

# V-Ray Frame Buffer

This page provides information on the New V-Ray Frame Buffer and its features.

## Overview

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The New V-Ray Frame Buffer (VFB 2) is a second-generation V-Ray virtual frame buffer.

The New VFB is much more than a render image holder window, with Light Mix capabilities for modifying the scene lighting after rendering and Layer Compositing for a higher level of post-processing adjustments.

- Image preview:
  - Loads render elements channels via a dropdown list;
  - Works with display corrections;
  - Loads various 8bit and 32bit file formats, including V-Ray resumable files;
  - Image comparison between 2 or 4 renders;
- Image management:
  - Keeps the rendered image in full 32-bit floating-point format;
  - Can store history of rendered images with their post rendering corrections;
  - Can save corrected output to various image formats;
- Image editing and post-processing:
  - Add Color Corrections to rendered image and its elements;
  - Layer Compositing for anything from a simple Back to Beauty workflow or advanced compositing;
  - [LightMix](#) adjustment of the scene lighting after rendering the image;
- Scene editing:
  - Can modify actual lights values by transferring updated intensity and color from LightMix mode;
- Render management:
  - Denoiser control;
  - Region rendering control and test resolution;
  - Allows you to choose the order in which the buckets are rendered.

See the [V-Ray Frame Buffer Overview](#) page or the [Courseware](#) page for more information.

## UI Paths

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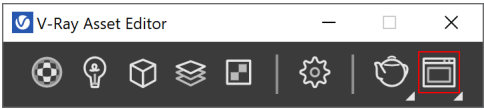
||V-Ray Toolbar|| > **Frame Buffer** (left-click) > **Shows the V-Ray Frame Buffer (VFB)**



### Rhino Menus Ribbon

||V-Ray|| > **Frame Buffer...**


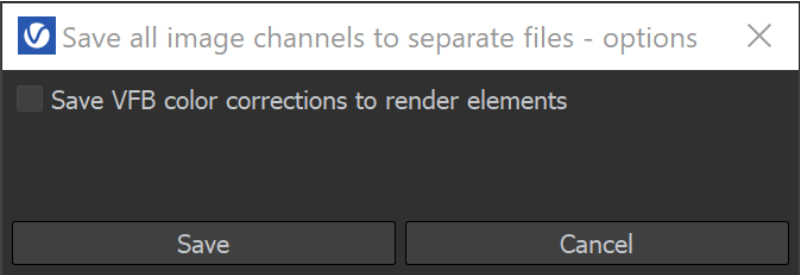
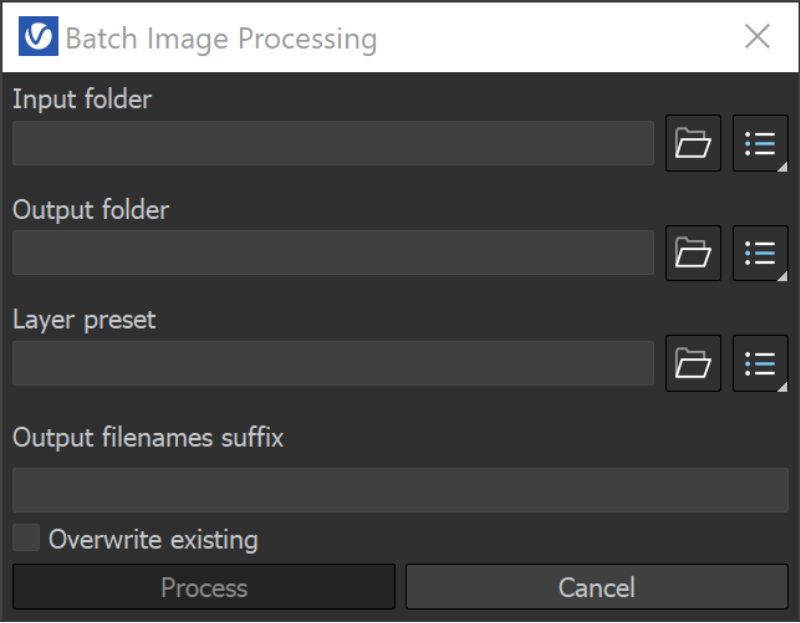
||V-Ray Asset Editor|| > **Open V-Ray Frame Buffer**



## VFB Menu





The V-Ray Frame Buffer menu holds the main frame buffer commands. Some of the options are also available in the VFB toolbar for quick access.

