Renderworks 2011 Migration Hints and Tips

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Vectorworks 2011 has introduced a completely new rendering engine within Renderworks. The previous versions of Renderworks, used the Lightwave rendering engine from Lightworks Design Ltd. Renderworks 2011 includes a rendering engine from Maxon Computer, called CINEMA 4D. It is not a full CINEMA 4D licence, but a cut-down version.

Because this is a completely new engine, inevitably there will be some "tweaking" required when importing files from earlier versions of Vectorworks with Renderworks. The purpose of this document is to offer some suggestions based on the feedback of the beta testing team and the development team.

In addition, Renderworks 2011 is a 64-bit application, which has potential hardware implications for PC users running 32 bit versions of Microsoft Windows.

Renderworks and Computer Hardware Implications

Renderworks 2011 is a 64 bit application. Therefore, to take advantage of the huge speed improvements Renderworks 2011 has to offer, you will need a 64 bit capable machine and a 64 bit operating system (Microsoft Windows or Apple Mac OS X) on your computer. What does this mean to a non-techy person? Essentially, 64 bit computers can address (talk to) larger amounts of memory than 4GB, and therefore make use of larger amounts of memory, producing much faster results. On the Apple platform, it has been a requirement for Vectorworks to run on 64 bit Intel-based, Mac OS X 10.5.7 since the launch of 2010.

However, Microsoft Windows has 32 bit and 64 bit versions in circulation. You will need to check the capabilities of your hardware and operating system to make the most of Renderworks 2011.

You can read more about 64 bit computing at the following locations:

http://www.apple.com/macosx/technology

http://www.microsoft.com/windows/windows-7/compare/32-bit-64-bit-faq.aspx

Many applications today are still 32 bit (including Vectorworks 2011) but 64 bit processors and operating systems will still be able to run these applications. You should always verify this with your application vendor before performing an operating system upgrade.

64 Bit Microsoft Windows

While Vectorworks is fully supported in both 32 bit and 64 bit Windows environments, we generally recommend using a 64 bit Windows operating system for Vectorworks 2011.

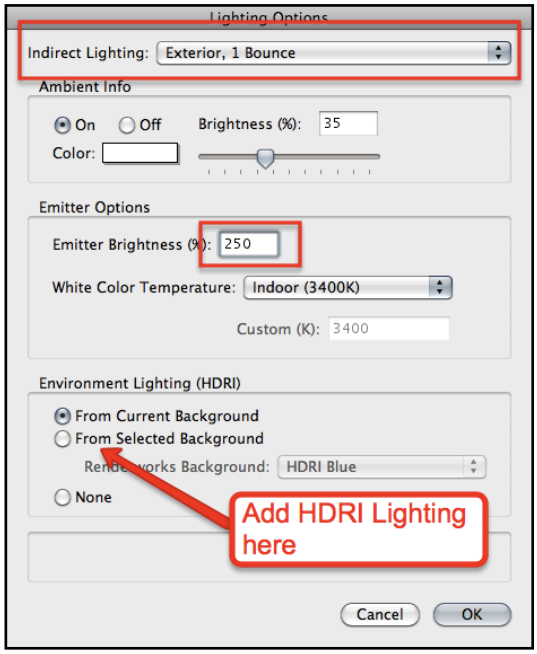
While Renderworks is fully supported in both 32 bit and 64 bit Windows environments, we strongly recommend using a 64 bit Windows operating system for Renderworks 2011, as it will make full use of 64 bit addressing.

With those recommendations having been made, we have noticed that drivers for 64 bit Windows can be somewhat more problematic than those for the more mainstream 32 bit versions of Windows. Should you choose to run 64 bit Windows you should make sure that you carefully choose your hardware and driver versions to avoid problems.

Changes to Lighting in Renderworks 2011

General Lighting Brightness

- General lighting levels within the CINEMA 4D engine are lower than those produced by the Lightworks engine. In new 2011 files, you will immediately notice the difference and find that you no longer have to compensate for over-brightness which was often a problem before. In migrated files, however, you may notice that lighting levels appear to have dropped.
- To avoid users having to edit each individual physical light source, the Emitter Brightness field in the Lighting Options dialog (View/Lighting menu) is automatically set to 250% for translated 2010 files, to closer match the brightness found in previous versions of Renderworks. This field is a quick way for the user to adjust all physical lights' brightnesses up and down to get a well-lit scene.
- We have found that scenes with lower levels of lighting take longer to render, which is contrary to the results we found in 2010.



HDRI Background Lighting

- The Lightworks Design Ltd file of HDRI backgrounds that shipped with 2010 is no longer available in 2011. However, if you have 2010 on your machine, you can open the old file, convert it to 2011 and then save it. Add the saved file as favourite in your Resource Browser.
- When using HDRI backgrounds, you will need to use Indirect Lighting, or the results will be "spotty."
- For migrated HDRI backgrounds, you may need to adjust their brightness. Edit the background itself, using the Resource Browser, and change the brightness to more than 100%. You can also adjust colour saturation here (I find some of the sky backgrounds offer light which is far too blue!).
- For exterior rendered scenes, you may now find that using a Directional Light with Soft Shadows enabled will produce a more pleasing result than using HDRI environment lighting.

