Add a new Render Target

Add Render Target

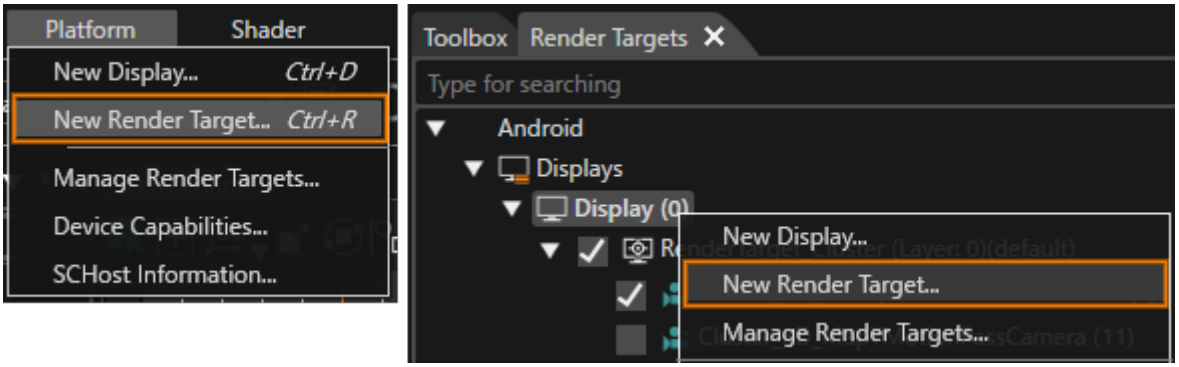
A render target is an abstraction of a rendering surface. In the field of 3D computer graphics, it is a feature of modern graphics processing units (GPUs) that allows a 3D scene to be rendered to an intermediate memory buffer, or Render Target Texture (RTT). It can then be manipulated by shaders in order to apply additional effects to the final image before displaying it.

As mentioned before, there are two types of render targets:

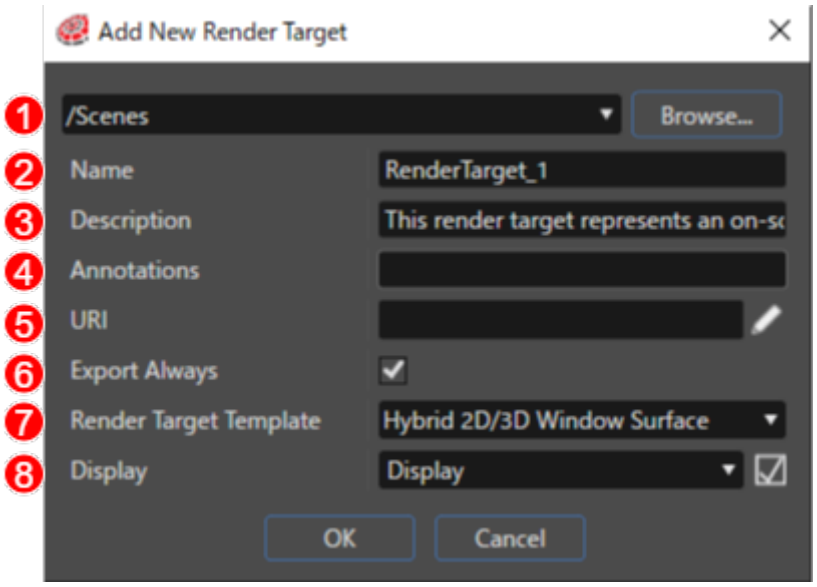
- Display Render Targets: They address the rendering in a native surface of the graphic device.
- Texture Render Targets: They represent textures which can be used in the scene to render into them.

A new render target can be added using one of the following possibilities:

Go to "Platform" > "New Render Target" in the menu bar or go to the Render Targets panel, right click on a node under the display and select "New Render Target" from the context menu.



Set the following items in the Add New Render Target dialog box and click [OK] to create a new Render Target.