Menu	Menu Options	
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<p><b>File</b></p>	<p><b>Save current channel</b> – Saves the currently loaded channel to an image file format.</p> <p><b>Save all image channels to separate files</b> – Saves all the render elements to separate files.</p> <p>Use  to save the VFB color corrections to render elements.</p> <p><b>Save all image channels to a single file</b> – Saves the image to a multi-channel EXR or .vrimg file.</p> <p><b>Load image</b> – Opens an image file from disk to be previewed in the V-Ray Frame Buffer.</p> <p><b>Batch Image Processing</b> - Opens the Batch Image Processing menu.</p> <p><b>Upload image to Chaos Collaboration</b> – Opens the <a href="#">Chaos Cloud Collaboration</a> window.</p>	<p><b>Save all image channels to separate files options</b></p>  <p><b>Save VFB color corrections to render elements</b> – When enabled, all color corrections are saved to the render channels (as opposed to only the RGB and effectsResult channels).</p> <hr/> <p><b>Batch Image Processing</b></p>  <p><b>Input folder</b> – Specifies a path to start images.</p> <p><b>Output folder</b> – Specifies a path for the output images.</p> <p><b>Layer preset</b> – Specifies a layer tree corrections preset.</p> <p><b>Output filenames suffix</b> – Specifies a suffix added to the output image filenames.</p> <p><b>Overwrite existing</b> – Enables overwrite of existing files with the same name in the output folder.</p>
<p><b>Render</b></p>	<p><b>Start interactive rendering</b> – Starts Interactive Rendering.</p> <p><b>Abort rendering</b> – Stops the current rendering.</p> <p><b>Render</b> – Starts Production Rendering.</p>	
<p><b>Image</b></p>	<p><b>Follow mouse</b> – Renders the closest bucket found to the mouse pointer, when using the bucket image sampler. If the progressive sampler is used, V-Ray samples the closest pixels to the mouse pointer.</p> <p><b>Follow mouse</b> – Drag the mouse over the VFB while rendering to change what part of the image is sampled first;</p> <p><b>Follow mouse (locked)</b> – Locks the bucket (or sampling) starting point.</p> <p><b>Copy current channel to clipboard</b> – Copies the current channel to the clipboard.</p> <p><b>Clear image</b> – Clears the contents of the frame buffer. This is useful when starting a new render to prevent confusion with the previous image.</p>	

<b>View</b>	<p><b>Display color space</b> – Specifies the color space, in which the image is displayed.</p> <p><b>None</b> – Does not specify a color space;  <b>sRGB</b> – Displays the image in sRGB color space;  <b>OCIO</b> – Displays the image in a color space loaded from an OCIO configuration file;  <b>ICC</b> – Displays the image in a color space loaded from an ICC configuration file;  <b>Gamma 2.2</b> – Displays the image in Gamma 2.2 color space.</p> <p><b>Zoom VFB</b> – Zooms in/out the rendered image in the VFB.</p> <p><b>Zoom 50%</b> – Zooms out to 50%;  <b>Zoom 100%</b> – Zooms to 100%. Alternatively, double-click in the VFB with the left mouse button;  <b>Zoom 150%</b> – Zooms in to 150%.  <b>Zoom to fit</b> – Zooms in or out so to position the image properly within the V-Ray Frame Buffer.</p> <p><b>Channels</b> – Chooses which channels to display.</p> <p><b>View red channel</b> – Displays the red channel;  <b>View green channel</b> – Displays the green channel;  <b>View blue channel</b> – Displays the blue channel;  <b>Switch to alpha channel</b> – Displays the alpha channel;  <b>Monochromatic mode</b> – Displays the image in monochromatic mode.</p> <p><b>Test resolution</b> – Enables test resolution in VFB. The submenu allows choosing a percentage of the render resolution to set as the test resolution. You can choose between 10%, 25%, 50%, 75%, 110%, 125% and 150%. Note: This only affects V-Ray and does not affect the native 3ds Max test resolution setting found under 3ds Max's Render Setup dialog.</p> <p><b>Color clamping</b> – Opens the color clamping submenu options:</p> <p><b>Force color clamping</b> – Forces color clamping;  <b>View clamped colors</b> – Displays the clamped colors.</p> <p><b>Use pixel aspect</b> – Enables visualization of the pixel aspect ratio.</p> <p><b>Flip</b> – Mirrors the image in the VFB. This is a view only option, the flipped image cannot be exported. This function is only active while holding the menu button or the hotkey for the corresponding type of flip. The effect does not interrupt interactive rendering.</p> <p><b>Flip horizontally</b> – Mirrors the image horizontally.</p> <p><b>Flip vertically</b> – Mirrors the image vertically.</p> <p><b>Panorama View</b> – Shows the image in 360° view.</p> <p><b>Show History</b> – Shows the History panel.</p> <p><b>Show Layers</b> – Shows the Layers panel.</p>
<b>Options</b>	<p><b>VFB settings</b> – Opens the <a href="#">VFB Settings</a> window where you can adjust settings for Render View, Render Region, History, and Layers.</p>

