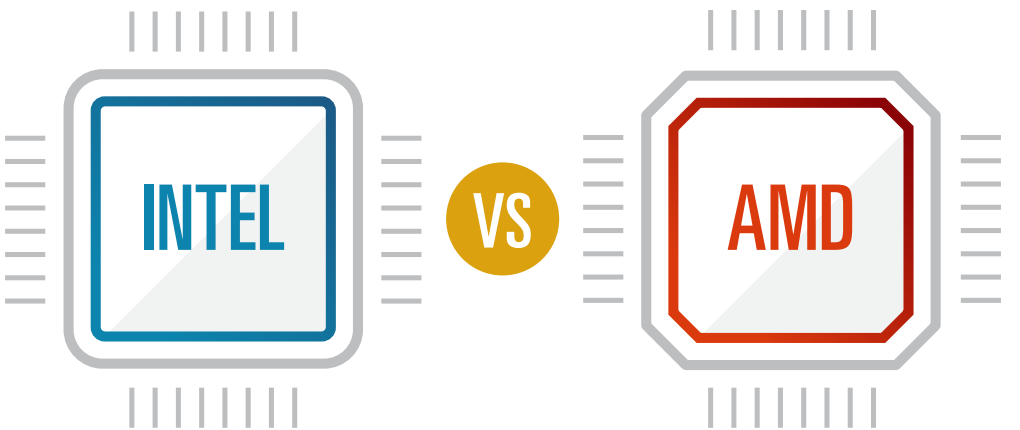
CHOOSING A HIGH-PERFORMANCE WORKSTATION



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INTRODUCTION

HIGH-PERFORMANCE WORKSTATIONS HAVE THE POWER TO TACKLE THE MOST DEMANDING COMPUTE-INTENSIVE JOBS.

AS MACHINE LEARNING, COMPLEX DATA VISUALIZATIONS AND ANALYSIS, AND ANIMATION BECOME MORE COMMON, THE DEMAND FOR THESE HIGH-PERFORMANCE COMPUTERS HAS GROWN AND BECOME MORE CRITICAL.

Finding the best workstation for your compute-intensive users can feel like an arduous task given these professionals demand a robust system with plenty of power and the confidence that the system properly drives their highly specialized applications. There's more to a good workstation than meets the eye.

While Intel is currently the leader in the high-performance workstation arena, AMD has been issuing strong performance messages about its new Threadripper PRO processors, coming first on Lenovo workstations. At first glance, the benchmarks appear to be on their side. But benchmarks only tell part of the story, as years of experience have shown. Looking at just numbers may not provide the big picture objectively. According to an independent workstation expert, it's critical to consider real-world performance.

That's where a third-party group like ours comes in.

We're Concrete, a research consultancy that brings evidence, insights, and the voice of the user to help disruptive innovators define the quality and usefulness of the products they bring to the marketplace. Intel commissioned us to take a customer-centric look at the current desktop and mobile workstation landscape.

CONCRETE INTERVIEWS

AS PART OF THAT EFFORT, WE CONDUCTED BLIND INTERVIEWS WITH SEVERAL HIGH-PERFORMANCE WORKSTATION IT DECISION MAKERS (ITDMS), PROFESSIONALS WHO ARE RESPONSIBLE FOR SOURCING WORKSTATION COMPUTERS FOR COMPUTE-INTENSIVE USERS IN THEIR ORGANIZATIONS.

The interviewees had years of experience—up to 20—supporting high-performance workstations. Because they didn't know who was sponsoring the study, they spoke openly. These interviewees included an IT manager for a 3D imaging lab in one of the largest hospitals in the US; a technology director for a large construction company; a managed-service provider with many workstation clients; and a technical director in the field of media/entertainment. In the interviews, we learned about their decision-making processes and how they evaluate aspects such as software compatibility and reliability. Interviewee organizations use workstations by HP, Dell, or Lenovo—all with Intel® Xeon® processors.

All those interviewed were asked for their opinion on these topics: total cost of ownership (TCO) and value; real-world performance and usages; compatibility, certification and future-readiness; brand value; thermal issues; reliability, documentation, and support; manageability; and communications, customer relationships, and transparency.

Concrete also conducted secondary research during which we investigated what Dell, HP, and Lenovo said about their most current high-performance workstation offerings, over two dozen recent technical and public press articles, and a number of product reviews, buyers' guides, and benchmarking sites. We also watched some of the most recent video reviews, to see what those in the know were saying.

