

Since we inserted it directly after the HUD, the HUD is now resized and positioned. However, it still looks like a graphic slapped on top of an image. You can access dozens more effects in the Effects Library and use them to better integrate this HUD into the composite.

Adding Effects from the Effects Library

The Fusion page includes more effects than just those in the toolbar. It also includes over 250 Fusion-specific tools that you can access in the Effects Library.

To add more realism to this shot, we should spend a little time making the HUD appear more realistic. For example, we can use a few different nodes to add some computer scanlines and blurring effects.

Since the camera is focused on our actress, the HUD would realistically be out of focus. Let's start improving the HUD by giving it a blurred out-of-focus look.

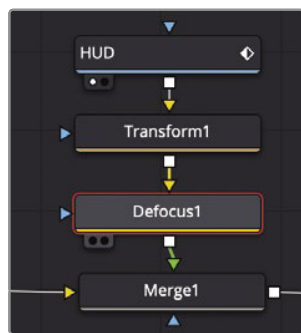
- 1 In the Node Editor, select the Transform node.
- 2 In the upper left of the Fusion page, click the Effects Library button.

The library is organized by category. The Tools category contains all the effects that are only available in Fusion.

- 3 In the Effects Library, click the Tools disclosure arrow.

There are Fusion-specific categories for everything from paint and particles to masking, image filters, tracking, and more.

- 4 Under the Tools category, select the blur category and click the Defocus tool to add it to the Node Editor.



Since the Transform node was selected, the Defocus is connected to the output of the Transform node.

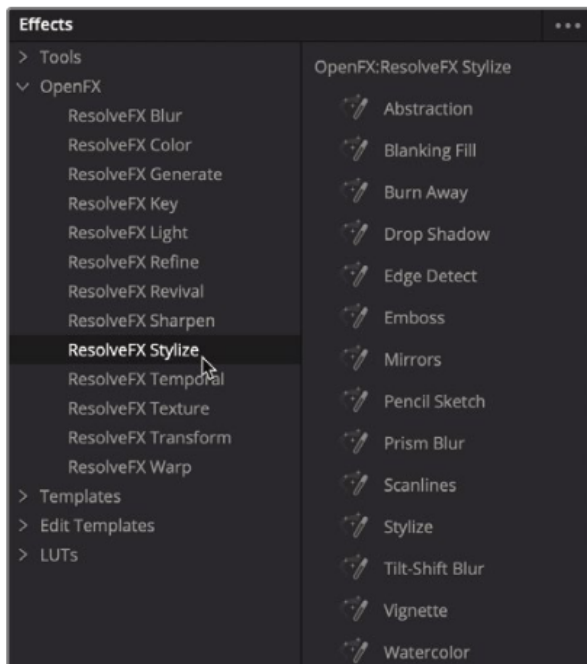
- 5 In the Inspector, lower the Defocus' Bloom slider to 0 to remove the over exposed white areas.

The remaining Defocus settings add a nice subtle soft focus to our HUD.

Adding ResolveFX

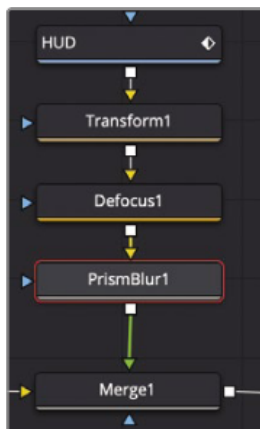
Now we'll add some blurring distortion using a Prism Blur. A Prism Blur mimics how a defective lens focuses differently on different colors. The Fusion toolset doesn't include a Prism Blur but DaVinci Resolve's Resolve FX does. You can access Resolve FX from the same Effects Library.

- 1 In the Effects Library, click Tools disclosure arrow to close the category, and then click OpenFX > ResolveFX Stylize.



The OpenFX category contains the same effects you have in the Effects Libraries in the Cut and edit pages.

- 2 From the Resolve FX Stylize category, click the Prism Blur tool so it is inserted after the Defocus node in the Node Editor.



The default settings on the Prism Blur appear fine for now. Let's introduce an older computer screen style to this by adding TV scanlines.

TIP You can temporarily disable a node by selecting it in the node tree and pressing Command-P (macOS) or Ctrl-P (Windows).

