

# V-Ray Next, Beta 1

Beta 1

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## Improved Speed and Quality

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- A large number of render speed/performance optimizations are introduced. V-Ray now renders twice as fast on average
- The V-Ray plugin now loads faster on SketchUp startup
- The internal shader structure used in V-Ray for SketchUp is updated and modernized .This improves the render speed, GPU Engine feature support and V-Ray Cloud compatibility

## Optimizations & Workflow Improvements

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- Implemented NVIDIA AI Denoiser. Instantly remove noise while rendering. Based on AI-accelerated denoising technology by NVIDIA. The new engine is a perfect solution for denoising while Interactive Rendering. Make sure to set the Update Frequency parameter to 100% to get the most interactive feedback possible
- Adaptive Dome Light option added and enabled. It improves the render speed in scenes illuminated by a Dome Light (Up to 7x faster than before). Lighting interiors using a Dome is now a valid option and significantly improves interior scene setup efficiency
- Automatic Exposure implemented. It relies on our adaptive learning techniques to render a perfectly exposed image. By looking at the entire scene, V-Ray automatically determines the proper exposure just as a modern camera would, but with one added advantage: V-Ray can automatically adjust the ISO value without changing the F-stop or shutter speed which lets you control depth of field and motion blur separately
- Automatic White Balance implemented. Uses the same techniques as Auto Exposure to remove any warm or cold light tint coming from the Sun or skylight
- Denoised Render Elements. Denoise individual render elements for added control in compositing. Enable the Denoise checkbox for any element to take advantage of the feature
- The way materials and material inheritance within the scene hierarchy is handled is improved. Changes to any scene material are now handled faster and in a more reliable way during Interactive Rendering
- The 'V-Ray Texture Helper' which is used as viewport representation of any procedural texture is improved visually. V-Ray Lights, Clipper, Fur, Proxy and Infinite Plane widgets can be hidden in a non-destructive way. Both changes help with the better look of the project when loaded in Trimble LayOut
- Implemented V-Ray Scene Inspector Tool. This is a universal tool for scene and materials hierarchy exploration. It also displays V-Ray Object ID assignments and can be used for in-viewport light intensity manipulations. Activate the tool and hover over an object to see its position in the scene hierarchy and its material. If the object material has been inherited from one of its parents, this is also displayed in a visual way. Faces, components and groups can be precisely selected with the help of a couple of keyboard shortcuts. Hover over a light then click and drag the cursor to change its intensity directly in the viewport
- The Light Intensity Tool is no longer available. Use the Inspector Tool instead
- A new V-Ray Toolbar is added exposing some utility functionality. The Inspector can be found there, as well as all the V-Ray UV Tools and two new display mode toggles for the viewport widgets
- Hide V-Ray Widgets function implemented. It hides all V-Ray specific objects from the SketchUp viewport without affecting the rendered result. Use it to export clean screen grabs of your model or when you need to send the model to LayOut. The tool can be activated from the Extensions / V-Ray / Tools menu or the utility toolbar button
- Solid Widgets display modes implemented. It changes the viewport appearance of area light sources and the V-Ray Infinite Plane. Rectangular and Sphere light sources are a good example. They are now displayed as line shapes by default and solids once this mode is activated
- All V-Ray Lights viewport widgets are updated. They now look better and come with additional lines to help with snapping, positioning or rotating. Some of the widgets can be displayed in two viewport modes - Line Shapes and Solids. The Enable Solid Widgets button changes the mode
- The internal groups of all viewport widgets are now locked to prevent unwanted alterations
- The Rectangular light now has U and V Size parameters exposed in the Asset Editor that directly affect the light's viewport widget. Changing the size this way affects all component instances in the project. Scaling the light component can still affect the size of each individual instance. The combination of both enables many efficient workflows
- The Sphere light now has a Size parameter exposed in the Asset Editor that directly affect its viewport widget. This Size works similar to the U and V Size parameters of the Rectangular light
- The lights' Size parameters allow light size changes without affecting the light intensity. Change the light Units to Radiance Power (W), for example, to take advantage of this workflow
- The Infinite Plane viewport widget is updated. It can now be displayed in two viewport modes - Line Shape and Solid
- The V-Ray Fur, Clipper and Mesh Light wrapper widgets are updated. Line art has been used for the icons. This helps resolve some issues with the Viewport Rendering mode (VPR)
- A V-Ray Scene Importer is implemented. It enables the import of a .vrscene file directly as SketchUp model and not just a reference. It can be found in the SketchUp main menu / File / Import - as an option in the browser window. The tool imports geometries, material assignments and texture placement. The imported scene is scaled and positioned correctly, independent of the source application or the source file units configuration
- The V-Ray Batch Rendering function is updated. It now reliably renders the exact camera position and scene properties on both Windows and Mac OS
- A Cloud Batch Render function is implemented. Use it to submit a SketchUp Scene batch to the V-Ray Cloud. A viewport overlay progress bar provides visual feedback on the process
- Global textures (not used in a material) can now be saved with the SketchUp project