Area Lights

- Area lights now emit light in both directions. Migrated Area Lights will need to be masked to achieve the same result using **Renderworks** 2011. Draw a 3D Polygon on the rear of the Area Light using the 3D Polygon tool to mask the light, or consider using a Glow Shader instead.
- It can decrease rendering time to use the new Glow shader for area-type lights instead of using area light objects, especially when large or complex geometry is involved. The Glow shader is a new reflectivity shader which can be created within a Renderworks texture and applied directly to 3D geometry.
- Glow Shaders only glow when Indirect Lighting is enabled (View/Lighting/Set Lighting Options and set Indirect Lighting to 1 Bounce, 2 Bounces or 4 Bounces.)

Individual Light Brightness

- The default light brightnesses have changed from 75% to 100% or from 100 Lumens/Lux to 1000 Lumens/Lux (if using emitter settings). Renderworks 2011 renders a directional light set to 1000 Lux as well-lit whereas Renderworks 2010 showed a light at only 200 Lux as well-lit.

- Sharp Distance Falloff has been renamed Realistic. As its name implies, it gives a more realistic appearance to lighting as it falls away when moving further from its source.
- Wireframe objects' lines (objects without a fill set) will not receive light from light objects – they always render as constant shading. Change the Fill attributes of this geometry to Solid if they want the objects to be shaded by lighting.

Lit Fog

- Lit fog is only available for Point, Spot, and Custom lights. It is not available for Directional, Area, and Line lights.
- Fog settings in individual lights need to be matched with a Renderworks background which has Lit Fog enabled. The Lit Fog settings have been simplified enormously and a default setting of 50% does a good job. There are two types of fog: Smooth and Noisy.

Texture Changes in Renderworks 2011

Texture mapping support is the same as in 2010, so there should be no loss of mapping information. (The only caveat is that OpenGL and RW match with respect to spherical mapping and they sometimes didn't before. This can cause 2010 files to show different spherical mapping in 2011 in RW modes.)

Textures are automatically translated when opening a 2010 file in 2011.Shaders that used the previous LightWorks technology are translated as closely as possible to the Maxon CINEMA 4D shaders. This means that shaders may look a little different in 2011 and you may have to adjust them. Things that may look different are:

Image based Textures

- Image textures translate without any losses.
- The Filtered Image shader's color filtering is in the 2011 Image color shader now. Use filtering to brighten or tone down and image texture's colour.

Glass

Glass can be created using several methods. It depends on what kind of glass object they are used on.

- Making the Color shader use a dark color makes the new 2011 glass look less milky.
- For a simple glass-like texture for building window panes, you can still combine Mirror reflectivity with Plain transparency.
- Otherwise a good accurate clear pane glass would be a color shader of plain black color, reflectivity of glass, transparency of glass, uncheck cast shadows, turn off emit and receive light in the texture Indirect Lighting Options dialog.
- A simple colored glass can be achieved by setting the Color button in the Glass transparency shader dialog.
- Much more accurate colored glass that should only be used for closeups would be to use the Absorption Color and Absorption Distance parameters in the glass transparency shader. The object should be a closed volume like an extrude, sweep, or solid for best results. Set the color to the color of glass, and the distance so that the color shows stronger as the ray travels further into the object. The Color field for the glass should be white, only the Absorption Color should be set to a strong color for this type of glass.

Metals

- To create metallic reflections, choose Metallic for more rough metallic looks and Mirror with a reflection color for more mirror-like metals.

- For car paint use the Metallic shader with Reflection >0% or Glass reflectivity. Try out the low and high clip of the Noise shader to open up more texturing possibilities. (For example you can make metal flecks by using a Noise reflectivity shader with a Cell Voronoi pattern and setting the Low Clip at 50% or higher.)

Fabrics

- The Anisotropic shaders from 2010 are handled by Metallic in 2011. "From Color" bump option is not available in 2011.
- The Fresnel color shader can be useful for fuzzy-looking surfaces like furniture. Set the edge color to a lighter color than the center color and curvy things like couches will look kind of velvety.
- Pavement bump can be used to make a leather bump effect.

Regular and Irregular Patterns

- Noise shaders will create irregular patterns.
- Tile and Brick shaders will create regular patterns.
- Pavement can be used for rough irregular stone work, such as knapped flint or dry stone walls.
- The Relative Scale values in the Noise and Tiles shaders enable you to stretch or compress the pattern to make it similar to wood grain, brushed metal or other stretched patterns.

Light–Reflecting Shaders

- The Constant reflectivity shader from 2010 is translated to Glow in 2011.
- Glow reflectivity will cause the surface of an object to emit light unless this option is turned off within the Glow shader's definition.
- Image Props converted from 2010 and below will have their Constant reflectivity migrated to Glow.
- The presence of a Glow shader on an object will not switch off the default light source. Ensure there is another light source in the scene.
- The Translucency reflectivity shaders in 2010 are translated to Backlit in 2011.
- Backlit textures should usually have Cast Shadows turned off so that the light behind the surface can pass through the texture.
- Glow shaders are a light source in their own right. Backlit shaders require a separate light source.