Hardware Recommendations for Houdini

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[Houdini](#) is a 3D modeling and VFX program from SideFX, similar to Nuke and After Effects, and is often used as a plug-in with programs like Unreal Engine, Unity, Maya, and 3DS Max. It is commonly used for animating characters and also has powerful simulation tools, making it ideal for effects like fire, smoke, and fluids. Its procedural, node-based pipeline has great integration with the viewport and allows artists to easily adjust and create multiple iterations of a scene with different effects so they can quickly hone in on an exact solution.

Like most software developers, SideFX has published a [list of system requirements](#) – but it is focused on the minimum specs required to run Houdini, rather than what will give users a smooth experience while they are working. Instead of depending on a minimum viable product, we have partnered with [Rebelway](#), an online VFX training organization, to provide recommended systems for professional artists as well as those just getting started with modeling, animation, and simulation. Their hands-on experience, combined with the knowledge of our consulting team, is the foundation for the advice below.

Processor (CPU)

What type of CPU is best for Houdini?

The best CPU for Houdini depends on what you will be using it for. The majority of modeling and animation tasks are limited to a single core, making a high clock speed processor from AMD's Ryzen 9 or Intel's Core i9 families ideal. Those CPUs also have a moderate number of cores, which comes into play when working on simulations, but they are limited on how much system memory they can support.

For heavy simulation workloads, 128 or even 256GB of memory may be needed. To accommodate that much RAM, a more advanced workstation CPU platform like AMD's Threadripper PRO is necessary. Those processors are also available with higher core counts, and some types of simulation (especially fluid dynamics) can harness more cores to improve performance.

CPU-based rendering can also use a lot of cores effectively, but for all but the largest scenes you will get faster rendering with a GPU (video card) based rendering engine instead. See the next section for more info about that.

Video Card (GPU)

What GPU (video card) is best for Houdini?

The video card is responsible for displaying the viewport in Houdini, along with any animation and effects shown in it. We generally recommend NVIDIA's GeForce line of video cards here, as they offer the best performance for the price combined with solid reliability. There is no reason to use their more expensive Quadro or RTX A-series. We have found the GeForce RTX 3060 Ti and RTX 3070 Ti to be great starting points for most users, while the RTX 4080 and 4090 offer more onboard memory for those who need it.

How much VRAM does my GPU need for Houdini?

The complexity of your scenes can impact how much VRAM is necessary. Most users should be fine with 8 to 12GB, but if you plan to work with larger or more detailed projects then consider bumping up to the 16 to 24GB range.

Does Houdini benefit from multiple GPUs?

Houdini itself has no use for more than one video card, but many artists use GPU-based rendering software alongside Houdini. If you are going to be rendering in a program or plug-in like Redshift, V-Ray, or OctaneRender then it is worth considering a faster GPU than Houdini on its own would need, and potentially a second GPU to further speed up the rendering process. Our [Professional workstation](#) has room for dual video cards, and we also have [various recommended systems tailored more specifically for rendering](#).

Memory (RAM)

How much RAM does Houdini need?

32GB is the minimum for general modeling and animation, but if you are doing any particle or fluid simulation then you will want at least 64GB. Larger scenes and more complex simulations could need as much as 128 or 256GB, and going that high may require a more advanced workstation CPU platform like AMD's Threadripper PRO.

Storage (Drives)

What type of storage drives should I use for Houdini?

There are three main types of storage devices available for workstation computers: NVMe based solid-state drives, SATA SSDs, and traditional platter hard drives. Of these three, traditional platter drives are by far the slowest – making them affordable for mass storage or backup, but far too slow to use as a boot drive or project drive.

SATA SSDs are several times faster than a platter drive, but not available in as large of capacities. These make excellent drives for holding libraries of effects, and when on a limited budget can be viable for the OS, applications, and even active projects.

NVMe drives are significantly faster than even a normal SSD, but also a bit more expensive. Their speed makes them the ideal drives for your operating system and programs, though, and if you have room in your budget they are also the best for housing projects you are working on. Their cost generally makes them prohibitive to use for mass storage, though, and the speed they offer is also wasted in that application.

What configuration of drives is optimal for Houdini?

Our general guidance for drives is to have a mid-size, fast solid-state drive (ideally NVMe) for your operating system and applications. Then a second SSD for holding your active projects will help keep you organized and helps reduce the risk of losing important data if you ever need to reinstall the OS.

In addition to those two drives, you might also consider a drive that's dedicated to holding commonly used effects (sometimes called an "action drive"). Artists who have a bunch of explosions, fire effects, and smoke effects that they use all the time will find a SATA SDD with enough space for them can often be a great addition if there is room in their budget.

Lastly, it is important to have some sort of regular backup of your data – whether it is an internal hard drive, an external USB drive, or a network attached storage array. Having this outside of the system itself is usually the safest option, in case something should happen to the whole computer (power surge, virus, etc).