## VFB Toolbar

	<p>This dropdown gives access to <a href="#">render elements</a> rendered for the scene. The selected render element is displayed in the VFB. By default, the RGB and Alpha render elements are available. Any additional render elements that have been added to the scene also appear in the drop-down.</p>
	<p>Displays the coordinates of the mouse pointer.</p>
	<p>Specifies the sampled area size. Click on the arrow to open a context menu with the available sampled area sizes: 1x1, 3x3, 5x5, and 7x7.</p>
	<p>Specifies whether color and display corrections are applied (RGB) or not (Raw) when showing the sampled pixel values at the current mouse pointer position.</p>

	Displays the RGB pixel values at the current mouse pointer position before applying any color corrections.
	Specifies RGB values. Click on the arrow to open a context menu with the available option.  <b>None</b> – Does not specify the RGB value. <b>HSV</b> – Specifies the Hue, Saturation, and Value of the pixel under the current mouse position. <b>Web</b> – Specifies the HEX of the pixel under the current mouse position. <b>8bit</b> – Specifies the 8bit color palette of the pixel under the current mouse position.
	Displays the Hue, Saturation, and Value of the pixel under the current mouse position when <b>HSV</b> is selected.
	Displays the HEX of the pixel under the current mouse position when <b>Web</b> is selected.
	Displays the 8bit color palette of the pixel under the current mouse position when <b>8bit</b> is selected.
	Locks the mouse pointer coordinates and displays information for the selected pixel.
	Shows corrected colors.
	Shows the V-Ray log.
	Displays the Red channel.
	Displays the Green channel.
	Displays the Blue channel.
	Displays the Alpha channel.
	Saves the image to disk. Press and hold the icon to bring up the submenu:  <b>Save current channel</b> – Saves the current channel to an image file format;  <b>Save all image channels to separate files</b> – Saves all the render elements into separate files; Use  to save the VFB color corrections to render elements.  <b>Save all image channels to single file</b> – Saves the image into a single multi-channel EXR or <i>.vring</i> file.  <b>Upload image to Chaos Collaboration</b> – Opens <a href="#">Chaos Cloud Collaboration</a> .
	Clears the contents of the frame buffer. This is useful when starting a new render to prevent confusion with the previous image.
	Renders the closest bucket found to the mouse pointer, when using the bucket image sampler. If the progressive sampler is used, V-Ray samples the closest pixels to the mouse pointer. With this option enabled, you can right-click on the image and select <b>Lock bucket starting point</b> to lock the bucket (or sampling) starting point.

	Allows you to render regions in the VFB. See <i>the <a href="#">Render Region</a> section for more information.</i>
	Starts Interactive Rendering.
	Stops the current rendering.
	Starts Production Rendering.

## Render History

The V-Ray VFB keeps a history of previously rendered images, and lists each with a number, thumbnail, and textual details in the Render history panel. Up to four images can be called from the history to be compared in the VFB (as shown below). History files are stored as *.vrimg* files in a user-specified folder. Render history settings can be configured in the [VFB Settings](#) window.



V-Ray Frame Buffer - [100.0% of 800 x 1000]