- 3 From the Resolve FX Stylize category, click the Scanlines tool so it is inserted after the Prism Blur node in the Node Editor.
- 4 In the Inspector, increase the Line Frequency to around 10, doubling the number of scanlines in the graphic and giving a more aged computer appearance.



TIP It can be easier to enter values rather than dragging sliders when changing controls in the Inspector.

Three nodes added to the HUD node have turned a simple graphic into a very nice, retro sci-fi computer screen.

Rearranging Nodes in the Node Editor

When editing a timeline, you take great care in ordering the clips precisely how you want the show to evolve. The same care and attention must be paid to the order of the nodes in a composite. The order we have now makes the scanlines appear much too sharp. Reordering the nodes will help in making this HUD more realistic.

- 1 Hold down the Shift key and drag the Scanlines node out of the node tree.

By holding the Shift key, you are able to extract and insert nodes anywhere in the node tree.

- 2 Continue holding down the Shift key and drag the Scanlines node over the connection line between the Transform and the Defocus nodes.



- 3 When the line turns blue, release the mouse to insert the Scanlines node.

The Shift key is one method of moving nodes around the Node Editor, but another method may be more familiar to you: simple copy and paste functions work for nodes as well. If you need to apply a second version of a node, instead of going to the toolbar or Effects Library, you can copy and paste one if it exists in the Node Editor.

Copying and Pasting Nodes

Taking a step back and looking at the entire composite, it makes sense that if the HUD is out of focus, the cracked glass would be out of focus as well. You can easily copy and paste nodes from one area of a node tree to another.

- 1 Select the Defocus node in the Node Editor.
- 2 Choose Edit > Copy or press Command-C (macOS) or Ctrl-C (Windows) to copy the selected node.

- 3 Select the GLASS node in the Node Editor.

Like clicking a tool in the toolbar, a pasted node is added after the currently selected node.

- 4 Choose Edit > Paste or press Command-V (macOS) or Ctrl-V (Windows) to add the copied node after the selected GLASS node.



The Defocus node is inserted between the GLASS node and the Merge 2 node.

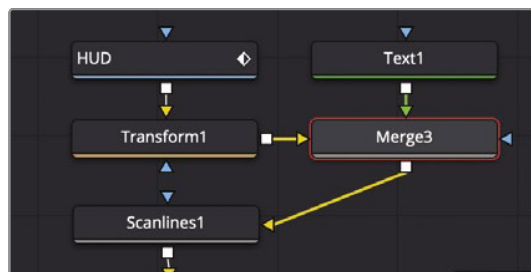
Adding Text

Good graphics—whether they are main titles, still images, or even subtle text on a simulated computer screen—should remain true to the look of the program. In this composite, you'll use some of Fusion's text features to add a blinking warning alert to the HUD.

- 1 Select the Transform1 node in the Node Editor.

By selecting the Transform 1 node, we'll insert the text just before all the effects that are added to the HUD. This means the text will get all the same effects and blend in more realistically with the HUD graphics.

- 2 In the toolbar, click the third button in from the left to add Text tool.



TIP You can right-click over any part of the toolbar and choose Customize > Create Toolbar to add, delete, and rearrange tools in the toolbar.

Adding the Text node to the Transform automatically creates a Merge connecting the two nodes. The Transform is connected to the background input of the new Merge, and the Text node is added to the foreground input.

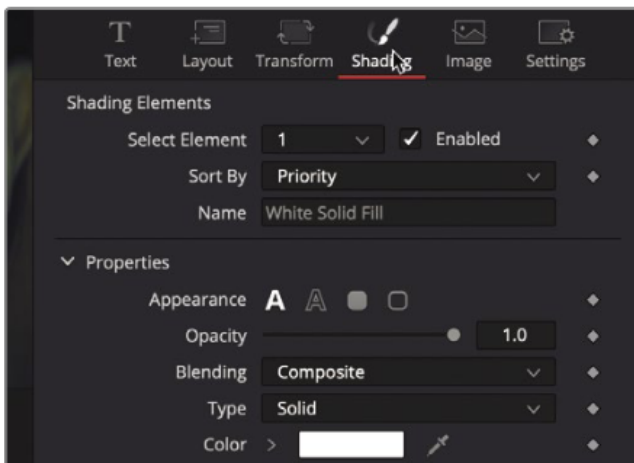
- 3 Select the Text node in the Node Editor and then, in the Inspector's Styled Text field, type **WARNING**.



