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# Choosing the right AI PC: Why there's more to performance than TOPS

Make sure your organization is ready for artificial intelligence apps with these practical tips on how to confidently purchase an AI PC that maximizes ROI and delivers value for years to come.

CIO

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AI PCs have the power to change the way people work by improving productivity, boosting collaboration, strengthening security, and enhancing the user experience. However, when making an AI PC buying decision, it's essential for IT decision-makers (ITDMs)to consider platform performance as a whole, including real-world capabilities.

Taking a big-picture look at some key considerations when purchasing AI PCs can ultimately help organizations improve business outcomes and lock in competitive advantage. As this paper will detail, when evaluating AI PCs, IT leaders should consider factors including:

- **TOPS (tera or trillions of operations per second)**
- **Real-world applications and workloads**
- **Optimizations and compatibility with software frameworks**
- **Employee satisfaction with new AI capabilities**
- **Cost, performance, and security benefits of client-based AI**

## The AI-ready imperative

As AI continues to rapidly evolve and integrate into the workplace, leaders must equip employees with tools that can handle the resulting resource-heavy apps and workloads well into the future.

According to Foundry's 2024 CIO Tech Poll: Tech Priorities Study, 70% of respondents anticipate higher spend on AI-enabled technology over the next 12 months. In addition, Gartner reports that 92% of organizations plan to invest in AI-powered software in 2024.[1]

Aging PC fleets and the upcoming Windows 10 End of Service – set for October 14, 2025 – provide opportunities to refresh outdated technology with AI PCs.

"The AI landscape is a whirlwind, with new apps and innovations introduced every day," said Erin Maiorino, director of competitive AI marketing at Intel. "Purchasing an AI PC now, instead of waiting for the perfect use case to come along, ensures that your company and employees are ready to handle the AI applications and capabilities of tomorrow."

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According to IDC's 2023 U.S. Commercial PCD Survey, ITDMs are heeding the call. The survey reports that three out of four respondents say AI capabilities are a very important requirement for their next PC purchase.[2] Further, AI PCs are expected to make up nearly 60% of all PC shipments worldwide by 2027, IDC says.[3]

## What is an AI PC?

**AI PCs are made up of three main processors, each with specific AI acceleration instructions, including:**

- A CPU (central processing unit) for running smaller workloads with low latency (i.e., AVX-VNNI)
- A GPU (graphic processing unit) for larger workloads that demand parallel throughput (i.e., DP4a or XMX)
- A NPU (neural processing unit) which intrinsically and efficiently processes AI workflows, especially at low AI calculations

**When all three are optimized to work together, organizations can realize significant productivity and efficiency gains.**

These trends are driving IT leaders toward AI PC adoption, but choosing the right device based on performance values alone could be a costly mistake.

## 5 essential elements for evaluating true AI PC performance

Performance is certainly part of the equation, but it should be considered in context with other factors. Following is a checklist of five factors that every ITDM should take into account when making an AI PC buying decision.

**1. TOPS:** It is common to describe peak AI accelerator performance using TOPS, a measurement that simply calculates how many trillion operations can be theoretically delivered in one second at 100% utilization. However, a bigger TOPS value doesn't necessarily translate into better performance in the work environment.

"TOPS calculates peak theoretical performance, so achieving that number depends on many factors, such as the health of your software stack and PC configuration, including memory, bandwidth, latency, and effective use of software frameworks," Maiorino said. "To accurately measure AI PC performance, companies need to get

their hands on these systems and evaluate against performance benchmarks that reflect the software employees are using."

**2. Real-world applications and workloads:** To get a more realistic performance picture vs. TOPS alone, start by assessing your current workflows. Consider employee personas – such as power users – and evaluate their needs based on use cases that reflect how they use their PCs day-to-day.

Such use cases may include:

- **Workplace productivity –** Using AI to summarize meeting transcripts, create drafts, and organize files and notes
- **Collaboration –** AI can introduce features including real-time language translation and transcription, accurate eye tracking, and reducing background noise
- **Creativity and content creation –** Creating original images and audio, and using AI to efficiently edit videos and photos
- **Security and manageability –** Running AI apps locally to support advanced security capabilities such as real-time threat detection and remote manageability, such as keeping drivers updated

**3. Optimizations and frameworks:** Gartner predicts more than 70% of independent software vendors (ISVs) will embed generative AI (gen AI) into their applications by 2026, up from less than 1% in 2023.[4] If your applications run locally, this means the hardware you use has to support these and other such compute-intensive workloads.

That's why it's important to make sure the AI PC you're evaluating is part of an ecosystem that drives software optimizations and compatibility with offerings from ISVs that are important to your organization.

"ITDMs need to consider the breadth and depth of the software that the AI PC vendor supports," said Maiorino. "If your vendor doesn't have these relationships, your workflows might be completely disrupted because you can't run the software you need. Look for the widest support of AI frameworks, as well as a high number of current and planned AI features."