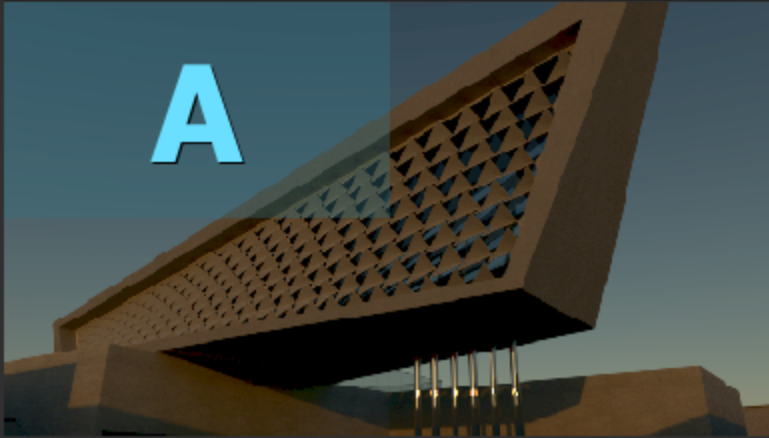
## History



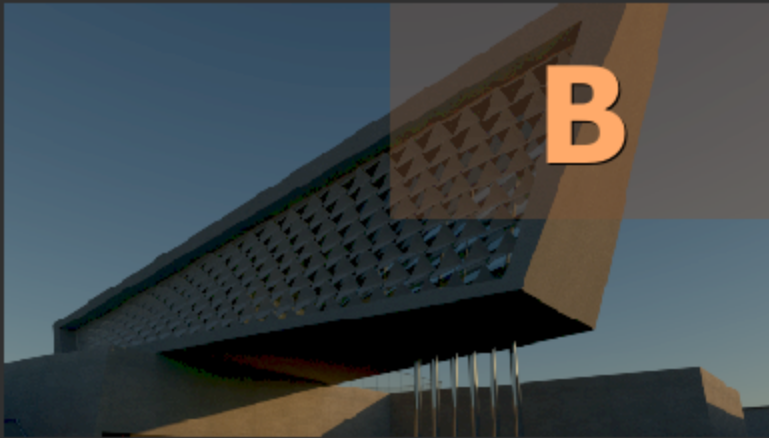
Search filter



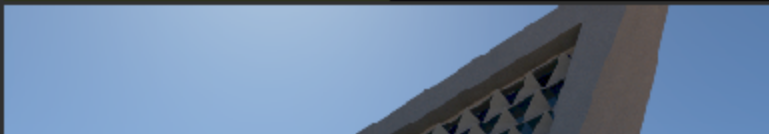
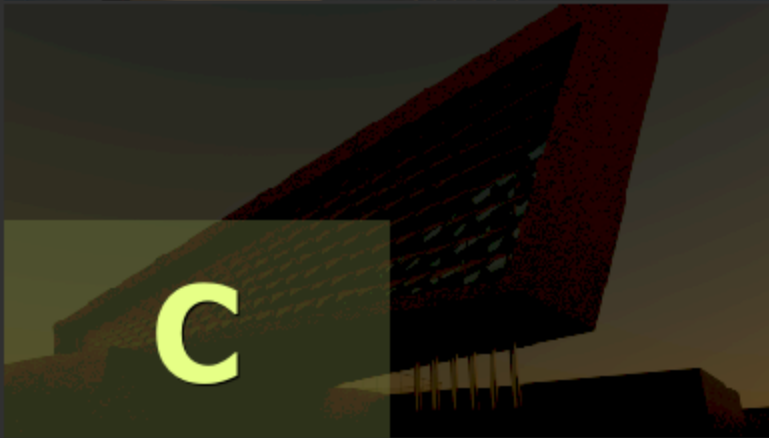
A