(1)	Top input field	The location where the Render Target is saved in Solution Explorer
(2)	Name	The Render Target Name
(3)	Description	The Render Target Description
(4)	Annotations	The Render Target Annotations
(5)	URI	The Render Target URI
(6)	Export Always	If enabled, the Render Target selected at the time of asset generation is always exported to the asset.
(7)	Render Target Template	The Render Target template
(8)	Display	The display that is linked to the Render Target

> The types available depend on the SceneComposer platform of a given solution, respectively of the feature set of the Candera Device specified by the platform.

The newly added render target can have the properties listed in the table below set in the Properties panel. The properties of the display render targets "Width", "Height" and "X", "Y" coordinates have to be configured with appropriate values that can be changed via Properties panel. The displays and the display render targets associated can be seen in the Render targets panel.

Section	Property name	Description

Render Target	Render Target Template	The Render Target template Select the Render Target template from the following: • **Hybrid 2D/3D Window Surface** • **Hybrid 2D/3D Off-Screen Surface** • **Software Layer** For details, please refer to Cameras and Render Targets.
	Display	The Display that is linked to the Render Target This property can only be set when Render Target Template = Hybrid 2D/3D Window Surface.
	Owner	Hybrid 2D/3D Off-Screen Surface: Surface owner Software Layer: Software Layer owner This property can only be set when the Render Target Template is set to Hybrid 2D/3D Window Surface or Software Layer.
	Type	The Render Target type
	Auto Swap	If enabled, the buffer will be automatically swapped (switched to new drawing) once all cameras linked to the Render Target have completed drawing.
	Auto Clear	If enabled, the relevant buffers (color, depth, and stencil buffers) are automatically cleared before a rendering operation to a Render Target is performed. The depth buffer is cleared with "1.0" values.
	Is Default	If enabled, it will be set as the default Render Target. For details, please refer to Default Render Target.
	Orientation	Rotation angle of the rendered image (0°/90°/180°/270°) For details, please refer to Rotate Display Preview.

ClearMode	A ClearMode item used to clear the buffer associated with a 3D Render Target. For instructions on how to create a ClearMode item, see ClearMode.
ClearMode2D	Color to clear the color buffer of a 2D Render Target

The properties in the Edting Utilities section vary depending on the Render Target Template selected.

Render Target Template: Hybrid 2D/3D Window Surface Edting Utilities section properties:

Section	Property name	Description
Edting Utilities	Preview Border Scope	Preview borders for the targeted Render Target Available in Global Preferences. • **None:** Border is hidden • **Global:** Border based on global coordinates • **Local:** Border based on local coordinates
	Preview Border Color	Preview border color for the target Render Target Available in Global Preferences.
	Width	Render target width (horizontal pixels) If this value is "-1", it is calculated from the Display value.
	Height	Render target height (vertical pixels) If this value is "-1", it is calculated from the Display value.
	X	The position of the Render Target along the X axis (horizontal direction) in the display linked to the Render Target
	Y	The position of the Render Target along the Y axis (vertical direction) in the display linked to the Render Target

Layer	Window Surface Layer ID When there are multiple render targets, you can set the rendering order.The higher the number, the higher the layer will be. • Bottom layer: Layer = 0 • Middle layer: Layer = 1 • Top layer: Layer = 2 The number of layers supported varies by device. Also, Window Surfaces with the same layer ID cannot be uploaded at the same time. For details, please refer to Multiple Render Targets.
BlendMode	Blend mode • **BlendModeStandard:** A common blend mode that represents transparency based on the alpha value of the source pixel. • **BlendModePreMultiplied:** Performs blending as if the source pixel is already multiplied by the alpha value. • **BlendModeOff:** Blending disabled For details, please refer to Blend Modes.
AntiAliasingSampleBuffers	Number of sample buffers to use for anti-aliasing
AntiAliasingMultiSamplingFactor	Minimum number of samples to use for multi-sample buffers used for anti-aliasing
MaxSwapInterval	Maximum swap interval Set when using EGL settings. If this value is "-1", the maximum swap interval is not limited.
MinSwapInterval	Minimum swap interval Set when using EGL settings. If this value is "-1", the minimum swap interval is not limited.

