Cadalyst

CAD Manager's Newsletter (#460)

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By: Robert Green

Minimum CAD Workstation Specs for 2021

What are the minimum requirements that will address the needs of your users — and your boss?

Every time I update my workstation recommendations, I find the same two things are still true: Users want more and management wants to pay less. Same as it ever was, right? But some other factors have changed, and with more of us working from home now, the question of "What is the best (or minimum) workstation for CAD?" has become tougher to answer.

In this edition of the CAD Manager's Newsletter, I'll update my minimum recommendations for the current landscape, and explain how I arrived at them in a way that your boss and IT department can easily understand. I'll start the discussion assuming a desktop machine, and then provide some guidance on laptops to wrap things up. Here goes.

Processor/Cores

The first thing to consider for most CAD programs (think AutoCAD, BricsCAD, Civil 3D, Revit, SolidWorks, etc.) is that processor selection is about frequency (clock rate) more than anything else. CAD applications tend to mainly run on a primary core, so it is still better to have fewer, faster cores than more, slower cores. We are starting to see the early stages of multi-core support in CAD tools, but nothing that calls for radical changes in processor selection yet — especially since most high-frequency processors have six or more cores anyway.

The key parameters to know are the base frequency (speed that all the cores can achieve) and boost frequency (maximum speed for a single core). If you consider that other applications are also running on the computer besides CAD (think office applications, rendering tools, analysis modules, etc.), we can see that the best processor/core combination will have the highest base frequency and the highest boost frequency. In this case, it would be better to have an 8-core processor at a 2.9-GHz base frequency boosted to 5.1 GHz than a 10-core processor at a 2.2-GHz base frequency boosted to 4.8 GHz, for example.

Finally, only processors with high amounts of cache and hyper-threading (Intel's simultaneous multithreading) should be considered — and this rules out Intel i5 processors. What is left are the highest-frequency Intel i7 and Intel i9 processors, with the latter being preferred.

Intel Core i9-99xx series processors provide great base (3.1- to 4.0-GHz) and boost (5-GHz) frequencies, and are available in a wide variety of machines (even some gaming laptops), but they are slightly more expensive. To save a little money, you could step down to the Intel Core i7-10850H which comes in at 2.7-GHz base and 5.1-GHz boost frequencies.

Minimum purchasing recommendation: *An Intel i7 107XX series processor with 6 cores would be considered the absolute minimum at this time, but Intel i9 99XX series processors — which provide 8 cores running at higher base and boost frequencies — get my vote for minimum if possible. These processors are faster (for higher productivity right now) and more capable of handling complex workloads (for updated software later). And if you're going to buy a workstation to last you for 3 years or more, doesn't it make sense to buy something that has the latest technology today?*

Senior management note: *Processor selection is the one thing you can't upgrade later, so don't go cheap on your processor — get the higher-speed Intel i9.*

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RAM and SSDs

Having a fast processor is only part of the performance equation, because all the other systems in the workstation help the processor operate at its maximum speed. And given the huge model files CAD software produces, it stands to reason that harmonizing your processor with the right RAM and SSD systems can you get the absolute best performance from your workstation. Read more »

Tools and Resources

Prepare Yourself for CAD Management 3.0

According to CAD management expert Robert Green, we're now in the midst of the third major change wave in CAD management (CM 3.0). More a summation of several smaller trends than a single driving trend, CM 3.0 will place new demands on CAD managers and redefine what it takes to compete in the field. To be effective, CAD managers must analyze, adapt, and gain new skills in a never-ending quest for improvement.

Cadalyst has published a 24-page guide that collects seven columns from Green's series on CM 3.0, addressing topics ranging from standards and workflows to the psychology of CAD users and the many languages CAD managers need to speak. **Download this free guide** to learn which skills and strategies you need to be prepared for the changes coming your way.

What's New at Cadalyst.com

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- See contents by Robert Green

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