- 4 Below the Styled Text field, choose a good font that you might see as an alert on a sci-fi computer screen.
- 5 Below the typeface, increase the size to about 0.1.

Next, you'll use the text shading controls to make the text red with a glowing orange outline.

- 6 Click the Shading tab.

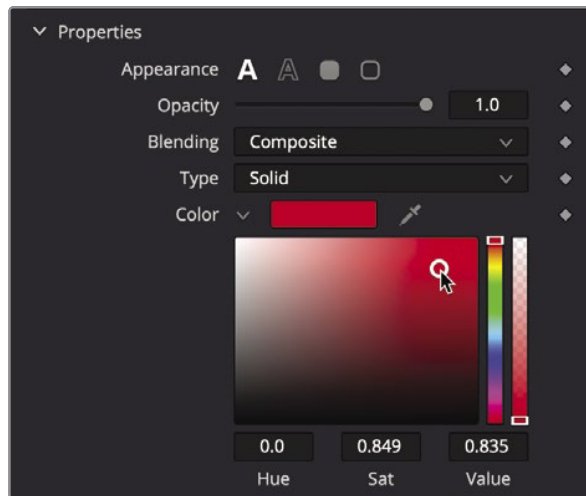


In the Shading tab, you can apply text color, outline, shadows, and glows. Since this is a warning alert, we'll make the text red and add a slight orange glow as well.

- 7 In the Shading tab, click the disclosure arrow for the Color swatch.

A larger color swatch appears where you can select the hue along the side of the swatch and a saturation in the larger palette.

- 8 Select the vibrant red color to fill the text.

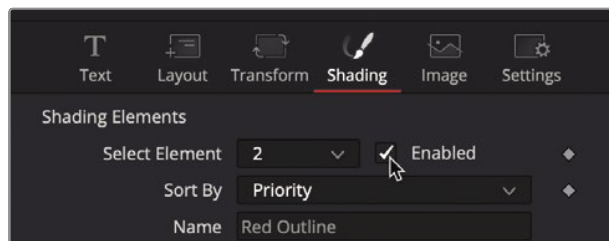


The Text node has eight shading options. From adding outlines to inserting glows, these additional shading options are fully customizable text layers. Fusion has given each of them a name and effect such as Shadow or Red Outline, but you can change them to whatever you want.

TIP After selecting a number (1-8), you will not see that chosen shading effect until you select the Enable checkbox.

Let's enable a new shading layer effect to apply a soft orange glow to our text.

- 9 From the Select Element drop-down menu, choose 2, and select the Enabled checkbox.



This shading element defaults to a red outline. We'll change it to an orange outline and give it a soft glow.

- 10 Click the disclosure arrow next to the color swatch to open the color palette and then select an orange color for the outline.
- 11 Scroll down the Inspector and open the Softness section.
- 12 Adjust the offset X and Y parameters to around 5.0 to soften the outline.



- 13 Increase the Glow parameter to around 0.3 to add an illuminating glow to the outline.

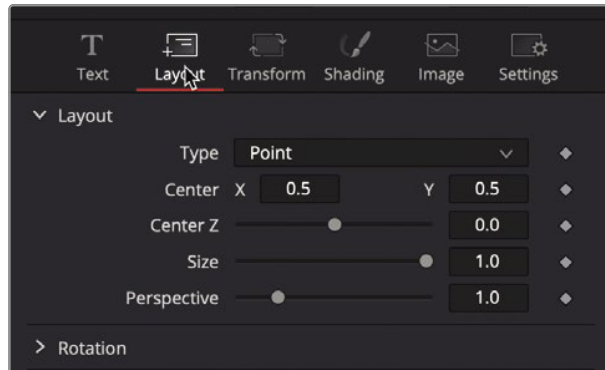


As mentioned, you can add up to eight shading elements to create fills, shadows, outlines, borders, and glows. In addition, you have control over the position, shearing, and rotation of each shading element, so your title design options are nearly limitless.