- Licensing errors are handled in a better way. Different messages are displayed depending on the situation. Additional information to help users resolve the issue appears in the pop-up window
- V-Ray for SketchUp code errors are handled in a better way. Different messages are displayed depending on the situation. Additional information to help users resolve the issue appears in the pop-up window
- Batch Cloud Rendering errors pop-up a window with additional information on the issue
- The V-Ray Menu is now better organized and various tool descriptions are updated
- The V-Ray Frame Buffer (VFB) Lens Effects UI is simplified. The workflow for setting up lens effects for the image is streamlined and made more versatile with the addition of some new options (like the Saturation control)
- Lighting Analysis render element implemented. It provides visual representation of the lighting intensity in the rendered frame. It maps Illuminance and Luminance information as color gradient or a grid of measured values onto the frame
- Material ID Number render element implemented. Masks objects in the scene based on their shader 'Material ID / ID Number' value. The selection masks with use automatic integer color assignment. The channel uses no anti-aliasing. It is supported by the GPU render engine
- MultiMatte Materials render element implemented. Creates red, green, and blue selection masks based on an objects' material ID Number assignments. A single MultiMatte can only store 3 masks - R, G and B. To account for that, we'll analyze the scene at render time and automatically create the necessary number of elements based on the number of unique IDs specified
- Added support for bitmap texture sequences. Enable the Sequence toggle and use the options in the Bitmap parameters to load a sequence of image during animation

## V-Ray GPU

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- V-Ray GPU is two times faster on average thanks to its new rendering architecture with support for more of V-Ray's high-end production features
- Volumetric effects are now supported. Environment Fog can be rendered in a very optimized way
- Added support for material refraction Dispersion
- Added support for adaptive Dome Light
- Added support for material Glossy Fresnel reflections
- Improved 3D/Normal displacement. The effect is now faster to render
- Added support for VRscan materials
- Better sampling of blurry reflective materials and specular highlights
- Support for Dirt texture's 'Self-occlusion only' parameter
- Added support for the Emissive layer Opacity value and texture

## Assets Library (Material Library)

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- Library folders are now displayed as a tree structure that can be explored by expanding and collapsing each branch contents
- Custom folder locations can be added to the library and then browsed for .vrmf files. Right-click on a library folder and select Close to remove it from the list
- Network locations (folders) can be listed. This enables the use of a single unified library for all members of a team or a company division
- Right-click on a library folder to bring up a context menu with a Refresh function available. Use it to refresh the content of a folder in case a file system change has occurred
- Assets can be deleted directly in the library content view. Right-click on any material and use the right-click Delete function to remove the material file from disk
- The Library UI is simplified and now uses two main layout presets - vertical or horizontal
- A search can be performed on the content of a deep (multi-level) folder structure. Quickly search a library folder containing multiple sub-folders with materials in each of them
- The performance of the library content list is improved. Lazy-loading is implemented to allow for smooth navigation while listing thousands of materials
- Multi-selection is now supported in the library content view. Hold down Ctrl to add or remove from the selection. Holding Shift enables range selection. Multiple materials can be then deleted together or added to the current scene as a batch. The multi-selection works in both Grid and List view
- Drag and dropping any scene asset to the library content section is now supported. Quickly save any asset to disk for later use. If the asset name already exists in the same location V-Ray exposes two options - replace the asset or cancel the operation
- The thumbnails size slider is replaced with Zoom In and Zoom Out buttons

## Asset Editor UI

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- Implemented Asset Tree view - Outliner . It lists materials, lights, geometries, render elements and textures in a unified way and visualizes shader hierarchy
- Every asset listed in the Outliner has a simple icon in front of its name for easier identification
- Updated Asset Editor toolbar. Both functionality and visual style of this UI element are updated. Separators are introduced to split icons of different type
- Asset type filters added to the toolbar. Use them to display assets of specific type or types in the list below. Multi-selection is supported. Use Ctrl+click to make an additional filter active. Shift lets you select a range and Ctrl+A selects all categories (except for the ones that have no members)
- Right-click on any asset type filter icon to bring up a creation menu for the specific type. This functionality is available even if a category is empty and visually disabled. Holding Ctrl keeps the dropdown menu active allowing multiple assets to be swiftly created
- Expanding the Render (button) drop-down menu no longer lists the active item twice
- Assets from all types (Materials, Lights, Geometries, Render Elements or Textures) can now be saved as .vrmf files and loaded in other projects

