

# CONFIGURING THE ULTIMATE CINEMA 4D WORKSTATION

Because CINEMA 4D, the popular 3D modeling and animation application, offers a wide variety of features accommodating various workflows, a one-size-fits all workstation configuration does not exist. But with the help of lead 3D Modeler and Cinema 4D expert Shane Benson, we'll look at the most common workflows so you can determine the right configuration for your C4D workflow. To learn more, visit the BOXX Cinema 4D Solutions page or call **1.877.877.BOXX**.



## GETTING TO THE CORE(S)

### 3D MODELING

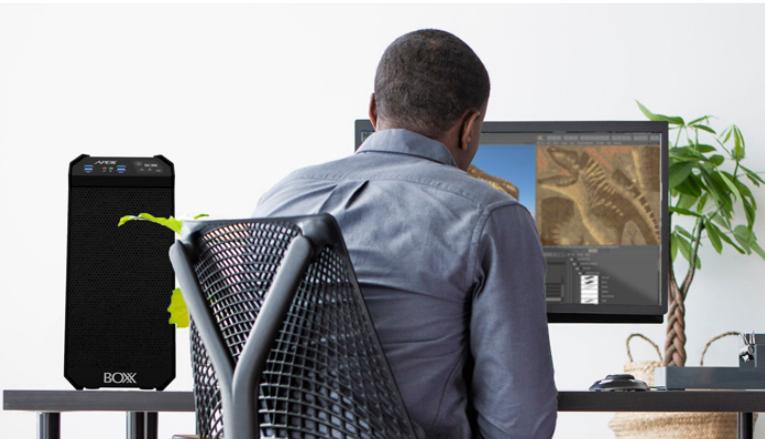
3D modeling within Cinema 4D is a single-threaded task or frequency bound (meaning that it predominantly uses only one core). Since the frequency of that core determines performance more than any other variable, a workstation with less cores (but higher frequency) is ideal. The process of building up meshes, extruding polygons, and manipulating vertices utilizes only one CPU core. In fact, almost all geometry related things are single threaded, except for deformers. Back a few years ago, MAXON made most of the deformers multi-threaded. If you use C4D primarily for modeling, spending money on a dual CPU workstation with dozens of CPU cores is a waste of money. You'll never use those additional cores in the middle of modeling or animating. Single core speed is the single most important factor in viewport performance. Since your workstation requires an operating system (OS), you'll need two cores dedicated to the OS and the balance of cores reserved for content creation tasks. Because a workstation with a high frequency CPU most benefits your 3D modeling workflow, the professionally overclocked BOXX APEXX S3 C4D workstation is an excellent choice.



Get started in your professional applications with the **APEXX S3**, configurable with an overclocked, liquid-cooled eight-core Intel® Core™ i7/i9 processors at 5.1GHz and support for two professional GPUs.

## ANIMATION

Like 3D modeling, animation is a single-threaded task (or frequency bound), so if it's your primary task, multiple CPU cores will (once again) be of little help. Workstations with higher CPU clock speeds perform much better at these tasks, so single socket APEXX S3 and APEXX 4 Cinema 4D workstations are ideal choices for your animation workflow. "Because the Cinema 4D workflow is mostly single-threaded, it makes sense to have fewer cores and higher clock speeds," says Benson. "Any additional cores will be sitting idle while you are modeling, animating, or rigging. C4D only uses all available cores when rendering."



## RENDERING

When choosing your CINEMA 4D workstation, consider that unlike 3D modeling and animation tasks, rendering your C4D assets is a highly multi-threaded process, therefore, the more CPU cores in your system (or systems) the better. C4D users have a variety of rendering engines to choose from. In addition to traditional CPU rendering, GPU-accelerated rendering is also a possibility and like CPU-rendering, benefits from multiple cores.

## GETTING GRAPHIC

"On message boards, forums, and social media, C4D users often complain about the application being slow, and even after upgrading their machines, they see no improvement," says Benson. "For example, they'll discuss slow viewport speed, especially when using a very dense mesh

or trying to cut holes in the mesh using a boolean. Their solution was to buy a bigger and faster GPU, however, this is incorrect because C4D does not use the GPU for boolean operations. Like the other modeling tools, it's a single-threaded task, and is calculated on the CPU, so throwing money at a bigger, faster GPU will not improve viewport performance when modeling." C4D's viewport relies on both CPU and GPU, so you can have the most expensive GPU on the market, but if your CPU is low-end, with slow clock speeds, your viewport is going to be slow. Another misconception is that the key to improving C4D performance lies in a double precision GPU. "Many C4D users think a big, beefy GPU with double precision will accelerate performance," says Benson, "but that's not the case. C4D uses the CPU for computation." Benson is quick to add, however, that the application does take advantage of double precision on the CPU. According to him, the limited availability of double precision (as well as reduced speed compared to single precision on GPUs) is one reason why MAXON is not making use of the GPU outside of OpenGL.