B

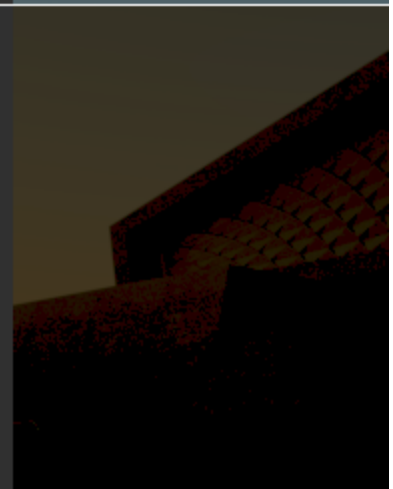


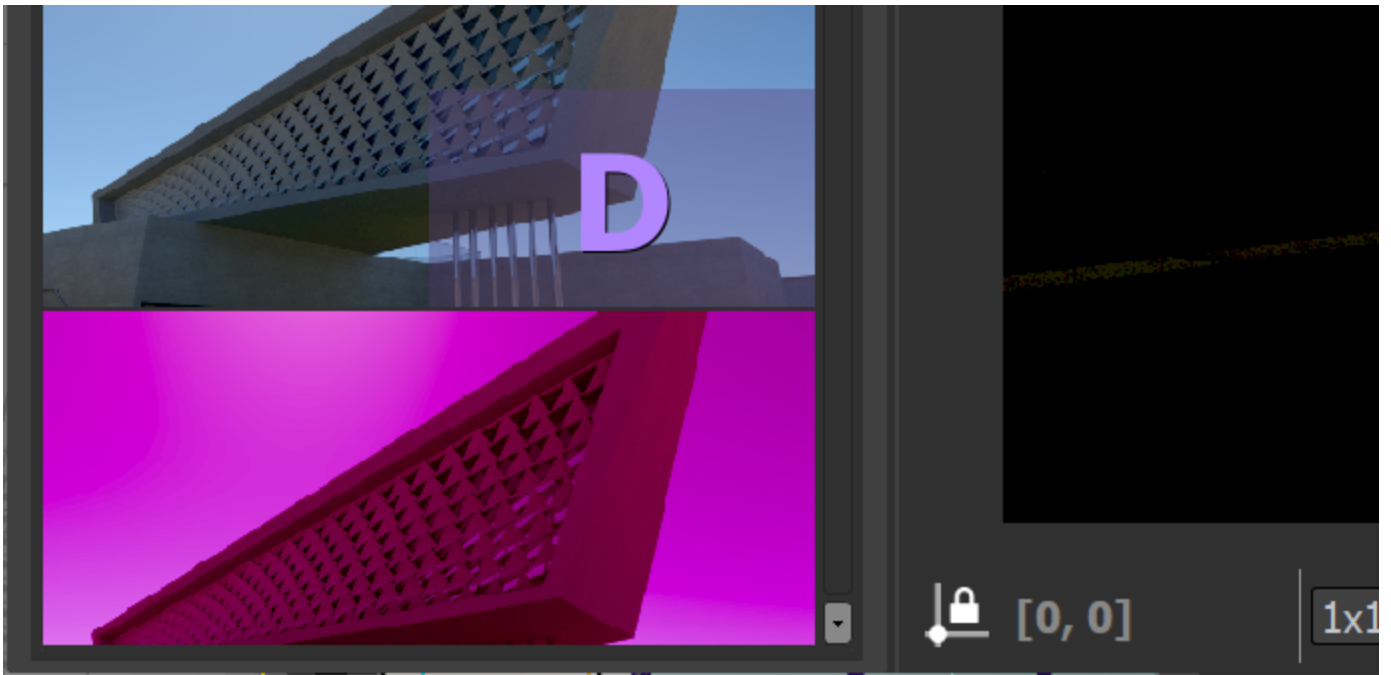
C



File Render Image

RGB color [ABCD]





Use the button on the left side of the VFB to set up the History.





V-Ray Frame Buffer - [100.0% of 800 x 450]

History



A | B



Search filter

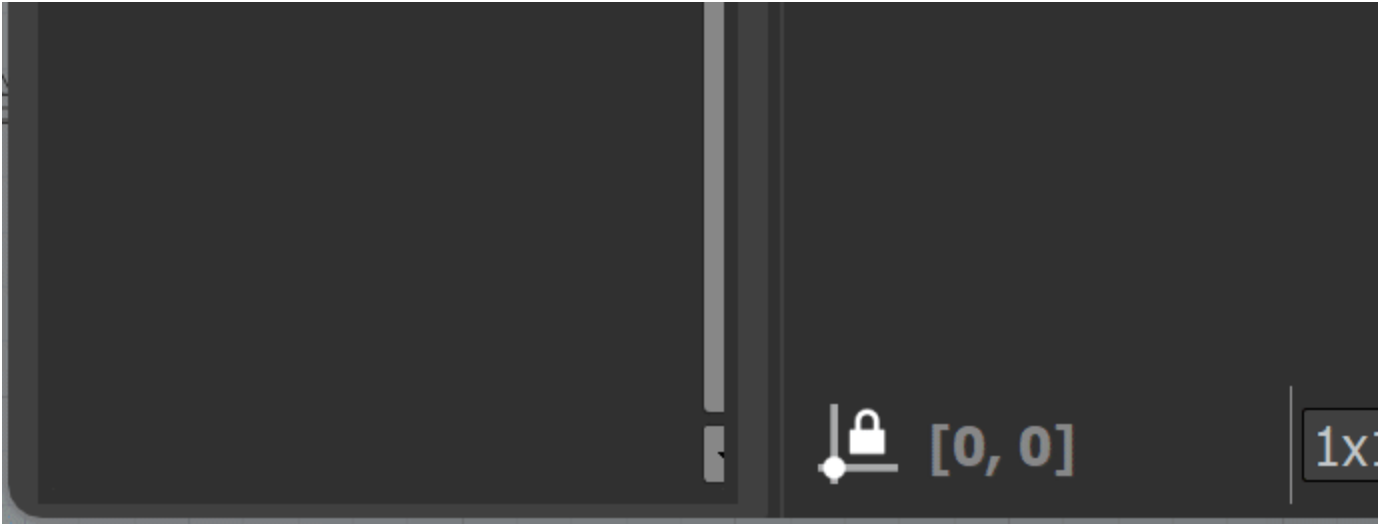








History is disabled.  
[Click here to set it up.](#)

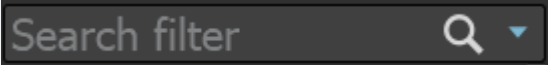
File Render Image

RGB color





	Saves the current image from the VFB to the render history. The image is placed at the top of the render history list.
	Enables or disables image A/B vertical comparison. Select images A and B from the render history.
	Enables or disables image A/B horizontal comparison. Select images A and B from the render history.
	Enables or disables image A/B/C/D comparison. Select images A, B, C, and D from the render history.
	Loads the selected image from the render history to the VFB.
	Removes the selected image from the render history.

	A search field where you can filter the images based on the scene paths and notes.
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The keyboard keys from 1 to 9 can be used to quickly load the first 9 images from the history to the VFB.