SwapInterval	Swap Interval Applies to the Window Surface. The initial value is "1". If the value is "0", the buffer swap is not synchronized with the video frame, and the swap is performed as soon as rendering is completed. If the value is "1" or more, the buffer swap is performed every time the vertical synchronization signal (V-sync) is received the number of times specified by the value.
RedSize	The number of bits for the Red color in the color buffer.
GreenSize	The number of bits for the Green color in the color buffer.
BlueSize	The number of bits for the Blue color in the color buffer.
AlphaSize	The number of bits for the Alpha in the color buffer.
Conformant	Set this property to enabled if Render Target is OpenGL ES compliant.
DepthSize	Number of bits in the depth buffer
StencilSize	Number of bits in the stencil buffer
BufferPreservedBit	If enabled, Render Target contents are preserved after buffer swapping, potentially improving performance by reducing GPU strain when only a portion of the screen changes.

Render Target Template Hybrid 2D/3D Off-Screen Surface Edting Utilities section properties:

Section	Property Name	Description
Edting Utilities	Preview Border Scope	Preview borders for the targeted Render Target Available in Global Preferences. • **None:** Border is hidden • **Global:** Border based on global coordinates • **Local:** Border based on local coordinates

Preview Border Color	Preview border color for the target Render Target Available in Global Preferences.
ColorFormat	Color buffer format
DepthFormat	Depth buffer format
StencilFormat	Stencil buffer format
ExternalColorTexture	Attaches an external color buffer to a Render Target.
ExternalDepthBuffer	Attaches an external depth buffer to a Render Target.
ExternalStencilBuffer	Attaches an external stencil buffer to a Render Target.
Width	Render target width (horizontal pixels) If this value is "-1", it is calculated from the Display value.
Height	Render target height (vertical pixels) If this value is "-1", it is calculated from the Display value.
MsaaSamples	MSAA (Multisample Anti-Aliasing) Sample Count For details, please refer to Multisample Anti-Aliasing Offscreen Render Targets.

Render Target Template Software Layer Edting Utilities section properties:

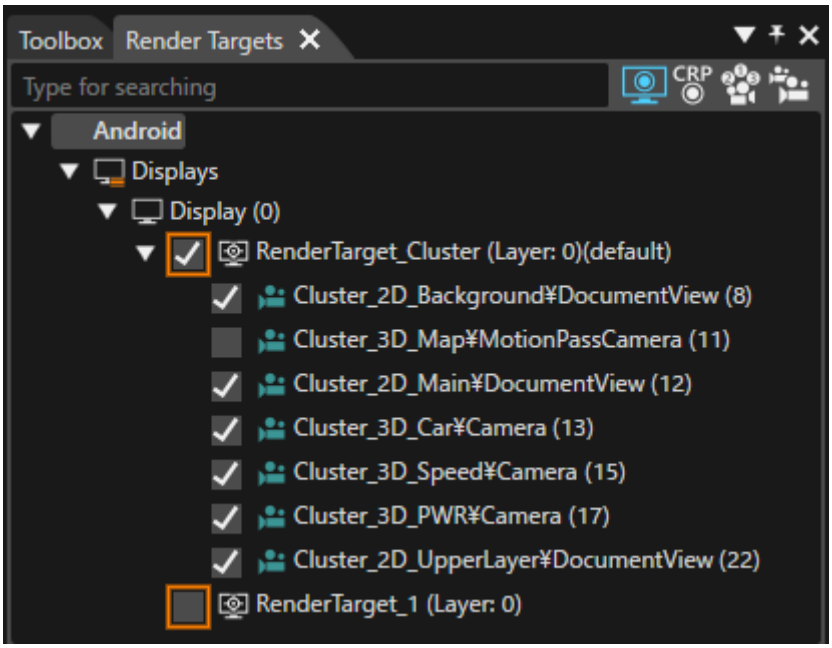
Section	Property Name	Description
Edting Utilities	Preview Border Scope	Preview borders for the targeted Render Target Available in Global Preferences. • **None:** Border is hidden • **Global:** Border based on global coordinates • **Local:** Border based on local coordinates
	Preview Border Color	Preview border color for the target Render Target Available in Global Preferences.
	ColorFormat	Color buffer format