With the introduction of GPU engines, C4D now has a wide variety of GPU render engines to choose from, (RedShift, Cycles4D, Octane, etc.). MAXON even implemented ProRender a while back, which is a GPU renderer. (ProRender is developed by AMD.) While it was a nice feature to have, the consensus among most C4D users was that it was too slow.

This year at NAB, Maxon announced that they acquired RedShift. This is great news for C4D users, as MAXON and RedShift will now be working closely to improve RedShift's integration into C4D. "If you're a RedShift user, then you will definitely want multiple GPUs," says Benson. "The current version of RedShift does not yet support RT cores. RedShift has said they are working on implementing this in the next big "3.0" release, as this requires them to remove the CUDA ray-tracer and replace it with NVIDIA's OptiX ray-tracer."

Arnold (C4DtoA) recently announced that they are implementing a GPU feature as well, however, it is nowhere near production ready. There are many C4D elements that are not yet supported by Arnold GPU. Hopefully, this will be something to expect in the future, but for now, if you're an Arnold user, it's all CPU.

If you're not going to be using a third party GPU engine, then one GPU will be just fine. Out of the box, C4D will only be using one GPU (the one that's driving the monitor). However, if you plan on using Octane, RedShift, Cycles, etc., then you'll definitely want to throw in a few GPUs—preferably with lots of RAM.

## Particles and Simulations

"C4D's particle system (Thinking Particles) is single threaded, but it's known for being slow," says Benson. "The only way to see an improvement would be with a high clocked CPU. There's a third party plugin (X-Particles) that is multi-threaded, and is extremely fast when compared to Thinking Particles. To be honest, if you're going to do particle work, then I would highly recommend X-Particles along with a high clocked CPU. I would imagine 12 or more cores up around 4.5 to 5GHz would be insanely fast."

Benson adds that dynamic simulations are single threaded as well. "I am not aware of MAXON implementing any multi-core support for this," he says. "Again, a high clocked CPU and SSD would be the only way to improve dynamics. I say, 'SSD', because you can bake the dynamic simulations. Once baked, the playback speed is much faster!"

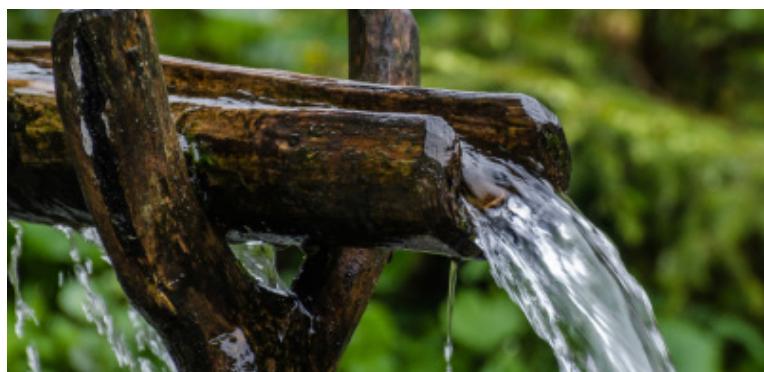
## SSDs

Regarding the role of solid state drives (SSDs), Benson says that adding them to your C4D workstation won't significantly improve performance within the application. "The only area that would see improvement would be faster times for launching the program and accelerated loading times when opening a scene large scene file. Caching simulations will also improve if you cache them to an SSD," he says. If your workflow

requires frequent loading and saving of large scene files, you should definitely opt for fast SSDs. Aside from application-specific speed improvements, a fast SSD will make your C4D experience more responsive overall, with less perceived lag when multi-tasking.

## THE IDEAL C4D WORKSTATION

"A desirable machine for Cinema 4D would be an overclocked Intel Core i7 with 24-32GB RAM, and either a GTX or Quadro graphics card," says Benson. "I mention GTX because I know some people are on a budget. Also if you were to opt for the less expensive GeForce card, you could then spend more money on an additional machine with lots of cores specifically for rendering. This takes the load off of the workstation. In fact, the ideal setup for C4D users would be a single socket machine (like an Intel Core i7) for when you're working. Then, when it comes time to render, the job could be offloaded to a machine with more cores, or multiple machines on a farm. My own personal setup is tailored to the engines I use (V-Ray and Arnold). Both are CPU based, so I have my main workstation, and then I also have a small rendering unit off to the side to aid with the final rendering."



## THE BOXX WORKFLOW

Benson's description of the ideal C4D solution typifies The BOXX Workflow—freeing up your workstation for modeling and animation by offloading rendering to a dedicated rendering system like the renderBOXX or RAXX from BOXX. These rack mounted systems are easily scalable, allowing C4D users to build a render farm as their business grows and workload increases. ■