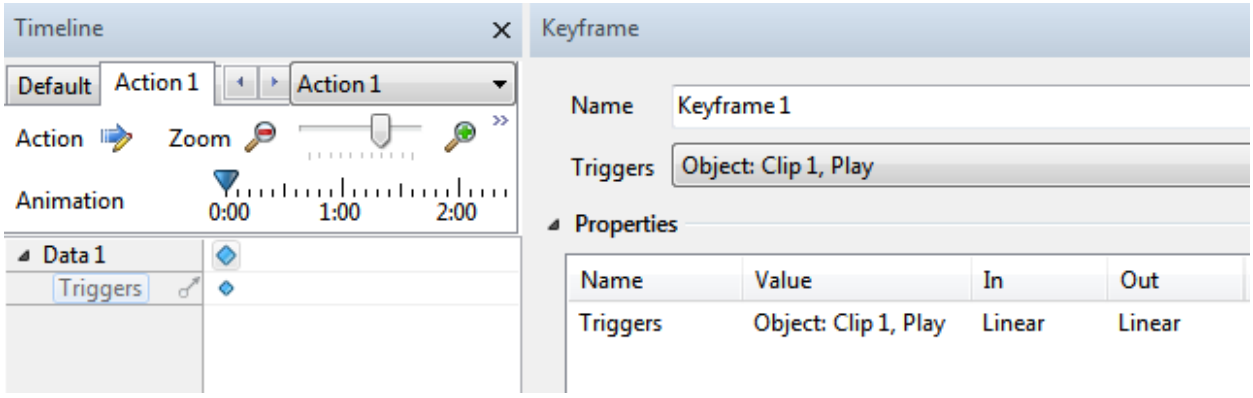
For Timeline Actions there is a “Triggered by” button. The label also shows the number of events that could trigger the Action:



Timeline Triggers

Triggers can be applied to the Scene Group, Scene Objects and Resources via the Properties Pane.

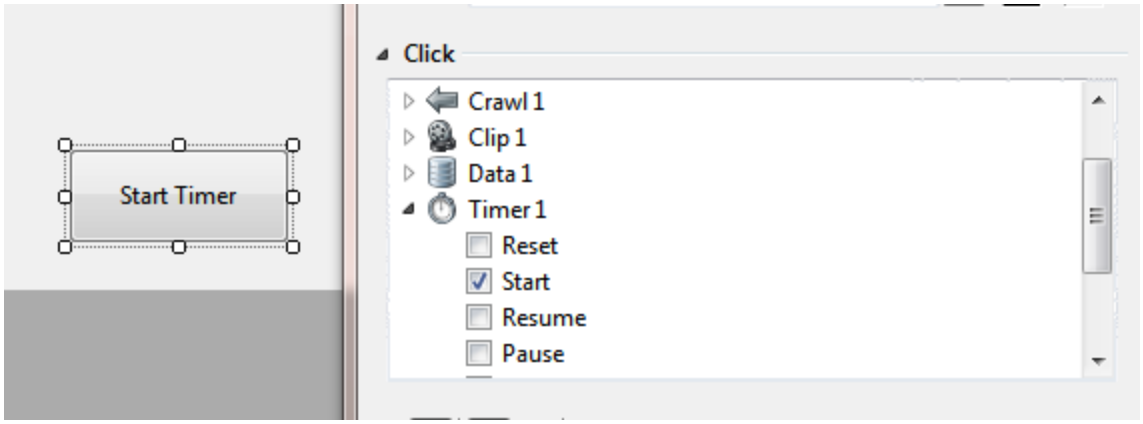
To add a Trigger to a scene object, first add a keyframe to the timeline then select a Trigger or multiple Triggers from the Triggers list in the Keyframe Properties.



To add Triggers to the Scene Group use the command sequence in the properties pane.

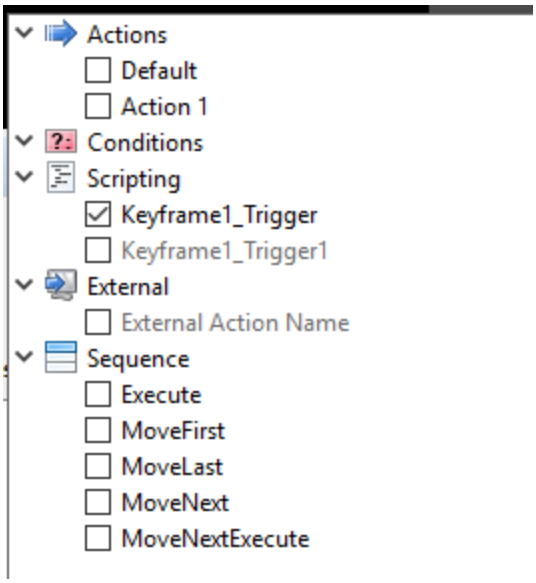
Timeline triggers can not be added to Expressions, Parameters Conditions and Replaceables

Control Panel Triggers



Triggering C# Scripts

C# Script functions can be triggered from the “Triggers List”



Application Logic

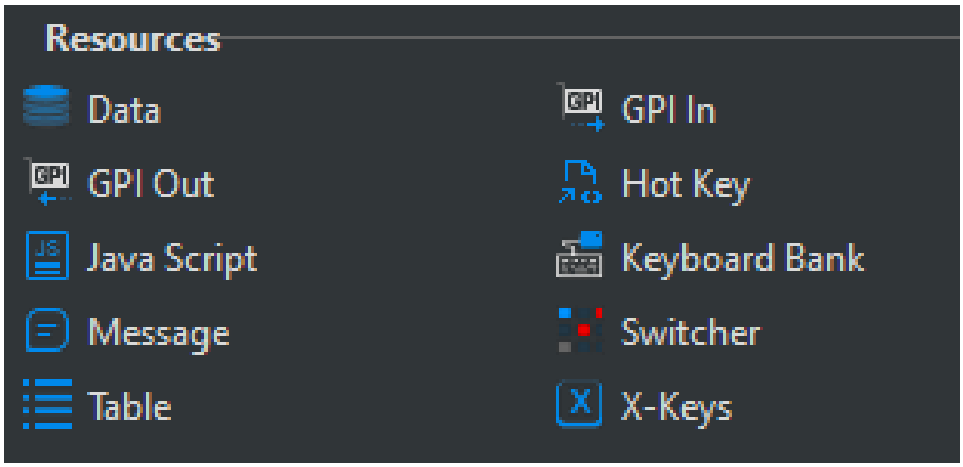
Application Logic is a scene that functions on application level.
Create a new or edit an existing Application Logic scene. Consider Application logic as a new scene that gets created by PRIME at startup and runs continuously while the PRIME application is running. There are a limited amount of scene resources available such as GPI out, PRIME Switcher and XKeys. Parameters, Conditions and expressions are available as well. The parameters defined here have a scope beyond Scene and Project parameters. Parameters defined here are available to all scenes in all projects.

Application Logic Scene

When Prime is started, Application Logic Scene is loaded with all the events, conditions and resources inside it. Prime creates an empty Application Logic Scene by default called “Default.pal” and stores it in Prime\Settings\Logic folder.

This scene can be viewed and edited in Editor through File -> Application Logic -> **Edit Application Logic**. The user can also create a new Application Logic Scene through File -> Application Logic -> **New Application Logic**.

Application Logic scene currently supports **Data**, **GPI In**, **GPI Out**, **Hot Key**, **Java Script**, **Keyboard Bank**, **Message**, **Switcher**, **Table**, **and X-Keys** resources.

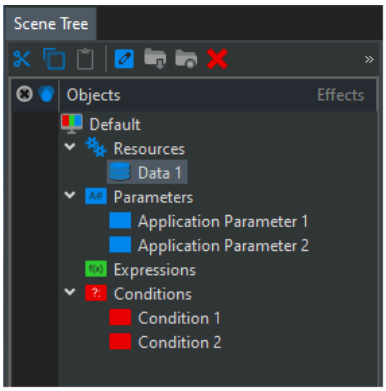


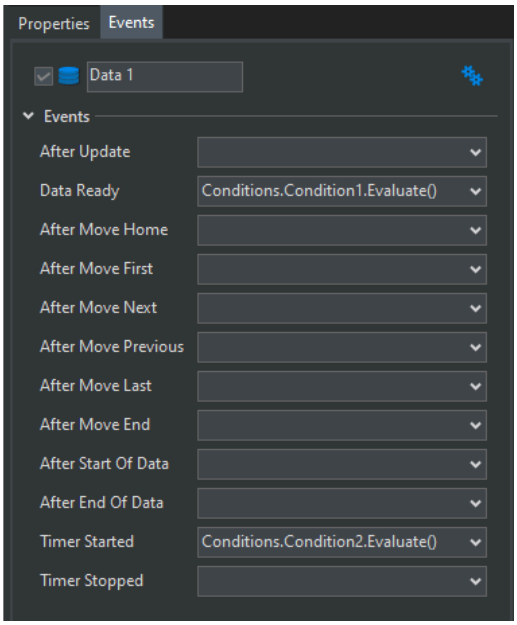
Resources supported by Application Logic

These resources can be used the same way they are used in a project scene. There are numerous scenarios this scene will enhance the experience of designing and working with Prime.

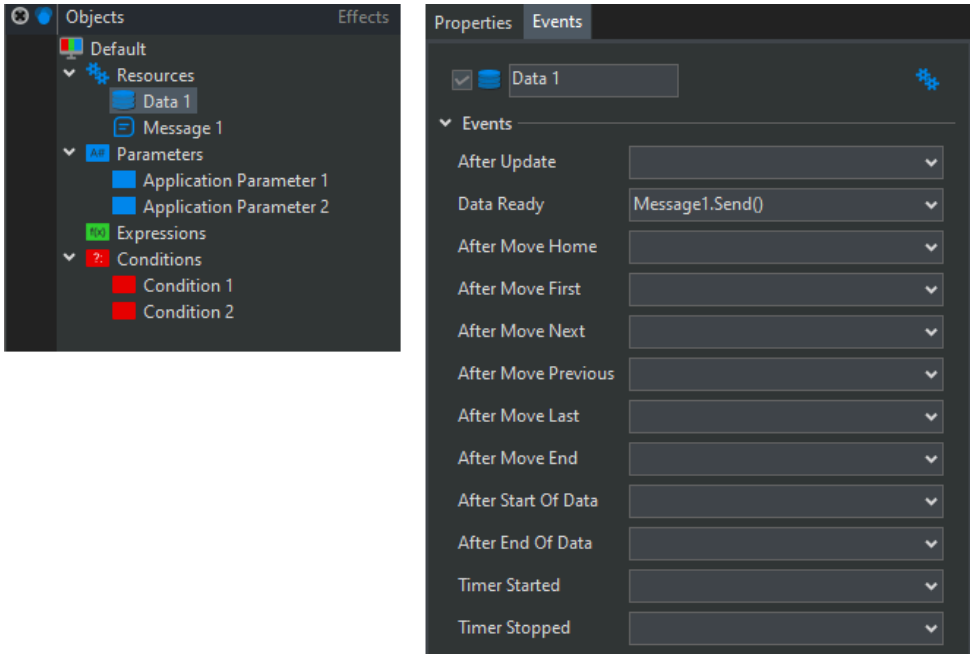
Examples of use cases:

Data object is created to evaluate conditions stored in Application Logic Scene.





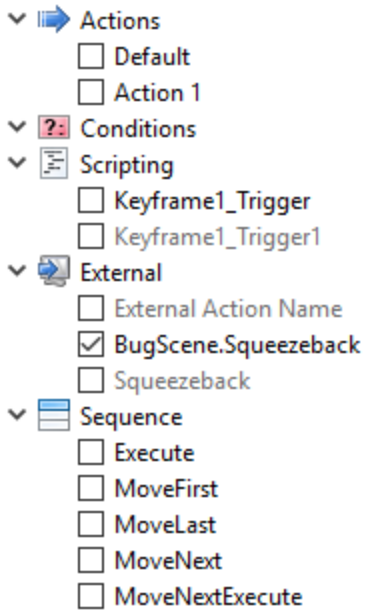
This example shows a data object, which is used to evaluate conditions to modify application parameters.



In this example Data 1 object loads its content from data source and fires Data Ready event, which can be used to send a message stored in Message1 object

External Activations

External Activations are functions that activate Actions and or Conditions in other scenes on output.



There are four possible arguments:

<ChannelIndex> is a number describing a channel (one-based so the first output channel is 1).
<ChannelName> is the text name of a output channel.
<SceneName> is the text name of a scene
<ActionName> is the text name of an action

All of these arguments support a wildcard (asterisk) in the following manner:

- *
  This will match anything. So * could match any channel, any scene or any action depending on which argument it is utilized for.

- *Text
  This will match any value that ends in "Text"

- Text*
  This will match any value that starts with "Text"

- *Text*
  This will match any value that contains "Text" somewhere other than the start or end.

You cannot use the wildcard like this:

- *Text1*Text2*

Supported External Activation Usage for Actions or Conditions:

- **ActionName**
  This will match any action with the provided name regardless of which scene contains it; only scenes on the same channel as the scene causing this trigger will be affected. This is consistent with the original External Activation implementation.

- **SceneName.ActionName**
  This will match any action with the provided name in a specific scene, but only on the same channel as the scene causing this trigger. This is also consistent with the original External Activation implementation.

- **ChannelIndex.SceneName.ActionName**
  This will match any action with the provided name in the designated scene, but only on the channel indicated by the provided index.

- **ChannelName.SceneName.ActionName**
  This will match any action with the provided name in the designated scene, but only on the channel indicated by the provided name.

The same format exists to execute Conditions:

ConditionName
Scene.ConditionName
Channel.Scene.ConditionName

Actual Usage Examples:

Imagine the following scenario.

- Two output channels: "Output1" and "Output2"
- Two scenes: "FirstNames" and "LastNames"
  - FirstNames has an action named "SlideOn" and "SlideOff"
  - LastNames has an action named "DissolveOn" and "DissolveOff"
- Play both scenes to both outputs

Now for crazy examples:

- **SlideOn**
  If triggered from a scene on Output1, this will play action FirstNames.SlideOn.
  If triggered from a scene on Output2, no actions will be played.

- **FirstNames.SlideOn**
  If triggered from a scene on Output1, this will play action FirstNames.SlideOn
  If triggered from a scene on Output 2, no actions will be played.

- ***.*On**
  If triggered from a scene on Output1, this will play action FirstNames.SlideOn and LastNames.DissolveOn.
  If triggered from a scene on Output 2, no actions will be played.

- **1.FirstNames.SlideOn**
  Regardless of which scene activated this trigger, this will play action FirstNames.SlideOn on Output1.

- **2.LastNames.DissolveOn**
  Regardless of which scene activated this trigger, this will play action LastNames.DissolveOn on Output2.

- **2.*.*On**
  Regardless of which scene activated this trigger, this will play FirstNames.SlideOn and LastNames.DissolveOn on Output2.

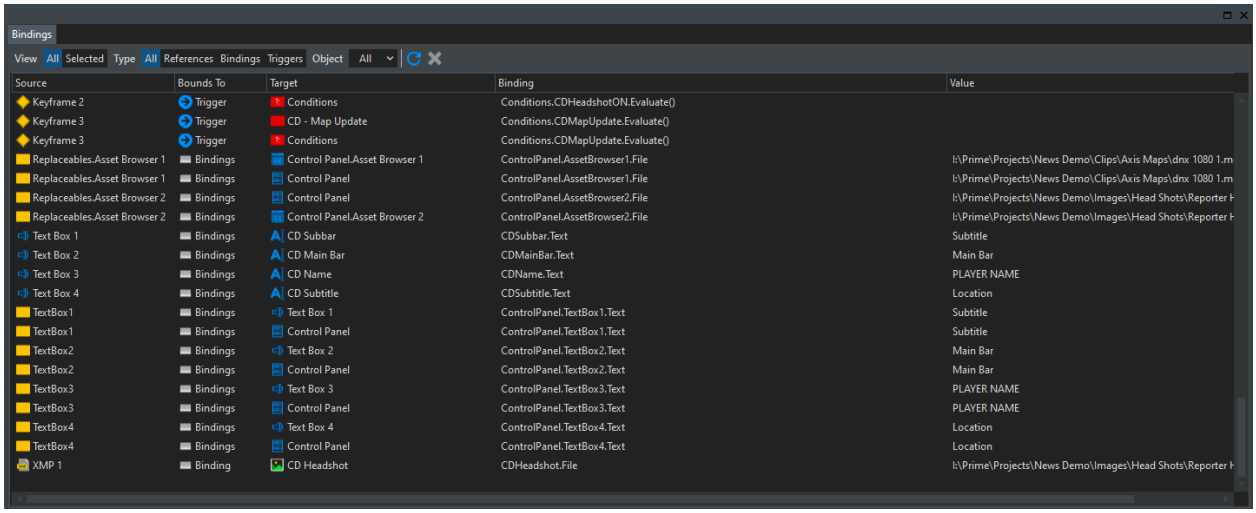
- ***.FirstNames.SlideOn**
  Regardless of which scene activated this trigger, this will play FirstNames.SlideOn on both Output1 and Output2.

- ***.*.*On**
  Regardless of which scene activated this trigger, this will play actions FirstNames.SlideOn, LastNames.DissolveOn on Output1 and FirstNames.SlideOn, LastNames.DissolveOn on Output2.

- **Output2.FirstNames.SlideOn**
  Regardless of which scene activated this trigger, this will play FirstNames.SlideOn on Output2.

- **Output*.FirstNames.SlideOn**
  Regardless of which scene activated this trigger, this will play FirstNames.SlideOn on both Output1 and Output2.

Bindings View



The Bindings view is a great tool for users to understand and visualize how properties within a scene are bound to events. This is a great diagnostic tool.

In the above example the first item reads:

Keyframe 2 references a condition named “CDHeadshotOne”.

Source: The Object that has a binding

Bound To: The location of the source object binding

Target: The target object that is referenced by the binding

Binding: The target object the source is bound to

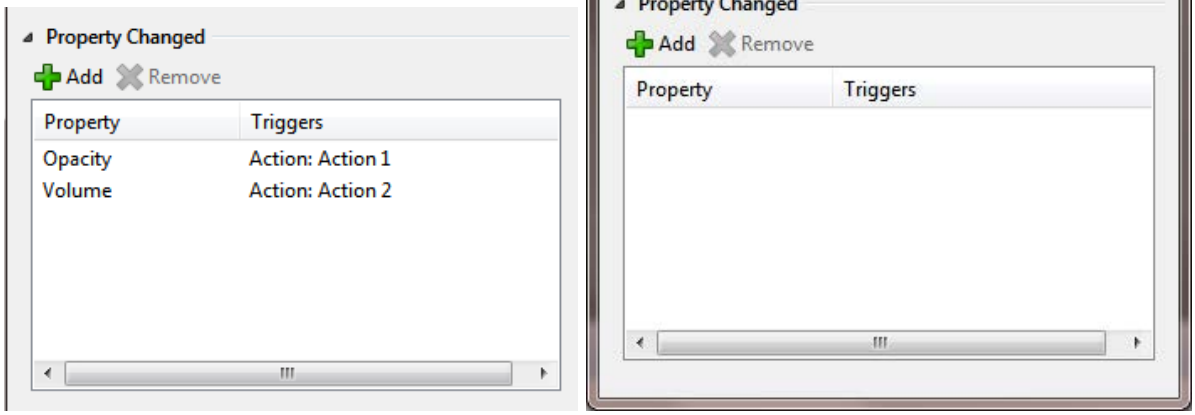
Value: The current value of the property

Events

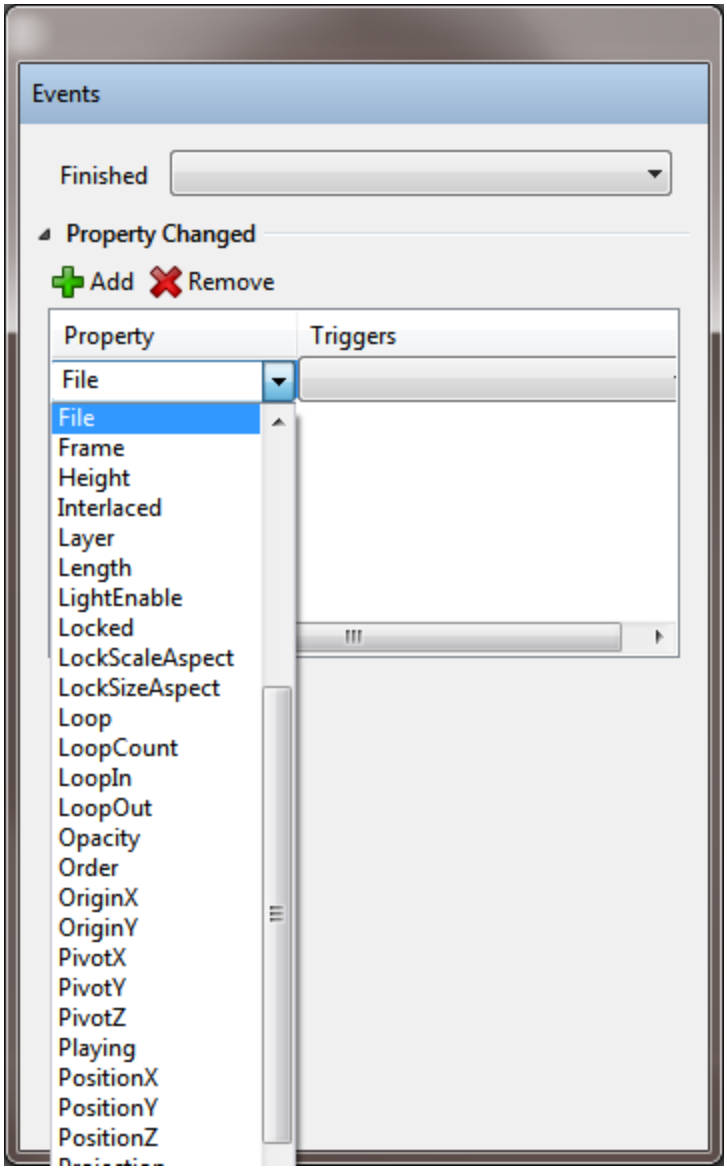
Events are the foundation of PRIME. Almost everything in a scene, meaning all objects, may raise an event when any of their properties are changed. Most objects have events. Users may “Hook Up” any “Trigger” (Above) to any event that gets raised within a scene.

