



AV11306

AV11306 - Learn how to use Autodesk A360 Cloud Rendering Service in 3ds Max 2016

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Learning Objectives

- Test your scene compatibilities before sending a render and learn how to fix errors and/or warnings.
- Send your renders to the cloud and leverage its potential in your workflow.
- Gain confidence with the A360 rendering settings. Enhance the look of your image, create panorama and Illuminance.
- Learn about the best practices and limitations of A360 rendering for 3ds Max users.

Description

A360 Cloud Rendering is now available for 3ds Max 2016. In this Instructional demonstration, you will learn the step-by-step process of sending your renders to the cloud. 3ds Max Best practices and scene preparation will be discussed as well as A360 rendering settings. If you have been using cloud rendering in Revit, then many of these steps in 3ds Max should be familiar to you. For the new 3ds Max users, this is a great opportunity to dive in the 3ds Max environment. For the purely 3ds Max users, we will cover the benefits and limitations of A360 so you have a better understanding of the cloud services and how you can leverage its power in your workflow.

Your AU Experts

Marion Landry has over 19 years of experience in architectural visualization, working with a range of software that includes 3ds Max software. She has worked for various architecture firms in Vancouver, British Columbia, Canada, and on numerous projects, from concept design to high-end visualization. As a technical marketing manager for Autodesk, Inc., she focuses on the creation of technical demonstrations and workflows with 3ds Max software for the AEC industry. She has also contributed to the writing of multiple white papers, including Daylight Simulation in 3ds Max Design 2009 ([Getting Started](#) and [Advanced](#)) ; [Using the Civil Visualization Extension for 3ds Max Design and AutoCAD Civil 3D](#); and, [Easier Mental Ray Rendering for Designs Workflows](#). You can follow Marion's technical advice and tips and tricks publication on her [YouTube channel](#) and on [Twitter](#).



About A360 Rendering

The new A360 Cloud Renderer is a physically-based render that quickly produces highly realistic images. It can render multiple camera views simultaneously on high-end cloud servers, and will greatly expand your rendering capacity without capital investment or technical know-how. It is a “send-it-and-forget-it” rendering queue with high speed and high reliability.

<https://gallery.autodesk.com/a360rendering>

A360 Cloud Rendering is ideal for:

- Architectural and Industrial Design scenes.
- Design Development requiring fast iterations
- Preview and Final Quality Still-Image and Panorama renderings
- Shadow analysis (solar studies)
- Lighting analysis (illuminance rendering)
- Any time you can't tie-up local machines for rendering, or need serious rendering horsepower.

What is the A360 renderer?

First, it is not mental ray, or Iray, or any renderer that you can buy for 3ds Max. It is a Light cuts-type renderer – an entirely new technology built by Autodesk for our artists – and for best results will require some adjustments in how you work.

***For those looking for more detailed info on the type of renderer, just Google “The Lightcuts Approach”, and check out research papers you might find. Or, click [here](#) to download a PDF document about Light cuts rendering*

The A360 renderer is built for speed and realism. With a rendering engine, these two qualities are usually mutually exclusive - you can't have both. The A360 Cloud Renderer, however, achieves both by re-lighting your model (transparently to you) with point lights that simulate what the direct and indirect illumination would be if fully-computed. A photometric area light may be simulated by several point lights, and an HDR Image-Based-Lighting (IBL) setup may contain hundreds of thousands of point lights just to simulate the HDR. The result is typically highly realistic.

There are some tradeoffs being made in the cloud for this high-performance, so when you compare your A360 renderings to what you may be getting from mental ray or Iray, you'll see subtle differences. Shadows are not as soft, for instance.

Because of these differences, the A360 renderer may not be ideal for all situations. There is a fair level of compatibility with basic Autodesk and mental ray lights and materials. Users importing models into 3ds Max from Revit will find a good level of support for lights and materials provided.

As powerful as A360 rendering is, it was originally built for a fairly closed ecosystem of Revit and Fusion 360, and as such, does not always play well with the things our users may use or need in 3ds Max. 3ds Max allows you to do arbitrarily complex things with materials, in particular, and you'll need to adjust some things for best results with A360. Some plugins that rely on specific renderer features will not be supported well, or at all, with A360.

