



Why choose workstations? Here are 10 top reasons.

Exploring why workstations might be a better fit than PCs for small to medium businesses (SMBs)

When you're choosing the devices to purchase for your staff, whether you're buying for ten people or a thousand, you have a host of decisions to make. Do you want laptops or desktops? What are the right configurations for your needs and budget? Which vendor will serve you best? And should you choose typical PCs or invest in workstations?

In the past, the question of workstations versus standard PCs was fairly straightforward. For your office workers who needed a basic system, you bought reliable desktops or laptops with no frills. For workers relying on more compute-intensive applications, you purchased workstations. Today, however, the lines have blurred. Some businesses have chosen to deploy consumer gaming hardware in place of workstations, seeing the high benchmark scores that gaming systems can achieve.

But this approach is short-sighted. Is a high score in one benchmark really all that matters for your users? Or do they need something that can perform reliably for any applications they throw at it? An off-the-shelf gaming system might have solid benchmark scores, but that's not necessarily enough. Good scores on paper are only one part of the picture.

Workstations are built for high-performance and reliability, especially in demanding, resource-intensive applications. They are certified by independent software vendors (ISVs) to ensure compatibility and stable performance with professional tools used in fields like engineering, design, and data science. These machines typically feature powerful processors capable of handling many tasks at once, along with professional-grade GPUs. Compared to consumer laptops and desktops, workstations can offer greater reliability, support more RAM—which is critical for AI and machine learning workloads—and may include enterprise-grade memory to prevent data corruption and minimize downtime.

Workstations won't be right for all your workers—but for some people, they're exactly what's required to set yourself up for success now and in the future. In this document, we explore ten key reasons you might wish to choose workstations over standard business PCs or even consumer-rated desktops or laptops for your small business.

#1. Certifications for the software you need

Any new commercial laptop today should be able to handle the applications that support basic office work, such as email, document creation and editing, video conferencing, and so on. But if you need more power for your everyday work, or if specialized applications are your bread and butter, you may need more than a standard commercial system. According to PC Mag, “The best mobile workstations harness top-tier processing and industrial-grade graphics hardware to drive applications like computer-aided design (CAD), architecture, CGI rendering and animation, engineering, and data science.”¹

Compared to traditional laptops or desktops, workstations—and the high-level GPUs and CPUs typically within them—are more likely to have earned certifications from ISVs such as Dassault Systèmes, Autodesk®, Siemens®, and more. To achieve these certifications, ISVs collaborate with hardware manufacturers to rigorously test their software on specific hardware and ensure that it runs smoothly and reliably, giving you assurance that the complex, resource-intensive applications you rely on will function well. Mobile workstations are also more likely than standard laptops to have certified drivers for specialized applications—valuable for mobile workers who need a reliable platform in the office, at the job site, or on the road with clients.

#2. Enterprise-grade memory for data-critical workloads

Workstations can incorporate advanced memory technologies that help to reduce memory corruption, increase speed, and improve serviceability. One of these technologies is ECC memory, which improves a system’s resistance to crashes and data errors related to memory corruption. ECC memory is generally unavailable in standard PCs, but it is typical for workstations.² It detects and corrects single-bit memory errors in real time, increasing reliability for workloads where data integrity, stability, and uptime are most critical. While it typically adds a small amount of performance overhead—meaning a slight reduction in overall system performance—workstations can bring enough computing power to overcome that deficit.³

ECC memory isn’t the only type of advanced memory available in workstations. Some workstations have Compression Attached Memory Modules (CAMM) or Low-Power Compression Attached Memory Modules (LPCAMM). CAMM and LPCAMM have a more compact design and offer a speed advantage over traditional memory.⁴ In a workstation, where performance is paramount, every bit of additional speed helps users achieve their goals. LPCAMM, with its smaller form factor, can also help reduce a laptop’s thickness and weight for better mobility.

ECC memory in Dell workstations

Dell workstations powered by Intel Xeon® processors include both Intel ECC memory and Dell Reliable Memory Technology (RMT). RMT detects errors in memory and “makes the defect area invisible to the operating system...as if the bad memory had never existed,” helping to reduce downtime and assist IT support.⁵ [Learn more about ECC and RMT Pro.](#)

#3. Extreme processing power

The most obvious reason to choose a workstation over a PC is computing power. Workstations deliver a great deal of processing power for resource-intensive applications, offering the lightning-fast speeds that help specialized teams increase their productivity. Workstation-class CPUs generally offer higher core counts, higher thread counts, and additional memory and PCIe bandwidth, ultimately delivering more power for both single-threaded and multi-threaded workloads.⁶

This is largely still the case despite recent developments in processor technology. It's true that as processors have evolved, the line between a HEDT processor and a low-end workstation-class processor has grown less distinct. Increased core counts and high clock speeds mean that some systems sold as gaming systems may be good choices for certain workstation tasks...in theory, at least. Looking at benchmarks for computer-aided design (CAD) software, for example, some HEDTs can deliver workstation-class performance scores. These benchmarks generally rely on single-threaded hands-on workflows.