Every Object will have an Event tab. Listed there will be commonly used events in combo boxes. There will also be a list view to add as many events as the object has to offer.

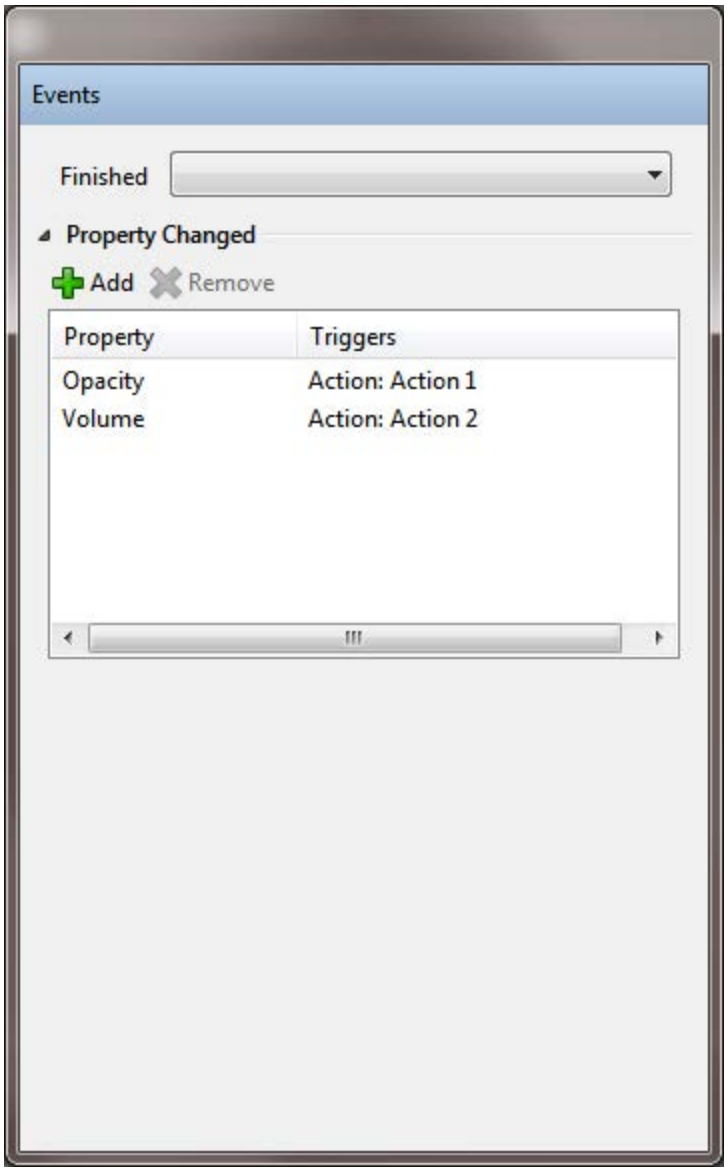
Below is the “Property Changed” section of every Event page.



The following example shows the events available to a Clip Object that trigger any item(s) in the Triggers list.


Events
Finished
Property Changed
Add
Remove
Property
Triggers
File
File
Frame
Height
Interlaced
Layer
Length
LightEnable
Locked
LockScaleAspect
LockSizeAspect
Loop
LoopCount
LoopIn
LoopOut
Opacity
Order
OriginX
OriginY
PivotX
PivotY
PivotZ
Playing
PositionX
PositionY
PositionZ

In this example, if the opacity changes it will trigger Action1. If the Volume property changes, it will trigger Action 2.



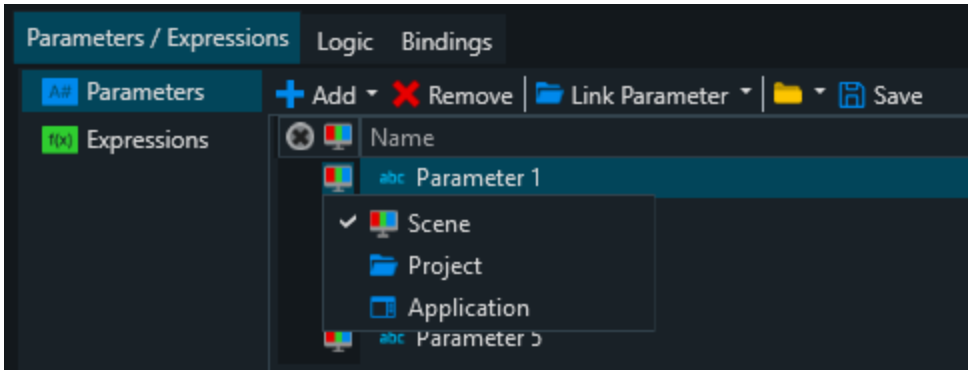
Parameters Editor

The Parameters Editor allows you to create, modify and delete parameters. Parameters are considered as storage locations for data. The Scope of a parameter's availability can be set to either Scene, Project, or Application.

- **Scene** Parameters are only available to objects in the parent scene.
- **Project** parameters are global to all scenes in the project.
- **Application** Parameters, defined in the Application Logic section, are available to all scenes in all projects.

Disable - disables the parameter in the Parameters and Scene Tree windows.

Scope - You can change the scope type by selecting the scope button next to the disable button for each added parameter.



Parameters, Expressions & Conditions are documented in the PRIME Parameters, Expressions & Conditions

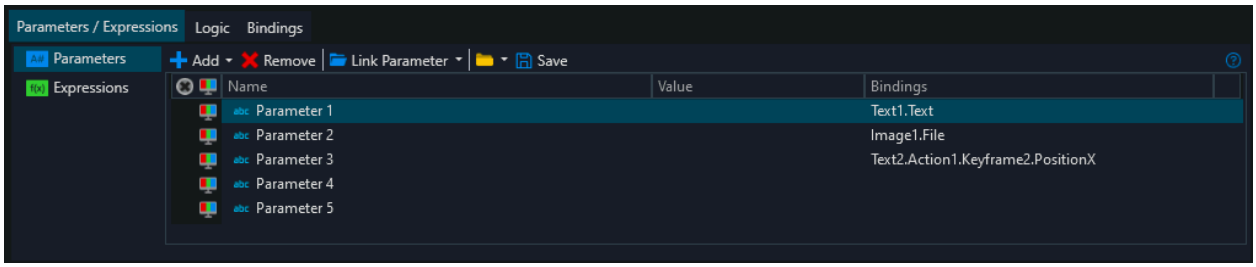
Parameters are useful for binding scene objects properties.
To bind any Object Property to a parameter:

1. Drag and drop the Object into the **Binding** column.

OR

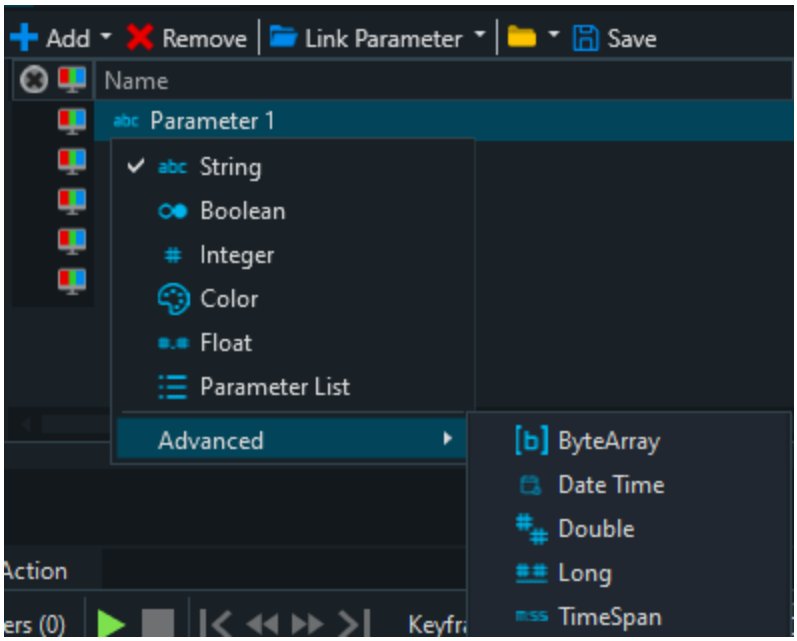
2. Drag from the **Scene Tree** as in the example above. By dragging Text1 from the **Scene Tree** into the parameters **Binding** column, the default property of the Text1 object is its "Text" property. The binding is shown as "SceneName.ObjectName.ObjectProperty".

Dragging and dropping any attribute or keyframe into an existing parameter will bind that parameter to that attribute. Drag keyframes from the keyframe editor to bind these properties.



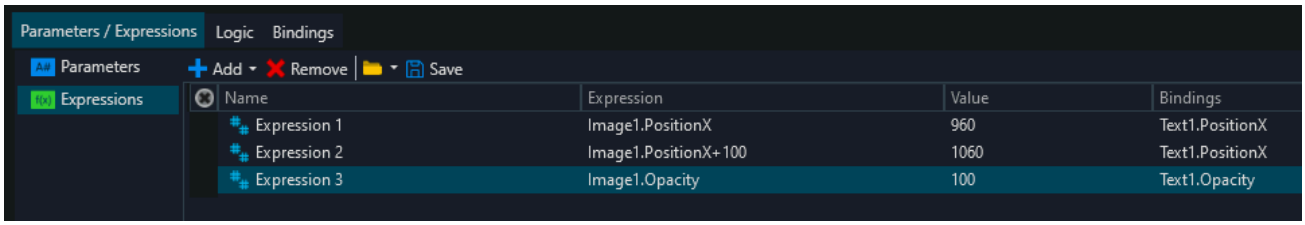
Type

PRIME will determine the type automatically when users drag and drop the parameter. If users add parameters manually then the type needs to be set by the user. Users can set the type by clicking on the abc text next to Parameter and choosing from the variety of options.



Expressions Editor

Parameters, Expressions & Conditions are documented in the PRIME Parameters, Expressions & Conditions



Expressions may be inserted into any binding that accepts a string of text.

Expression Samples:

- Set X position of one object to another:

Type	Expression	Bindings
Double	Image1.PositionX	Text1.PositionX

- Set X position of one object to another plus an offset:

Type	Expression	Bindings
Double	Image1.PositionX + 100	Text1.PositionX

- Set Opacity of one object to another times a scale value:

Type	Expression	Bindings
Double	Image1.Opacity * .5	Text1.Opacity

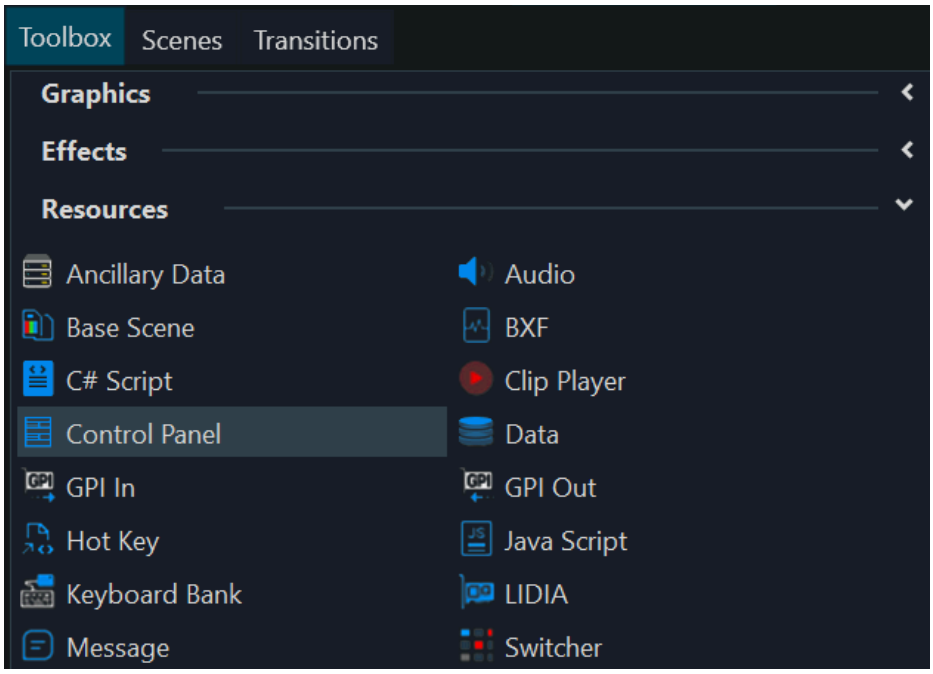
- Set File of one object to the modified Text of another:

Type	Expression	Bindings
String	"I:\Graphics\" + Text1.Text + ".png"	Image1.File

Scene Control Panel

To add a Scene Control panel to a scene or base scene:

1. Navigate to Toolbox > Resources > Control Panel
2. Single click Control panel resource

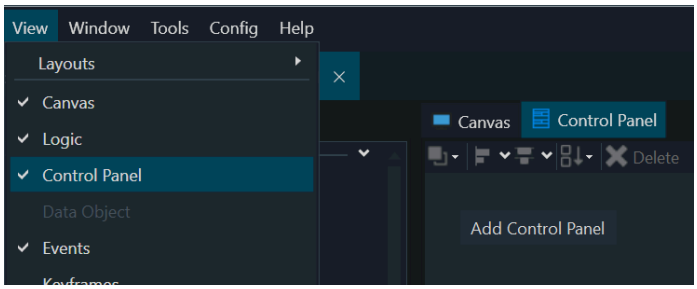


A single control panel resource can be added to each individual scene or base scene. Only one control panel is permitted per scene.

To access the Scene Control panel:

1. Navigate to View > Control Panel

You can also add a new Control Panel by clicking Add Control Panel in the CP Panel itself

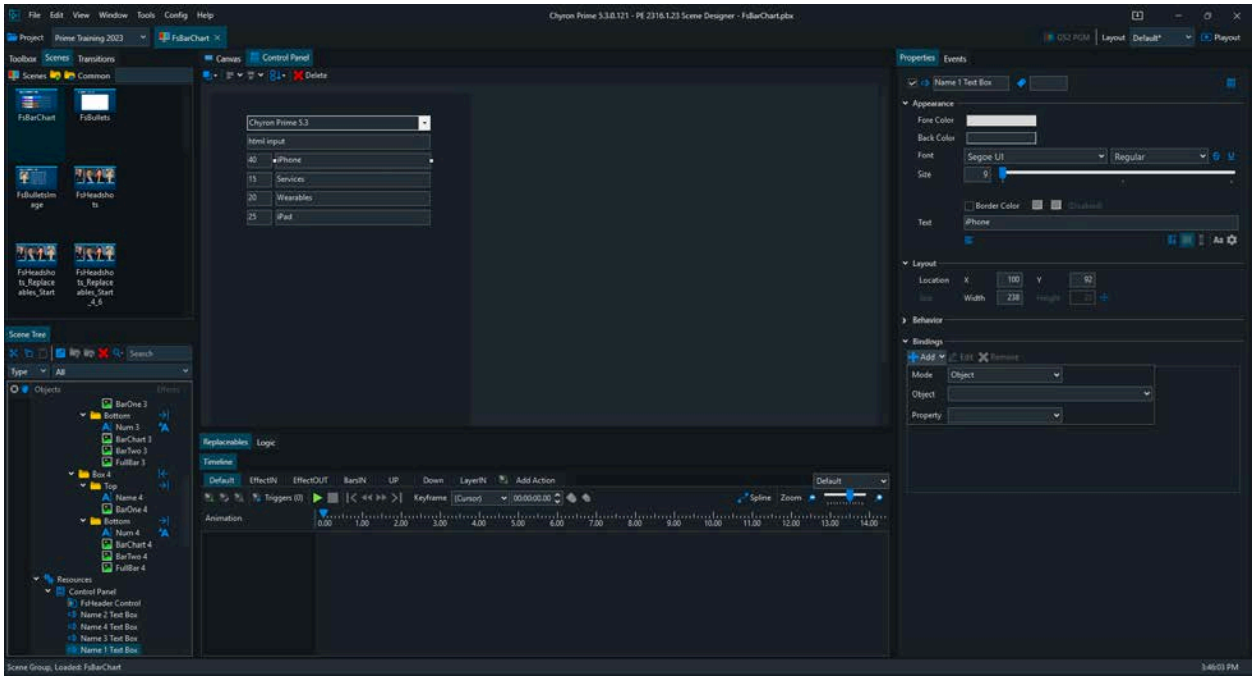


The Scene Control panel is used to design a custom user interface and bind the controls to Scene Objects.

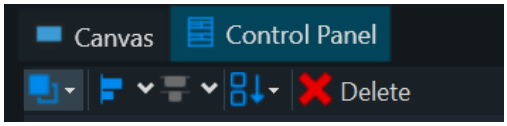
The simplest way to create these bindings is to drag and drop an existing element directly onto the Control Panel:

- **Actions** from the Timeline
- **Scene Objects** from the Scene Tree

The system will automatically create and bind a corresponding control.



Control Panel Toolbar Options



Order - Select one or more CP Control Objects first and then select an order operation to bring that object either forwards or backwards in layer order.

- Bring to Front
- Send to Back
- Bring Forward
- Send Backward

Align - Select at least two CP Control Objects and then select an Alignment operation to align those objects.

- Align Left Edges
- Align Horizontal Centers
- Align Right Edges
- Align Top Edges
- Align Vertical Centers
- Align Bottom Edges

Distribute - Select at least three CP Control Objects and then select a distribution operation to distribute those objects.

- Distribute Left Edges
- Distribute Horizontal Centers
- Distribute Right Edges
- Distribute Top Edges
- Distribute Vertical Centers
- Distribute Bottom Edges

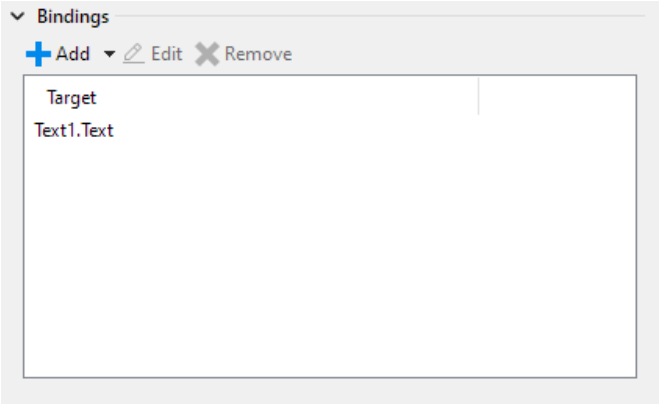
Control Placement - When new Controls are added to a Control Panel, this determines their initial location relative to existing Controls.

- None - layered directly on top of each other
- Left to Right - adds CP controls from left to right
- Top to Bottom - adds CP controls from top to bottom

(Changing this option also changes the Config Control Panel Placement Setting)

Control Panel Binding Properties

Control panel Controls have their own set of bindings

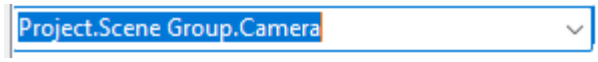


Mode - Project, Object, and Keyframe

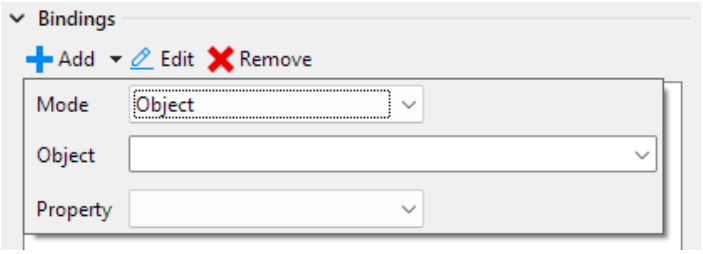
Object - objects within the Scene Tree

Property - selected object properties

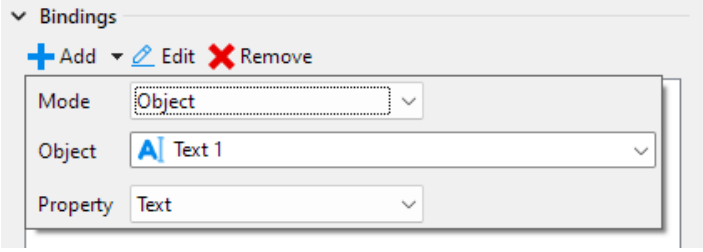
Clicking Add will create a blank placeholder Binding which allows users to manually type the Mode, Object, and Property desired.



