

RenderMan for Maya 21.0

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Welcome to RenderMan for Maya 21!

This new release of RenderMan for Maya 21 (RfM), includes a number of new features to address feedback as well as general improvements to RenderMan for Maya workflow and performance. We've added all new lights and materials as well as a useful asset browser system that can be leveraged in your studio pipeline.

We've also included simplified UI elements and removed obsolete options to give you a new streamlined experience along with new features. Happy rendering!



Please note that RenderMan for Maya no longer includes the Reyes renderer. RenderMan for Maya is now based on modern and improved pathtracing technology and C++ plug-ins. Scenes using old RSL lights, displacements, and imager shaders will fail to render or render black because of this change.

Please see the release notes below for all the new capabilities and known issues!

What's New

Interface Simplification

The rendering UI has been simplified to improve workflow and speed. Many controls have been removed or merged so artists have to click less to create more. There have also been updates to the look of icons, more intuitive icons, and easier ways to select your desired action.

Better Defaults

We've removed much of the guesswork by setting appropriate defaults. These defaults are designed for common scenarios and performance benefits. Rendering should give you what you expect--a physically correct and intuitive result!

New Material!

[PxrSurface](#) is introduced to users from actual Pixar Animation production! The material is a physically based but flexible material with options to layer. Artistic control is maintained for all your art direction needs!

All New Lights!

All new [lights](#) and lighting tools are included in this release! You can now use the same lights and filters as Pixar Animation Studios. Useful features and performance enhancements are all included. We've also included an improved [Portal Light](#) for those difficult interior situations.

Asset Browser

We've built a new [Asset Browser](#) that allows you to create, collect, and manage rendering assets from inside Maya. It's flexible enough to use your studio data and store material networks, light rigs, and environment maps. Video tutorials are included to get you started.

Texture Baking

It's now possible to bake patterns into 2D textures or point clouds from inside Maya! This allows artists to simplify complex networks to a single result for rendering. This can improve performance by reducing the cost in evaluating these patterns. Point clouds may be converted to ptex as a post process.

Denoise Improvements

Continued improvements in performance of the Denoise feature improves speed and quality. Also, using Denoise with CUDA capable GPUs can reduce Denoise processing times up to 60 times compared to CPU. Using the GPU requires CUDA 7.0 (compute capability 2.0 or later) and a [capable graphics card](#) with support. GPU denoising is enabled by default with an automatic fallback to CPU denoising if no compatible device is available.

Occlusion Integrator

[PxrOcclusion](#) is a new integrator that can be used to create non-physical renders for later compositing. Artists will find this very useful in adding details, knocking back unwanted elements, and creating occlusion passes for integration into background plates. No material or light changes are necessary, just change your integrator and render!

PxrDirt

[PxrDirt](#) is a new pattern made for artists wanting to create useful effects like procedural dirt maps or weathering. With useful controls and the new [PxrBake Texture](#) pattern, artists can quickly generate and use results instead of hand painting maps. Combine this with the layering abilities of PxrSurface to bring your shading to another level!

Projection Editor Improvements

The Projection Editor has been improved using feedback from actual film production.

Improved Holdout Workflows

Production feedback has helped us further refine our powerful holdout features. These now operate using all available features to the renderer including correct and complete light transport participation. Note that you should be using an image plane in your setup workflow.

Physical Camera

You now have the option to define an arbitrary plane of focus using the PxrCamera. This can be used to create special effects and fields of focus to drive your story and focus your viewer in ways previously impossible.

OSL Patterns are Native

OSL Patterns no longer require added work to render in RenderMan and are handled natively. Using your own patterns has never been this easy or fast.

Miscellaneous Changes

- The shelf's IPR button has a submenu to select the IPR resolution. By default, picking a new resolution with restart the IPR, but this can be disabled by toggling "Restart IPR on change".
- IPR does not have to be stopped to render again. Just press the IPR button again to force updates when geometry positions are changed.
- Added improvements to the way the IES browser handles files.
- There is a new "Rebuild Shelf" menu item in the RenderMan menu, under Diagnose. This will destroy the previous shelf and rebuild it. This is useful if after installing or uninstalling your shelf has been corrupted. Note this does not rebuild previously added user options.
- The intensity of IES profiles has changes to be more in line with the real world. A new "IES Ignore Watts" switch has been added to the Advanced tab of the render globals, in a Compatibility section, should you wish to revert to the previous behaviour.
- The preset browser now includes a preference pane.
- The preset browser now stores all its assets inside a "RenderManAssetLibrary" directory. If the directory doesn't exist, it will be created for the user.
- OSL shaders can now register themselves as a node in the hypershade. To do this, a nodeid and classification string needs to be added to the shader's metadata. Ex:

```
shader OSLShaderExample
[[int rfm_nodeid=1200405, string rfm_classification="rendernode/RenderMan/pattern"]]
(
    float f1 = 0.2
    [[string page="Float Input1", float min = 0, float max = 1]],
    float f2 = 0
    [[string page="Float Input2", float min=0.0, float max=1.0]],
    ...
)
```

- Bxdf "PxrBlack" is assigned to mesh lights by default. This can be overridden by assigning a Bxdf to the light or the geometry source. PxrBlack is assigned to prevent secondary scattering from the light itself.
- txmake no longer manipulates input images to conform to the OpenEXR latlong specification. An input image is converted directly to an OpenEXR format latlong texture with no image manipulation. The -extraargs exrlatlong flag is no longer needed or supported.
- Originally introduced in 20.6 as an option, PxrPathTracer now tracks the diffusedepth and speculardepth separately from each other based on which lobe of the BSDF is sampled. Previously rays that have both diffuse and specular contributions increment both the diffuse and specular depths. The new behavior is more intuitive and produce expected results when adjusting the trace:maxdiffusedepth and trace:maxspeculardepth attributes. This comes at the cost of, in some cases, effectively doubling the number of indirect ray bounces which can cause look differences and /or increase render times.

Known Limitations

RenderMan for Maya



You **MUST** set Maya->Preferences->Settings->Animation->Evaluation Mode to "DG" not "Serial" or "Parallel"

- Modifying light visibility while in IPR mode does not change light visibility
- Maya fluids will currently only render if you add RenderMan volume controls. Select the fluid shape and in the AE, do Attributes->RenderMan->Add Volume Controls
- Creating a mesh light during IPR will retain the old geometry (non-mesh light). A refreshed IPR session will remove the old geometry.
- Prior versions of RenderMan for Maya are not compatible with RenderMan 21.0. Trying to load the version 20.0 plugin with RenderMan Pro Server 21 installed will cause the following warnings: "rfm Warning: skipping unknown Slim keyword: requires" when loaded. The 20.0 plugin will not function correctly.
- Preset Browser : pattern nodes with array parameters and displacement patterns will not be correctly saved. This will be corrected in 21.1.
- Deselecting "Receive Shadows" does not work.