

# Effects

Effects describe the appearance of a `RenderNode` in a 2D scene. The number of effects may differ on each platform. A functional overview of each effect is provided in the table below (you can navigate to the detailed pages by using the links in the titles).

|    | Effect name                                       | Description                                                                                                   |
|----|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 1  | <a href="#">BitmapBrushBlend</a>                  | Renders a bitmap image as source content and blends it with the destination (store) buffer.                   |
| 2  | <a href="#">BitmapBrushColorBlend</a>             | Renders a bitmap, modulates its color (e.g., RGBA factors) and blends the result with the destination buffer. |
| 3  | <a href="#">BitmapBrushHslBlend</a>               | Renders a bitmap with hue/saturation/lightness adjustments and blends it with the destination buffer.         |
| 4  | <a href="#">BlurBitmapBrushBlend</a>              | Produces a blurred bitmap image (post filter) and blends it into the destination buffer.                      |
| 5  | <a href="#">GIBitmapBrushColorMaskBlend</a>       | Renders a bitmap using a color-based alpha mask and blends it with the destination buffer.                    |
| 6  | <a href="#">GIBitmapBrushMaskBlend</a>            | Renders a bitmap with an alpha mask (mask texture) and blends it with the destination buffer.                 |
| 7  | <a href="#">GIDropShadowBitmapBrushBlend</a>      | Draws a drop shadow for the input bitmap and blends both shadow and image with the destination buffer.        |
| 8  | <a href="#">GIDropShadowBitmapBrushColorBlend</a> | Draws a drop shadow and applies color modulation to the bitmap output before blending to destination.         |
| 9  | <a href="#">GIFlipBitmapBrushBlend</a>            | Flips the bitmap horizontally and/or vertically and blends it with the destination buffer.                    |
| 10 | <a href="#">GIFlipBitmapBrushColorBlend</a>       | Flips the bitmap, applies color modulation, and blends the result with the destination buffer.                |
| 11 | <a href="#">GILinearGradientBitmapBrushBlend</a>  | Applies a linear gradient over bitmap/text content and blends it to the destination buffer.                   |

|    |                                                       |                                                                                                                       |
|----|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 12 | <a href="#"><u>GLLinearGradientBrushBlend</u></a>     | Generates a linear-gradient brush as source pixels and blends it with the destination buffer.                         |
| 13 | <a href="#"><u>GLMultiTextureBrushBlend</u></a>       | Blends two bitmap inputs (multi-texture combine) and then blends the result to the destination buffer.                |
| 14 | <a href="#"><u>GLOutlineBitmapBrushColorBlend</u></a> | Creates an outline from the image alpha (notably for bitmap-cached text), modulates color, and blends to destination. |
| 15 | <a href="#"><u>GIRadialGradientBrushBlend</u></a>     | Generates a radial-gradient brush as source pixels and blends it with the destination buffer.                         |
| 16 | <a href="#"><u>GISolidColorBrushMaskBlend</u></a>     | Fills with a solid color through an alpha mask and blends it with the destination buffer.                             |
| 17 | <a href="#"><u>MVGArcBrush</u></a>                    | Renders a vector arc shape (MVG) as a brush output (source pixels).                                                   |
| 18 | <a href="#"><u>MVGEllipseBrush</u></a>                | Renders a vector ellipse/circle (MVG) as a brush output.                                                              |
| 19 | <a href="#"><u>MVGPathBrush</u></a>                   | Renders a vector path (MVG) as a brush output.                                                                        |
| 20 | <a href="#"><u>MVGRectBrush</u></a>                   | Renders a vector rectangle/rounded-rect (MVG) as a brush output.                                                      |
| 21 | <a href="#"><u>MirrorBitmapBrushBlend</u></a>         | Renders a bitmap together with its mirror reflection and blends the combined output to destination.                   |
| 22 | <a href="#"><u>ShadowBitmapBrushBlend</u></a>         | Produces a shadow or glow around the bitmap and blends the effect and image with destination.                         |
| 23 | <a href="#"><u>ShearBitmapBrushBlend</u></a>          | Shears (skews) the image by X/Y shear angles and blends it with the destination buffer.                               |
| 24 | <a href="#"><u>SolidColorBrushBlend</u></a>           | Generates a solid-color rectangle as source pixels and blends it with the destination buffer.                         |
| 25 | <a href="#"><u>SolidColorBrushColorBlend</u></a>      | Generates a solid-color rectangle, applies color modulation, then blends to the destination buffer.                   |
| 26 | <a href="#"><u>SolidColorBrushHslBlend</u></a>        | Generates a solid-color rectangle with HSL correction and blends it with the destination buffer.                      |

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## Combined Effects

The effects provided in SceneComposer are **combined effects**. They can be dragged from the toolbox and dropped onto a RenderNode.