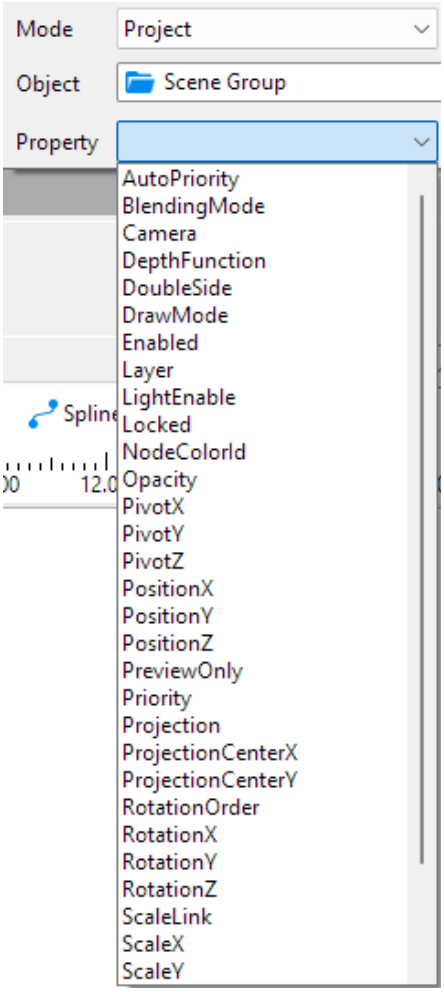
You can also click the dropdown next to add and select the Mode, Object, and Property.



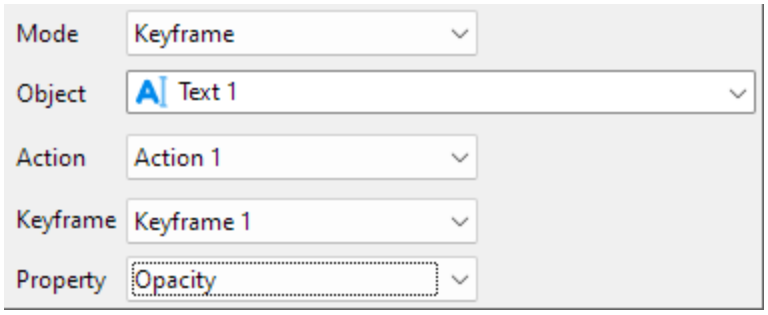
Selecting a target binding and clicking edit will bring up a populated dropdown UI with the Mode, Object, and Property.



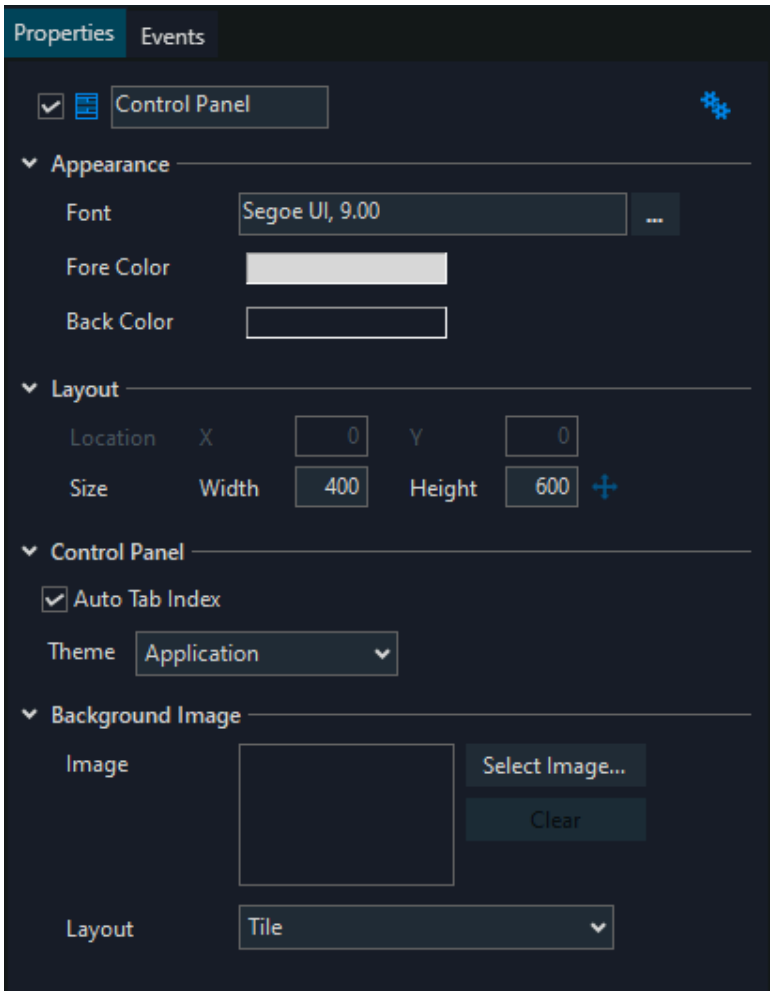
Selecting Project Mode allows users to select the primary project scene group and the scene group properties.



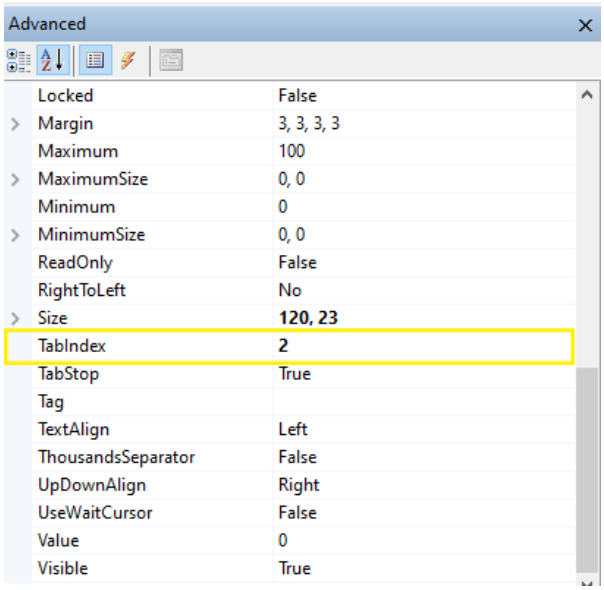
Selecting the Keyframe Mode allows users to select an Object, Action, a specific Keyframe, and the Property that has a Keyframe.



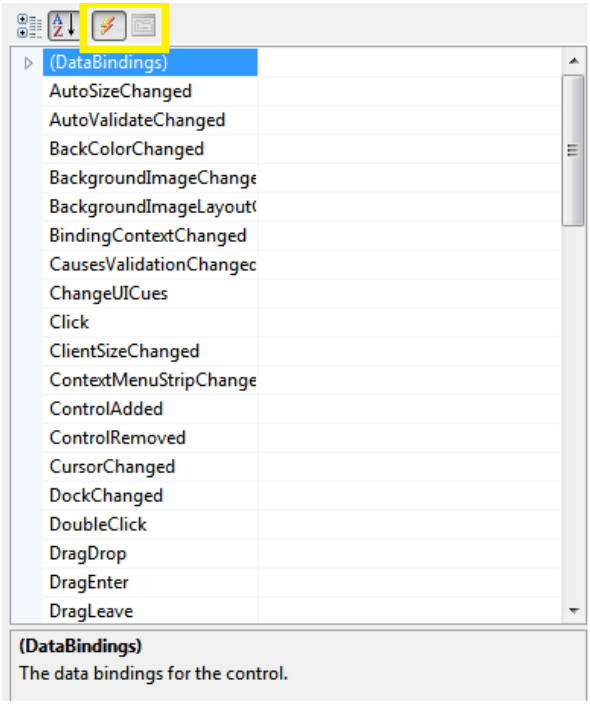
Control Panels have their own set of Properties:



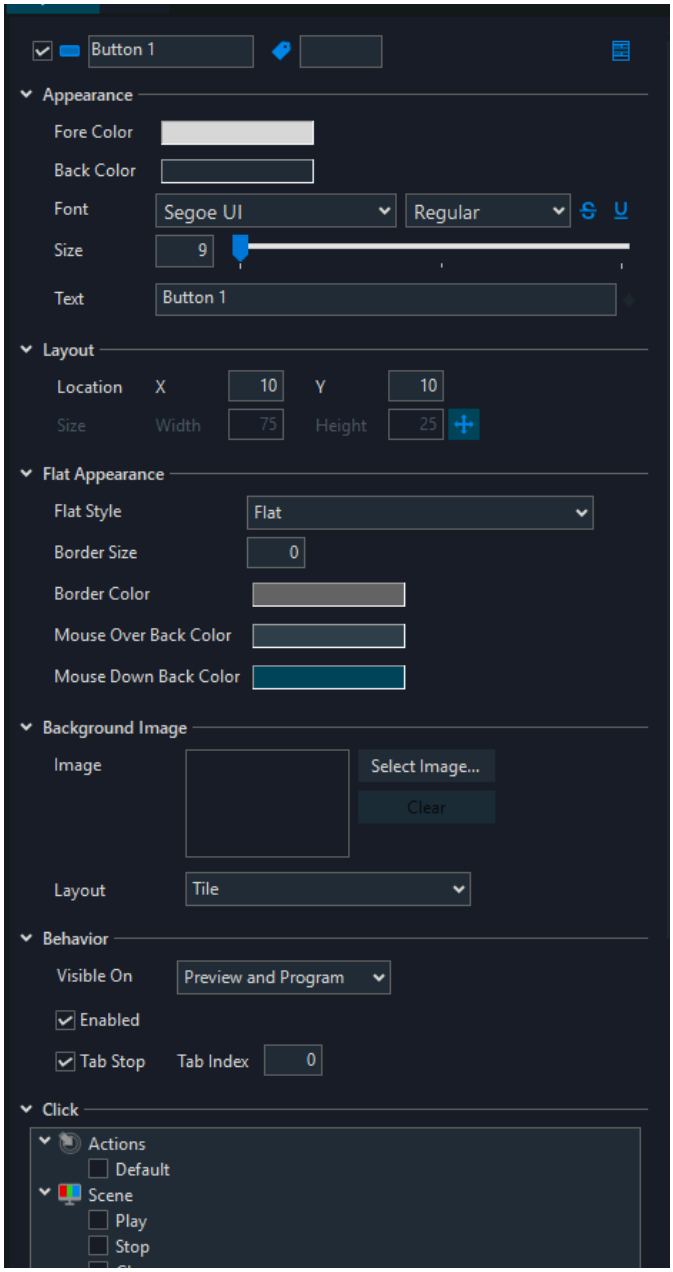
Auto Tab Index - sets the tabbing order for items on the control panel based on their position. The tab order is set automatically from left to right and top to bottom. To set a custom Tab Index uncheck this option and set the Tab Index using the advanced properties.



Selecting the lightning bolt will show all the events for the control:



Buttons allow users to bind different types of commands within the “Properties panel” of the control. In this example, the button is bound to a Condition.



You can continue to bind as many commands to the button as needed.

Each control panel control type has their own set of properties, many of which however are common between each control.

Behavior

Visible On - Designers can choose per control to appear on Preview, Program, or both in PRIME's Playout Channels.

- **Preview**
- **Program**
- **Preview and Program** (Default)

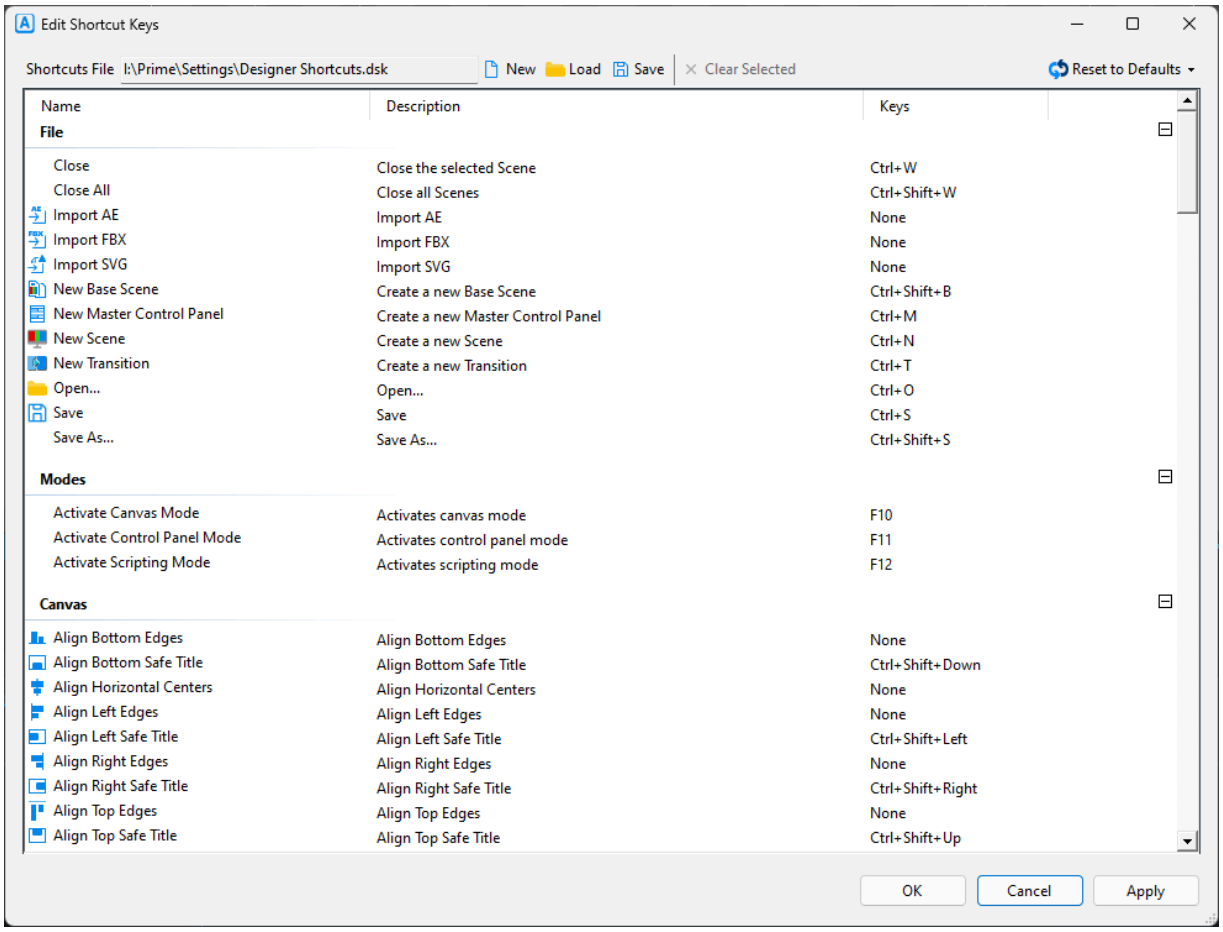
Enabled - indicates whether the control is enabled

Tab Stop - indicates whether the user can use the TAB key to give focus to the control

Tab Index - determines the index in the TAB order that this control will occupy

Shortcut Keys

PRIME has a Shortcut key manager for both play out and design



To assign a shortcut key select an item from the list, place your cursor in the “Keys” column and begin to press the keys on your keyboard you wish to have as the shortcut.

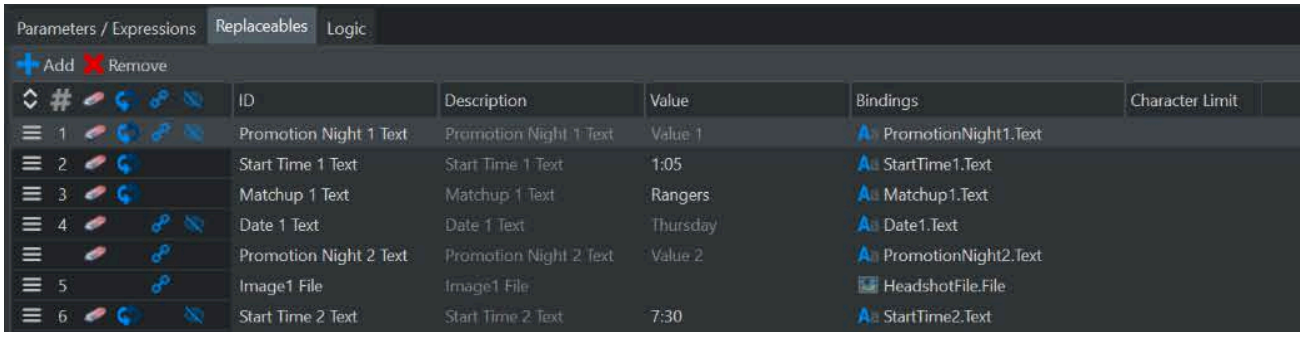
As the application grows the list of available functions will appear in the “Name” column.

Parameters, Expression & Conditions

Parameters, Expressions & Conditions are documented in the

“PRIME Parameters, Expressions & Conditions.pdf” file located in the PRIME Documents folder.

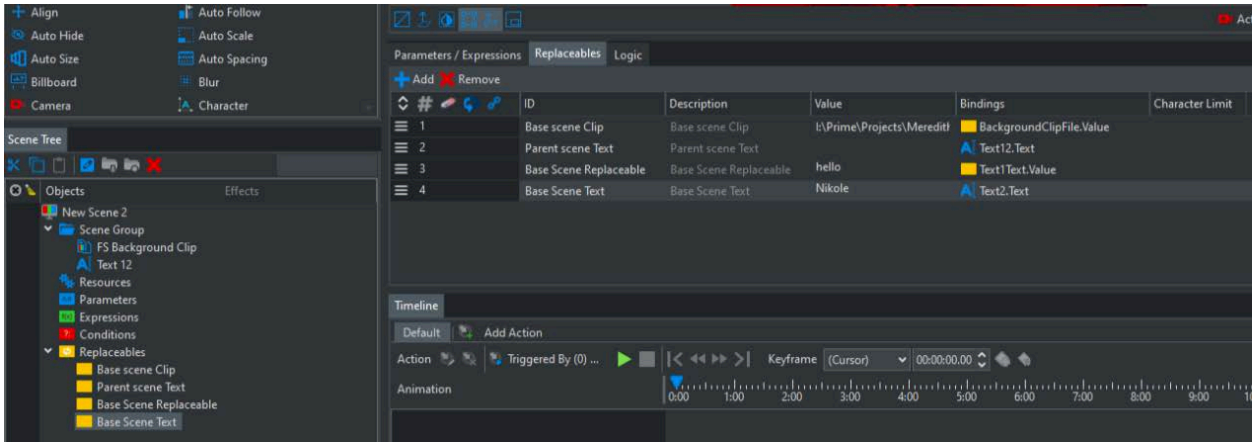
Replaceables



Any and all properties can be set to be able to have its property value changed via automation or CAMIO using the “Replaceables” table.

- Reorder- Drag and Drop Replaceables to reorder
- Order- Used to fulfill data from the Intelligent Interface “W” command. To disable II for a replaceable object click on the numeric value. Disabling II on a replaceable will automatically renumber the replaceables list order.
- Auto Erase - Used to erase the default value. Used mainly for LUCI/CAMIO
- External Updates- Used for Intelligent Interface “X”-”R” command set.
- Databound - Enable any replaceable object that is getting updated from another object like dataobject, parameters, XMP.
- Show/Hide Replaceable - Used to show or hide a replaceable object from Playout’s Replaceable Panel and Edit Scene Messages
- ID - Alphanumeric updateable field
- Description - Alphanumeric updateable field. In LUCI/CAMIO Description will be the object name visible to producers in the LUCI NRCS plugin.
- Value - Updateable field for object’s value
- Bindings - Objects that the replaceable is directly bound to.
- Character Limit - Limits the number of characters allowed for text objects. This is applied in LUCI/CAMIO.

By default, All replaceables added to a scene will be visible in the replaceables panel in Prime Playout. You can choose not to have certain replaceables visible by utilizing the new Hide/Show Replaceable menu introduced in PRIME 4.9.0
Base Scene replaceables will not be visible automatically in the replaceables panel. Manually add the base scene binding object to the parent scene replaceables (preferred option) or add the base scene replaceable to the parent scene replaceable. You must enable databound on any base scene replaceable object, you intend to add to a parent scene's replaceables.

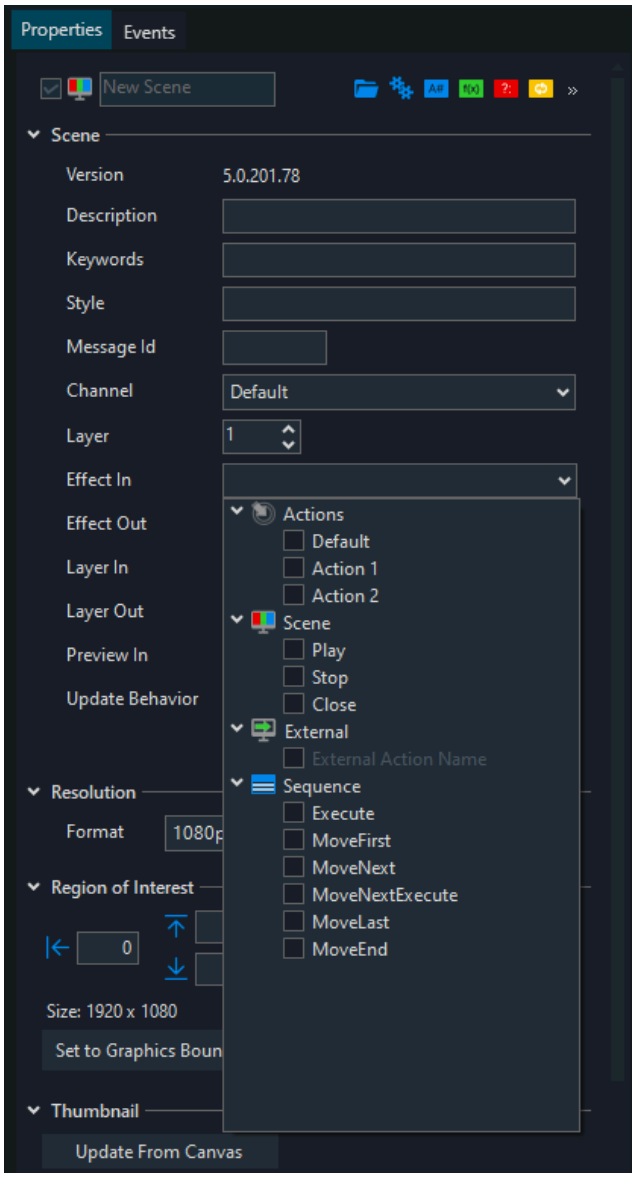


Effect In/Out

Effect In and Effect out are properties of the scene. The Effect in and Effect Out combo box will show the “Triggers” list.

