

# V-Ray Denoiser Render Element | Denoiser

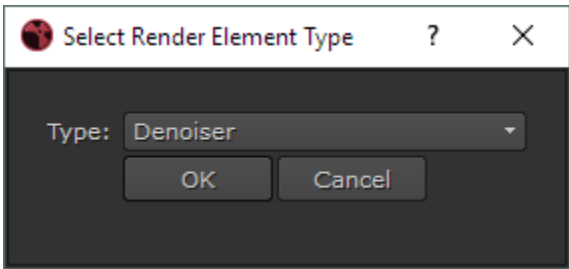
This page provides information on the Denoiser Render Element

## Overview

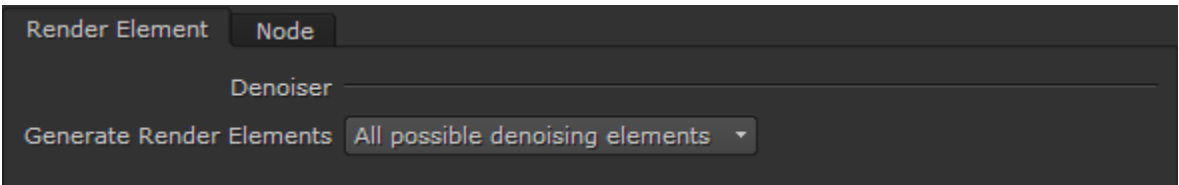
The V-Ray Denoiser takes an existing render and applies a denoising operation to it after the image has been completely rendered out via normal means. The denoising operation detects areas where noise is present and smooths them out. Images can also be denoised using the Standalone Denoise Tool included with the installation of V-Ray for Nuke. For more information on the way the Denoiser works, please see the [V-Ray Denoiser](#) page.



UI Path: ||Toolbar|| > **V-Ray Menu icon** > Render > VRayRenderElement - Type: Denoiser



## Parameters



**Generate Render Elements** – Specifies which render elements to add to the VFB automatically when rendering:

**All possible denoising elements** – Adds all elements that could be required by the denoiser and allows switching between different types.

**Manual** – Adds only the noiseLevel and defocusAmount render elements; the rest must be added manually.

**Single pass only** – Adds only the elements needed for the current denoiser type (single pass or by render elements). Single-pass denoising requires fewer render elements and choosing this option can save RAM and disk space, but it will not be possible to switch to per-element denoising.

## Example: Denoising Presets

The example below illustrates how vrayRE\_Denoiser works using the presets. A purposely noisy render was set up using the [Progressive image sampler](#) with **Render Time** set to only 10 minutes to leave plenty of noise in the render. To better see the noise level in each image, click the image to see it at full size.



RGB Color Render Element prior to denoising



vrayRE\_Denoiser Render Element (**Mild** Preset)



vrayRE\_Denoiser Render Element (**Default** Preset)



vrayRE\_Denoiser Render Element (**Strong** Preset)



vrayRE\_Denoiser Render Element  
(**Custom** Preset: **Strength**: 5, **Radius**: 10)



The vrayRE\_Denoiser Render Element  
(**Custom** Preset: **Strength**: 10, **Radius**: 20)

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## Example: noiseLevel Render Element

The noiseLevel Render Element shows where areas of noise have been detected in the scene. White areas have the most noise, black areas have no noise, and gray areas have varying levels of noise.



RGB Color Render Element prior to denoising



noiseLevel Render Element  
(Click image to more clearly see  
dark spots representing noisy areas)



Denoised RGB Color Render Element

## Denoising Elements

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When rendering, the V-Ray Denoiser Render Element automatically adds a few render elements which are required by the denoising algorithm. Some of them are standard render elements like [Diffuse](#) and [Reflection Filter](#). A few special render elements are also generated:

- The **noiseLevel** (Noise Level) render element is the amount of noise for each pixel in greyscale values, as estimated by the [V-Ray image sampler](#).
- The **defocusAmount** (Defocus Amount) render element is non-black only when depth of field and motion blur are enabled, and contains the estimated pixel blurring in screen space.
- The **VRayDenoiser** render element, when generated, contains the final image that results from noise removal.