DepthFormat	Depth buffer format
StencilFormat	Stencil buffer format
ExternalColorTexture	Attaches an external color buffer to a Render Target.
ExternalDepthBuffer	Attaches an external depth buffer to a Render Target.
ExternalStencilBuffer	Attaches an external stencil buffer to a Render Target.
Width	Render target width (horizontal pixels)
Height	Render target height (vertical pixels)
X	The position of the Render Target along the X axis (horizontal direction) in the Render Target's owner (drawing area).
Y	The position of the Render Target along the Y axis (vertical direction) in the Render Target's owner (drawing area).
Layer	Software Layer ID When a Software Layer is made up of multiple layers, you can set the rendering order. The higher the number, the higher the layer.
BlendMode	Blend mode For details, please refer to Blend Modes.
ConstantAlpha	Alpha (transparency) applied to the entire Software Layer
BufferCount	Number of buffers used by the Software Layer • SoftwareLayerSingleBuffered • SoftwareLayerDoubleBuffered
Enabled	Enable (show)/disable (hide) Software Layers

CompositionCamera	CompositionCamera The drawing of each layer in the Software Layer is used by the Composition Camera to generate the final display image. For details please refer to Software Layers.
BorderEnabled	Show/Hide Layer Borders Each Software Layer is separated by a one-pixel border.

> Please refer to the Candera API Documentation to learn about device-specific render target properties:
> Candera::RenderTarget

Every new created render target could be enabled or disabled by ticking the checkbox. When deactivating/activating a render target by unchecking/checking the checkbox, the render target gets also unloaded/uploaded. Therefore, one can make use of several WindowSurfaceRenderTarget objects having the same layer by activating only one of them; the others will not be uploaded.



> A render target can be deleted using the context menu option "Delete" in the Render Targets panel.

Configure Render Target

Configure a Display Render Target

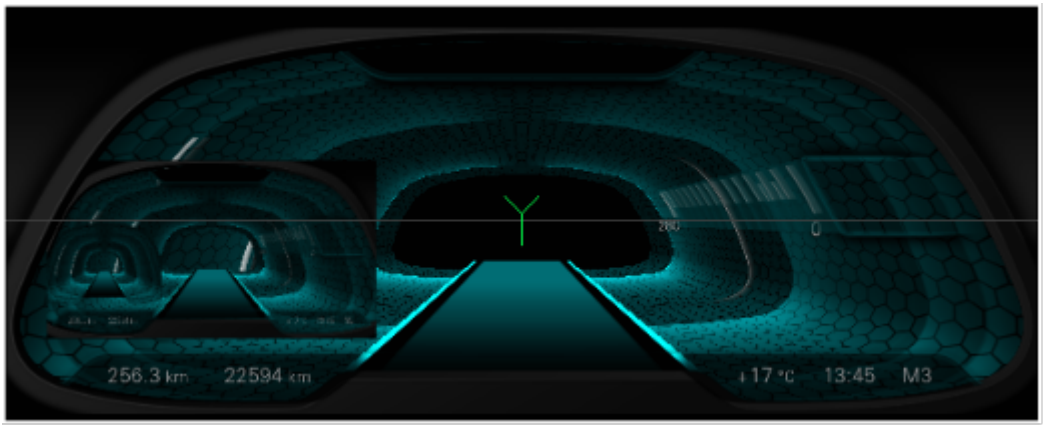
In the "Render Targets" panel, the Display Render Targets are organized in the DisplayRenderTargets collection of a Display node.

New display render targets will be listed under this category.