Select an Action(s) as your effect In/Out or select a Condition to use “Conditional Transitions”. (See the “Conditional transitions” section.

Other choices are available as your Effect in/out as well such as a script or External Activation (Trigger an action in another scene).



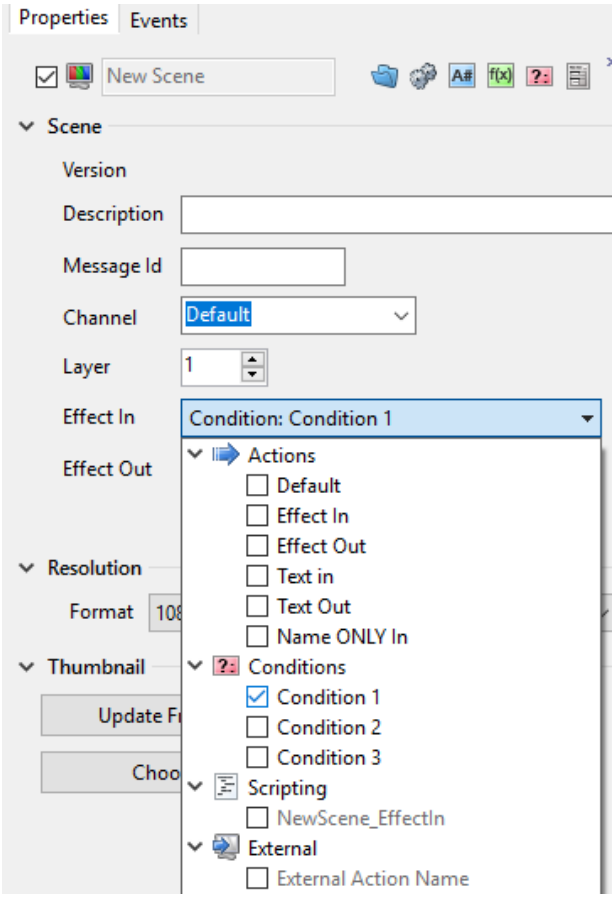
Conditional Transitions

There are two types of “Conditional Transitions”.

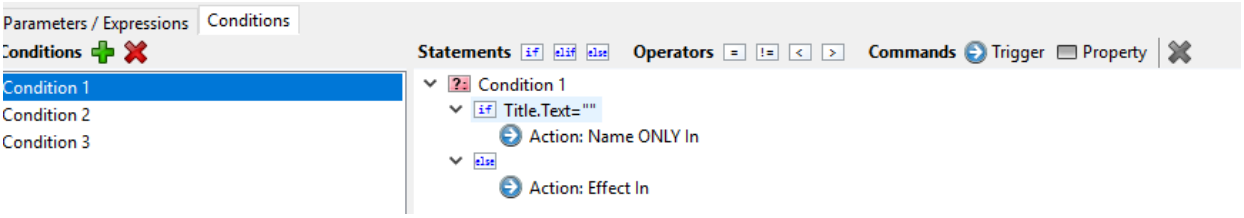
1.) Rules that evaluate which transition to trigger as the Effect In play based on conditions within the scene itself.
2.) Rules that evaluate which transitions to trigger in other scenes on output at the time the current scene plays to output.

Prime uses its “Conditional Manager” to manage the logic.

Users can select an action from the list or select a Condition to evaluate which transition to play as the effect in.



Example: If the Title text is blank trigger Name ONLY Action otherwise trigger the Effect In Action.



Conditional Transitions Advanced

Functions that allow evaluating the scene that's on the output channel.

From the condition editor the following functions are available for use with Conditional Transitions:

Channel.IsSceneOnOutput(string sceneName)
Returns true if there is another scene matching the given name on the current channel; the current channel is defined as whatever channel the scene executing the expression is on. This does not match the scene responsible for executing this function.

The sceneName can include wildcards like the External Action Trigger work from earlier this year.

Channel.IsSceneAndNameOnOutput(string sceneName, string layerExpression)
Returns true if there is another scene matching the given name and layer restrictions on the current channel; the current channel is defined as whatever channel the scene executing the expression is on. This does not match the scene responsible for executing this function.

The sceneName can include wildcards like the External Action Trigger work from earlier this year.
The layerExpression behaves like the feature in Intelligent Interface (>1, 1, >=1).

Channel.IsDescriptionOnOutput(string description)
Returns true if there is another scene matching the given description on the current channel; the current channel is defined as whatever channel the scene executing the expression is on. This does not match the scene responsible for executing this function.

The description can include wildcards like the External Action Trigger work from earlier this year.

Channel.IsDescriptionAndLayerOnOutput(string description, string layerExpression)
Returns true if there is another scene matching the given description and layer restrictions on the current channel; the current channel is defined as whatever channel the scene executing the expression is on. This does not match the scene responsible for executing this function.

The description can include wildcards like the External Action Trigger work from earlier this year. The layerExpression behaves like the feature in Intelligent Interface (>1, 1, >=1).

Channel.IsLayerOnOutput(string layerExpression)
Returns true if there is another scene matching the layer restriction on the current channel; the current channel is defined as whatever channel the scene executing the expression is on. This does not match the scene responsible for executing this function.

Channel.Resolution (Channel.Resolution.Width and Channel.Resolution.Height)
Gets the resolution of the channel as defined by the playout configuration which is available in Logic and return the correct Width and Height of the channel

Scene.Layer
Returns the layer of the current scene.

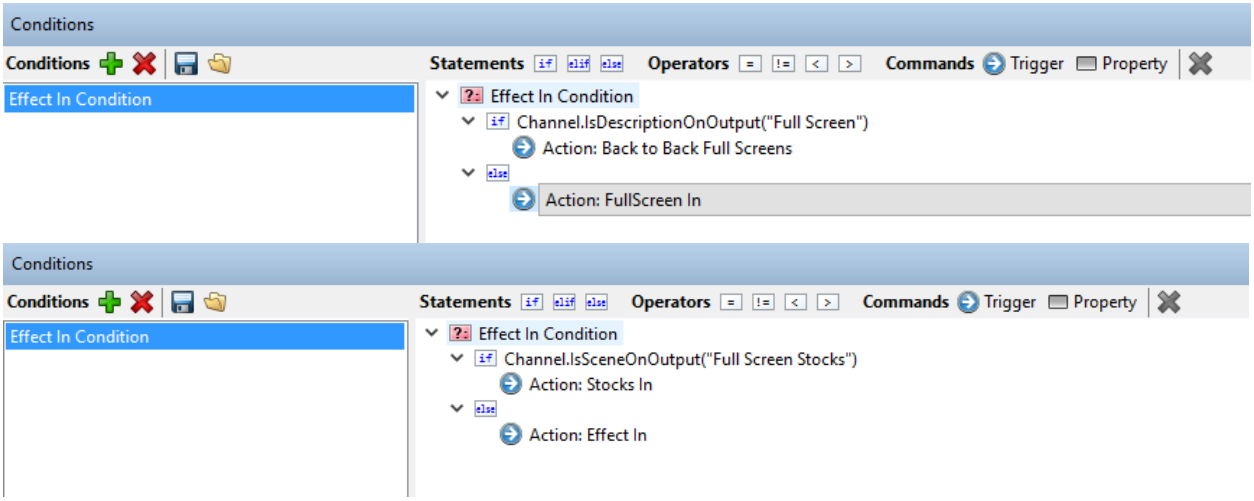
Scene.Loaded
Returns true if the current scene is loaded.

Scene.Playing
Returns true if the current scene is playing

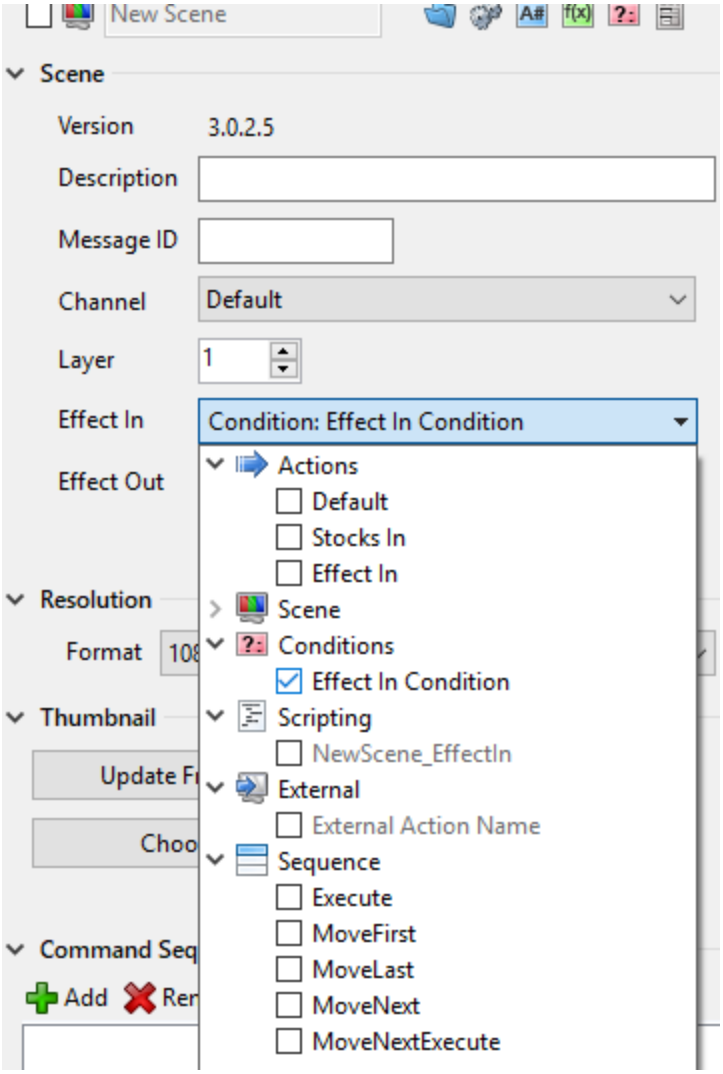
Scene.Name, Scene.Description, Scene.Locked, Scene.Version, etc. have also been added.

Examples:

Create some Effect In Conditions:



Hook up the “Effect In” as a “Condition”:



Update In/Out

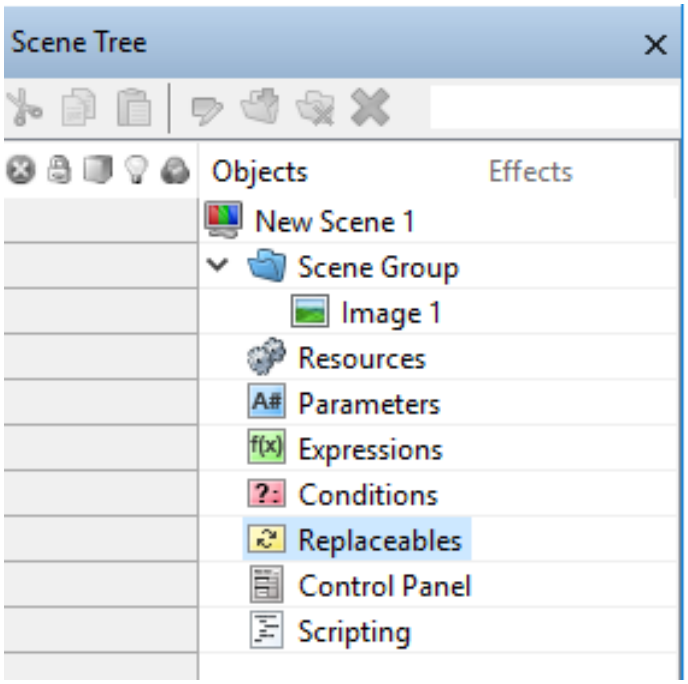
Prime will automatically apply “Update In/Out” rules if the incoming message uses the same base scene as the outgoing message.

The Transition effect applied to the object will trigger automatically.

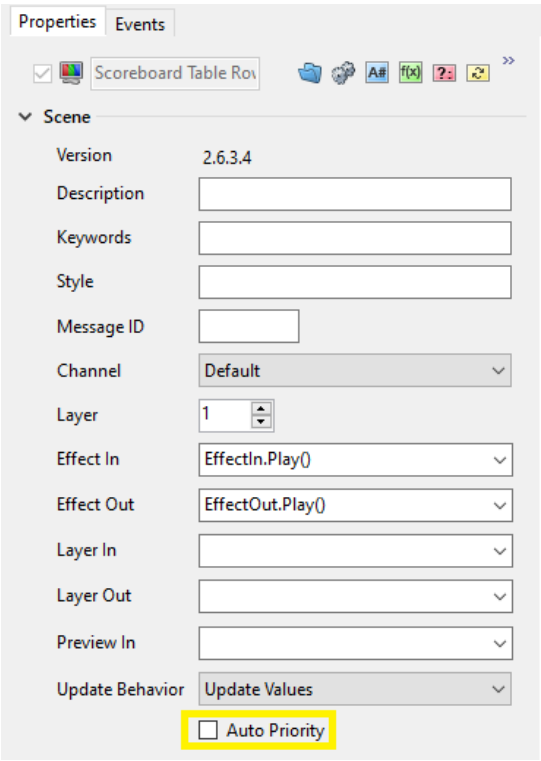
For a two line lower third,

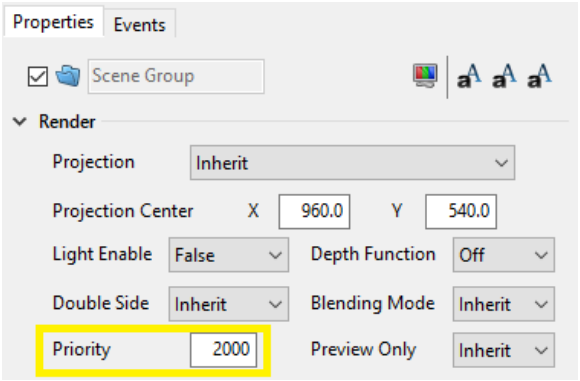
If Message 200 (Not Scene, but Message) is on air and its base scene is “Lower third” and message 201 is cued and uses “Lower Third” as its base message then the transition that is assigned to each of the two lines will trigger when the incoming scene 201 is played.

IMPORTANT: *The “Replaceable’s list will determine which scene objects transitions will be fired. Add each object to the Automation ID list that you wish to be applied to Update In/Out.*



By default an incoming scene is prioritized over an outgoing scene. The Auto Priority sets the priority value for graphics automatically with respect to their position in the scene tree. To manually adjust the scene priority uncheck the Auto Priority in the Scene Properties and set the Scene Group Priority > Render > Priority value.





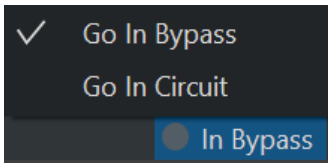
API & Scripting

API & Scripting is documented in the PRIME_API_Scripting_Guide document.

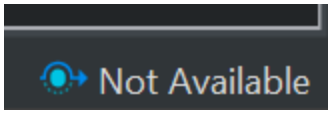
Bypass

Systems with a compatible Matrox DSXLE4 card can switch between Bypass and In Circuit directly in PRIME Playout.

When using a compatible DSXLE4 card and Matrox Hardware is selected, users can switch between In Bypass and In Circuit by clicking the Bypass menu in the bottom right hand corner of PRIME Playout.



Go In Bypass: System will not output PRIME graphics and video input will pass through
Go In Circuit: System will output both graphics and video input



PRIME Bypass Not Available Scenarios

- The Bypass Device is set to None
- The Bypass Device is set to Matrox and an incompatible Matrox card has been detected
- The Bypass Device is set to External Panel but the External Bypass Panel is not detected or has thrown an error.

*Please see the PRIME Playout Configuration Guide for Bypass Configuration details.
*External panel detection executes when switching to In Circuit.

Power Clips

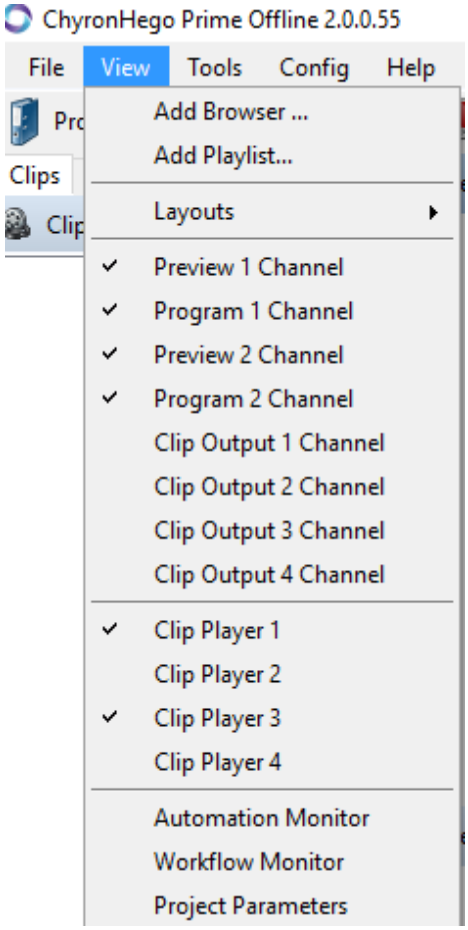
Adding and Configuring Power Clips Controllers

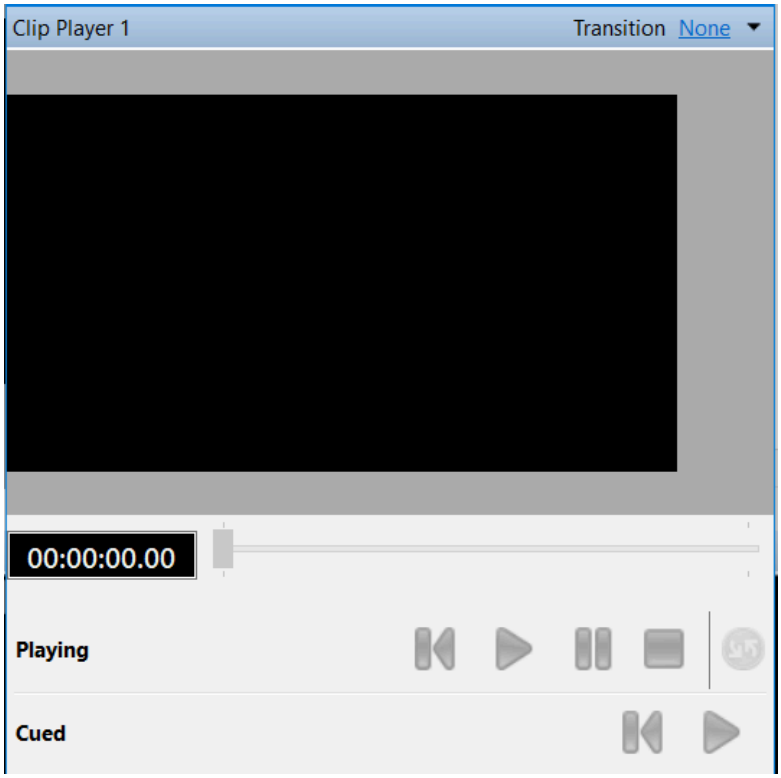
Showing the Power Clips Controllers

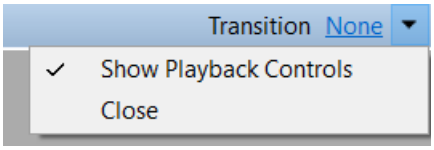
Power Clips are clips that are not part of individual scenes but clips that can play from the independent clip players created and configured in the “Playout Configuration”

When A clip player is added through the PRIME Playout Configuration, the player clip controller becomes accessible in the Runtime user interface menus.

