What computer do I need for Helicopter Simulation?

By Pro Flight Trainer

One question we get asked many times is: What type of computer system do I need for helicopter flight training?

The simple and quick answer is as fast a computer as you can fit into your budget. With so many computer options many of us need to prioritize how we spend this budget. In what areas do I go high end, and where can I save some money?
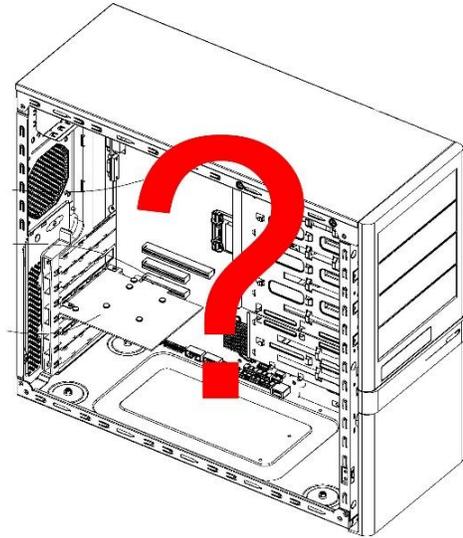
Operating System

The first decision that will need to be made is what operating system am I going to run? In general you can go two different ways, Windows or Apple (Linux is also an option but not a common choice). We don't want to offend Apple users, but we do not recommend going the Apple rout for simulators. To start with, the available software is very limited – no FSX or Prepar3D. The next issue is the generally slow GPU's on most Apple systems. As you will read further in this article, we recommend a stand-alone graphics card of moderate speed and great system cooling. This is an area of weakness in the Apple systems. In many other areas like CPU they are fine.
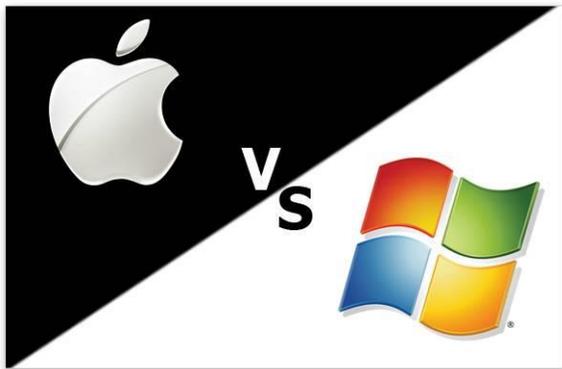
So this leaves us with going the Microsoft Windows direction for most system builds. The newest windows operating system work great with almost all the available simulator software and add-ons. One big advantage of the Windows system is the ability to see what data the controls (joystick) are sending the computer in the MS game controller (can select to see the raw data). You can also calibrate the hardware outside of the simulator software, something we recommend.

CPU Performance

The CPU (Central Processor Unit) is the single most critical component in building a great simulator computer. Most flight simulator software engines were developed many years ago before the advent of powerful graphics cards. Because of this, they put much more emphasis on CPU speed than many current games. Generally speaking you should look for the fastest CPU you can reasonably afford.

A high clock speed, Intel 4 core processor (3.2 to 4.0 GHz) is recommended. Six or Eight cores will not help performance much as single core CPU performance is most important factor. Hyperthreading is not usually supported so you can save some money by getting a Intel i5 processor over the hyperthreading i7.

If you want to get that last bit of performance out of your system, you can get an unlocked CPU. Turning up the clock speed (overclocking) can give great performance but at the expense of excessive core temperature and system stability. Carful thought on system design and component selection must be given before the speed is turned up!

The standard CPU fans that come with the processor are adequate for most systems. If you are overclocking or want that little extra stability (high room temperature also effects the system) from a cooler system then upgrades need to be made. The first option would be an upgraded fan/heatsink combination. For optimal performance, a liquid cooled system can be installed. Not all cases can fit an upgraded CPU cooler so be careful in your computer case selection.

