

# GPU Frame Buffer

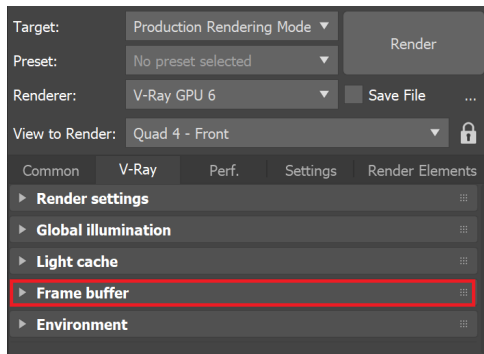
This page provides information on the Frame Buffer rollout in the V-Ray tab when V-Ray GPU is used as the production renderer.

## Overview

The settings in the Frame buffer rollout control various aspects of the [V-Ray Frame Buffer](#), a display window for renderings optimized for V-Ray GPU.

When rendering in 3ds Max without V-Ray, renderings appear in the 3ds Max frame buffer. The V-Ray Frame Buffer works similarly in that it displays the rendered image as it is generated, and also provides additional tools specific to V-Ray GPU.

**UI Path:** ||Render Setup window|| > **V-Ray** tab > **Frame Buffer** rollout (**Renderer** set to **V-Ray GPU**)



## Parameters

**Open VFB** – Opens the V-Ray Frame Buffer.

**Show render log** – Opens the V-Ray messages (log) window.

**Enable built-in VFB** – Enables the use of the built-in V-Ray Frame Buffer. When disabled, the rendered image appears in the 3ds Max frame buffer instead.

**Memory frame buffer** – Creates a V-Ray frame buffer and uses it to store color data that can be observed while rendering and afterwards.

**Fit IPR resolution to VFB** – When enabled, V-Ray GPU adjusts the rendering resolution to fit in the VFB when rendering in IPR mode. When disabled, the full resolution is used in the VFB.

**Post-effects update rate** – The frequency of post-effects updates, such as denoising and lens effects, during progressive rendering; roughly the percentage of time calculations are allowed to take compared to the total render time. Zero disables updates during progressive rendering. Larger values cause the effect to be updated more often. A value of 100 updates the post effects as often as possible. Values between 5 and 10 are usually sufficient. Viewport IPR uses update rate of 100 unless the value is set to 0. If the value is 0, then the render is not denoised in Viewport IPR.

**V-Ray raw image file** – When enabled, V-Ray directly writes to disk the raw image data as it is being rendered. It does not store any data in RAM, so this feature is very handy when rendering huge resolutions for preserving memory. See the [Save V-Ray Image File](#) for more information.

If you are using the Progressive Image Sampler, the image is kept in memory during the rendering. You need to manually stop the rendering, or set a limit and wait for the rendering to complete before the *.vrimg* is saved.

**Generate preview** – Creates a small preview of what is being rendered.

**Separate render channels** – Allows you to save the channels from the VFB into separate files. Use the **Browse...** button to specify the output file. This option is available only when rendering to a memory frame buffer. If rendering is done only to a raw image file, the render channels can be extracted from that file after rendering is complete. If the [VRayDenoiser](#) render element is enabled, the RGB channel is saved with the text *origRGB* appended to the filename, and the effectsResult channel has the text *RGB\_color* appended to it.

**Save RGB / Save Alpha** – Allows you to disable saving the RGB and Alpha channels respectively. This is useful if you only want to generate other render channels. Note that V-Ray still generates the RGB and Alpha channels; however, they are not saved.

**Separate folders** – Saves each render element to a separate folder based on its name.

**Expand # to frame number** – This option is enabled by default. Disable it to stop V-Ray from replacing the **#** symbol with frame numbers for separate render channels.

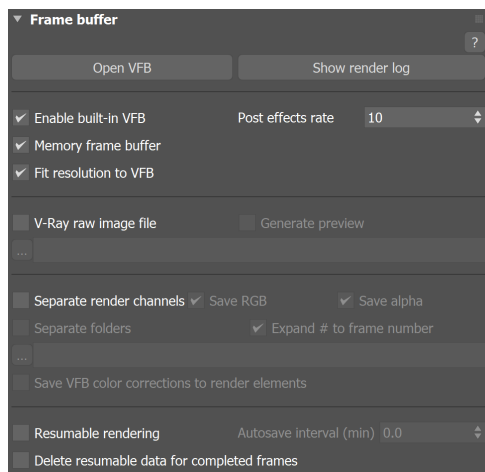
**Save VFB color corrections to render elements** – When enabled, saves the VFB color corrections to render elements.