Checking a clip player to view will show the Clip Player and its controls:







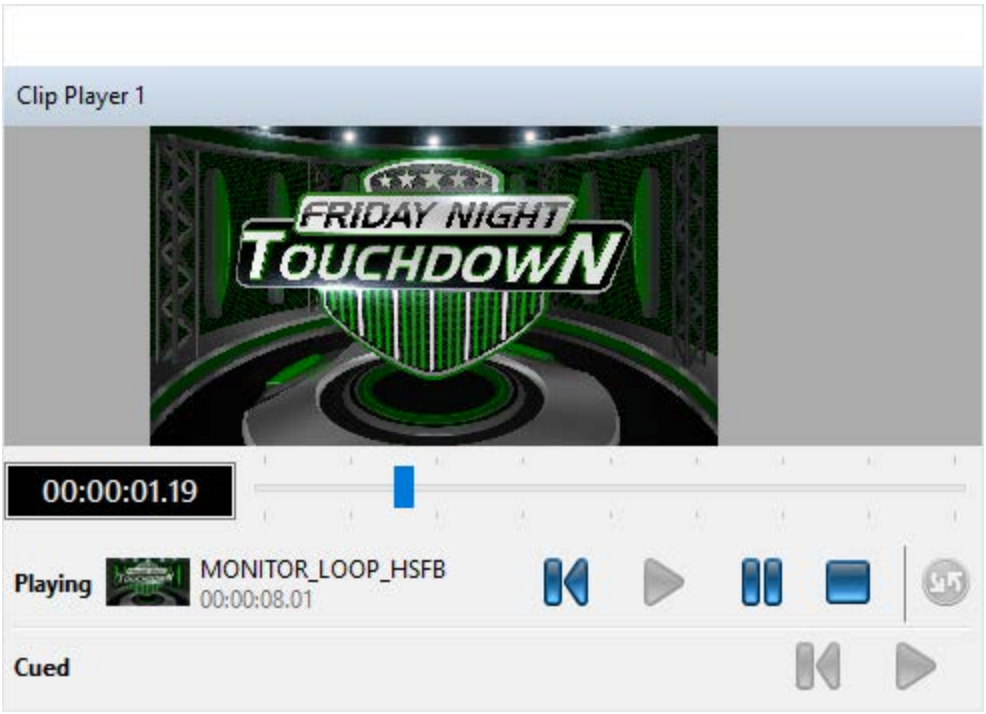
Selecting the drop-down caret in the upper right corner allows users to select to show/hide Playback controls.

Default Transition

Assign a default transition for clips that play from this controller.

Playing Power Clips

Clips played with this controller will play to their assigned channel and layer which is defined in the Controller setup not the clip itself.



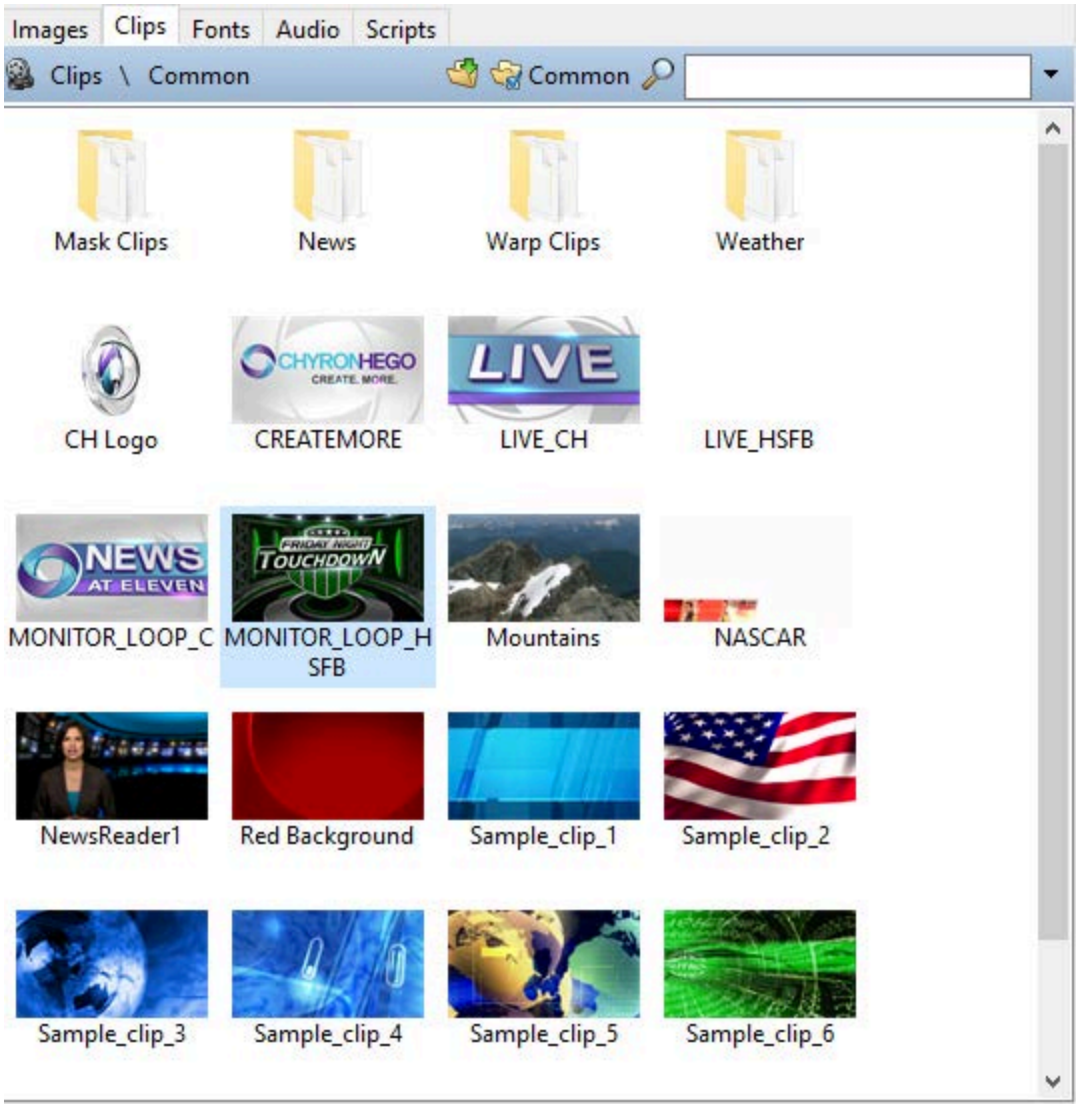
Clips can be played back by automation under various protocols or manually by dragging clips from the current Projects clip folder or the common clip folder.

Editing the Clip Metadata

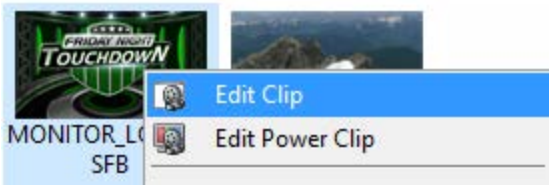
*Clip files consist of two files, 1.) The actual media file such as **MyMovie.mov** and the associated side car file that contains all the metadata associated with the clip. Information stored there are settings like "Hold first Frame", "Description", Thumbnail etc.*

Prime Clips do NOT use a backend database, instead it uses the Windows file system as its database and the Windows Search API for searching.

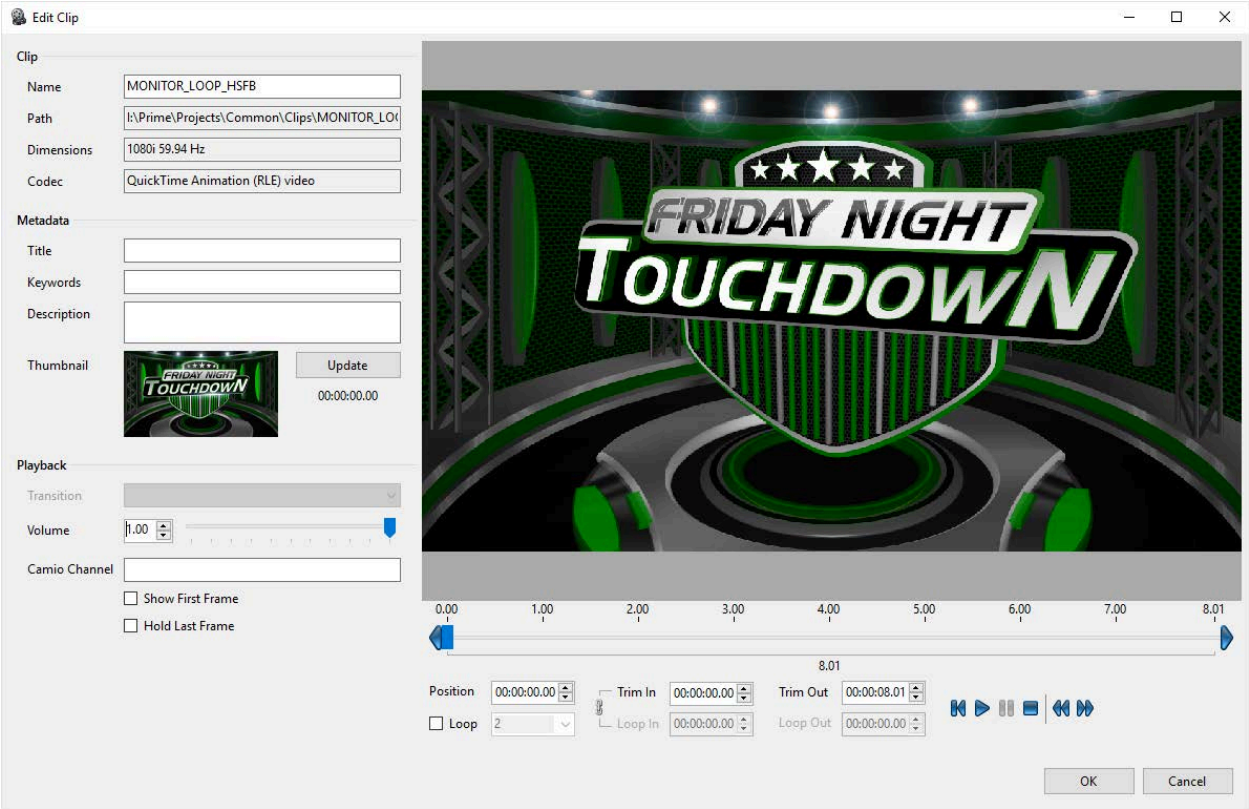
Clips are stored in your Projects "Clips" sub folder or in you Projects Common Clips folder:



To edit your clip right click on your clip to edit all the associated meta data for the selected clip:



This will bring up the standard clip dialog:



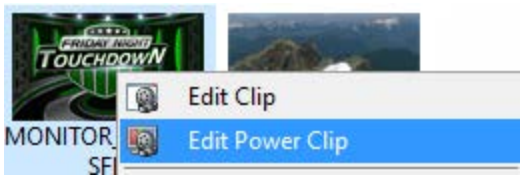
Insert all the meta data fields you require.

4-point looping is available using the clip timeline cursors.

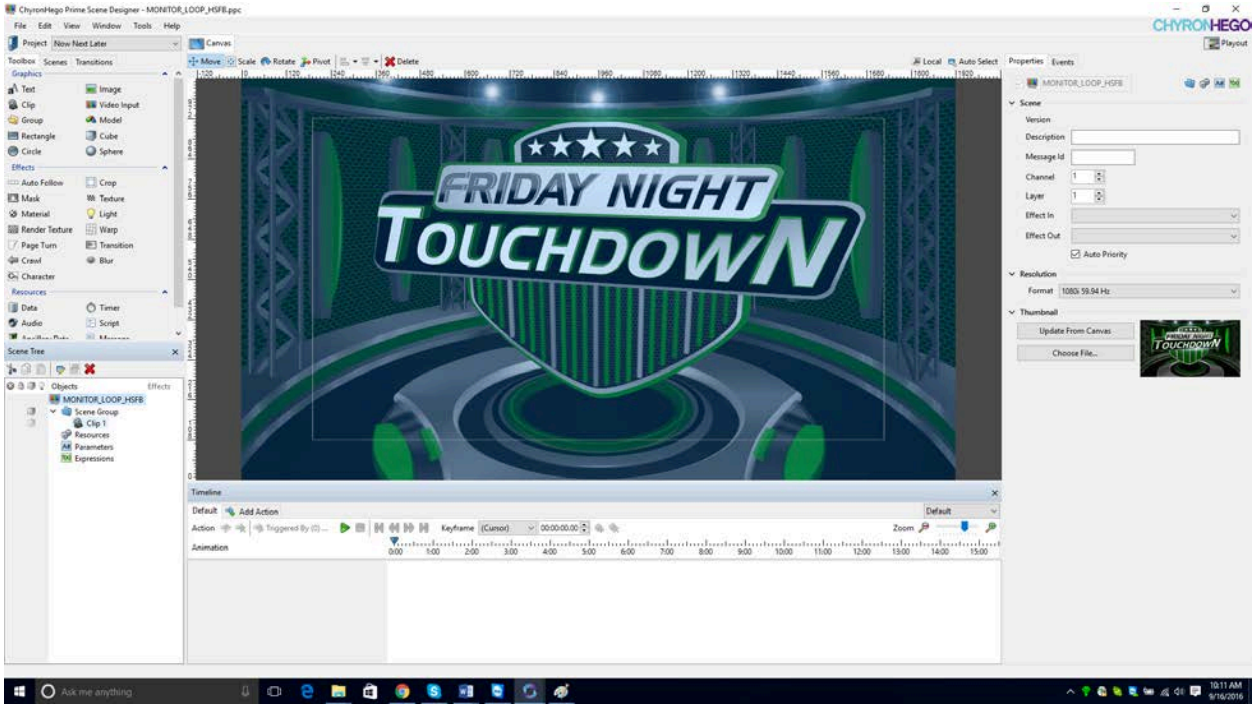
Creating a Power Clip

A Power Clip is the ability to add Graphics, Text and other scene elements to your clip.

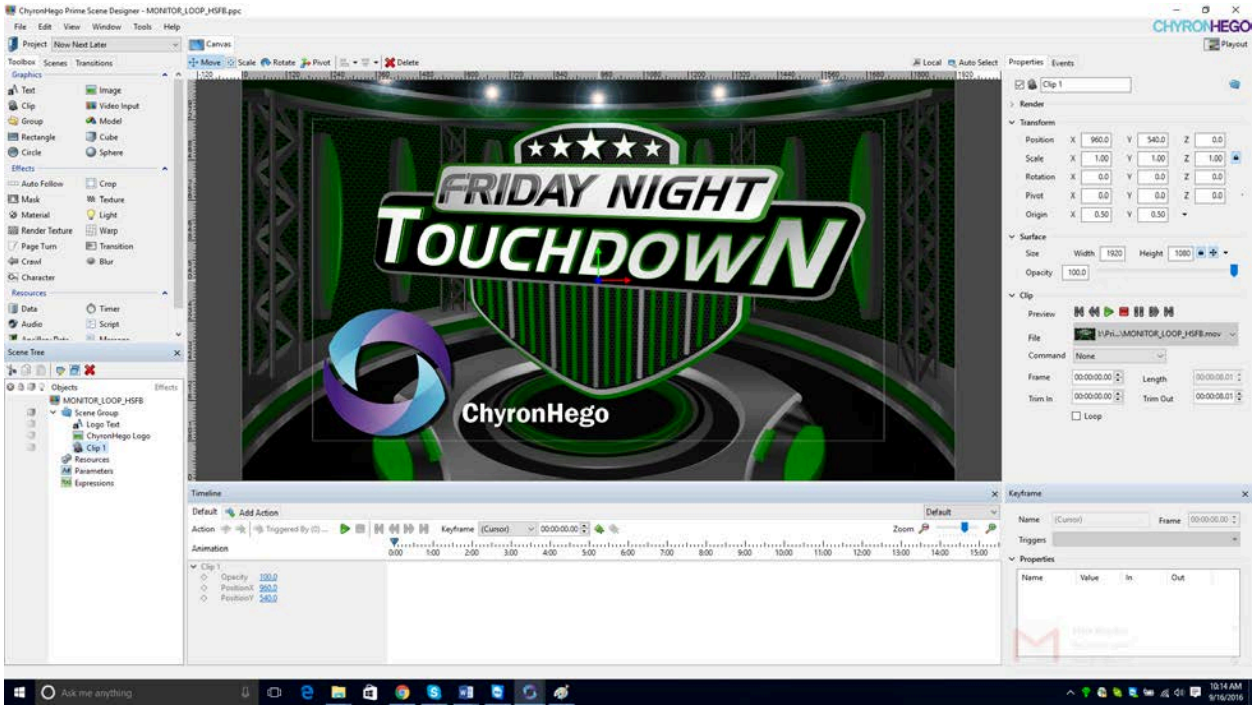
Select a clip from your Clips database and select “Edit Power Clip”:



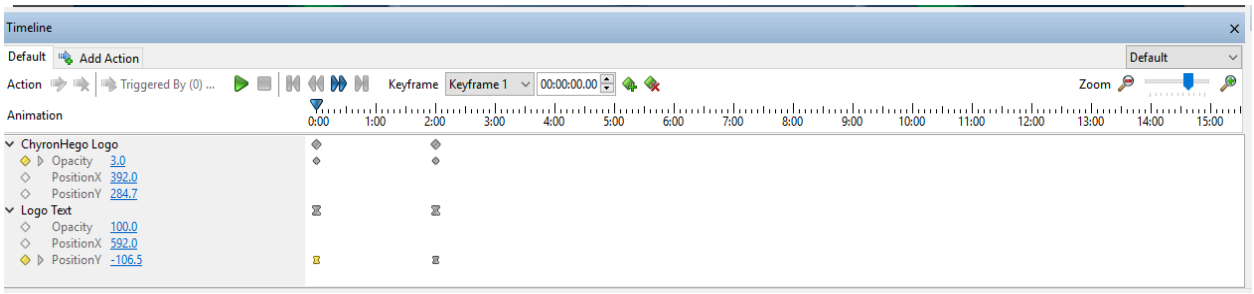
This will launch the Advanced Power Clip Editor allowing you to add more elements to the clip. As you can see a “Power Clip” is essentially a scene with the base clip at the heart of it:



In the following example we will add an image and some text to the clip. We will add an animation to animate the image and text on.



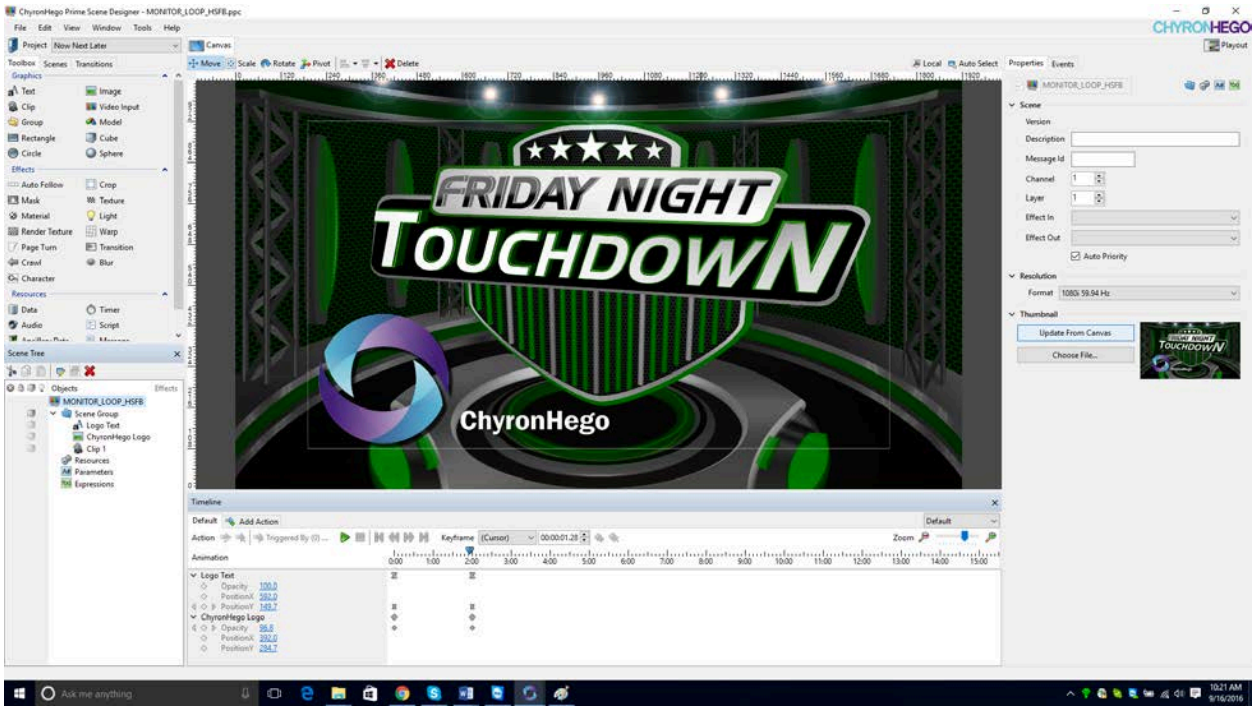
From the Timeline “Default” transition I will fade up the logo and animate the text to move on screen from screen bottom.



Save the clip.

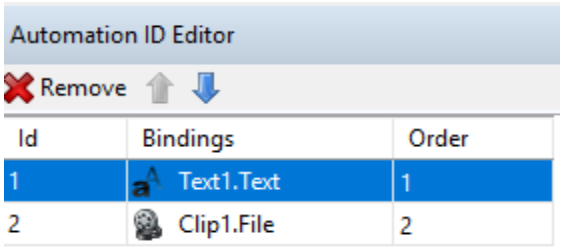
When the clip is played the “Default” transition is played dissolving up the logo and animating the text to move into position from the bottom of the screen.