Increasingly, however, CAD and similar applications—such as digital twin applications for enterprise and 3D modeling and environment building tools for entertainment—have rendering and simulation as key elements of the production pipeline. Video production, particularly the creation and editing of animated elements, is another common workload that requires render time. These sorts of tasks are multi-threaded interactions that work best with high thread count processors with high clock speeds. And workstation CPUs are designed to handle these exact types of workloads. As PCMag notes, “Anyone running extra-tough professional software should consider a workstation over a traditional desktop.”⁷

Other areas that can benefit from workstations' increased multi-threaded processing include:

- **Video editing.** Creating and editing video, whether based in live-action footage or 2D or 3D animation, is a highly compute-intensive task...and nothing interrupts a good creative flow like waiting for a scene to load. Rendering projects, including video renders, greatly benefit when a system can divide the labor of the render into smaller parts. Since their inception, professional 3D modeling tools have had network renderer options to distribute computation of complex scenes; major film studios would be unable to complete their work without this technology. But with modern rendering pipelines and cutting-edge workstations, artists no longer have to submit a job for a preliminary render just to see if they are going in the right direction. They can run a draft-quality render on their workstation in seconds (while they wait), minutes (over a break), or hours (overnight), depending on their needs, the time available, and the size of the render. In contrast, waiting for time from a cloud-based “farm” (a cluster of rendering servers) might take a day or more. The processors in current workstations usually have large amounts of cache and memory, allowing creators to keep tasks local and prevent I/O bottlenecks by relying on system RAM or physical storage for retrieving data for repetitive tasks.
- **Advanced simulations.** Beyond rendering beautiful scenes for film and video, numerous engineering industries use simulation to cut down the development time of products, using various physics solvers to perform fluid, electronic, thermal, mechanical, and other simulations to determine the viability of a design. Similarly, scientists and medical researchers use AI, ML, and other sophisticated algorithms to model medicines, environmental forces, and chemical processes, alongside using specialty software tools.
- **Software development.** In the past, with large software projects comprising many team members, a full recompilation of the source code might require hours. But as software has gotten more complex, the demands on computers have increased to match. Large amounts of RAM not only enable fast compilation, but also grant the ability to run entire networks of test virtual machines or containers on a local workstation without worrying about swap disk performance, paging, or other input/output (I/O) bottlenecks. The increased core counts available on workstation-class processors also often allow those same tasks to run with enough available overhead to avoid processor resource starvation.

Beyond any single workload, increased processing power can simply help with multitasking. When you have teams where everyone wears multiple hats and works on multiple projects simultaneously, as many people at small businesses do, you need your team to be able to jump from task to task seamlessly. Powerful workstations can allow a marketing team member to edit a video while contributing to a virtual meeting and sending an email—where a less powerful PC might freeze up.

#4. Professional-grade graphics and GPUs

Modern, high-performance processors are only one piece of the puzzle when it comes to a powerful workstation. Discrete GPUs, once limited to gaming and niche scientific applications, are now a keystone of some aspects of modern business computing. For use cases including AI/ML, engineering, film, and beyond, workstations harness the power of enterprise-grade GPUs to act as a performance multiplier on top of already impressive system performance coordinated by workstation-grade CPUs.

AI and ML workloads particularly rely on GPUs, because many popular tools—such as large language models (LLMs)—require more physical GPU memory than is available on consumer graphics cards. Compared to CPUs, “GPUs are designed specifically for parallel processing, which makes them ideal for computationally intensive tasks such as deep learning and AI model training.”⁸

Powerful GPUs are also valuable for:

- **Rendering and raytracing:** Rendering processes, like those we describe above, are a necessary part of video production, motion graphics, and many manufacturing workflows. For many years, these processes were limited to CPU-based computation due to the math involved for raycasting and raytracing. Today, though, many algorithms have changed to cater to the strengths of GPUs. Modern GPUs have hardware-based raytracing hardware, further boosting rendering performance. A number of rendering tools and algorithms can even use the CPU and GPU in parallel, drawing on the strengths of each component to finish tasks in small fractions of the time it would have taken a few years ago.
- **CAD and visualization software:** Architects, engineers, and product designers rely on CAD software to translate their creations from 2D to real life. Workstation GPUs are often optimized for dealing with the geometry used in CAD and similar software to a level that consumer GPUs typically can’t match. Optimizations through ISV-certified drivers mean that GPU-heavy workstations perform smoothly and reliably in these very demanding applications.
- **Data science:** Data science workflows involve loading and manipulating massive amounts of data. While this work does not always involve visualization, GPUs can help accelerate it and make it easier for data scientists to extract the analyses they need. Data science workflows have traditionally been slow and cumbersome, relying on CPUs to load, filter, and manipulate data, and train and deploy models,” according to NVIDIA, but “With NVIDIA AI software, including RAPIDS™ open-source software libraries, GPUs substantially reduce infrastructure costs and provide superior performance for end-to-end data science workflows.”⁹ Beyond performance, some ISV applications utilize hardware features that simply aren’t supported on consumer GPUs, meaning that you need a workstation GPU to support critical features of certain workflows.

#5. Next-gen AI capabilities

AI/ML development has become essential to many organizations, as businesses seek to take advantage of the latest AI technologies to increase productivity and reduce costs. These benefits are not just for enterprises: 58 percent of small businesses use generative AI, and 96 percent say they plan to adopt new technologies moving forward.¹⁰ While an HEDT or gaming laptop may be able to deliver a short burst of high performance for AI inference, they're likely to get hot under load. Workstations are usually designed to sustain high performance over a long duration, using a combination of advanced hardware engineering and cooling systems. This capability is a requirement for anyone using their PCs to develop new AI capabilities.

Beyond raw, sustained computing performance, large amounts of RAM can also be incredibly valuable. Many AI models are increasing in size exponentially, with the number of AI model parameters approximately doubling every year since 2010.¹¹ As these models continue to grow, many of them will not fit within the confines of a gaming GPU, instead requiring workstation or server-level hardware with sufficient RAM. Cutting-edge workstations may also offer dedicated neural processing units (NPUs) built for handling AI calculations on-device. While NPUs are available in new HEDTs and desktops, on workstations, NPUs can also help provide additional scalability and increased energy efficiency for AI tasks.

#6. Better scalability with more options

Whether in a laptop or desktop form factor, workstations generally tend to be larger than their standard counterparts, which offers the opportunity to include more and more powerful components. Depending on the architecture, the highest-end workstation configurations can support one to two high-end processors; one or more GPUs; more than a terabyte of RAM; multiple NVMe, SAS, or SATA SSDs or platter hard drives; and advanced networking capabilities. Peripherals are also an option: Workstations typically have a large number of ports, allowing you to connect monitors, keyboards, and other favorite tools.

The opportunity to utilize multiple GPUs is a particularly significant advantage of workstation-class systems. Many HEDT configurations are limited by chassis size and design, available physical PCIe slots, PCIe data lanes, or power requirements. Where does this matter most? AI/ML development, particularly development focused on LLMs, may be highly dependent on the availability of GPUs or high-end CPUs. Multiple enterprise-grade GPUs frequently allow resource pooling, or the allocation of computing resources based on demand, and permit the development of increasingly larger AI applications.

Additionally, when you purchase standard laptops or desktops for your team, you likely choose a configuration with the understanding that the configuration is set for the entire life of the system (repairs notwithstanding). In contrast, workstations—particularly desktops, but some mobile workstations as well—often give you the flexibility to more easily expand and swap out components, making better use of your existing hardware.

#7. Better reliability and longevity

"Workstations are built for the long run," notes Autodesk in an article discussing the choice between a PC and workstation.¹² Beyond the ability to upgrade some components as necessary, workstations are "fundamentally more reliable than [their] consumer- or corporate-focused siblings" due to high-level thermal engineering, more robust materials, and a design focused on accommodating extremely compute-intensive applications.¹³

As just one example, some Dell Pro Max workstations feature a new modular USB-C port that's up to four times more durable than an older commercial laptop's and, per Dell, a "newly designed modular mainboard and input/output (I/O) boards" that improve serviceability and reduce waste.¹⁴ Together, these features have the potential to extend the life of your investment. More reliable systems can also help save time for your IT teams, who are likely already oversubscribed; in smaller businesses, they may even be handling IT support on top of an already full-time job. The fewer support tickets they need to handle, the more they're able to focus on the rest of their work.

Spotlight on security

40% of SMBs say that security is the most important factor when they're choosing new technologies.¹⁵ And for good reason: Cyberattackers are getting more and more sophisticated, evolving their attacks alongside other technologies. As you're selecting the next systems for your organization, whether you choose workstations or standard PCs, security is a critical consideration.