Positioning Text

The Text node includes layout parameters to position text however you like. For our purpose, since the text is meant as part of the HUD that the actress is looking at, it should be reversed on the screen.

- 1 At the top of the Inspector, click the Layout tab.



- 2 Scroll down to the Rotation parameters and drag the Y rotation to 180.
This flips the text around 180 degrees on the Y axis.

TIP The Merge and the Transform nodes both include Flip and Flop buttons, which would produce the same results.

Next, you'll position the warning text directly under the actress's eyes.

- 3 Use the Center X and Y parameters to position the text along the bridge of the actress's nose, under her eyes.



Now you have the text in place and looking like it is part of the HUD. If this is a warning alert, it would make sense to have it blinking on and off, making it very noticeable in the shot.

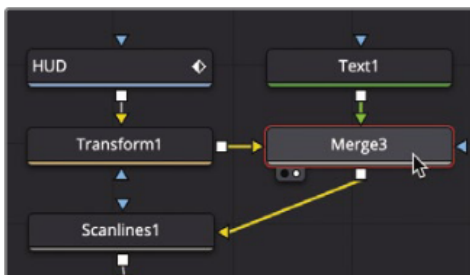
Animating with Keyframes

The ability to change elements over time is a crucial feature of any visual effects and motion graphics application. The Fusion page handles basic keyframe animation in the same manner that you already know from the edit page but goes much deeper with full keyframes and Spline Editors. Let's start by adding keyframes that raise and lower the opacity of the text.

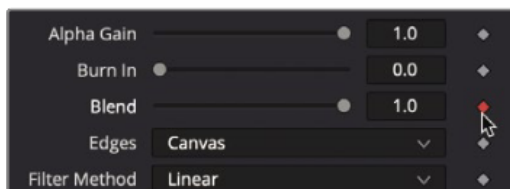
- 1 Press Command-Left Arrow (macOS) or Ctrl-Left Arrow (Windows) to move the playhead to the start of the render range.

As you did on the edit page in Lesson 7, you'll add a keyframe using the Inspector. In this case, you'll use the Blend parameter in the Merge to fade the text on and off.

- 2 Select the Merge 3 node and press 2 to see it in viewer 2.

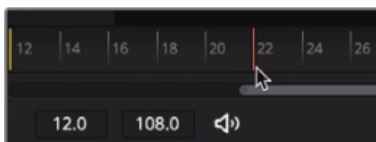


- 3 In the Inspector, click the keyframe icon to the right of the Blend control to add a keyframe, and drag the parameter to 0.



Enabling the keyframe button of any parameter adds a keyframe at the current playhead location and sets up auto keyframing: any time you adjust that parameter, a keyframe is added. Let's fade the text up and down again.

- 4 In the render range, drag the playhead forward 10 frames, to frame 22.



- 5 In the Inspector, drag the Blend parameter to the right until it reaches around 1.0

- 6 Drag the playhead forward 10 frames, to frame 32, and drag the Blend parameter back to 0.

Now, you'll view the animation to check it's pacing.

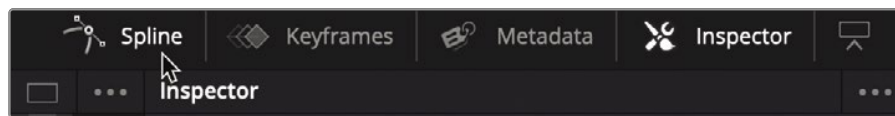
- 7 In the time ruler, drag the playhead to the start of the render range and play the animation.

As you have seen, setting keyframes in the Fusion page Inspector is identical to doing so in the edit page. However, you'll encounter differences when you want to view and modify keyframes. In doing so, you'll discover that the animating power of the Fusion page far surpasses that of the edit page.

