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White Paper

REDEFINING BUSINESS PC PERFORMANCE IN AN ERA OF POWERFUL USE CASES

The science and economics of processor evolution always helped us understand the inevitability of more powerful and more cost-efficient PCs. But the rate of improved performance and utility of business PCs is truly astounding. Today's PCs—and those in the not-too-distant future—are at the heart of how organizations use IT to accomplish amazing things.

AMD
together we advance_

Introduction: The state of the art of today's business PC

Business PCs have ascended to a lofty place as indispensable, transformative assets that help organizations do things thought unimaginable only a few years ago. Spreadsheets have given way to complicated financial modeling, word processing has been replaced by content management systems, presentation software's tasks now are subsumed into global, real-time collaboration.

Business users also are working on multiple tasks simultaneously. Employees don't just write documents; they juggle those with presentations and spreadsheets in order to create multimedia reports. Or, they do real-time content creation and publishing, directly tied to marketing automation to create and track global sales promotions.

All of this has been made possible by the reimagination and re-engineering of the PC. Tasks that previously required a high-powered server or even a supercomputer now routinely are executed—at far lower costs and with much more efficient energy consumption—by PCs that comprise turbo-charged CPUs and graphics chips, lightning-fast and uber-high-capacity storage, and special-purpose processors for use cases such as artificial intelligence. And, these are all doing their work with integrated cybersecurity that helps ensure high availability and resiliency even in the face of mounting internal and external threats.

Why is this happening? Of course, the rate of technical advancement at the PC component level has never been greater, and software such as operating systems, utilities and applications turn that hardware power into actionable results.

But since "necessity is the mother of invention," the biggest catalysts for this amazing transformation of the PC are the new requirements for PC utilization that reshape the nature of work itself. Improving employee productivity, enhancing collaboration and supporting

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enterprise-wide digital transformation initiatives are the top three drivers that influence an organization's strategy for endpoint devices (i.e., PCs), according to TechTarget's Enterprise Strategy Group.[1]

And without question, the single biggest contributor to a re-examination of PC purchasing decisions is remote/hybrid work becoming a standard feature of modern work patterns. With so many employees now working from home or remote locations—or working independently as contractors or entrepreneurial sole proprietors—the need for PC upgrades and enhancements became obvious. Using PCs at home had to deliver the same performance, reliability and experience as a traditional office-based PC—in fact, even better due to the new use cases being deployed. Enterprise Strategy Group points out that the single most important factor influencing changes in an organization's PC strategy is the increased number of hybrid or remote workers.[2]

Why performance matters for business PCs: Use cases for today and tomorrow

All organizations need their employees to make the best use of all available tools in order to do their jobs more effectively and more efficiently. Now, more than ever, they demand that from their personal computers—and employees demand it, as well.

Frequently, IT departments and users in both technical and business roles demand high-performance PCs. When defining high performance, organizations should focus less on raw benchmarks, and more on what that performance allows their employees to do.

1 Source: Enterprise Strategy Group Research Report, Endpoint Device Trends: Evaluating a Shifting Desktop and Laptop Procurement, Management, OS, Feature, Application, and Spending Landscape, February 2024.