Configure a Texture Render Target

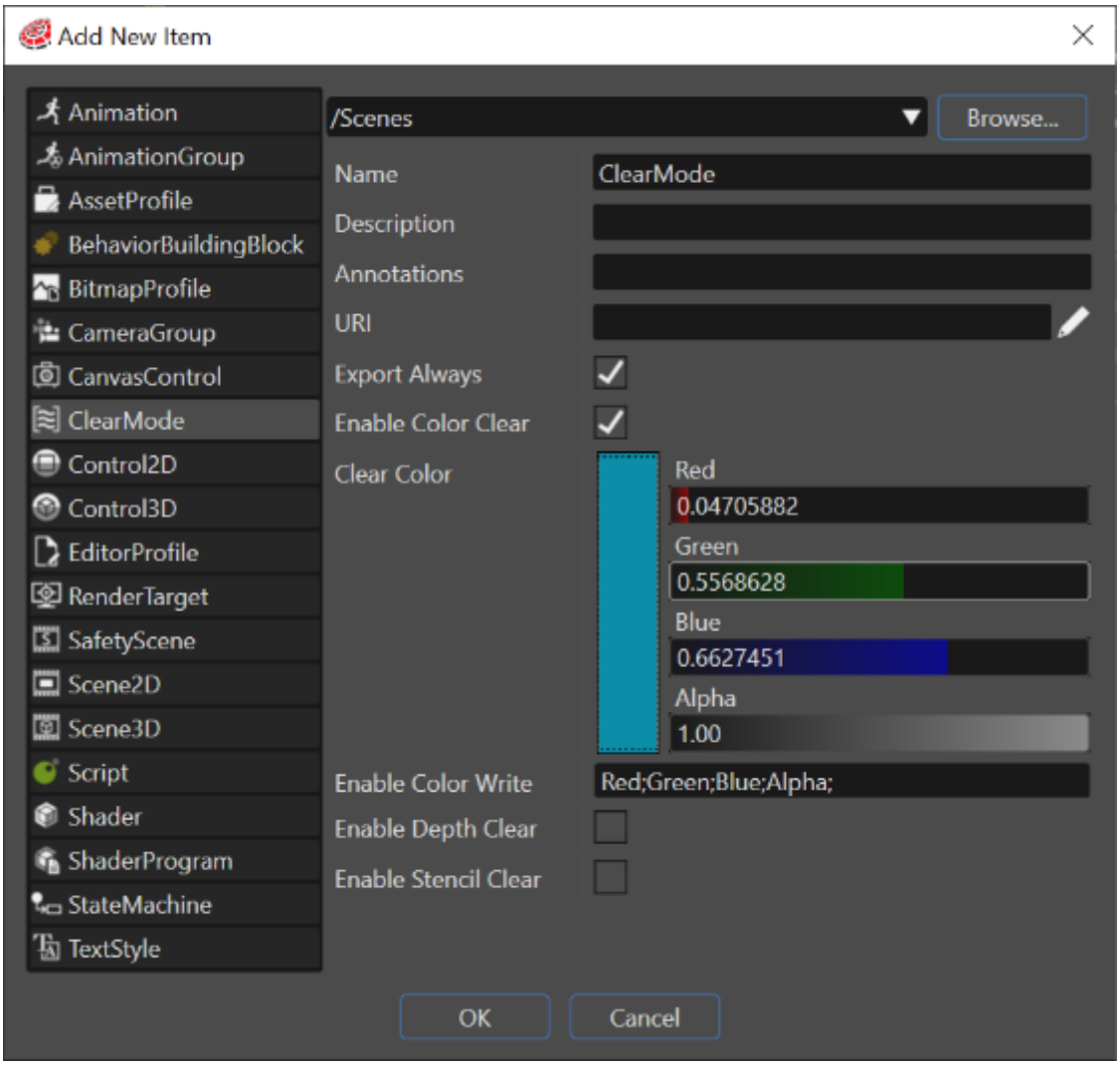
Rendering to a texture is simple on one hand, but on the other hand it is powerful and enables numerous special effects. It is an extension to rendering to a surface.
Usually, for a texture render target, the texture render target properties "Width" and "Height" must be configured according to the required size of the texture.