**Resumable rendering** – If there is a resumable file existing for the current frame, the rendering is resumed from it. Otherwise a new render is started and resumable files are saved. If the rendering is already complete, the frame is skipped and the next one (if any) is started. *For more details, please see the [Resumable Rendering tutorial](#) page.*

**Note:** All saving formats are supported by the VFB (Render Setup > V-Ray tab > Frame buffer) and 3ds Max output (Render Setup > Common tab > Render Output). Resumable information is stored in additional *.vrimg* files. For instance, if resumable rendering is enabled when rendering to a PNG file format, resumable information is saved as a *.vrimg* file along with the output PNG.

**Autosave Interval (min)** – Specifies an interval in minutes for saving resumable files during rendering. This usage applies only to Progressive sampling; Bucket renderings are saved on every completed bucket. A value of 0 disables autosaving during rendering and resumable files are saved only at the end of the rendering.

**Delete resumable data from completed frames** – When enabled, the resumable file is deleted automatically if the frame is completed successfully. This applies for additional *.vrimg* or *.vrprog* files, it doesn't apply when the output image file is *.vrimg*.



## Save V-Ray Image File

The Save V-Ray Image File window is accessible when the **V-Ray raw image file** option is enabled.

**File Name** – Specifies the name of the file.

**Save as type** – Choose as what type of file to save the image. You can specify either a **.vrimg**, or an **.exr** file for output:

If you specify a *.vrimg* extension, the resulting file can be viewed through the File > View image... menu of 3ds Max or loaded in V-Ray Frame Buffer. It can be converted to an [OpenEXR](#) file with the help of the [VRimg to OpenEXR Converter](#) tool.

If you specify an *.exr* extension, V-Ray writes out a tiled [OpenEXR](#) file that can be used directly by 3ds Max or other compositing applications. The file contains all render elements for the image.

For either file type, if [Lens Effects](#) or the [VRayDenoiser](#) render element are enabled, the resulting file contains both the RGB Color channel and effectsResult channel.

Both file formats are multi-channel images, which means that a single output file contains all render elements for the image.

**EXR 32-bit output** – When enabled, the .exr file is saved in a 32-bit output. Note that .vrimg files always contain 32-bit data.

**Deep EXR** – When enabled, the .exr file is saved with a deep output.

**Note:** Deep Output is only available when rendering with bucket image sampler.

**Dot-delimited frame number** – When enabled, adds a dot between the file name and the frame number suffix in case an animation is rendered.

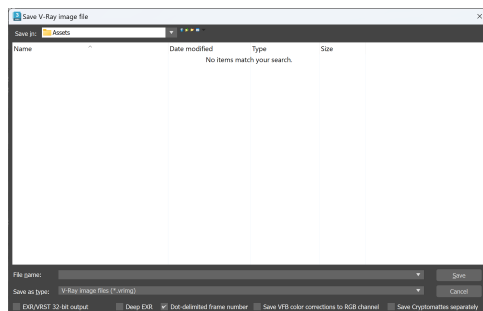
**Save VFB color corrections to RGB channel** – When enabled, saves all applied VFB color corrections to the RGB channel of the output image. This does not apply to the sRGB, Gamma 2.2 and ICC display corrections. OCIO, LUT and Background Image corrections are saved if this is explicitly specified in their VFB rollouts.

Layers are only saved to .exr and .vrimg files written through V-Ray's own output. The output in Render Setup > Common tab is written by 3ds Max so .exr files saved from there do not have Layers saved.

When saving layers to an exr/vrimg file, V-Ray writes a flag indicating whether the color corrections are baked in the RGB channel. For example, if you save an exr from the VFB File menu > Save all image channels to single file option, V-Ray creates an .exr file with corrections baked in. It also saves the layers as metadata and the flag that corrections are baked in. When loading images into the Frame Buffer, V-Ray checks if the image has corrections baked (using the flag), and if such are found, the layers are not loaded because this causes double correction.

If you want to keep the layers that come with the Max scene, turn the **Auto Load Layers** option off from VFB > Options > History tab. If you want to load layers from an external image, enable the **Auto Load Layers** option and check how you save those images.

**Save Cryptomatte separately** – When enabled, saves the Cryptomatte channels as a separate EXR file. Keep in mind that this option is intended to work only when Save as type is **OpenEXR**.



## Notes

- If rendering with V-Ray Standalone, use the **-deleteResumableFileOnSuccess=1** command to automatically delete the resumable file if the frame is completed successfully. This applies to additional .vrimg or .vrprog files, and not when the output image file is .vrimg. The default command value is 0, which keeps the resumable file.
- .vrimg is a Chaos proprietary file format used by the V-Ray Frame Buffer to store the rendered image incrementally (bucket by bucket) while rendering in full floating-point format, with all available render elements. It is used as a render output but it is not recommended to use it as a texture file format. VRIMG contains metadata, i.e. render statistics. It supports dynamic bucket size.