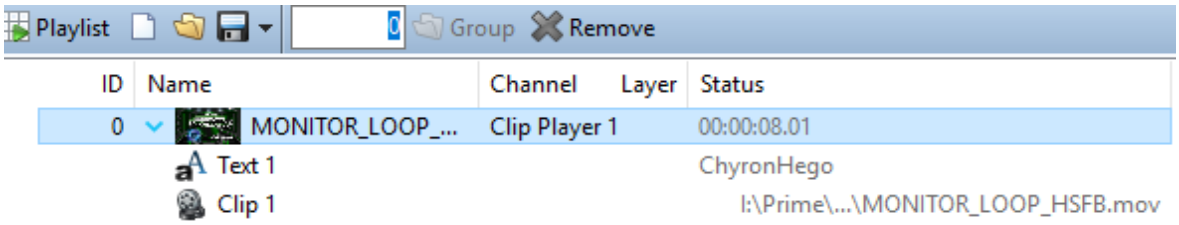
You may want to update the thumbnail associated with the clip. Select the top node from the scene tree. From the scenes property editor, you will see a “Thumbnail” section. Select “Update from Canvas”.



Power Clips will have an icon in the thumbnail in the browser. This clip is a Power Clips and has key as shown in the browser by the two icons in the lower right hand corner:

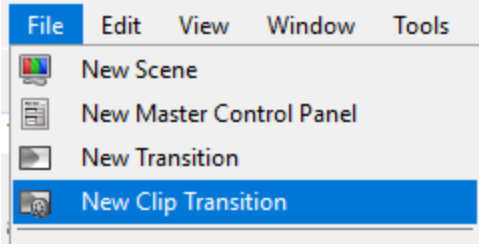
To Expose the Image and text to the Playlist or CAMIO/LUCI add the items to the Automation List:



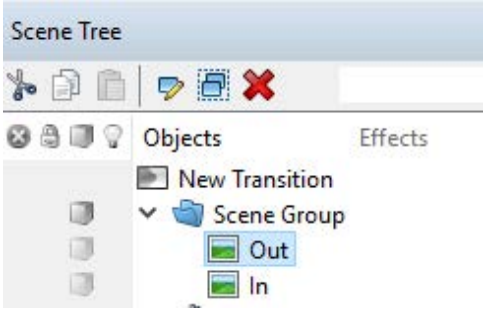


Creating Clip Transitions

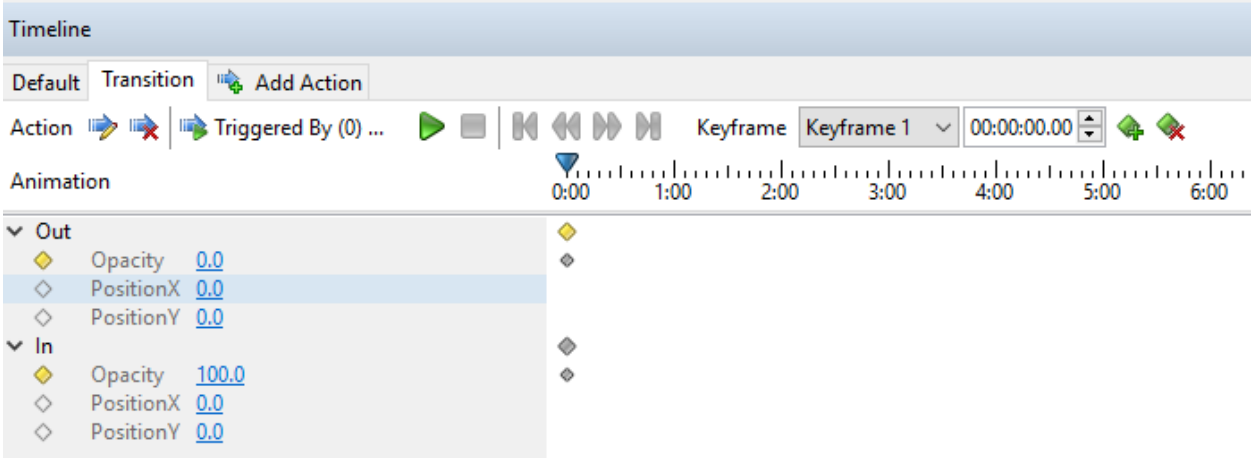
From the Designer File menu select “New Clip transition” to open up the Clip Transition Editor



Select Your “In” or “Out” transition from the Scene Group

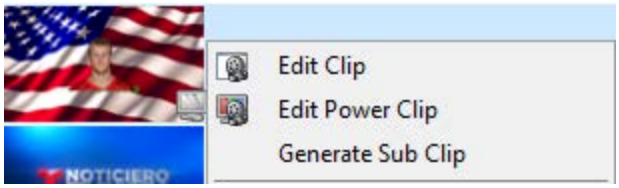


The Timeline Editor allows you to keyframe your effects

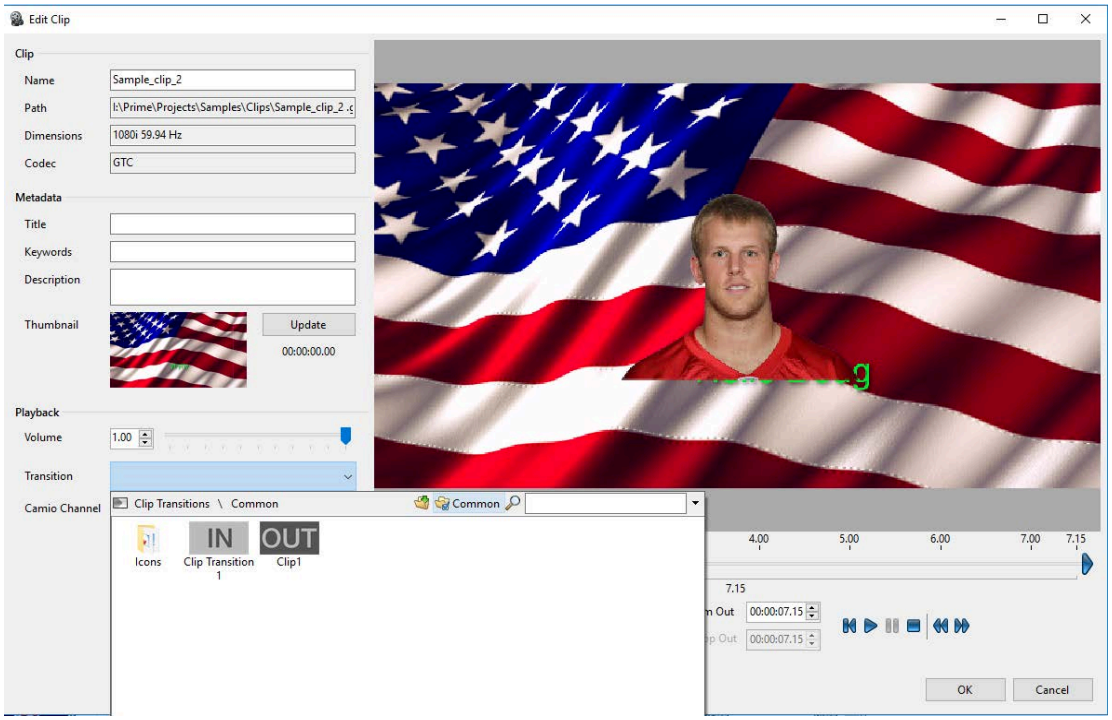


.

Your transition can now be applied to a Clip using the “Edit Clip” menu

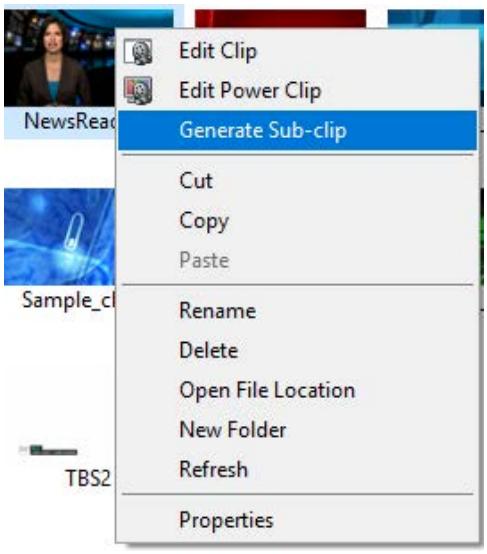


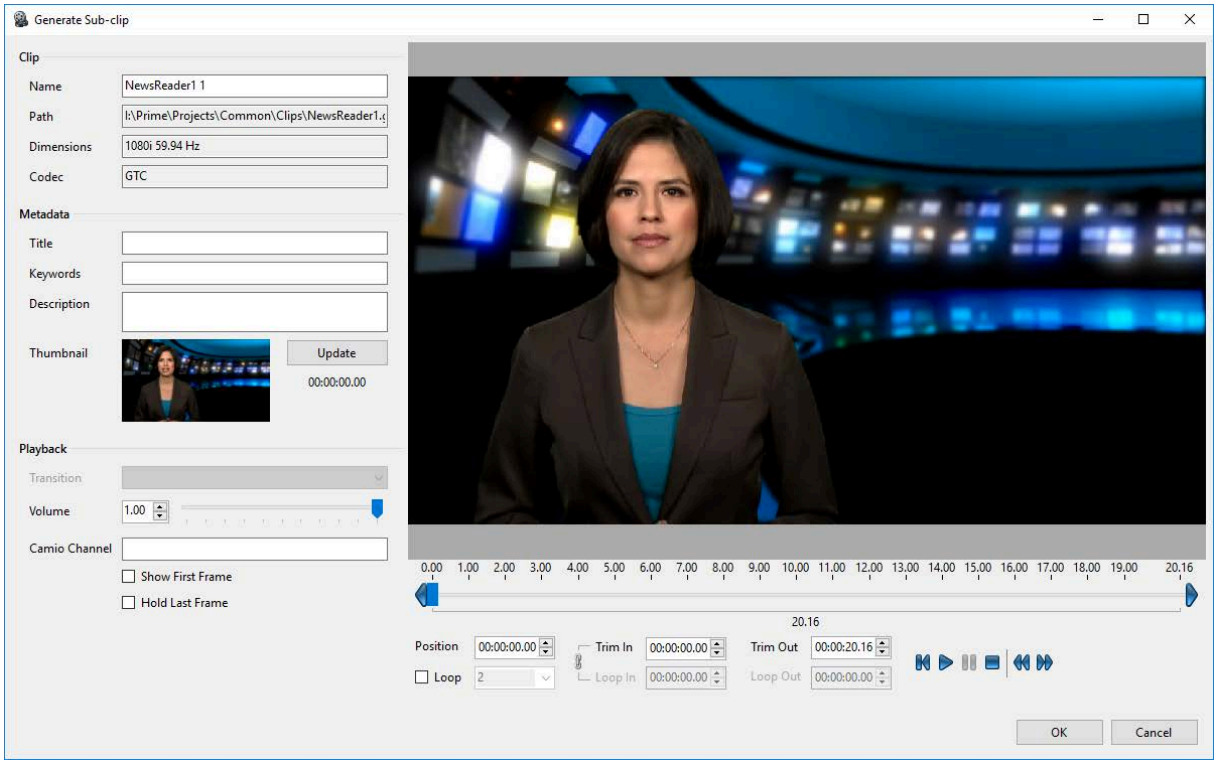
Select your clip transition from the “Transitions drop down menu.



Creating a Sub-Clip

Right click on a clip and select the “Generate Sub-clip” menu item to bring up the clip editor





Set new In and Out points to generate the new sub clip

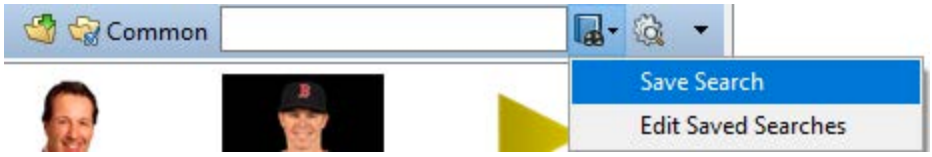
Searching for Clips

Primes Search functionality uses the Windows Desktop Search API used in Windows Explorer.

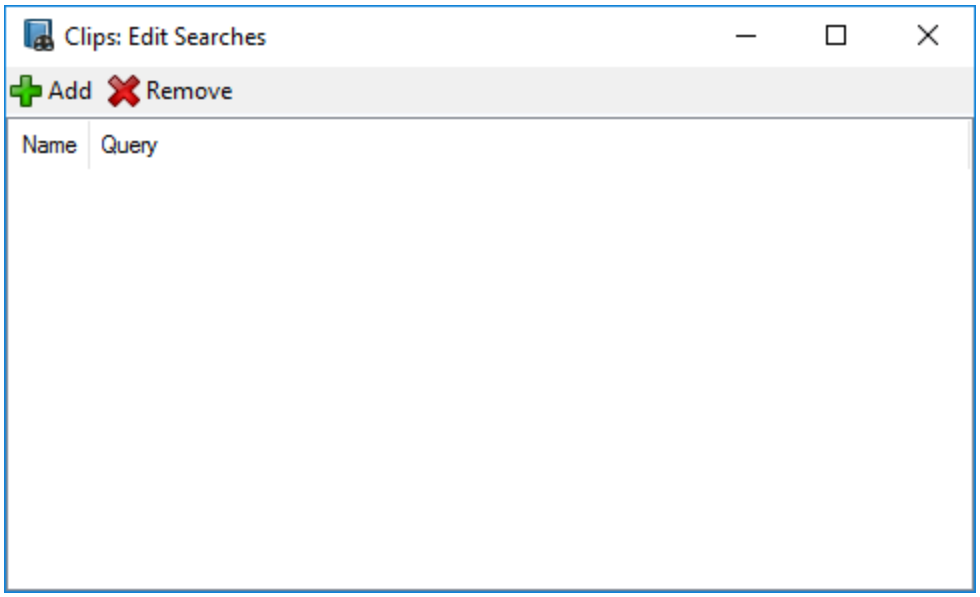
Note: PRIME does NOT support search capabilities for projects on mapped drives due to the Microsoft Search API

The Browser search box:

Searches can be saved and edited:

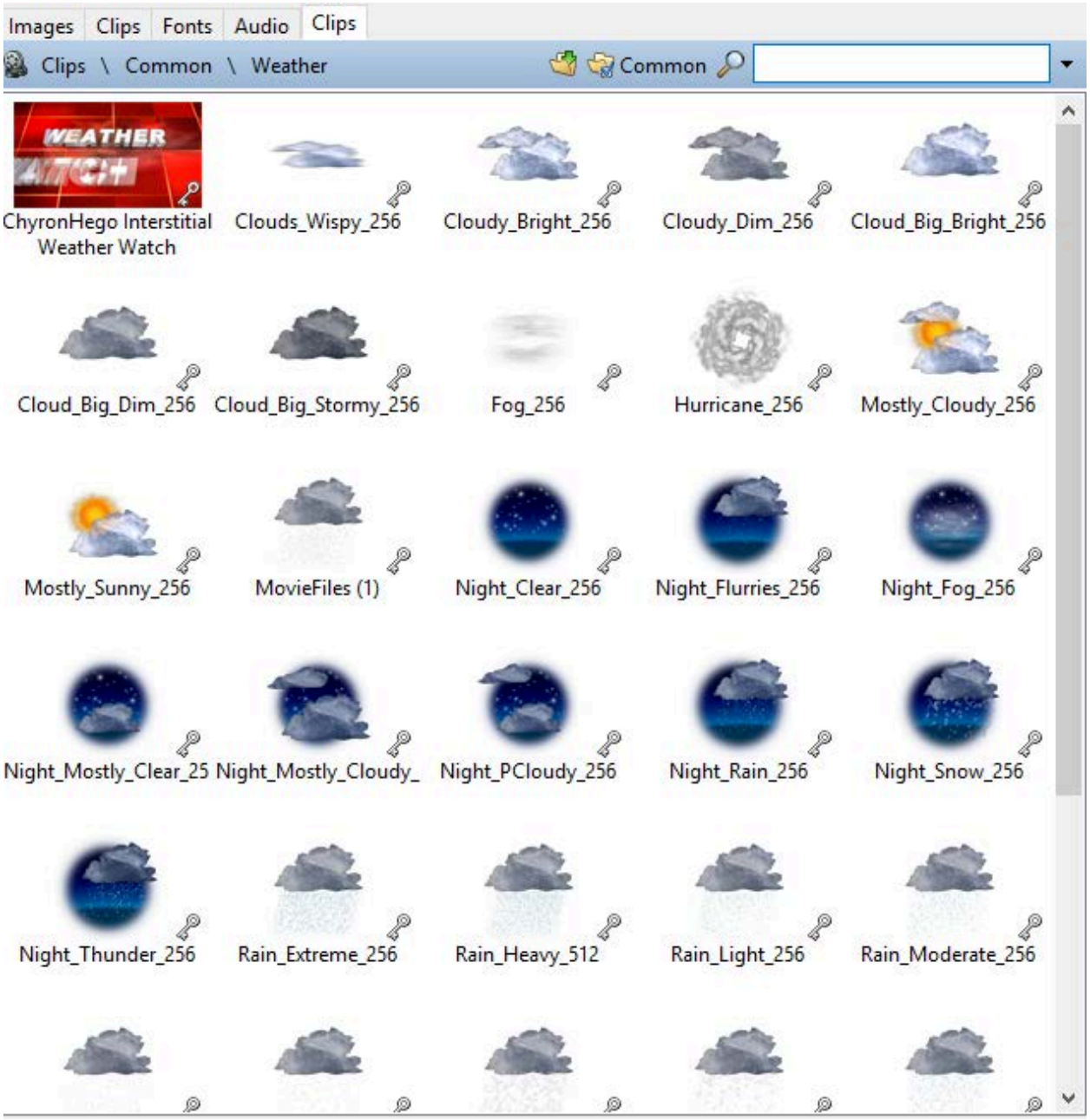


Edit/Save Searches

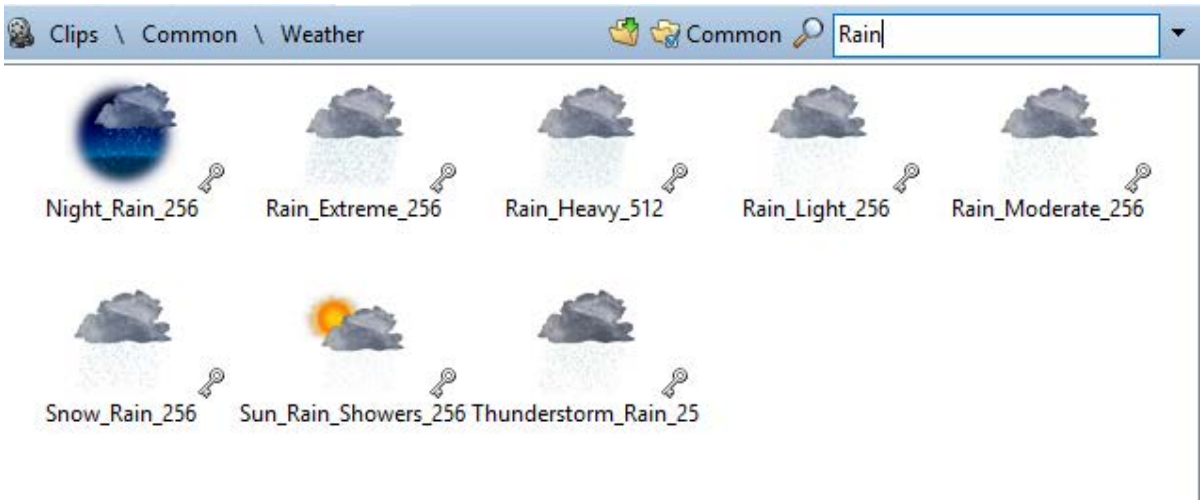


If you type into the Search Field Prime will search the following fields;

Name, File Path, Description and Keywords.