**Edit note** – Allows you to add a text comment to the image; the comment appears below the image.

**Set A** – Sets the render as A image for A/B comparison.

**Set B** – Sets the render as B image for A/B comparison.

**Load to VFB** – Loads the selected image in the VFB (same as double-clicking on the image).

**Delete** – Deletes the selected image from history. The image is moved to the system's Recycle Bin and can be restored from there if needed.

**Load layers** – Loads the layer tree preset of the selected image.

**Load V-Ray settings** – Loads the V-Ray settings used for the saved render.

**Compare V-Ray settings** – Opens the **Compare V-Ray settings** dialogue, where you can compare the render setups of saved renders.

**Open scene** – Opens the rendered scene in the viewport. This option works as long as the initial file path of the scene has not changed after the render.

**Copy scene path** – Copies the full path to the scene.

**Reload history** – Re-reads the history image list. This may be needed if the history folder is updated outside of Rhino (f.e. from another Rhino session).

Manually saved *.vrimg* files can also be added to the History folder, but they need to be saved with all image channels in one *.vrimg* file to keep the complete image info.

## History



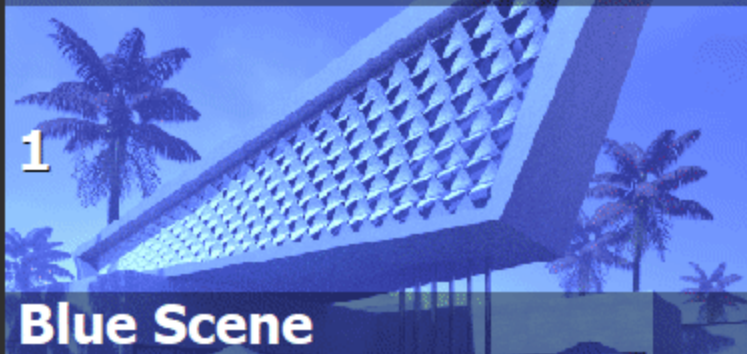
Search filter



**696x870**

**13m 17.9s**

1

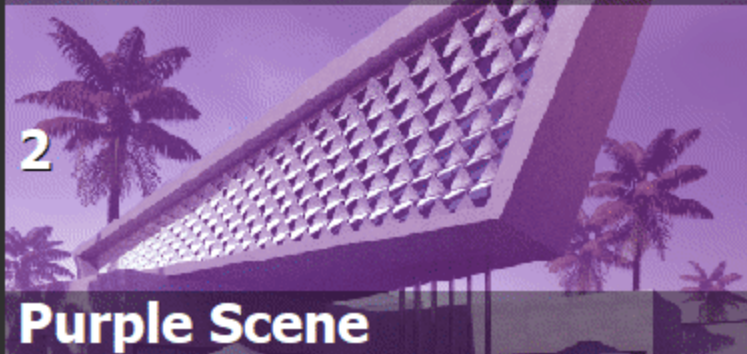


**Blue Scene**

**696x870**

**13m 17.9s**

2

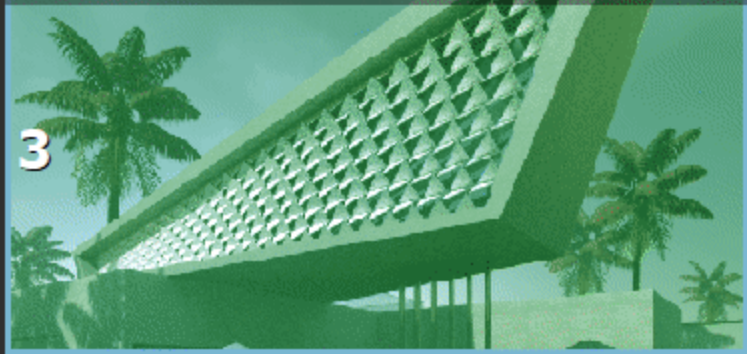


**Purple Scene**

**696x870**

**13m 17.9s**

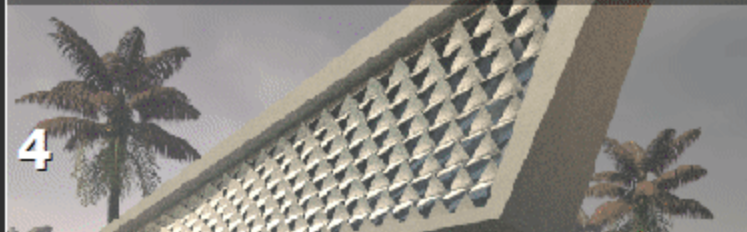
3

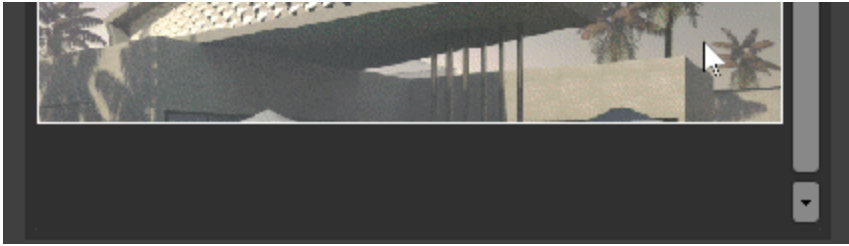


**696x870**


**13m 17.9s**

4












## Layers

The New V-Ray Frame Buffer includes a suite of color corrections and tools for adjusting the image. The tools are added as layers and displayed in a layer tree. You can enable or disable a particular tool using the visibility icon () to the left of its name.

For more information on using the Layers, see the [Layers](#) page.