THE FINDINGS

RELIABILITY, COMPATIBILITY, AND OTHER CONSIDERATIONS

Despite some positive reviews in the trade press, AMD's new processors are hindered by their gaming pedigree; they are still perceived as a common choice for value users and gamers more than they are for high-powered compute users. For example, the ITDM in media/entertainment—with two decades experience in the field of animation—said **his perception of AMD is "always gaming, gaming, gaming. And we don't game here."**

For the purposes of this research, Concrete adopted a processor-centric approach for all interviews. However, it soon became clear that depending on the industry, another factor proved highly significant, perhaps more significant than the choice of a CPU. Which factor? The healthcare IT manager put it succinctly: "Application vendor or OEM recommendation. What is *their* recommendation?"

That sentiment was echoed by the entertainment ITDM, who relies on vendor input and recommendations. "We keep a really great relationship with Dell Sales [who] proactively reach out to me... We hold meetings where they kind of give us a roadmap."

This kind of a relationship, of course, can be a matter of subjectivity. According to the construction ITDM, if their workstation vendor started offering both AMD and Intel solutions for the same machine and claiming they were equivalent, then the decision would come primarily down to cost. **"We would certainly go [with the] more cost effective... And if we were able to prove, through our own testing that it met our needs."**

The ITDM from healthcare noted reliability is a key concern because these days "we never turn off our workstations, especially when everyone started working remotely." And the animation decision-maker said, **"It's so rare that we call Dell support for something that's failed,"** and that **Intel's products "just don't die."** Even the construction ITDM, while expressing his belief that both Intel and AMD processors are reliable, agrees that his high-end users would probably prefer Intel.

THE FINDINGS

COMPATIBILITY OF HARDWARE WITH SOFTWARE IS ANOTHER ESSENTIAL CONSIDERATION FOR ITDMS.

Intel's 20-year-plus track record of independent software vendor certifications, stability, and robustness were mentioned in the interviews. Since the Threadripper architecture is in merely its third generation, and Threadripper PRO is a newer iteration, it might seem to be a more appropriate choice for experiments on less widely tested systems than for mission-critical use.

The ITDM from the animation house noted that his company uses **"over 300 different software applications or plug-ins across the board, each one having their own system requirements and what they support and what they don't support. And so, research has to be done every single time that we want to refresh our technology hardware."** Product research citing Intel compatibility is readily available. Ironically, "most vendors, the big software vendors do support AMD in their system requirements," he said, "but you have to dig for it. And that to me is a sign."

OF COURSE, IT'S IMPORTANT TO KNOW THAT THE WORKSTATION MEETS THE MINIMUM REQUIREMENTS TO RUN A SPECIFIC APPLICATION. THAT'S WHEN CERTIFICATION BECOMES A FACTOR.

ISV Certification is typically performed by the OEM (such as HP, Lenovo, or Dell), and the OS or app vendor. Just like a college degree or professional certification, all certification programs are intended to systematically ensure that a minimum set of capabilities are being met. And, like other types of certifications, not all certifications are the same. In the workstation space, it's not a general certification that matters but a very specific certification based on the individual use case.

While certification varies in importance by customer and industry, discerning ITDMs want the confidence of knowing that the application is fully certified to run on a specific system. Certification is above and beyond simply meeting a checklist of specifications. It means that the application has gone through rigorous processes to validate that the hardware provides optimal performance and a quality user experience. You might very well define certification as proof that the system and the software will work together as expected.

From an ITDM viewpoint, Intel would seem to be a prime choice with its strong track record of ISV certifications, market acceptance and success in the category of workstation computers. Additional details on CPUs powered by Intel® Xeon® processors are available from Dell, HP, or Lenovo reps.

From our interviews, we heard that enterprise ITDMs favor Dell and HP for their workstation vendors. **That feedback leads to a provocative question: Why is Threadripper PRO being offered only in a Lenovo machine?** How much will these exclusive offerings impact the high-end workstation market?

FINAL NOTES

"WORKSTATION" IS A TERM THAT UNFORTUNATELY IS OVERUSED AND HAS NO REAL AGREED-UPON DEFINITION.

For the purpose of this paper, a workstation can also be called a high-performance workstation, a high-end workstation, or a high-end desktop (HEDT). When procurement is asked to buy workstations, they may want to apply a one-size-fits-all purchasing policy, yet different discerning ITDMs know that workstation users may have radically different needs.

In a final evaluation, an automobile analogy might be useful. Do users need a budget commuter, a hybrid, a race car, or a tricked-out all-wheel drive? Do they want a track record based on real-world use cases, or are they willing to take a chance on mission-critical tasks?

Answering these questions might be a useful initial step in choosing the CPU for a workstation upgrade.

"When you say CPU, everyone thinks of Intel."

—Healthcare decision maker

The power of insight.

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