Add horsepower for resource-intensive workloads

with **4.8x** the graphics performance*

Keep sensitive data local

with **2.2x** the on-device AI performance†

Process images and videos more efficiently

with **3.1x** the AI inference performance††

Dell Pro Slim: Improve efficiency, enhance decision-making, and drive innovation

With performance advantages over a 2022 OptiPlex 7000 SFF, upgrading to new Dell Pro Slim desktops powered by Intel® Core™ Ultra 7 265 processors is a smart move

While common practice used to be refreshing desktop computers every 3 to 5 years, tech-savvy organizations should consider moving toward a more frequent refresh cycle, especially now. The rise of artificial intelligence (AI), advanced security innovations, and the growing amount of usable data are just a few reasons.

This report shows the advantages you can expect by upgrading from 2022 Dell OptiPlex 7000 SFF desktops to new Dell Pro Slim professional-grade AI desktops equipped with the latest-gen Intel® silicon, built-in neural processing unit (NPU) technology, and AI accelerators.

More serious changes to the business landscape are on the way, including agentic AI and workforce dynamics.[1] Putting cutting-edge technology at everybody's fingertips will set up your organization for success moving forward.

*Based on 3DMark® Steel Nomad GPU benchmark results.
† Based on Geekbench AI GPU (Half Precision) benchmark results.
†† Based on Procyon® AI Computer Vision (Intel OpenVINO™) benchmark results.

How we tested

After 30+ years selling OptiPlex desktops, Dell has rebranded OptiPlex as Dell Pro Desktops.[2] Like their OptiPlex predecessors, Dell Pro Desktops are designed for IT-managed environments in businesses of all sizes.[3] To determine the benefits of refreshing to new Dell Pro Desktops powered by Intel® Core™ Ultra 7 265 processors, we compared a Dell Pro Slim desktop's performance to that of a similarly configured 2022 OptiPlex 7000 SFF desktop, with both running Windows 11 Pro:

Dell Pro Slim

- Intel® Core™ Ultra 7 265 processor with Intel vPro®
- Intel® Graphics
- 16 GB of DDR5 memory
- 512 GB of SSD storage

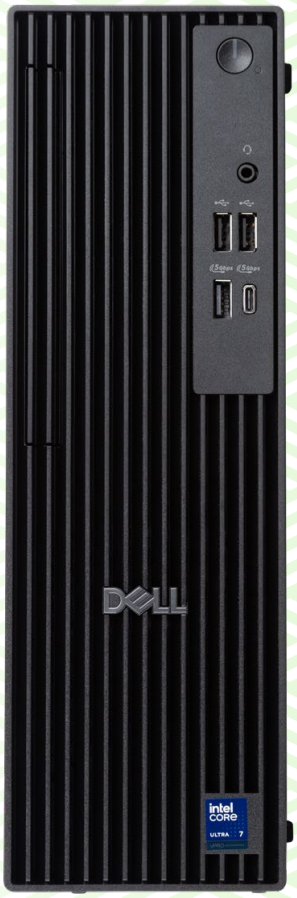
Dell OptiPlex 7000 SFF

- Intel® Core™ i7-12700 processor with Intel vPro®
- Intel® UHD Graphics 770
- 16 GB of DDR4 memory
- 512 GB of SSD storage

To assess resource-intensive and on-device AI system performance for a wide variety of tasks, including text and image generation, office work, complex calculations, data analysis, and high-fidelity graphics, we set the Windows 11 Pro power mode to "best performance" and ran these benchmarks:

- 3DMark Steel Nomad
- Cinebench 2024
- Geekbench AI
- Procyon AI Computer Vision Benchmark
- Procyon AI Image Generation Benchmark
- Procyon AI Text Generation Benchmark
- Procyon Photo Editing Benchmark
- Procyon Video Editing Benchmark
- PugetBench for Creators

The results we report reflect the specific configurations we tested. Any difference in the configurations you test, as well as screen brightness, network traffic, or software additions, can affect these results. For a deeper dive into our testing parameters and procedures, see the science behind the report.



Built-in benefits

Dell Pro Desktops are, according to Dell, "bringing the benefits of AI-optimized performance and energy efficiency to PC users, regardless of form factor."[4] Like their OptiPlex predecessors, Dell Pro Desktops (available in all-in-one, micro, slim, and tower form factors) are designed for IT-managed environments and professional-grade productivity, making these compact desktops ideal for businesses of all sizes.[5] Equipped with Windows 11 Pro for "more security, more performance, more success,"[6] Dell Pro Slim desktops also include multiple technologies to better support your business goals and objectives:

More powerful hardware: Modern chipsets, faster memory, and faster storage—plus a 57 percent gen-over-gen acoustic improvement due to fan optimizations.[7]

Enhanced security: In addition to advanced Dell, Intel®, and Microsoft supply chain, hardware, Windows AI-powered, and firmware protections, Dell Pro Slim desktops include customer-specific packages with the latest BIOS, drivers, and firmware versions.[8] Plus, Intel vPro® Security helps "defend against modern threats at each layer: hardware, BIOS/firmware, hypervisor, VMs, OS, and applications."[9] And the Intel® Threat Detection Technology (Intel® TDT) tool leverages AI power to detect and monitor threats.[10]