	<p>Creates a layer or folder. Multiple layers of the same type can be added.</p> <p><b>Folder</b> – Allows grouping multiple layers in folders and folders in sub-folders.</p> <p><b>ICC Profile</b> – Uses an ICC profile file for color corrections.</p> <p><b>Filmic tonemap</b> – Contains different types of mapping curves and gamma corrections. Also allows selection of a color space.</p> <p><b>Lookup Table</b> – Allows loading a LUT file for color transformations.</p> <p><b>Curves</b> – Adds a Curves color correction layer.</p> <p><b>Color Balance</b> – Adds a Color Balance color correction layer.</p> <p><b>Hue/Saturation</b> – Adds a Hue/Saturation color correction layer.</p> <p><b>White Balance</b> – Adds a White Balance color correction layer.</p> <p><b>Exposure</b> – Adds an Exposure color correction layer.</p> <p><b>Constant</b> – Adds a solid color that can be used to achieve an effect on another layer (for example to multiply by the constant).</p> <p><b>Render Element</b> – Selects a render element (with ability to apply mask on it) from your image that you can use in compositing. This is only available when the <b>Source</b> layer is set to <b>Composite</b>.</p> <p><b>Background</b> – Adds a background color correction layer.</p> <p><b>MultiMatte mask element</b> – <a href="#">Mask</a> is based on the MultiMatte Render Element.</p> <p><b>Cryptomatte mask element</b> – <a href="#">Mask</a> is based on the Cryptomatte Render Element.</p> <p><b>Integer mask element</b> – <a href="#">Mask</a> is used with integer render elements like Render ID, Object ID, and Material ID Render Elements.</p> <p><b>Proportion Guide</b> – Allows for a number of composition guides to be overlaid on the image. The available guides are <i>Rule of Thirds</i>, <i>Diagonals</i>, <i>Golden Ratio</i>, <i>Center Cross</i>, and <i>Custom Grid</i>.</p>
	<p>Deletes the selected layer(s).</p>
	<p>Saves a layer tree preset.</p>
	<p>Loads a layer tree preset.</p>
	<p>Quick access to custom layer presets. You must set the path to it in the <a href="#">VFB Settings</a>.</p>
	<p>Undo create layer.</p>
	<p>Redo create layer.</p>

Layers

Stats

● Log



Proportion Guide



Stamp



Display Correction



Folder



ICC profile



Filmic tonemap



Lookup Table



Curves



Color Balance



Hue / Saturation



White Balance



Exposure



Constant



Background



Lens Effects



Sharpen/Blur



Denoiser: unavailable

## Stats

The Stats section provides track reports about the scene, the engine, the devices, the performance, and the memory.

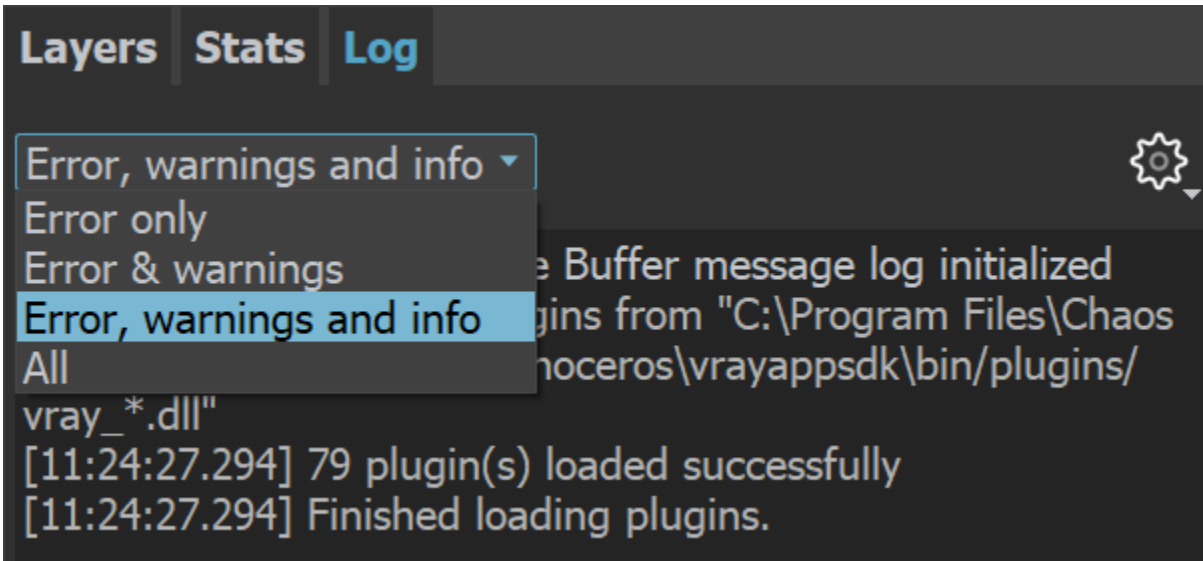
Memory tracking is always enabled and there is no need for configuration.