### Background information

Combined effects are a combination of two or three basic effect types that are combined to an effect chain.

The following three basic effect types are used to form this effect chain

- **Brush Effect:** Acts as the input effect; it defines the source data for the node (e.g. SolidColorBrush, BitmapBrush)
- **In-place Effect:** Multiple different in-place effects can be concatenated (e.g. ConstantAlphaEffect, MaskEffect)
- **Blend Effect:** e.g. AlphaBlendEffect

A correctly configured effect chain consists of the following

- a Brush effect at first
- followed by an optional In-place effect
- finished by a final Blend effect

For usability reasons, Scene Composer only provides combined effects in the Toolbox by default.

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## Use Combined Effects

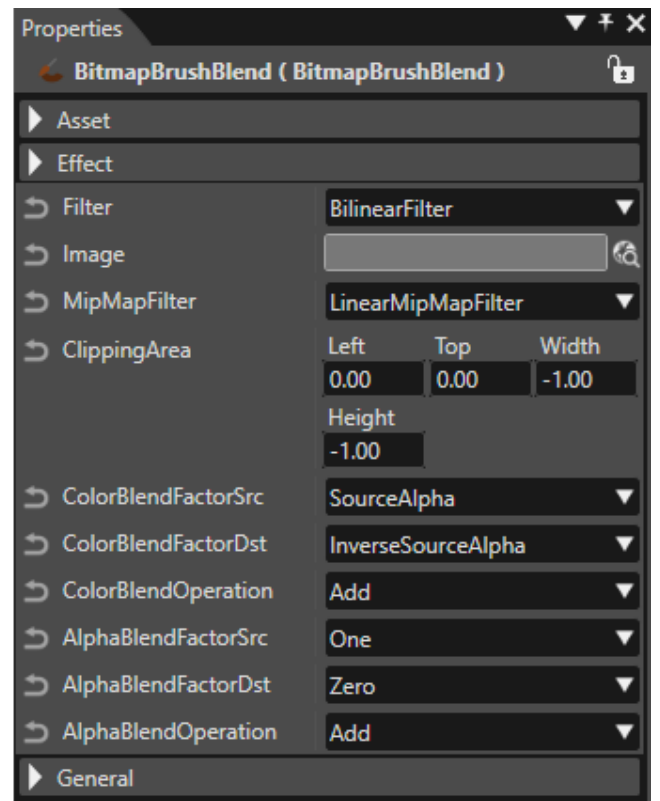
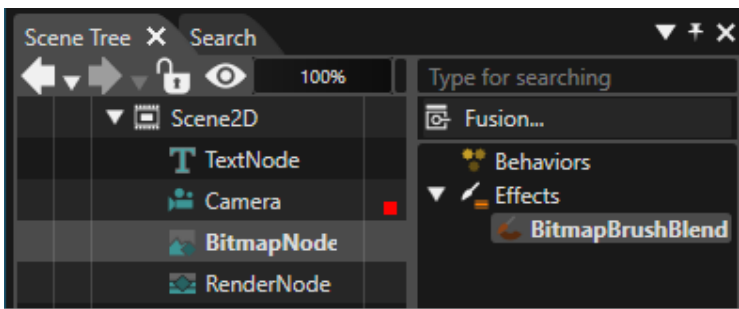
Several node types are already preconfigured with a specific combined effect. E.g. when a BitmapNode is added to the scene graph, it is automatically linked to a BitmapBrushBlend combined effect

For user-defined nodes, use the following 2D node type:

- **RenderNode:** Drag a combined effect from the Toolbox and drop it over the desired RenderNode in the Scene Tree panel.

Follow these steps to view and edit the effect:

1. Select the node in the left side of the Scene Tree panel.
2. The linked effect will appear on the right side.
3. Select the effect to display its properties in the Properties panel, where you can edit them.



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