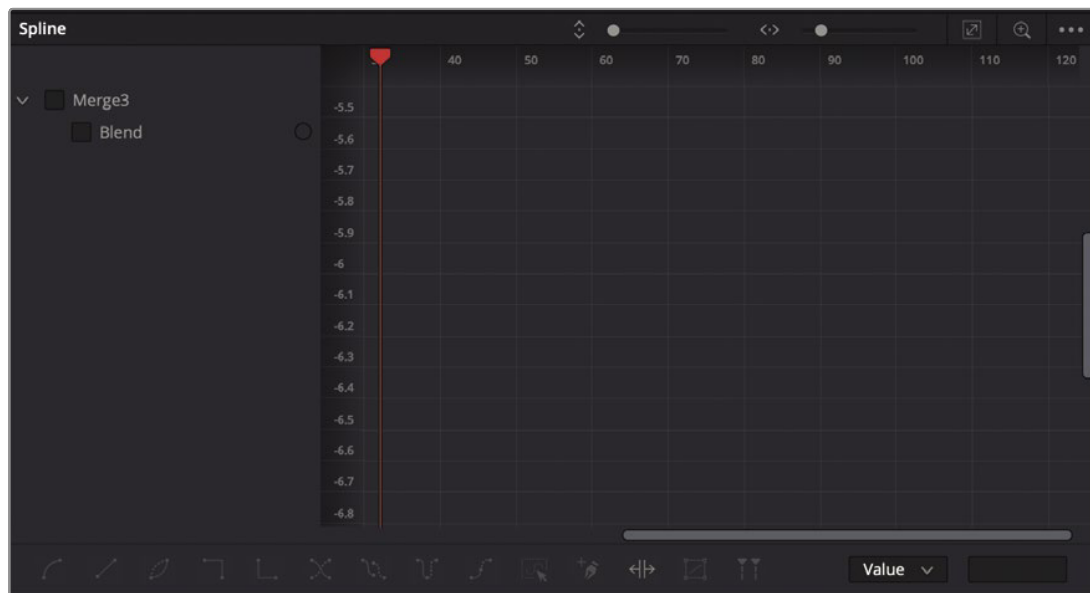
Viewing and Modifying Keyframes

The Node Editor is used for organizing the image-processing operations in your composite, but it does not show keyframing information. The Fusion page includes a Keyframes Editor and a Spline Editor that are extremely powerful for viewing and modifying keyframes.

- 1 In the upper-right corner of the DaVinci Resolve window, click the Spline button to show the Spline Editor.



The Spline Editor is a comprehensive environment in which to create, move, and modify keyframes. It is the primary panel to see and modify the animation curves that show the interpolation between each keyframe.

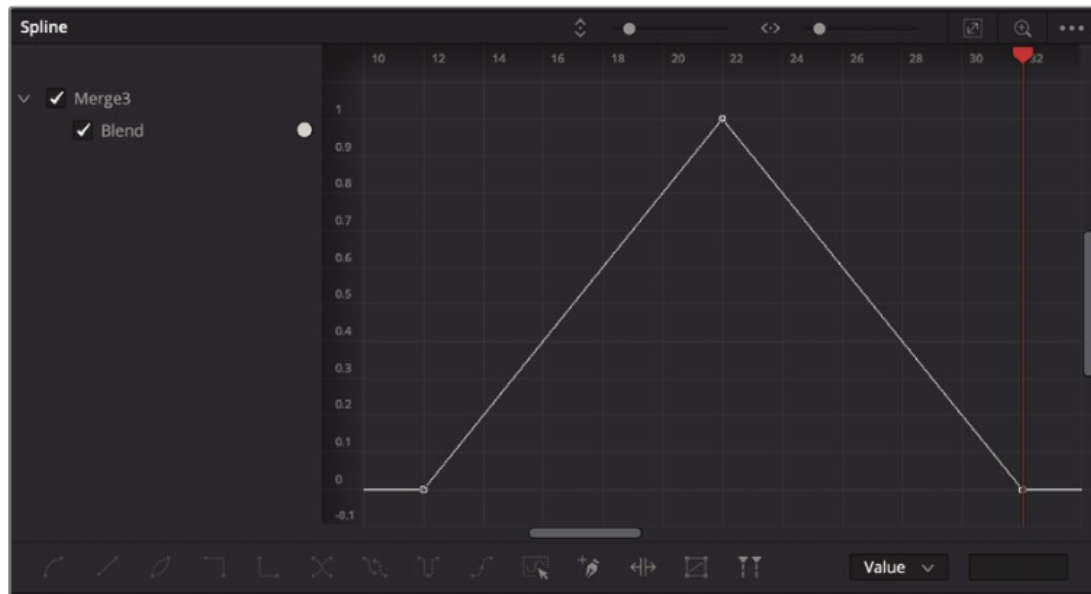


The Spline Editor is divided into two sections. On the left is the header and on the right is the graph area. The header shows all the animated parameters in the Node Editor. Using the checkboxes next to each parameter, you can show and hide the keyframes in the graph area.