2 Ibid.

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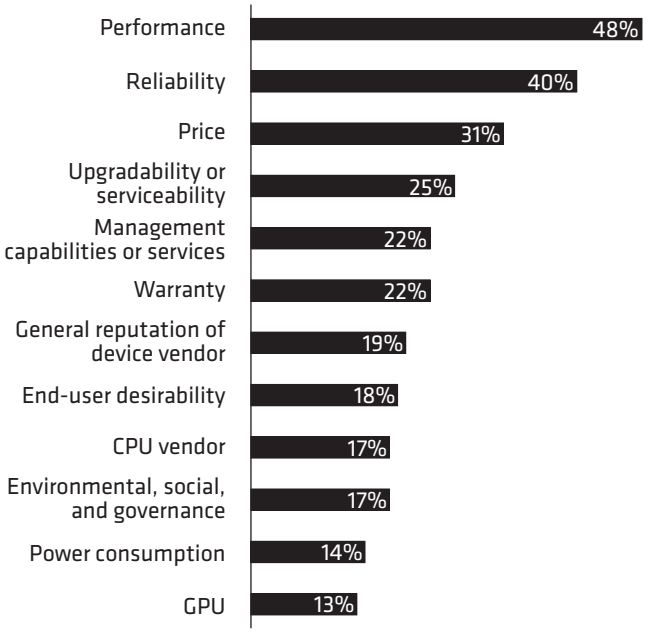
There's little doubt that performance—always an essential requirement when making decisions on PC purchases—still is at the top of the list for IT and business users. Research from Enterprise Strategy Group highlights this, citing performance as the top criterion when making decisions on PC purchases.[3]

What are the top criteria for your organization when choosing its preferred desktop or laptop vendor? (Percent of respondents, N=354, three responses accepted)



For users, high performance takes several forms that enhance productivity and improve the user experience. For instance, high-performance PCs allow systems to boot faster, execute commands with greater speed and support multitasking much easier. But perhaps even more important is the ability for high-performance PCs to make demanding and transformative use cases a reality.

These PC use cases are already helping organizations accomplish exciting, innovative and high-value activities in a cost-efficient PC format, rather than having to rely on more expensive architectures based on servers or supercomputers.

For instance, one of the breakthrough use cases for high-end PCs today is Artificial Intelligence personal computers (AI PCs), which bring AI processing to a local, individual level, rather than running exclusively in the cloud or on a data center server. Other important use cases include improving the efficiency and responsiveness of hybrid workforces, and for supporting widespread, no-compromise collaboration.

Perhaps even more exciting, however, are the prospects for emerging use cases for high-performance PCs. These are likely to include the following:

- Cybersecurity appliances: These are powerful, typically mobile PCs that will allow security administrators to handle endpoint detection and response, firewall, threat intelligence, authentication biometrics, all in a compact form factor.
- Retail loss prevention systems: These PC-based solutions will handle real-time data feeds from IP cameras on a loading dock, shelf-based replenishment sensors, and POS-based analytics to create a 360-degree of sources of merchandise shrinkage.
- IoT/"smart things" management consoles: The exponential growth of connected, non-IT devices creates a management challenge for IT administrators, and a PC-based console would streamline management while supporting high performance even as the number of smart devices continues to scale.

These are just a handful of emerging use cases—from artificial intelligence and virtual reality to individualized training and quantum computing research—that will be enabled by the meteoric improvement of personal computers.

3 Ibid.

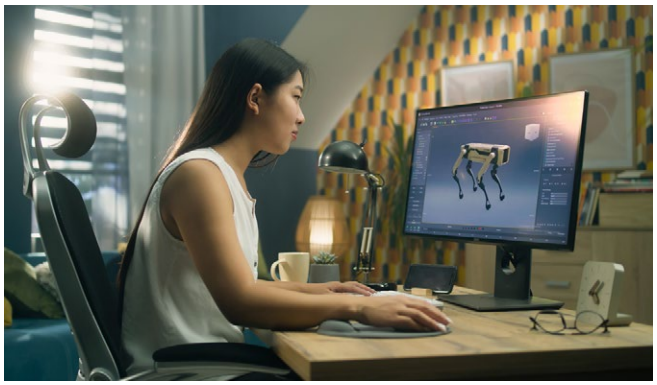
What to look for in your next-generation business PCs

IT professionals have always aligned their PC purchasing decisions with shifting organizational needs for empowering both IT professionals and business users. As the COVID-influenced move toward remote/hybrid work demonstrated, legacy PCs were no longer sufficient for a rapidly changing work dynamic. As a result, technology refresh cycles have begun shortening again as organizations look to take advantage of the enhanced performance of business PCs for demanding use cases.

