

3ds Max 8 & mental ray

Autodesk Media and
Entertainment

3ds Max 8 and mental ray 3.4

Audience:

Public

Autodesk® 3ds Max® 8 software supports mental ray® 3.4.4 rendering software using various methods for both rendering and licensing. This is an overview of those methods, when they are most appropriate, and the cost associated with each. This is not an overview of how mental ray, 3ds Max, or the process of rendering occurs. It is intended to provide information on the various rendering options and when it is appropriate to use them. It is also designed to help people understand when it is appropriate to purchase additional mental ray rendering licenses.

Rendering Methods:

mental ray rendering can be executed in three methods: 1) Through mental ray command line rendering (not 3dsmax.exe, discussed below), 2) through Autodesk® Backburner™ render manager or the 3dsmax.exe command line, and 3) through the 3ds Max mental ray rendering UI. These are the rendering options. When and why you should select one option or another is outlined below.

- 1) mental ray command line: As the title suggests, there is a dedicated mental ray executable, ray.exe, and through the command line, a .mi file (native mental ray file) exported from 3ds Max (or several other applications) can be rendered.
- 2) Autodesk Backburner or command line using 3dsmaxcmd.exe: While there are significant differences in the capabilities of Backburner vs. the 3dsmaxcmd.exe, the process itself is similar enough that we can group them together. This option is offline rendering where either a file is submitted to Backburner or a batch file is saved and submitted to the 3ds Max command line. The file is scheduled for rendering, then queued and rendered at the selected time.
- 3) 3ds Max mental ray UI: In 3ds Max, when the mental ray renderer option is selected, the Render Scene dialog provides a set of features and options specific to the mental ray renderer. This option allows for Distributed Bucket Rendering, an online method of rendering using many computers on the same frame with that frame shown in the 3ds Max viewport.

License Types:

There are also three types of licenses one can use to render with mental ray. These three types are 1) stand-alone mental ray render server licenses, 2) 3ds Max-associated distributed rendering licenses, and 3) satellite rendering.

- 1) Stand-alone mental ray render server licenses: This is the only license that will work with ray.exe, the mental ray command line rendering tool. These licenses are the most flexible types of licenses, as they can be used for any type of mental ray rendering. This license can render a mental ray-generated file from ANY application that exports .mi files. It can also be

used to augment the satellite rendering nodes (discussed below) if additional rendering nodes are required.

- 2) **3ds Max-based associated distributed rendering licenses:** When a scene is built in 3ds Max and rendered through Backburner or the 3ds Max command line renderer (3dsmax.exe) there is no limit to the number of processors contributing to the mental ray render. This method is most comparable to the free network rendering found with the 3ds Max renderer and, in this regard, acts the same. Artists can either submit a scene to Backburner and use those management tools to schedule and execute the render or they can create a batch file and use the 3ds Max (not the ray.exe) command line renderer.
- 3) **Satellite rendering licenses.** 3ds Max will allow up to eight processors to assist in rendering to the 3ds Max mental ray rendering UI (in addition to using up to two processors in the host computer for a total of 10 processors). When executing Distributed Bucket Rendering in the 3ds Max viewport, this is the license type used for up to eight processors.

When to use different license types and rendering methods:

Each of these rendering methods and license types has its strengths depending on the situation. In this section, we will look at the license type and how the license type complements the rendering method.

Satellite rendering

Satellite rendering allows up to eight remote processors to connect to the 3ds Max mental ray rendering process to add rendering power to the up-to-two processors that are on the computer that is hosting the 3ds Max session from which the rendering is executed. The 3ds Max mental ray UI is used to determine which computers are to contribute to the rendering process. This is an excellent option for previewing renders using mental ray because, with a single click of the button, up to 10 processors can be working on a single frame of any size. This gives the artist the ability to quickly preview any single frame or to render an animation with little more than a single click of the mouse. There is no need to use a rendering manager, queue manager, file export, batch process, etc. Simply determine which computers will assist in the rendering process (render servers) and click render. This is the best method for accessing quick results with minimal setup. Additionally, this is also a great choice if the artist is rendering a very large single frame or a single animation and does not need to be concerned with render management. Every function of mental ray is accessible through this licensing method with the exception of the more sophisticated render management tools one finds in Backburner or one of the command-line render methods.