- 2 In the Spline Editor header, select the Blend checkbox below Merge 3.

Enabling the checkbox shows the keyframes in the graph and the interpolation between each keyframe.

- 3 Move the mouse pointer over the Spline Editor, and press Command-F (macOS) or Ctrl-F (Windows) to maximize the spline in the graph area.



TIP You can pan and zoom in any panel of the Fusion page by holding down the middle mouse button and dragging to pan, and holding down Command (macOS) or Ctrl (Windows) and scrolling with the middle mouse button to zoom in and out.

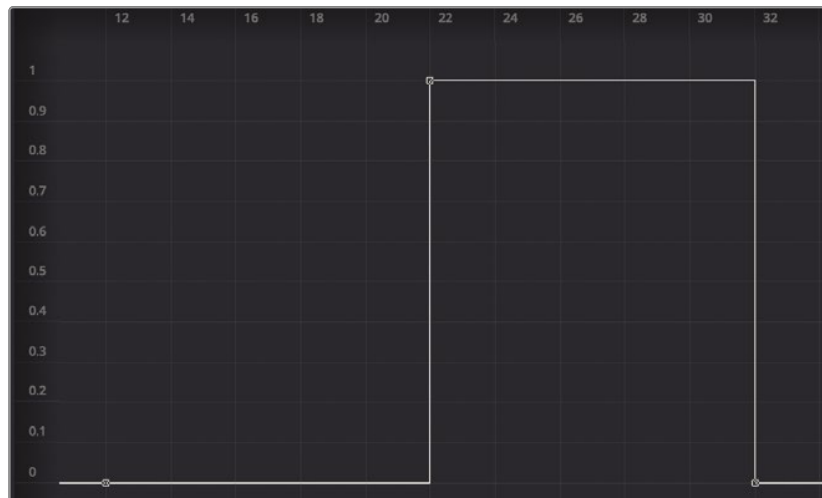
The animation spline for the blend parameter is displayed in the Spline Editor. The starting keyframe is in the lower left. The second keyframe rises as the blend value increases. The ending keyframe is in the lower-right. The straight line between the three keyframes indicates a linear animation, which means it has a constant, steady rate of motion.

To have the text blink on and off instead of slowing fading on and off, you can change the interpolation from Linear to a Step, sometimes called a hold interpolation.

- 4 In the Spline Editor, click in an empty area of the graph and choose Edit > Select All or press Command-A (macOS) or Ctrl-A (Windows).
- 5 In the lower left corner of the Spline Editor, click the Step In button.



The Step In button holds the first keyframe's value until it reaches the next keyframe, and then immediately switches to the new keyframe's value. In our animation, this creates a blinking text animation rather than a fading animation.



- 6 Press Command-Left Arrow (macOS) or Ctrl-Left Arrow (Windows) to move the playhead to the start of the render range.
- 7 Play the animation to see the results of the Step In interpolation.

Because we set only three keyframes, the text blinks on and off, one time. Using the tools at the bottom of the Spline Editor, you can quickly repeat a series of keyframes to last for the entire composition.

- 8 In the Spline Editor, click in an empty area of the graph and choose Edit > Select All or press Command-A (macOS) or Ctrl-A (Windows) to select all the keyframes again.
- 9 In the toolbar below the Spline Editor, click the Set Loop button.



Now let's review the finished composite.

- 10 Click the Spline button to close the Spline Editor.

- 11 Select the Media Out node and press 2 to see the entire composite in viewer 2.
- 12 Press Command-Left Arrow (macOS) or Ctrl-Left Arrow (Windows) to move the playhead to the start of the render range.
- 13 Play the animation to see the results of the Step In interpolation.

In just a few minutes and setting only three keyframes, you've created repeating, blinking text and explored just a couple of the tools in the Spline Editor.