What do buyers need in next-generation business PCs? Four issues stand out:

- **Performance.** As seen by Enterprise Strategy Group's research cited earlier in this paper, high performance continues to top the list of requirements when it comes to new PC purchases. Performance, of course, is measured in several ways, starting with CPU performance. In addition to spiking execution of commands and enhancing data processing, it also allows organizations to use the PC for such important applications as visualization, analytics, cybersecurity threat hunting and financial modeling. Performance also is a measurement of seemingly simple—but essential—requirements as an enhanced user experience in such things as avoiding system lockups when running large databases or even simply booting up rapidly. Performance also is measured in terms of low latency for processing and storage, and handling multiple applications simultaneously.
- **Reliability.** Business PCs now operate around the clock, even handling automated tasks after hours or while we are asleep. That means that downtime must be avoided at all costs, so demonstrable reliability is a must. And since so many applications and use cases are carried out by individual users due to the availability of local resources on their personal systems, even an hour's loss of availability for a single PC can have significant ramifications. The quality, integrity, durability and availability of components are now must-have features, especially when the PC is now the gateway to an unlimited number of cloud services.

- **Privacy and security.** Powerful PCs with positive user experiences mean more and more data is created, processed and stored on local systems rather than on a data center server. Since much of that data is defined as "sensitive" or "proprietary," PC makers and their technology partners have taken important steps to help deliver stronger data privacy and security features. Given the broad and widening regulatory footprint concerning the protection of data privacy, this is an absolute requirement.
- **Sustainability and power efficiency.** With PCs now "in use" on a nearly around-the-clock basis, there is more emphasis on providing higher sustainability and more efficient power usage. Whether it's battery management for mobile PCs or to support remote work, the need to support processor-cycle-intensive workloads, or for PCs to use materials and components that are manufactured and disposed of in responsible ways, sustainability and power efficiency are more likely to be topics of discussion among PC purchasing teams.



How AMD makes next-generation PCs a reality

Whether an organization's top PC use case is supporting remote/hybrid work, AI PCs, or some other requirement, making an informed, future-proofed decision on the right PC undoubtedly will include assessing options for a preferred CPU vendor and product line. AMD, a long-time leader in CPUs, GPUs and accelerators, supports the industry trend toward high-performance PCs with a broad line of chip-level solutions.

At the heart of the AMD solutions set for high-performance PCs are AMD Ryzen™ processors. These processors combine high performance and power efficiency to enable sustained performance at scale, and to promote resiliency and availability for business-critical and mission-critical applications.

AMD Ryzen™ processors support demanding compute workloads such as big data analytics, modeling and machine learning algorithms, as well as graphics-intensive workloads such as high-end video conferencing, 3D imaging and real-time collaboration.

The processors also are engineered to help organizations enhance their data privacy and cybersecurity with the integrated AMD PRO Security feature set, including security features from the chip to the cloud.

Conclusion

The remarkable technological advances in processing, storage, networking, software, energy efficiency and security have enabled PCs to handle complex, multitasking use cases that either were inconceivable a short time ago or were assumed to be the domain of data center servers or even supercomputers. The key driver for the reimagining of the PC is ultra-high performance, driven by a new generation of processors, accelerators and other components.

As a result, organizations in every industry and of every size now depend upon transformative information technology more than ever to accomplish their most essential goals, and the modern PC is often the key driver of next-generation IT. The purchasing priorities of PC buyers should reflect the urgency of performance that is up to the demanding tasks set down by modern use cases. Specifically, the choice of CPU matters considerably—and so does the selection of a preferred CPU vendor.

AMD brings not only a wealth of R&D leadership to the decision-making process, but it has a broad portfolio of solutions for different use cases and environments. For decades, AMD has been on the cutting-edge of both technical leadership and real-world utility that helps organizations get more for their investment.