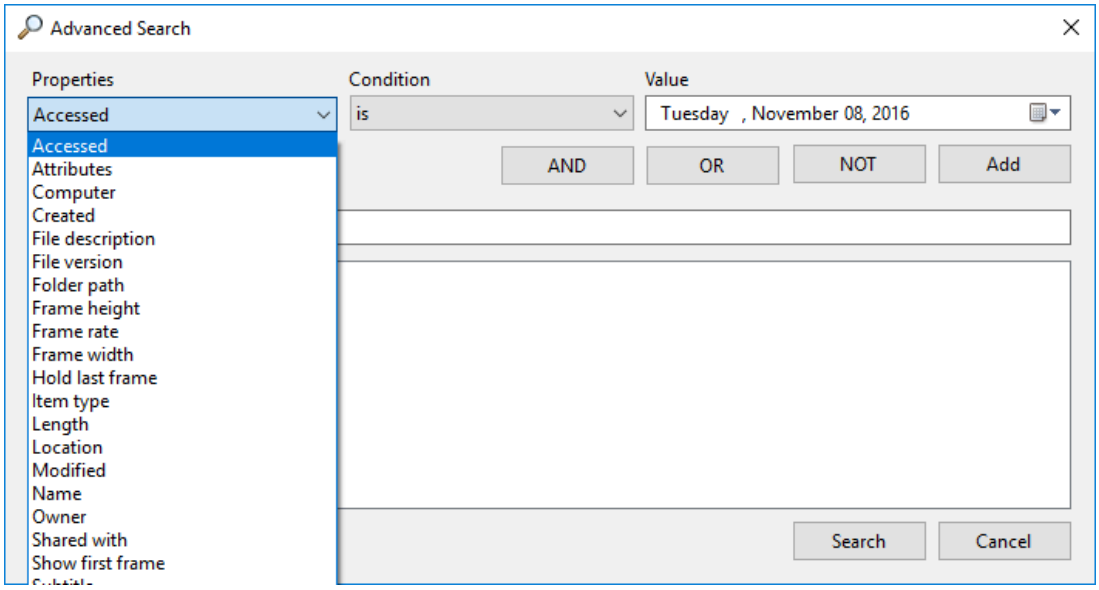


Now type in "Rain" results in: *(any file that has "Rain" in the Name, File Path, Description or Keyword will show up as a result of the search)*



Advanced Searching

Click the magnifying glass icon to launch the advanced search dialog



The advanced search allows searching on all the fields associated with clips

For extended search and filtering capabilities use the extended windows search terms

Microsoft Generic Search Query

Microsoft Image Search terms:

Microsoft Video Search terms:

Examples of extended search terms:

System.FileDescription

System.Title

System.Video.FrameWidth

System.Video.FrameHeight

System.Video.FrameRate

System.Keywords

Prime.HoldLastFrame

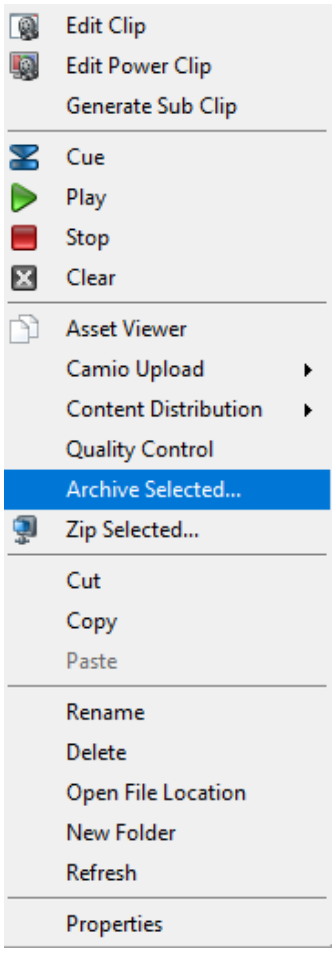
System.Video.FrameWidth:>10

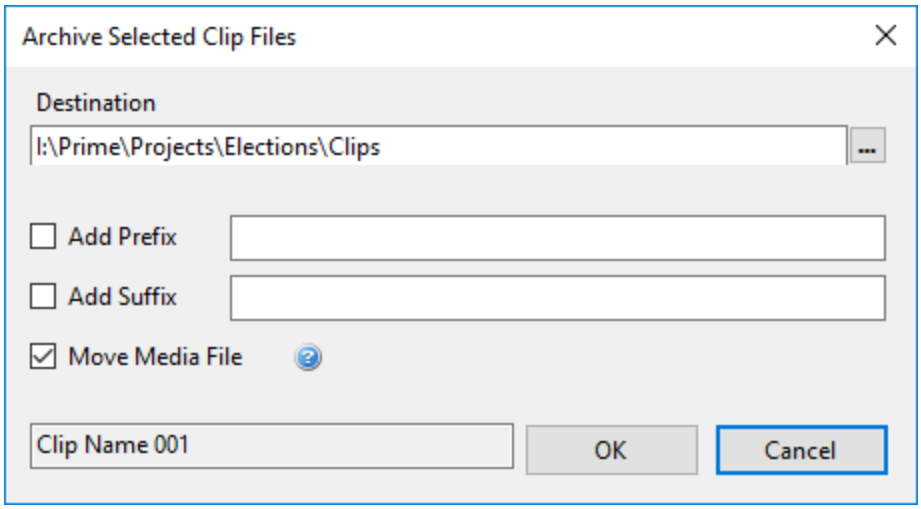
Archiving Clips

Clip files consist of two files, 1.) The actual media file such as MyMovie..mov and the associated side car file that contains all the metadata associated with the clip. Information stored there are settings like “Hold first Frame”, “Description”, Thumbnail etc.

Right click on a clip:

- Set the destination for the archive.
- Add a prefix or suffix to the clip file.
- Move the Media file. This option moves the actual clip file otherwise just the associated metadata file is moved to the archive folder.


Edit Clip
Edit Power Clip
Generate Sub Clip
Cue
Play
Stop
Clear
Asset Viewer
Camio Upload
Content Distribution
Quality Control
Archive Selected...
Zip Selected...
Cut
Copy
Paste
Rename
Delete
Open File Location
New Folder
Refresh
Properties


Archive Selected Clip Files
Destination
I:\Prime\Projects\Elections\Clips
...
Add Prefix
Add Suffix
Move Media File
Clip Name 001
OK
Cancel

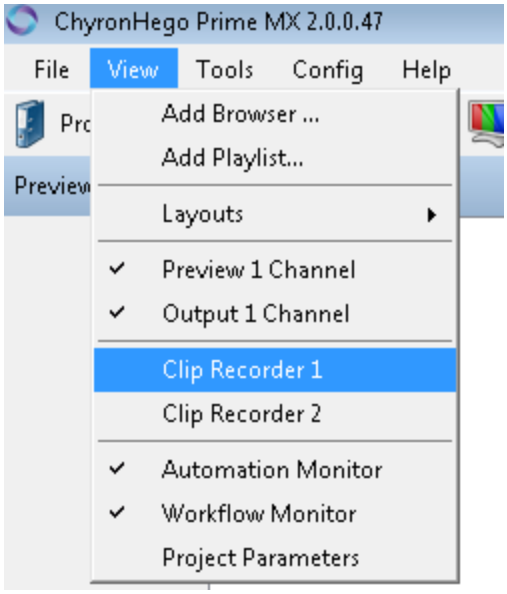
Clip Recorder

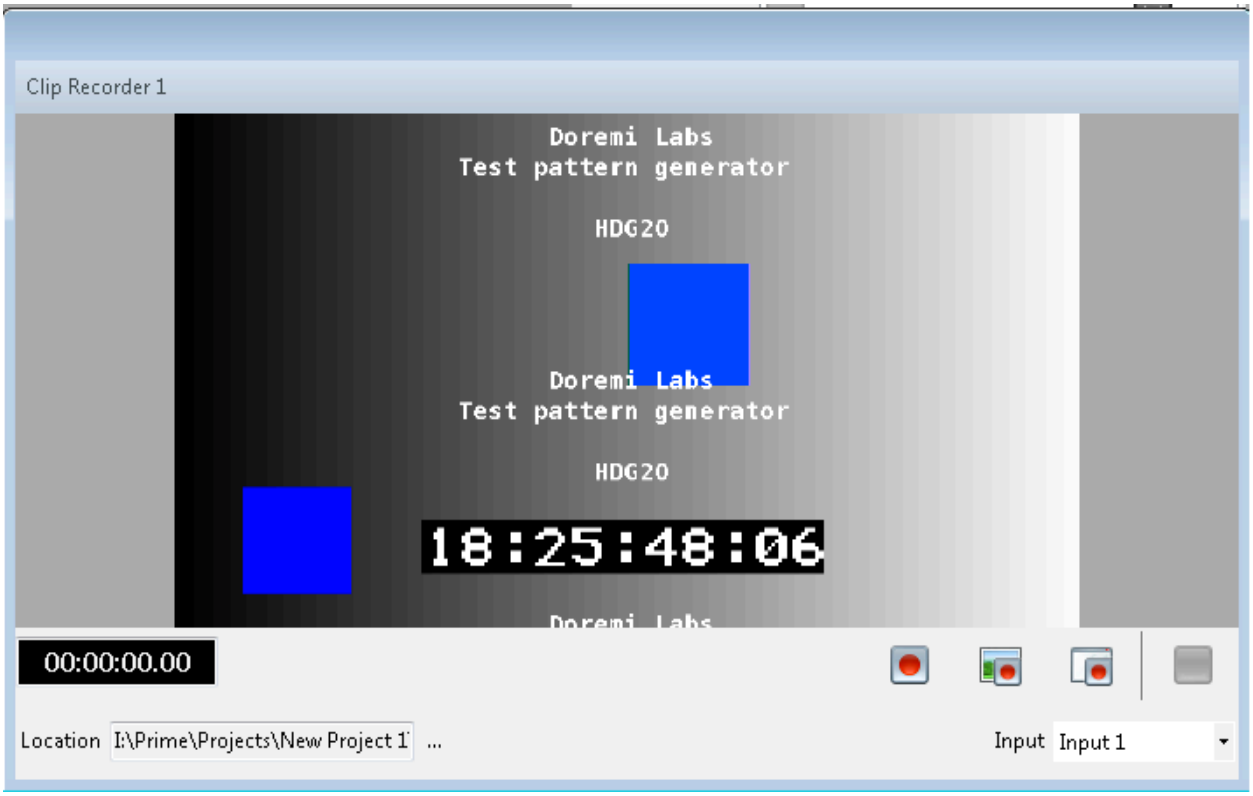
Adding and Configuring Power Clips Recorders

To add Clip Recorders, view the **PRIME Playout Configuration Guide**

View the Clip Recorder

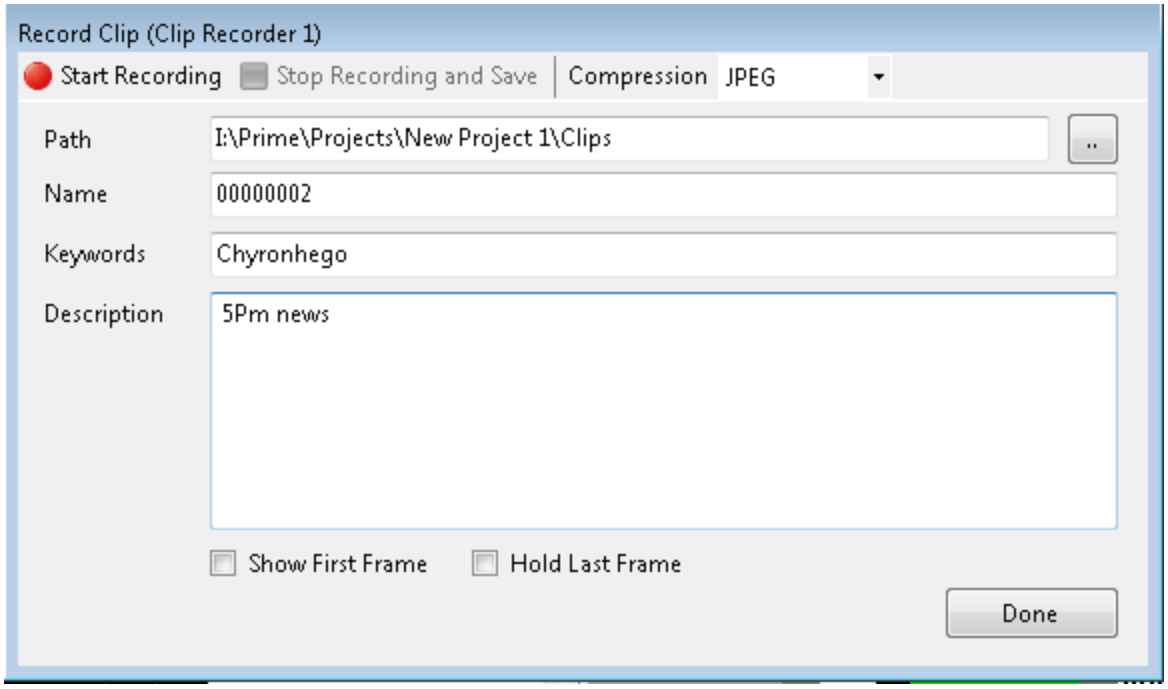
Once Clip Recorders are added in the PRIME Playout Configuration they will become accessible in the “View” menu





Clip Record functions:

- **Quick Record-** Starts recording immediately from the selected input.
- **Record-**Brings up the record dialog allowing users to enter meta data to be associated with the clip and select clip compression.



- **Frame Grab-**Grab a single frame of video input
- **Stop-**Stops recording the Quick Record

Clip Converter

See the separate document on the Clip converter/Watch folders.

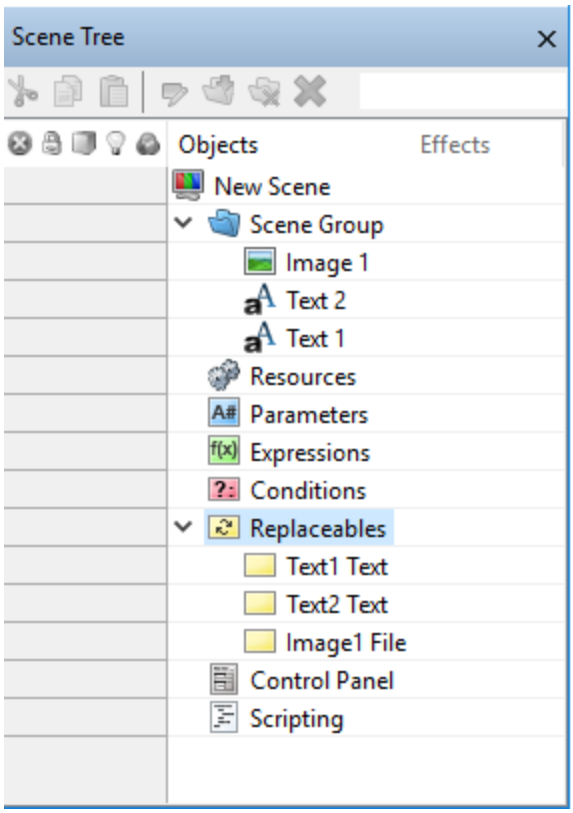
CAMIO

Template Preparation

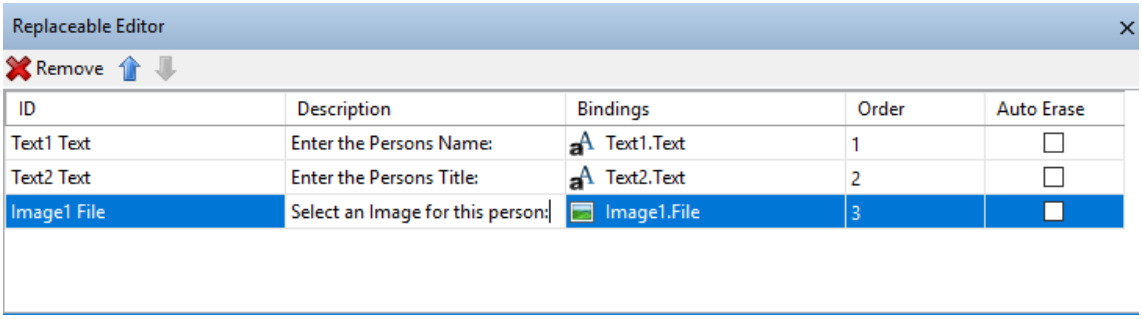
Clips and Graphic Templates can have replaceable elements that will show up in the ChyronHego NRS plugin. To define which elements will show up add them to the **"Replaceable Editor"** found in the Designer. Drag and drop from the scene tree the elements you want to exposed to the NRS plugin for producers to be able to fulfill.

Note: these elements will also now be shown in the Play List as well.

Replaceable Fields



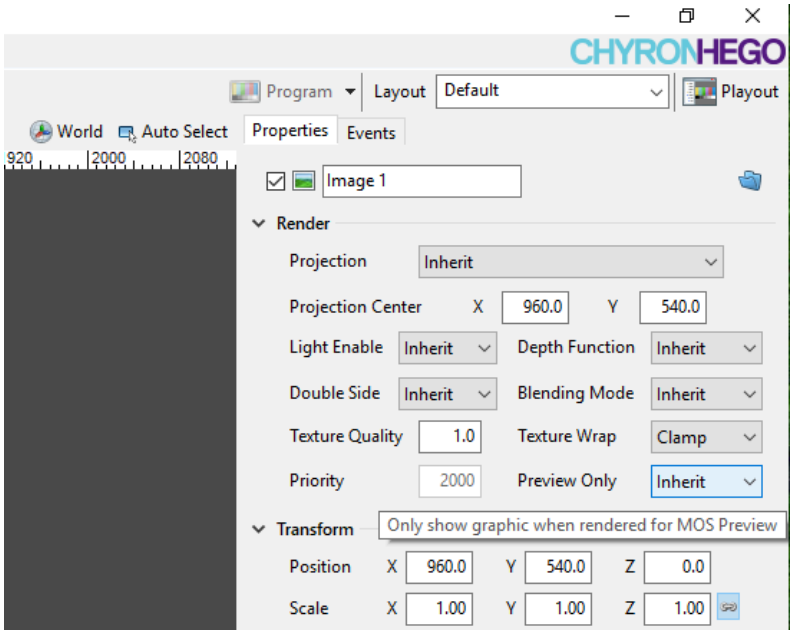
Auto Erase

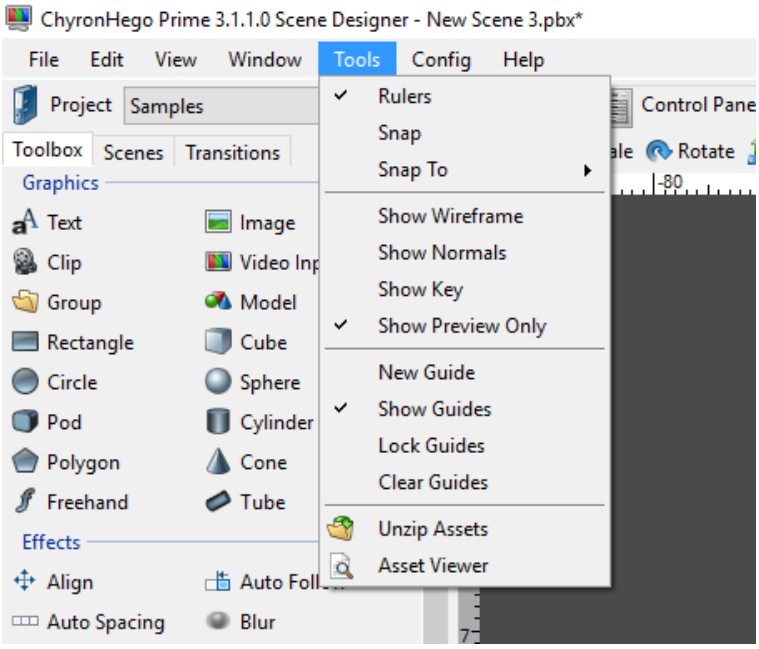


- **Id:** This is the ID automation will use to identify this item.
- **Description:** This is a user-friendly description and is also used in the NRS Plugin (LUCI) as the label for the replaceable item.
- **Order:** Used by legacy automation commands.
- **Auto Erase:** The data in this field will be erased in LUCI when the template is selected.

LUCI Preview Only

The “Preview Only” option allows for scene elements to be visible in LUCI templates and Previews. Any Scene object that has “Preview Only” marked as “True” will be visible in LUCI but will NOT be visible on the Playout machines. This option can be toggled On/Off from the “Tools” menu. When set to “Inherit” the setting will inherit from its parent. This way an entire group can be “Preview Only” by setting the Groups “Preview Only” setting to True.