As far as intended workflows, Revit-to-Max and Inventor-to-Max should be well supported, as well as workflows from other CAD and solid modeling applications such as SolidWorks. Revit imports were the ultimate test for this first release, and raw RVT imports render without issues. That is, as long as the Revit modeler didn't bury lights inside of opaque fixtures, it should render in a similar way in Revit on A360 and from 3ds Max on A360.

If you have been using cloud rendering in Revit, then many of the steps in 3ds Max should be familiar to you. If you are working with Revit imports into 3ds Max, you should have good results right away if the model, lights, and materials were correct in Revit.

For a general Frequently-Asked-Question on rendering in A360, check out their support forum [FAQ Post](#).

Send your render to the cloud

Watch this video to review what was discussed in class.

<https://youtu.be/P264ebwc0OI>

Test your scene compatibility

To help you with transitioning your scenes to A360 we've provided a "Test Scene Compatibility" button in the render settings. This will open the Render Message Window and perform a translation from 3ds Max geometry to A360, without actually triggering a render. This allows you to see if there are materials or objects that may have issues with the A360 renderer. You can fix issues before upload and spending credits, and have more confidence in the models that you upload.

Anything that is an error you will need to fix, but warnings won't block you from rendering. Some warnings, like for hidden objects, are usually harmless. Most other warnings we see in scenes have to do with unsupported maps and materials, and those you will likely want to fix if the image is important. Please refer to the Best P section of this document to learn more about the limitation of A360 Rendering.

We always recommend you send standard size images, which are free. If the image looks good you can always change the render settings in your A360 gallery and trigger a new high quality rendering without re-uploading your model.

Watch this video to review what was discussed in class about this topic: <https://youtu.be/1iraUc-pkZs>

Watch this video to learn about setting a project folder: <https://youtu.be/3NjFOUcPyEU>

Enhance the look: watch this video to review what was discussed in class.

https://youtu.be/7_VWNzulP10

Create panorama, Shadow analysis, Illunimance: watch this video to review what was discussed in class.

<https://youtu.be/hgXDzcZ9MQo>

Share: watch this video to review what was discussed in class.

<https://youtu.be/Uu7-4RLxnWE>

Best Practices

LIGHTS AND SHADOWS

Lighting in A360 always works in a physically-real manner, despite the relighting. Lights always have realistic falloff, and always cast shadows. Since your scene is re-lit with point lights, you'll notice that you don't get soft shadows.

Objects in your scene also always cast shadows, just like the real world.

Photometric lights + mr Sun and mr Sky (Daylight Systems) are supported.

Using the Design defaults in 3ds Max 2016 generally works best with A360 and mr/iray.



*If you chose the “Max” defaults instead of the “Design” defaults when you first installed 3ds Max 2016, then your Sun and Sky may be the Standard or IES style by default, and may need to be changed. The mental ray mr Sun and Sky objects aren't used in A360, but their parameters are mapped to A360 objects. The Sunlight System is not supported.

Your defaults can be changed from the “Customize” -> “Custom UI And Defaults Switcher”, and choosing the “DesignVIZ.mentalray” option.

The mr Sky Portal, although classified as a Photometric Light, is unsupported. If you use a mr Sky Portal as a “light card”, you'll need to replace it with a rectangular photometric light for a similar effect.

ENVIRONMENT AND BACKGROUND

The A360 renderer has its own equivalent version of the mr Physical Sky environment map, and with that you cannot adjust the horizon. For night renders you'll get a starry sky in A360.

Like iray, A360 does not support "Environment/Background Switcher" that lets you have two separate images as background and environment.

EXPOSURE CONTROLS

The new Physical Camera Exposure Control, along with the classic mr Photographic Exposure Control, are both supported. You must choose the "Native" option in the A360 settings for exposure when sending your job, otherwise you get automatic exposure control in A360. For turntable animations (selectable from the cloud gallery), using Native from 3ds Max is often required to prevent exposure change per-image.

CAMERA SUPPORT

The classic Target and Free cameras are supported, as is the new Physical camera. The A360 renderer does not support effects, so you won't get Depth-of-Field, Motion Blur, lens distortion or Bokeh effects in your renders.

The exposure settings in the new Physical Camera are supported, as long as you use the new Physical Exposure control and the "Native" setting in the A360 render settings

IMAGE-BASED LIGHTING

A360 approximates IBL by making tens (or even hundreds) of thousands of point lights, all based on the image you provide. In most cases this works great, and is incredibly fast for IBL.