Stand-alone mental ray render server licenses

These licenses work in two rendering situations, when using the mental ray command line to render .mi files and when additional render servers above what is provided with the satellite license are required when using distributed bucket rendering. Let's first look at the satellite license situation.

Satellite rendering (described above) can be augmented with additional render servers by having those render servers authorized to render using stand-alone mental ray licenses. This is valuable if your scene can take advantage of additional processors through the 3ds Max mental ray rendering interface. However, this is

usually not the case. Autodesk has found that the returns on additional processors diminish normally at 10 processors, if not sooner. The diminishing returns are due to the increased overhead caused by the additional processors.

Command line rendering using ray.exe is where the stand-alone licenses are most valuable. Ray.exe is primarily used in larger productions, particularly when more than one application is being used to create files for rendering with mental ray. These licenses allow source files to come from any 3D package that can generate a .mi file. If an environment is highly mixed with different 3D solutions, this is the best choice as this type of production usually has either a commercial render management solution or a custom built solution to handle incoming files, settings, selection of render server, etc. and ray.exe fits directly into that pipeline. Ray.exe also has a smaller memory footprint and so is more efficient than rendering out of 3ds Max or Backburner. The difference in memory usage from the application footprint is rarely the make-or-break point on a render process, but it can make a difference in some low memory situations. As ray.exe can only be authorized by stand-alone licenses, this type of pipeline requires stand-alone licenses.

This is also required when your render farm is based on computers such as Linux®, IRIX, Solaris, etc., that are not certified to run 3ds Max.

3ds Max associated distributed rendering licenses

If you are using 3ds Max exclusively or are only using 3ds Max to manage the rendering of your mental ray licenses, this is the perfect solution. This provides all of the licensing needed to render any mental ray job. Backburner works with this solution so artists can simply hand their 3ds Max scene files that are set up to use the mental ray renderer to Backburner and use those management tools to set up their render job. If artists want to use a render management tool other than Backburner and it works with the 3ds Max command line renderer, all of the licenses are still provided. The Autodesk Backburner complete render management solution works not only with 3ds Max but with many other Autodesk Media and Entertainment products. The advantage to using the 3ds Max command-line renderer along with a batch file is that the batch file and command-line renderer can be used with other management tools. As long as it is 3ds Max rendering the mental ray rendered scene (no matter the render management solution) there is no limit to the number of processors contributing to the process. The command line also allows for greater verbosity than does Backburner, so information that is being generated by the mental ray rendering process can be captured and viewed.

Feature	Satellite	Stand-Alone	Max assoc
CPUs	10	Unlimited*	Unlimited
source file	3ds max scene	mi	3ds max scene .max
Bucket rendering	yes	Possible	No
...			

Price:

- Satellite Rendering No additional charge
- 3ds Max distributed rendering No Additional Charge
- Stand-alone mental ray licenses Per Processor charge

Stand-alone mental ray Licenses

Pricing is determined by the volume of the requirement. Please contact your reseller or your Autodesk reseller representative for specifics around pricing and availability.

Licenses are PER CPU, a license is required for each processor.

Q & A

Q: How does the licensing work if I am using a dual-core system or hyperthreading on my computer?

A: All of the licensing methods authorize on a per-socket basis, not a per-virtual-processor basis. If you are running a dual-core system with hyperthreading but only have one physical processor, you will tie up only a single license.

Q: Is 64-bit available for stand-alone or Backburner rendering?

A: The process can run on 64-bit hardware on a 64-bit operating system, but it will do so in 32-bit mode.

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