- Navigating to a child texture can now be done in the assets tree list itself without clicking on parameter texture/material slots
- The main panel footer button Create Asset now shows a creation menu organized in submenus based on the different asset types. It lists assets with colorful icons on their left for easier identification
- Assets of all types use a unified UI logic. The Swatch Preview is on the top of the right fly-off panel and the parameters are listed below. The overlay view used for texture creation and editing is no longer needed and has been removed
- Back button added to the right fly-off panel footer (Arrow pointing left). Use it to go back to the previous asset selection
- Up the Hierarchy buttons added to the right fly-off panel footer (Arrow pointing up). Use it to go up to the parent of the selected asset. A smart way of determining what is the preferred parent is used for assets instanced in multiple places
- Render elements are now treated as assets - they can be created or deleted in the Assets list. Their preview image, parameters and a short description can be found in the right fly-off panel
- Textures can now be instanced in multiple material slots or re-used in a different material. Use an instance of a texture in the diffuse material slot and a color corrected instance of the same map as bump. Changing the source file changes both
- Global textures can now be created. A texture instanced in multiple base materials automatically becomes a global map referenced in both materials. Creating a texture from the Asset list menu directly adds it as a global item, listed under the Textures category
- Effects Update Frequency is moved to the Denoiser section for convenience - now called Update Frequency. It still affects both the Denoiser and VFB Lens Effect updates
- The Denoiser is no longer a render element but a scene property

## Materials and Textures

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- Implemented Curve Color Correction texture. Remap any texture color values using R, G, B or H, S, V curve controls
- The UI of the Generic material UI is updated. The Material ID and Raytrace Properties rollouts expose some advanced material parameters
- Material ID Number is added together with the ID Color to enable a new way of masking materials. Utilize it with the new 'MultiMatte Materials' render element
- Reflection, Refraction and Diffuse material layers are updated. Their UI and parameter names are now consistent with the Universal V-Ray BRDF UI. The Transparency parameters are switched to Opacity controls for consistency. Any old shaders will be migrated automatically to the new backend structure
- Flakes layer is introduced to the Layered/Generic Material. Add metallic flakes to any shader blended with auto-generated opacity map

## Asset Preview

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- The materials and texture preview swatches are merged in one unified asset preview located in the right fly-off panel just above the asset parameters list
- Implemented live preview for all light types - Rectangular, Sphere, Spot, Omni, IES, Sun, Dome and Mesh
- Implemented separate live preview scenes for textures of different kind - 2D (Bitmap, Checker, etc.), 3D (Noise, Marble, etc.), Ray-traced (Edges, Dirt, etc.), Environment (spherical images, etc.) and View-dependent (Falloff, Fresnel)
- Implemented static preview for all Render Element assets. The pre-rendered image clearly shows what the selected element looks like
- A default image based on the asset type is displayed for any asset that does not use a live or static preview
- Asset preview toolbar is implemented. It contains the preview scene selection button as well as three brand new controls over the preview window - a Start/Stop preview toggle, A One-time render and Render size selector buttons
- The Start/Stop button in the Asset preview toolbar toggles the live preview for all assets
- The One-time render button can be used to render the preview of the current asset only once
- The Render size button indicates the current preview render resolution size. Open its dropdown list to choose between rendering it at 100%, 50%, 25% or 12.5% of the original size. Downscaling the size compromises (or exchanges) image quality for render speed

## Other Changes & Bug Fixes

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- The Material ID render channel now takes opacity into account
- Light Components added to the scene are now sized based on the asset's size parameters
- Viewport Rendering can now be initiated in scenes with Fur, Clipper and Mesh Light visible viewport widgets
- A number of issues with material Binding are resolved
- Materials applied to a V-Ray Infinite Plane are now affected by their SketchUp texture size
- The GPU Device Selection menu entry now properly runs the executable file
- Empty V-Ray Fur and V-Ray Clipper components no longer prevent rendering
- The V-Ray UV Tools mapping now works as expected when applied on a group's copy
- Changing a material name no longer duplicates it. Capitalizing its letters also behaves as expected
- V-Ray Fur now ignores double sided materials and only use the front one for shading
- Archvision RPC support has been discontinued
- SketchUp 2015 support has been discontinued
- Caustics combined with a Stereo Camera no longer render incorrectly
- Drop-down menu lists no longer hide behind other UI elements

## Known Issues & Limitations

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- Selecting an Environment texture shows the Assets Tree view with nothing selected. Using the Back button selects the previously selected asset in the tree
- Deleting material's child texture does not automatically select the material. A different material is selected instead
- Opening a SketchUp project created with an older V-Ray version and containing many materials loads slowly the first time. Saving the project with the new V-Ray version makes subsequent loading faster
- Opening a SketchUp project created with an older V-Ray version with the SketchUp Outliner loaded causes a significant delay on scene activation (opening the Asset Editor or starting a render). Close the Outliner before opening the project to improve performance