To use a texture render target as a texture, SceneComposer allows selecting a texture render target in the "Choose Item" dialogs, whenever a texture shall be selected during composing a scene.

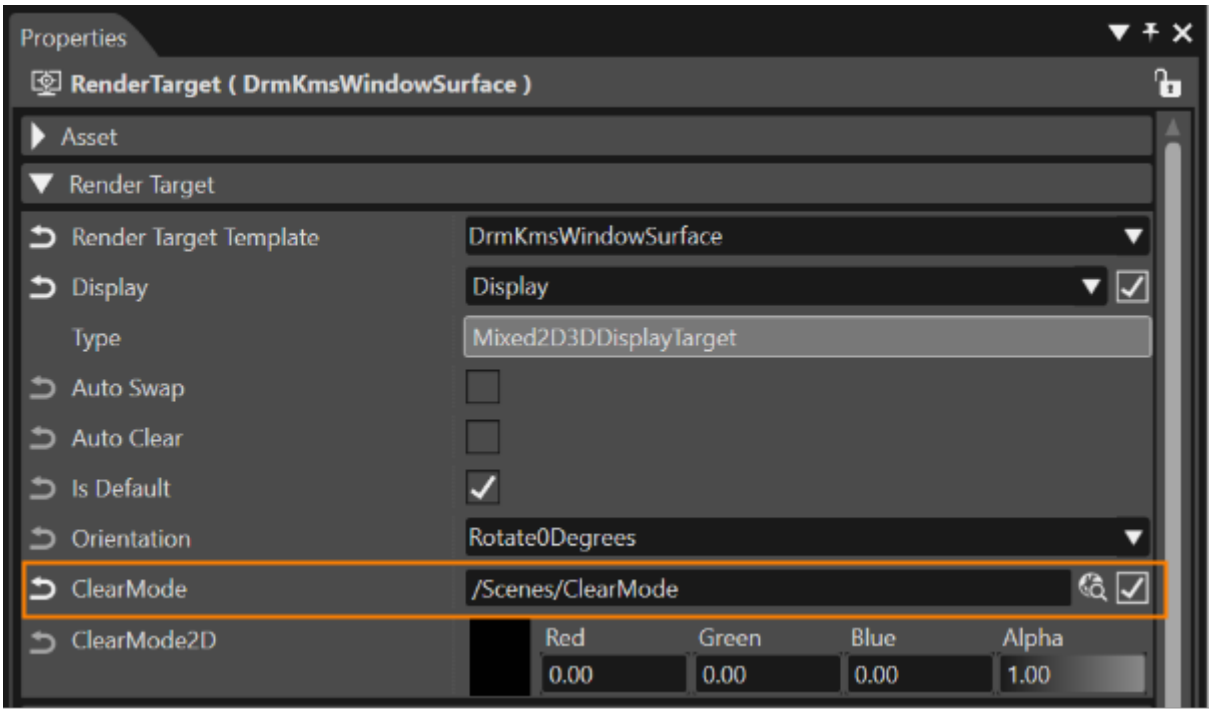


Clear Mode Item

The "Clear Mode" item can be created via "Solution Explorer" panel by using the context menu option ("Add" > "New Item"). In this way, all its specific properties ("Clear Color", "Enable Color Write", "Enable Depth Clear" and "Enable Stencil Clear") are related with just one item instead of being included among many other properties of every render target. If there are many render targets which are referencing the same clear mode item, it is enough to modify just one time the desired property rather than modifying every of them.



After the creation of a "Clear Mode" item, it can be used after being referenced from a specific Render Target. This operation can be done by using the "Clear Mode" property available in the "Properties" panel associated with any available render target.



If a ClearMode is a associated to a RenderTarget, the RenderTarget is cleared using that clearmode before any of the attached cameras renders to it.

Clear Mode Property

See also: Candera::ClearMode

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