Taking a look at GPU's

Next on the list is a nice GPU (Graphic Processor Unit). This is an area you can save some money or spend a small fortune for the latest and fastest! How fast of a GPU you need is partially determined on how high the video settings will be set in the simulator software. Most mid-priced video cards with at least 2 gig of RAM will function smoothly running a single monitor. If multiple monitors will be used or the video settings will be set at a high level, then a higher end video card is desirable (multiple videos cards are also an option).

Recently another consideration has appeared and will have a significant impact in GPU decisions….. Virtual Reality! The Oculus Rift goggles we have purchased revolutionize the sim experience but require a very fast GPU.

The new high resolution VR equipment generally needs 3x the GPU power vs 1080p rendering! So if you want to go this direction (and you will if you test a VR system) then you will need one fast video card.

Don't forget Memory

If you have money left in your budget, we would recommend going with 16 Gig of RAM for the system. If you need to keep your budget a little lower you can get by with 8 Gig of RAM.

We have completely switched over our computers to SSD drives (solid state drive) over the older hard disk drives. A high quality SSD (Samsung are a great choice) make any system quicker (the much faster system start up alone is worth the money). As SSDs are generally smaller, we recommend adding a standard HD drive for storing video clips of those great landings. Again if the budget is tight you can go with a single smaller SSD.

Monitors

A few years ago a large, high resolution monitor was very expensive – but not anymore! You have a lots of options in this area, one BIG monitor, multiple monitors, Ultra-Wide screens…..

This decision is greatly dependant on your budget and what viewing experience you are after. Remember if you are going multiple monitors (3 work well) or oversized high resolution screens the GPU need to be upgraded to support this.

As briefly mentioned in our GPU section Virtual Reality is coming up fast now. Many new products are being offered and we see this as greatly improving simulators in the future!

Other Considerations

A simulator system is not complete without proper cooling and power. To start with, you will need a nice case to house all your components (often overlooked). Don't just look for a nice looking case as function is very important. Following are some common mistakes when selecting a computer case:

1) Size – That small case may free up table space but will it have room for that long new graphics card? We always recommend a larger case.
2) Cooling – As you are building a higher performance system than most computer users, *heat dissipation will be a factor. Look for a case with multiple fans that can create a cross flow* movement of air (pushing air into and out of case). Again size is important – a larger case will have more room around components for heat dissipation.
3) Noise – If you have a lot of air moving around for cooling things can get very loud. Many new cases have sound suppression designs that greatly lower sound levels. High quality fans can also reduce sound while increasing air movement – a win/win solution.

The biggest power supply you can buy is not usually needed (600W to 800W is generally adequate). You can calculate how many watts your systems requires from many Power Supply calculators on the web (example: http://powersupplycalculator.net). We would stay away from cheap power supplies as you don't want to damage your system if they suddenly fail!

Motherboards can make or break a nice system – from unstable to rock solid. Look for a high quality mother board with the latest chip set that supports your CPU, GPU and RAM. Gigabyte and Asus make some great boards!

Optional sound cards are not usually needed as the motherboard offers great sound performance. A nice set of speakers or headphones really complete the experience of a turbine start up on your Dodosim 206!

Too hard?   Make it easy!

Now you know some things to look for in a system.   If you have some knowledge you can buy all the components and build your own computer.   If this is out of your comfort zone many local computer shops with work with you and supply and build your dream custom computer.

Finally you can purchase a complete computer system from many companies (HP, Dell, Lenovo are a few).   Your best selection with many manufacturers is their gaming computers – this will give you the performance/cooling you need over the basic systems.   One advantage with a complete system is the ability to purchase extended warranties and customer support benefits.   This can be of great assistance when things stop working!

From a simple home system to a fast and powerful training simulator, anything is possible.   Matched to our Pro Flight Trainer controls you will get the most out of your training time and money….. And you will a fun flying experience!

Happy Landings from your Pro Flight Trainer Team