Dell takes a multilayered approach to PC security. Per a recent PT research study, Dell PCs offer support for monitoring solutions, a range of BIOS security and protection features, and management integrations with Microsoft Intune. [Learn more.](#)

#8. Potential for long-term cost savings

When you're deciding between workstations and standard PCs, it's easy to see cost as an argument against the workstation. After all, because of their increased capabilities, workstations tend to be more expensive than consumer or commercial PCs, and small businesses have to keep a close eye on every line item in the budget. But if you're only thinking about cost in terms of purchase price, you're not seeing the whole picture. According to IDC, "workstations help prevent performance degradation and downtime, which can both [decrease] productivity and lead to real losses."¹⁶ With the additional cost of workstations comes the potential for a significant return on your investment. You could see:

- **Faster time to outcome:** A high-performing workstation can keep up with your team's work, even on their heaviest applications. Without a workstation, they might be stuck waiting a long time for graphics to render or files to load. Those wait times can range from an annoying to a problem that takes hours out of the workday (or worse, days out of the work week) while they wait for a render to complete. The right workstation can shave off minutes, hours, or even days from work on critical applications, allowing you to complete work faster.
- **Stronger productivity:** When your workers have to wait for a render or similarly compute-intensive task, increased computing power can allow them to multitask in the meantime, rather than walking away from a near-frozen system. Wasted time is wasted money, and a workstation allows you to gain costs back in increased productivity.
- **Flexibility to scale:** With the ability to swap out and replace components with newer, higher-end options, you may well be able to keep the same hardware in action longer, taking greater advantage of your initial investment.

#9. Improved vendor support

As you're choosing new systems for your team, you always hope to minimize technical issues and crashes—but technical problems are inevitable. When they do occur, it's best to have comprehensive support to solve the problem quickly and get staff back to work.

Because they're enterprise-grade, workstations may be eligible for enterprise-level manufacturer warranties and service agreements even if your business is smaller. These service agreements can include next-business-day onsite repairs and 24x7 access to support teams. Workstations and their components may also receive more frequent driver updates, which are critical for ISV certification from software partners. Per NVIDIA, for example, "Tight collaboration between NVIDIA and our software partner developers and engineers ensures highly optimized and reliable performance over the lifetime of supported application releases."¹⁷ With consistent updates and enterprise-grade support, workstations have the potential to offer a step up in reliability.

#10. Designed for your needs, today and tomorrow

The world is changing rapidly, and every shift comes with it an increased need for computing power. Video standards have shifted from 1080p to 4K. Audiences expect polished, engaging graphics as a part of any piece of content. And AI continues to expand its relevance and capabilities as it becomes more and more vital to many business workflows.

With the power and capabilities of a workstation, your teams are more likely to be able to keep pace with the demands of tomorrow's technologies. For specialists, power users, and content creators, future-proofing is especially important, because these teams need to be able to count on their system working well with future versions of key software. "If your productivity is tied to your PC," notes one analyst, "it's time to consider a workstation."¹⁸

Which form factor is right for you?

Workstations are available in desktop, laptop, and rack form factors, and which one is right for your organization will depend on how your staff use their systems. Desktops may be a good fit if your teams work in the office, don't take their work home, and need the extra processing power that a larger form factor can provide. Given their increased size, desktops—particularly multi-GPU workstations—can be orders of magnitude more powerful than laptops.

If your staff travel frequently or work from multiple places, however, mobile workstations might be a better fit, as they pack a great deal of power into a smaller and more portable form factor. With a mobile workstation, workers have the freedom to travel and work remotely rather than being tied to the office. You may even be able to save on office space by maintaining a smaller office footprint and relying on teams working from home with mobile workstations.

Dell Pro Max workstations

Dell Pro Max PCs, launched in 2025 to replace the Precision line, are the flagship line of workstations from Dell Technologies, Inc.. These systems, which PC Mag calls “another herald of the imminent machine learning revolution,”¹⁹ are available as laptops, micro desktops, slim desktops, and tower desktops. We recently compared several Dell Pro Max AI PCs against their predecessors from two and three years ago and found that the new Dell systems offered significant advantages in graphics performance, AI performance, and more. [Explore our testing.](#)



Image provided by Dell Technologies

Conclusion

There are countless laptops and desktops on the market, but if your teams rely on specialized, resource-intensive applications for their everyday work, consumer- or commercial-grade options simply won't cut it. Workstations can offer significant advantages for small and medium businesses. With certified software compatibility, enterprise-grade components and processing power, and improved reliability and scalability, workstations provide a robust foundation for today's demanding workflows and tomorrow's technological advancements.

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