Using Modifiers

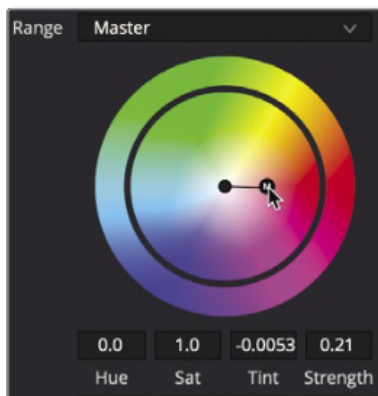
Any node in Fusion can be expanded with the use of modifiers. Modifiers are extensions, or optional add-ons, to a node's controls. They are applied to a specific parameter in the Inspector, and the effect of the modifier applies only to that parameter.

We can use a modifier in this exercise to generate a red glow on the actress's face that blinks on and off at the same rate as the text.

- 1 Select the Color Corrector 1, which is connected to the ACTRESS node.

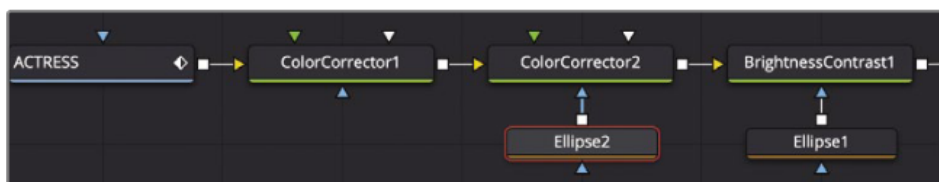
We'll add a second Color Corrector node to create the red tint on the actress's face.

- 2 In the toolbar, click the Color Corrector node.
- 3 In the Inspector, drag the color indicator toward red.

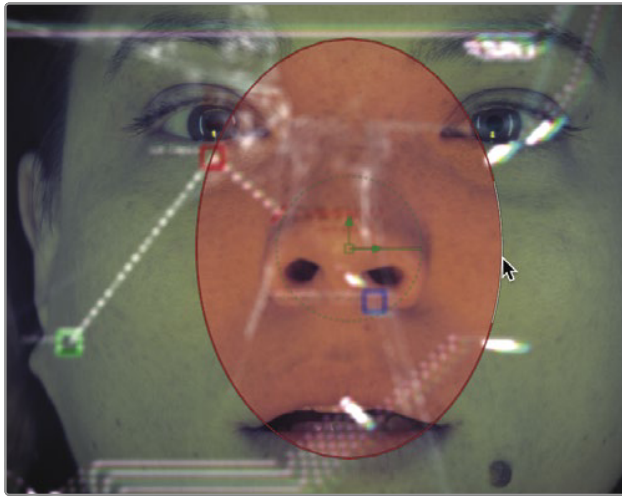


Since we only want the red tint to apply right around the actress's eyes, nose, and mouth, we'll use a mask to limit the second Color Corrector.

- 4 In the toolbar, click the Ellipse mask tool so it connects to the Color Corrector 2 node.



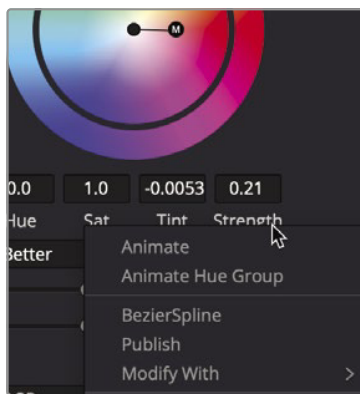
- 5 In the viewer, drag the circular mask shape so it is just around the center of the woman's face.



- 6 In the Inspector, drag the Soft Edge slider to around 0.1.

Now, to create the blinking animation, we'll use a modifier, called a probe to control the strength of the red tint. The probe modifier samples the pixel brightness from an image to drive the animation of a parameter. First, we'll apply the probe modifier to the red tint strength, since that is the parameter we want animated.