Layers Stats Log	
▶ Engine	
▶ Device(s)	
▶ Performance	
▼ Memory tracking	
▼ GeForce GTX 1050	
Textures (MiB)	5.11
Static geometry (MiB)	< 1
Moving geometry (MiB)	< 1
Dynamic geometry (MiB)	< 1
Pinned (MiB)	< 1
RE (MiB)	< 1
Internal state (MiB)	127.25
LPE (B)	0
Lights (MiB)	< 1
LightCache (MiB)	< 1
Hair (B)	0
Particles (B)	0
VolumeGrid (MiB)	< 1
Other (MiB)	1.46

## Log

This tab shows the Log report.

There are several view options to select from in the dropdown menu.



## VFB Shortcuts

These shortcuts navigate through the VFB image. Please note that the VFB window must have the current focus for the shortcuts to have effect:

Mouse	Description
Mouse wheel	Zoom in/Zoom out
Double-click left button	Zoom to 100%
Page Up /Page Down	Switch between render elements
Middle button dragging	Pan (hand tool)
Keyboard	Description
+ / =	Zoom in
- / _	Zoom out
*	Zoom to 100%
Arrow keys	Pan left, up, right, down
F	Fit the region or the whole image. Available only if the render region option is used.
Esc	Abort render
Q	Enable history A/B vertical compare mode.
W	Enable history A/B horizontal compare mode.
E	Enable history A/B/C/D compare mode.
1-9	Load the respective image from the VFB2 history
H	Show/hide history
L	Show/hide whole right panel
P	Show/hide only layers tree
S	Show/hide settings
F11	Toggle fullscreen
Ctrl+C	Copy the VFB image to the Windows clipboard; the image is copied exactly as it appears on the screen (meaning sRGB/LUT/OCIO etc corrections are applied). The full resolution image is copied to the clipboard, even if the VFB view is zoomed in/out.
H; Ctrl+[	Show/hide history
Ctrl+L; Ctrl+]	Show/hide right panels

## Render Region

Region rendering can be used in both Interactive and Production modes to isolate only part of the frame for rendering. Usually, when a render region is used, you would like to save the whole frame instead of the region only.

When saving single-channel .exr files, the render region is ignored and a full frame is always saved. This applies when saving the .exr through **VFB**.

Saving .exr files, using the Render Output option of the Asset Editor, writes just the render region data in the file by default. The rest of the frame is rendered black.

Saving .exr files from **VFB > Save all image channels to single file** saves the render region on top of the previously rendered frame.



## Notes

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- New VFB does **not** display the G-Buffer layers (like **Coverage**, etc.).
- New VFB does **not** work with strip rendering.
- New VFB does **not** work with rendering to fields.
- The OpenEXR file format is an open file format for high dynamic range images originally developed by Industrial Light and Magic. The official site of the OpenEXR file format is <http://www.openexr.com/>
- If Lens Effects or the V-RayDenoiser render element are enabled, then the RGB Color channel is saved with the name RGB\_color and the effectsResult channel is saved as effectsResult when saving all channels from VFB.
- If an 8-bit file is saved through the VFB or the Render Output / Save image settings, the color space (for example sRGB) is embedded and the image appears as in the frame buffer when loaded in an external image viewer. If a 32-bit (exr, hdr, tif) image is saved, it remains linear and relies on the external image viewer to handle the display color space.
- **Unexpected behavior of the VFB window may occur when using Windows 8.1 OS.**
- The Log tab at the right panel of the V-Ray Frame Buffer tracks the render process only. The Log Window includes the same information about the render process in combination with messages from the rest of V-Ray (host-app communication, UI, etc.)