**4. Employee satisfaction:** AI assistants can take on some manual work for your team, enabling higher productivity, freeing up time for more valuable

work, and potentially even opening the door to new business models.

Take the example of a paralegal who spends hours each day doing manual research. If you equip him with an AI PC and a large language model (LLM) that can scan documents, the paralegal can shift his focus to more satisfying and outcomes-oriented work. Such capabilities also give rise to new pricing strategies and differentiated ways of doing business.

**Automating mundane tasks** frees employees to focus on more meaningful work, **boosting creativity and job satisfaction.**

Because AI PCs use AI to adapt to real-time conditions, users get a better experience in addition to higher performance. Employees also enjoy longer battery life and uninterrupted workflows since the NPU or GPU can more efficiently process AI tasks; it doesn't rely on the CPU cores to do all the work (lowest latency, but lowest peak performance).

**5. Client-based AI:** Companies that want to bring the power of AI to users in a cost-effective way should consider PCs that process AI workloads on the device itself. This is especially valuable in a remote or hybrid environment.

Running certain AI workloads locally instead of in the cloud can provide the following benefits:

- **Cost savings when running proprietary applications, by reducing the need for cloud instances**
- **Faster performance, including low latency by reducing the need for calls to remote servers**
- **Increased security and data privacy; data stays on local devices instead of moving to the cloud**

For example, client-based processing can help streamline developer workflows by allowing them to use their local devices for the bulk of their work. Historically, cloud was the only option for training and deployment. With the AI PC, developers can choose to do both locally, improving energy efficiencies.

## Intel: Your partner for faster, easier, more accessible AI

Intel is setting the standard for the AI PC market by optimizing the way PCs process AI workloads. By taking advantage of Intel's AI-

enhanced architecture, embedded security, and an expansive ecosystem of AI software partners, customers can speed up workflows, increase efficiencies, shore up privacy, and secure computing workloads – all from an individual device.

Intel's AI PCs feature:

- **AI-optimized architecture:** Unlike older devices, AI PCs built on Intel® Core™ Ultra processors are optimized to run AI software on the device itself, incorporating AI-accelerating instructions in the CPU cores, GPU cores, and NPU (a new on-chip co-processor developed to run AI workloads with the best power efficiency).

- **Open, AI-ready ecosystem:** Intel co-develops with more than 100 ISVs and has optimized over 300 AI applications and tools for PC users. Intel also offers 3x more on-device apps and frameworks than any other silicon provider.[5]

- **500+ AI models:** Intel's library of more than 500 trained and optimized models[6] – including large language, diffusion, super resolution, object detection, and computer vision – helps IT deploy AI apps more quickly and efficiently.

- **Unmatched security:** Intel provides AI-enhanced security right out of the box. By combining Intel's Threat Detection Technology (TDT) with ISV endpoint detection and response (EDR), users can detect threats from their AI PC without additional hardware.

- **Proven reliability:** Intel processors are continuously updated, ensuring broad AI framework compatibility and uninterrupted performance optimization. Access the latest AI advancements and seamless integrations – all backed by system-wide support.

- **Community support:** Intel's AI PC Developer Program provides access to tools, workflows, and AI-deployment frameworks for Intel® Core™ Ultra processors that enable developers to streamline processes, speed up deployment, and ramp up faster.

- **Sustainability:** Intel is transforming power management and battery technology, designing devices that hold battery charge longer and adjust power consumption based on individual use for a more sustainable, user-centric computing future.

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## Make the wise choice

As ITDMs recognize the value that AI PCs deliver, adoption of these systems is set to skyrocket, erasing your competitive advantage with each day that passes. By understanding how to best evaluate your AI PC choices today, you can confidently select the system that maximizes resources, increases returns, and prepares your team for the next AI innovation that comes their way.

**Learn more** about how you can increase productivity, boost collaboration, strengthen security, and **get a competitive edge with Intel® AI PCs**.


1 Gartner, "4 AI Software Trends Shifting Buying Behavior," June 20, 2024, https://www.gartner.com/en/digital-markets/insights/ai-software-trends

2 IDC, "IDC›s 2023 U.S. Commercial PCD Survey – AI PC Results," Sept. 2023, https://www.idc.com/getdoc.jsp?containerId=US51194123

3 IDC, "IDC Forecasts Artificial Intelligence PCs to Account for Nearly 60% of All PC Shipments by 2027," Feb. 2024, https://www.idc.com/getdoc.jsp?containerId=prUS51851424

4 Gartner, "4 AI Software Trends Shifting Buying Behavior," June 20, 2024, https://www.gartner.com/en/digital-markets/insights/ai-software-trends

5 CIO, "Weighing risk and reward with gen AI vendor selection," Jan. 3, 2024, https://www.cio.com/article/1257377/weighing-risk-and-reward-with-gen-ai-vendor-selection.html

6 Ibid.


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