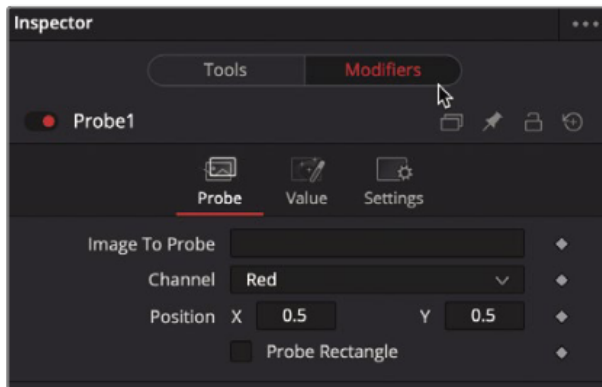
- 7 Select the Color Corrector 2 node and right-click over the Strength label in the Inspector.



- 8 From the contextual menu, choose Modify with > Probe.

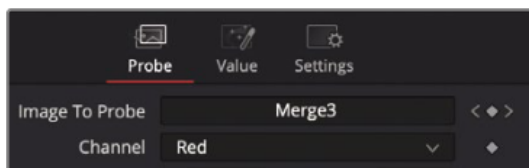
When you apply a modifier, a tab appears at the top of Inspector where you'll find the controls for the applied modifier.

- 9 At the top of the Inspector, click the Modifiers tab.



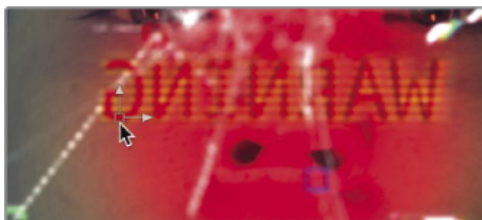
The probe requires two essential adjustments. You must identify the node you want to sample from, and within the image generated by that node, you must identify the specific pixel that has the brightness you want to sample.

- 10 Drag the Merge 3 node from the Node Editor into the Image to Probe field in the Inspector.



When you begin dragging, it may appear as if you are pulling the Merge node off of the Node Editor, but once your mouse is outside the Node Editor, the Merge node will return to its original location.

- 11 Drag the playhead to frame 22 when the text is clearly in the viewer.
- 12 Select the Color Corrector 2 node and use the Probe's Position X and Y controls to move the onscreen control over the red text.

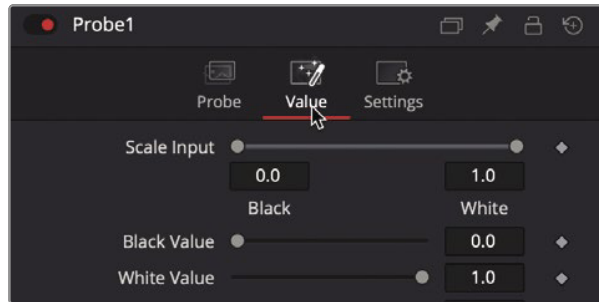


The probe will increase the red tint on the actress's face when the red text is onscreen, and it will lower the strength when the red text is offscreen.

- 13** Click the Play button to review the composite.

The intensity of the red is too high, so we need to lower it. This can be done using the Value controls in the Probe modifier.

- 14** Click the Value tab at the top of the Probe modifier's Inspector.



- 15** Lower the White value to around 0.3 to cut the red intensity in half.

- 16** Click the edit page button and let the effect cache before you play it in the edit page timeline.



The Fusion page is a feature-rich, powerful compositing application that has been in development for several years. Don't expect to master it with a single lesson. If you are coming from a different visual effects or motion graphics application, you'll have a head start, but even if you are only familiar with compositing in an editing timeline, start off by applying simple effects to your own content and slowly experiment from there. You'll be amazed how quickly your bag of Fusion compositing tricks will grow.

Lesson Review

- 1 In the Fusion page, how can you display the output of a node in viewer 1?
- 2 When clicking a tool in the toolbar, where is the node added?
- 3 What node would you use to blend two images?
- 4 What is the yellow input on a Merge node?
- 5 True or false? When you are on the Fusion page, you can disconnect the Media Out node because you have no use for it.

Answers

- 1 In the Fusion page, to display the output of a node in viewer 1, select the node and press the 1 key.
- 2 The new node is added directly after the selected node in the Node Editor.
- 3 A Merge node is used to composite two images.
- 4 The yellow input on the Merge node is for the background input.
- 5 False. The Media Out node is always the last node connected, and it renders the Node Editor results back to the edit page timeline.