MATERIAL AND MAP SUPPORT

Materials and Maps are the area where you are likely to run into issues with A360 Rendering. A360 is built around the straightforward needs of Revit and Fusion 360, where there is a very short list of what you can change or do. In 3ds Max you can do arbitrarily complex things with materials, and that is its power and charm.

The Autodesk Materials are well-supported in A360, and is recommended if you are going to move your workflows to this service.

The Arch & Design (A&D) material is mapped onto an Autodesk Generic material. Many of the settings in A&D are mental ray-specific, or are not needed in a physically-real renderer. You will likely get good results, but may see differences in your A360 renderer.

Standard materials are mapped to an Autodesk Generic material, and will render. Other non-physical materials are not supported.

For Bitmaps, the Crop settings are not supported.

Material transforms in the Bitmap are not supported – use a UVW Map modifier where needed to adjust your map transforms.

Unsupported map types include procedural maps like Noise and Marble – A360 does not have an equivalent – and some fairly common map types like Mix and Tiles will require you to find or make an equivalent bitmap.

Tip: Set your Material Editor renderer to mental ray (*unlock the connection to the Production renderer before switching to A360). This way you can still edit materials while A360 is selected.

*Refer to this video to see this example live: <https://youtu.be/1iraUc-pkZs?t=6m40s>

MATTE/SHADOW WORKFLOWS

The A360 renderer wants to work just as the real world works, and does not have support for Matte/Shadow workflows. In that case you'll need to build actual geometry, or do some Photoshop magic. Saving to PNG format provides an alpha channel for a transparent background which helps for compositing.

FEATURES SPECIFIC TO CERTAIN RENDERERS

As you know by now, it isn't mental ray. So things like mr Proxy objects are not going to work, and the same goes for V-Ray proxies, and many other renderer-specific objects and shaders.

ATMOSPHERICS AND EFFECTS

The A360 renderer does not support atmospherics and effects. For scenes like the new "Underwater Template" that comes with 3ds Max 2016, the fog-like underwater effect is lost.

LARGE SCENES AND PARTICLE SYSTEMS

The time it takes you to send a model to the cloud may depend on scene complexity, your proximity to the render servers, and how fast your Internet connection is. 3ds Max must translate your model into a mesh that A360 can use, and that translation can take a long time when it comes to things like Particle Systems. If it looks like 3ds Max isn't responding, check your CPU usage in the Task Manager in Windows and see if it is busy.

VIEW-DEPENDENT TESSELLATION

Body objects are a terrific way to bring in industrial models from Inventor and other solid modeling products. It allows for adjustable tessellation per-object, and also render-time resolution that is view-dependent.

This view-dependent tessellation can cause issues when you send scenes to A360 and select multiple cameras for rendering. The first camera selected in the list will be used for deciding how to tessellate the objects. Because tessellation is view-dependent, some objects may receive lower than expected tessellation when viewed from another angle.

So, if a body object is small in Camera001 and large in Camera002, then it likely will have low tessellation in Camera002. You can get around this by sending each camera to A360 individually instead of all at

once. You can also convert body objects to poly, or place an Edit Poly (or another) modifier on the stack of the affected objects.

You may have a similar issue with modifiers and object types that change based on the view.

How to get credits

The A360 Renderer uses "Cloud Credits" to render, but allows you to send smaller images for free.

Cloud credit can be purchase if you have a Maintenance or Desktop subscription.

<http://www.autodesk.com/subscription/overview>

Cloud credits are usually provided to organizations that have product suites. Educational users also have access to cloud rendering as part of their license.

You can find out more information on that [here](#).

Users of Educational cloud credits will see the size of jobs limited per-submission and will also be at a lower priority in the queue.

Where to find support

If you have more questions please post them in the "Shading, Lighting and Rendering" forum [here](#) on The Area.

You can also visit my YouTube channel. I have posted a series of quick tips around the new features of 3ds Max 2016, including A360 rendering:

https://www.youtube.com/playlist?list=PLowqs8sl9-jtM_O14sNwbQoXJsaFlwdTV

I hope you enjoyed the class and that you gained a deeper understanding of both 3ds Max and A360 Rendering. I am always open for comments, questions and/or suggestions of tips and tricks.

Thank you

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