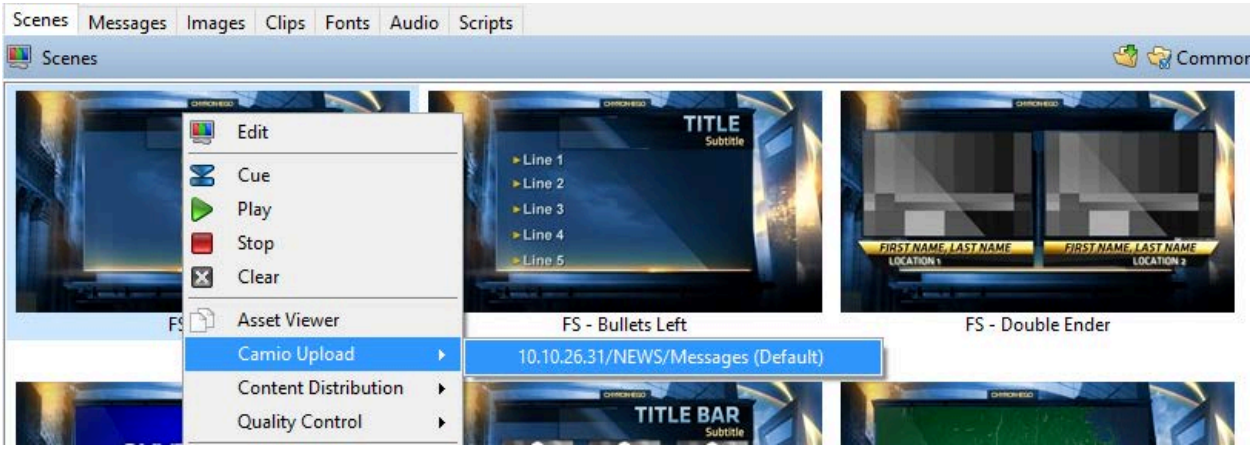



ChyronHego Prime 3.1.1.0 Scene Designer - New Scene 3.pbx*
File
Edit
View
Window
Tools
Config
Help
Project
Samples
Toolbox
Scenes
Transitions
Graphics
Text
Image
Clip
Group
Model
Rectangle
Cube
Circle
Sphere
Pod
Cylinder
Polygon
Cone
Freehand
Tube
Effects
Align
Auto Spacing
Blur
Rulers
Snap
Snap To
Show Wireframe
Show Normals
Show Key
Show Preview Only
New Guide
Show Guides
Lock Guides
Clear Guides
Unzip Assets
Asset Viewer
Control Pane
Rotate
-80

Publishing

Publish a single scene

Right click on a scene or clip and select “Upload to CAMIO”. Select the CAMIO server from the list of available servers defined in the above configuration:



Publish a Project

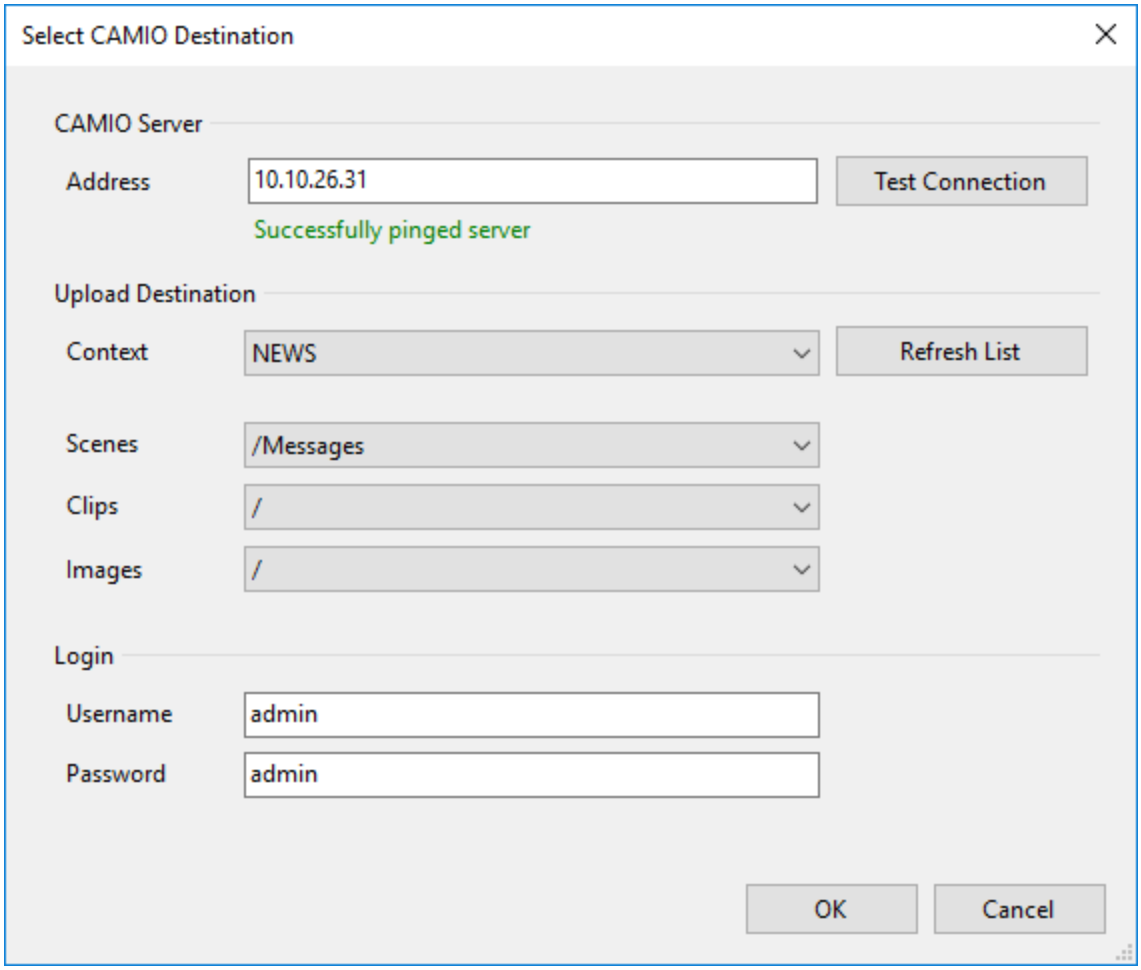
Click the Project Icon in the upper left hand corner of the Runtime user Interface and select “CAMIO Upload” menu. Select the CAMIO server from the list of available servers.

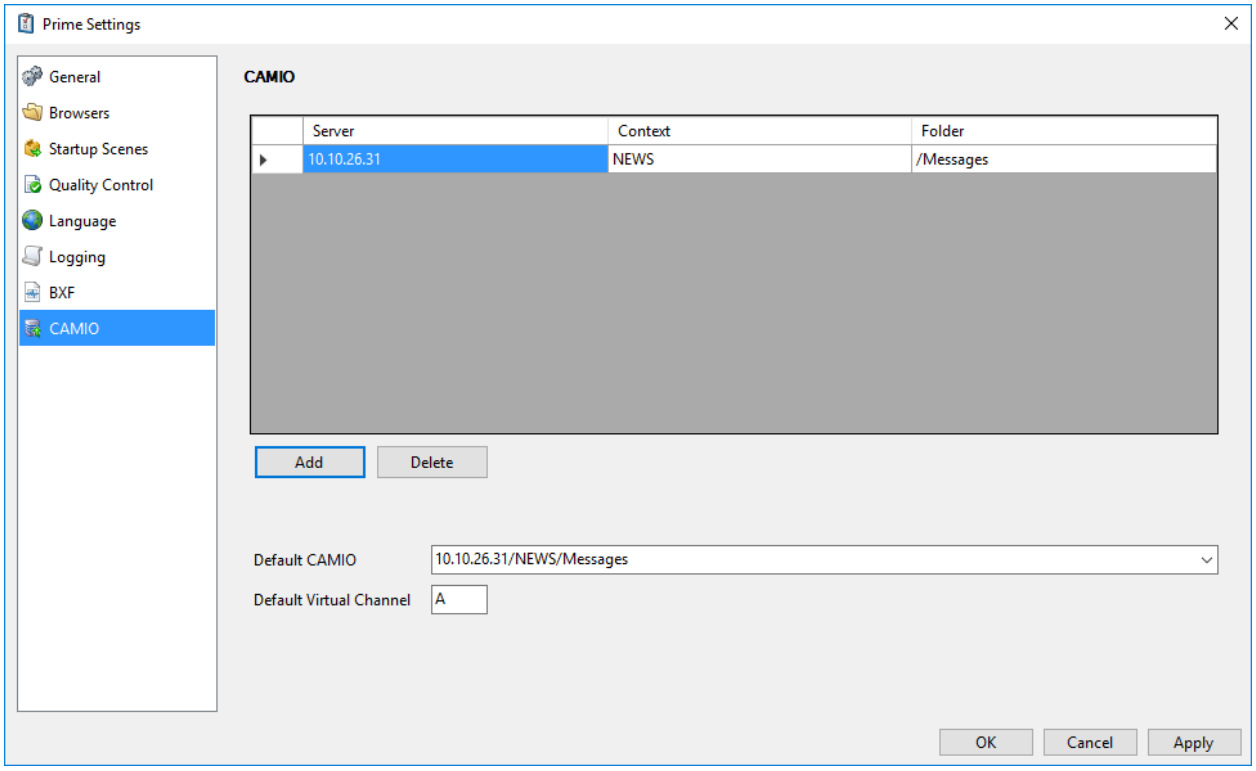
CAMIO Playback

This section refers to the PRIME Playout devices

Configure the CAMIO Server:

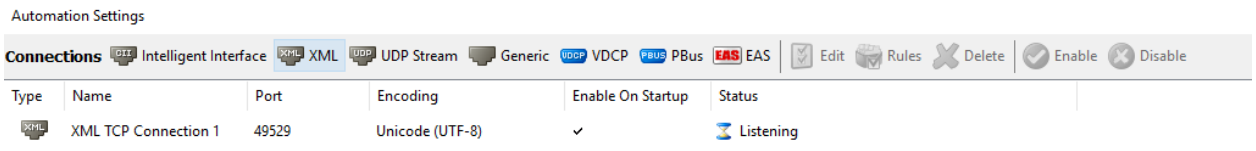
From the Runtime User Interface select the menu Config->Settings->CAMIO. Press the “Add” button to configure CAMIO Server(s):





Configuring for Playback Control:

Add an XML connection in the Automation Settings: This connection will receive playback commands from the CAMIO playback device controller (ISQ).



CAMIO Renderer

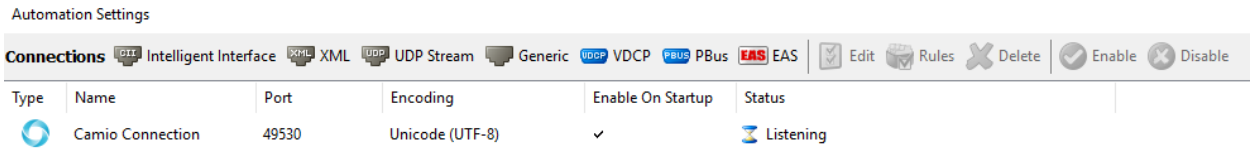
This section refers to the CAMIO PRIME Preview Render Application that runs on the separate CAMIO Render device.

CAMIO PRIME is the PRIME software configured to generate previews within the NRS plugin.

The ChyronHego Dongle will show the “Device Type” as “CAMIO Renderer”. When set the PRIME application will serve as a Preview Renderer ONLY. Many features within the PRIME software will be disabled or unavailable. When launched the splash screen will show a “CAMIO PRIME Renderer”.

The CAMIO Renderer Automation Connection:

This connection will automatically be added and enabled. No Configuration required but is useful for diagnosis purposes to view the command stream.



Configure the CAMIO Renderer End Point:

LIVE

Uploading to LIVE

Configure Live Uploader

In Prime Settings > Live Uploader select Add to create a new connection Profile.

Name: Alphanumeric value of your choosing

Bucket Details

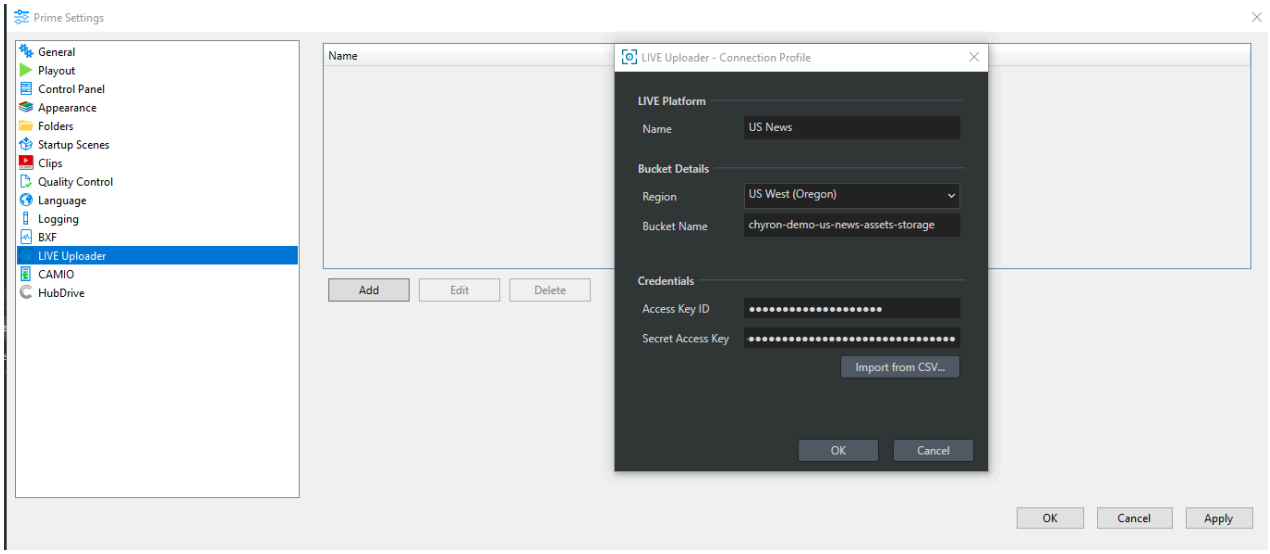
Region: Select the region where the S3 Bucket is hosted

Bucket Name: Populate with S3 Bucket name provided to the admin of your Live environment.

Credentials

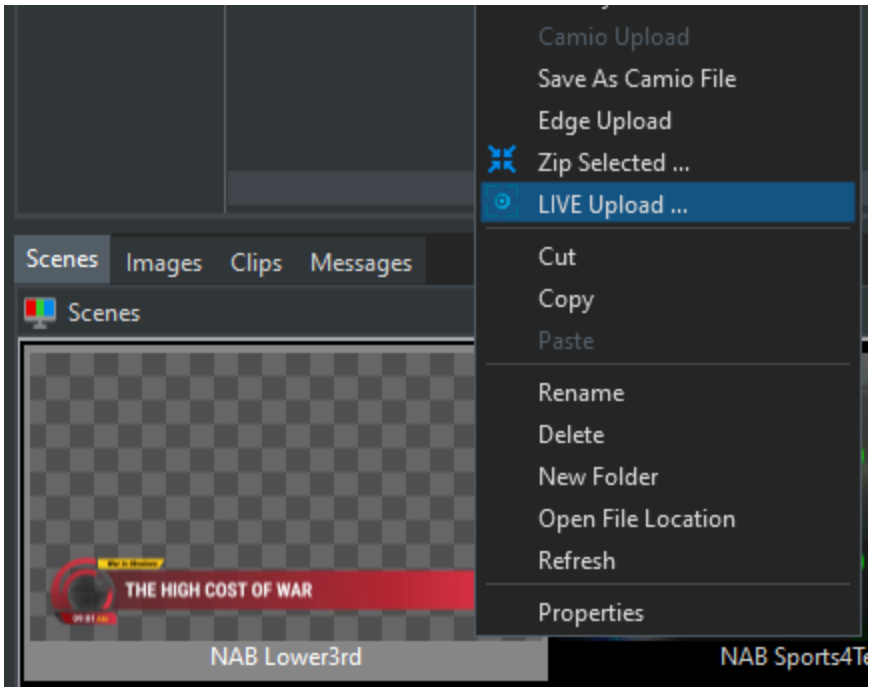
Access Key ID: Populate with Key ID provided to the admin of your Live environment

Secret Access Key: Populate with Secret Access Key provided to the admin of your Live environment.

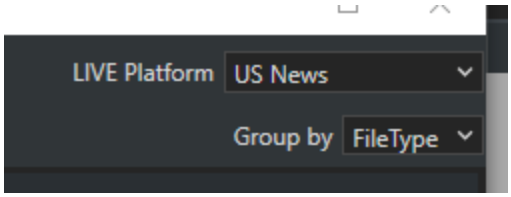


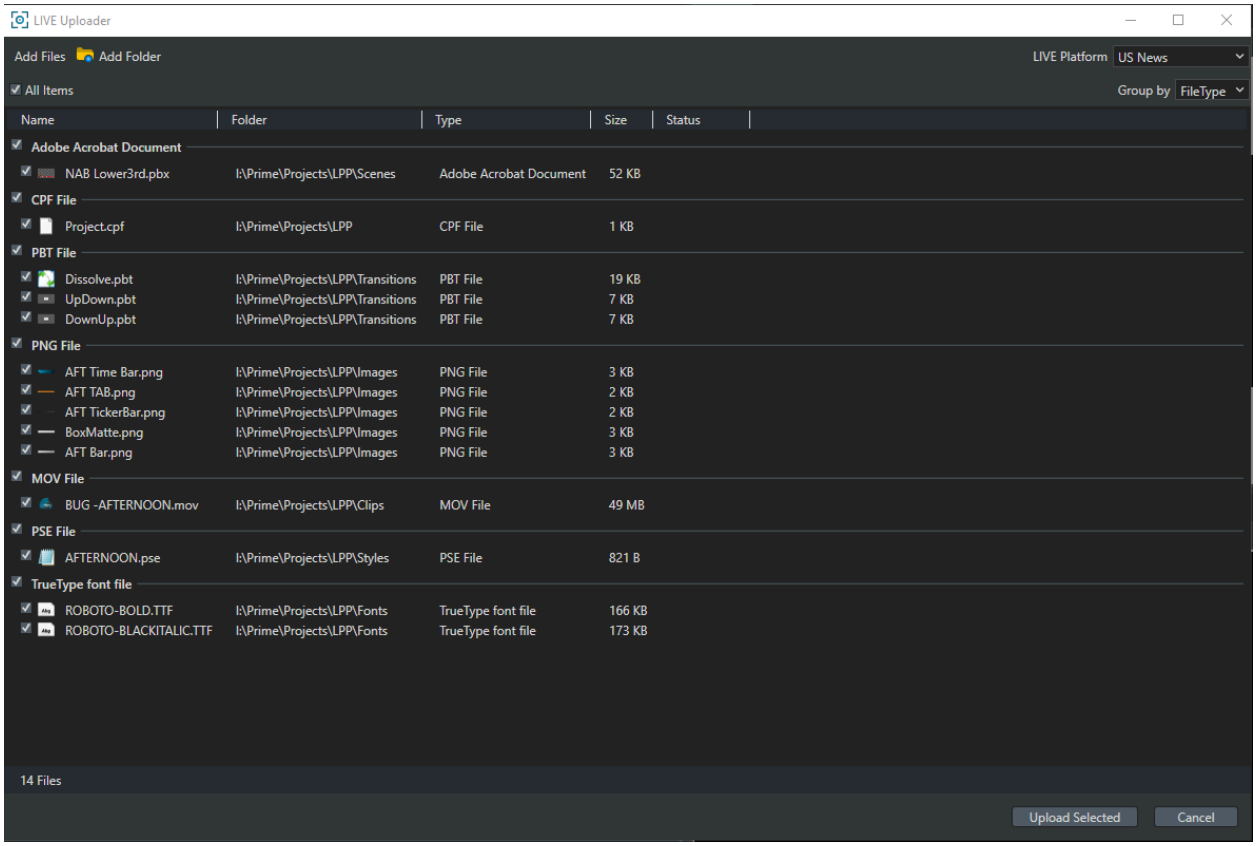
Upload a single scene

Right click on a scene or clip and select “Live Upload”.



Select the Live Platform from the list of available configured Live environments, in the top right hand corner.





Select Add Files to add additional files.

Select Add Folder to add additional folders

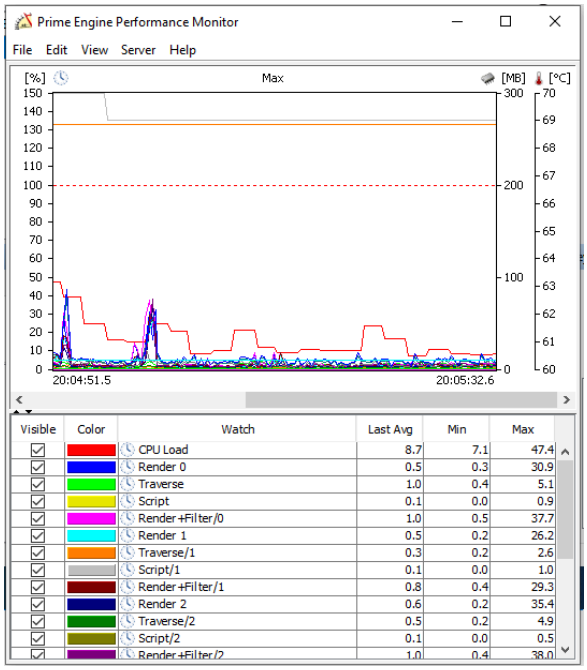
To begin the upload process select “Upload Selected”.

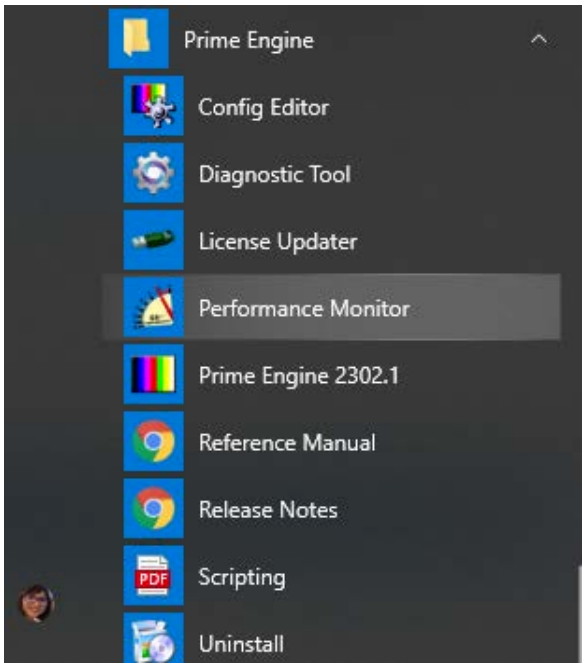
Display Matrix Display Port (GPU) Output

See the separate document: Display Matrix Configuration.

Performance Monitor

PRIME is accompanied by a utility tool for measuring the application and system performance. This tool is called the **PRIME Engine Performance Monitor** and is located on the Start menu inside the Prime Engine folder





ABOUT US

Chyron is ushering in the next generation of storytelling in the digital age. Founded in 1966, the company pioneered broadcast titling and graphics systems. With a strong foundation built on over 50 years of innovation and efficiency, the name Chyron is synonymous with broadcast graphics. Chyron continues that legacy as a global leader focused on customer-centric broadcast solutions. Today, the company offers production professionals the industry's most comprehensive software portfolio for designing, sharing, and playing live graphics to air with ease. Chyron products are increasingly deployed to empower OTA & OTT workflows and deliver richer, more immersive experiences for audiences and sports fans in the arena, at home, or on the go.

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