Simplified IT: Improve cyber resilience with Dell Trusted Workspace and use Microsoft Intune to manage your fleet over the cloud.[11]

Remote management: The Intel vPro® platform enables IT teams to monitor for threats and maintain their fleet on their schedule.[12]

Easy component upgrades: A tool-less chassis and three PCIe® expandable slots.[13]

Advanced sustainability: Dell Pro Slim desktops meet key sustainability criteria for energy efficiency (certified ENERGY STAR®) and climate impact (registered EPEAT Gold with Climate+).[14] It's chassis is also manufactured with up to 50 percent post-industrial recycled steel.[15]

Comprehensive connectivity: Up-to-date connectivity options (Wi-Fi 7) with newer USB-C and USB-A standards, DisplayPort™ and HDMI 2.1 output options, as well as 2x optional USB 3.2 Gen 2 (10 Gbps) ports.[16]

Augmented productivity: Copilot in Windows unlocks a user's own personal AI assistant, so they can get real answers, grow their skills, and optimize workflows.[17]

The Dell Pro Slim desktop we tested was powered by an Intel® Core™ Ultra 7 265 processor with Intel vPro®. This processor integrates CPU, GPU, and NPU architectures, and its NPU has an overall peak of 33 8-bit integer (INT8) trillions of operations per second (TOPS). The CPU architecture has 8 performance-cores and 12 low power efficient-cores. The GPU architecture has four Xe-cores and supports up to four displays. The NPU architecture supports OpenVINO™, WindowsML, DirectML, ONNX RT, and WebNN AI software. Learn more at: https://www.intel.com/content/www/us/en/products/sku/241068/intel-core-ultra-7-processor-265-30m-cache-up-to-5-30-ghz/specifications.html.

Note: The graphs in this report use different scales. Please be mindful of each graph's data range as you compare.

Optimize productivity

To stay ahead in a rapidly changing business landscape, keeping an eye on evolving technologies is crucial. By upgrading to more powerful and efficient Windows 11 Pro desktops, your organization and your staff can streamline workflows, reduce bottlenecks, and accomplish tasks faster and with higher quality. This not only improves operational efficiency but also empowers innovation and the ability to capitalize on new opportunities.

In our resource-intensive performance tests, better GPU performance translates to a smoother visual experience as well as speeding content creation and design processes. Improved CPU power supports smoother multitasking and quicker processing of complex workloads. Better system responsiveness also reduces wait times and interruptions, allowing desktop users to maintain focus and workflow continuity.

Figure 1: 3DMark Steel Nomad measures GPU performance. This content creation benchmark pushes the limits of graphics hardware by running a native 4K render resolution.[18] Source: PT.

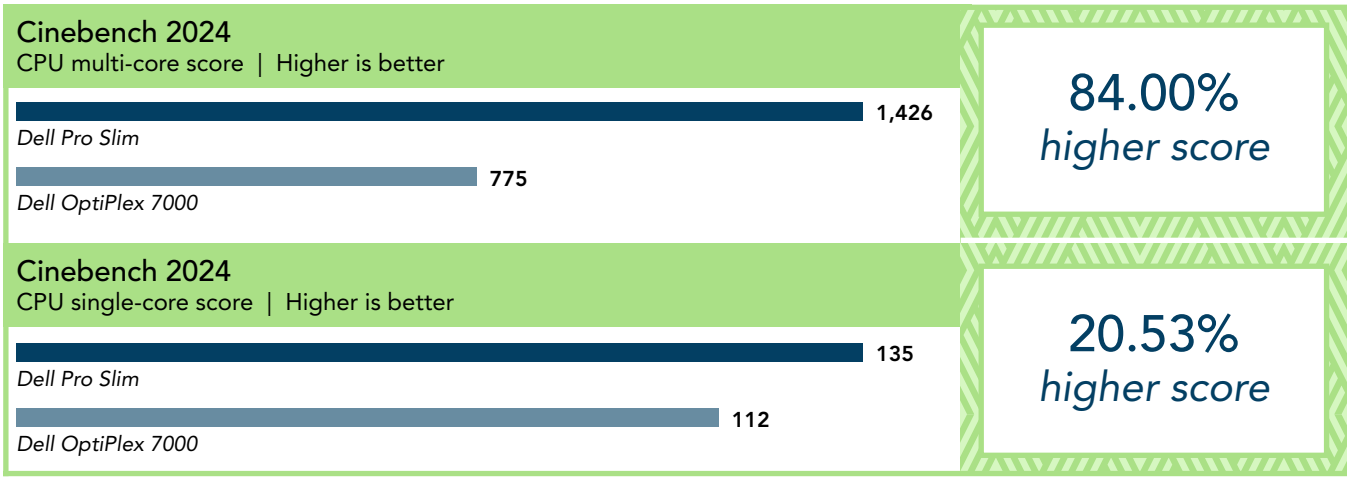


Figure 2: Cinebench 2024 measures CPU performance. This content creation benchmark utilizes Redshift for Cinema 4D, a processor-intensive 3D and video editing software, to evaluate processor capabilities by rendering a 3D scene.[19] Source: PT.

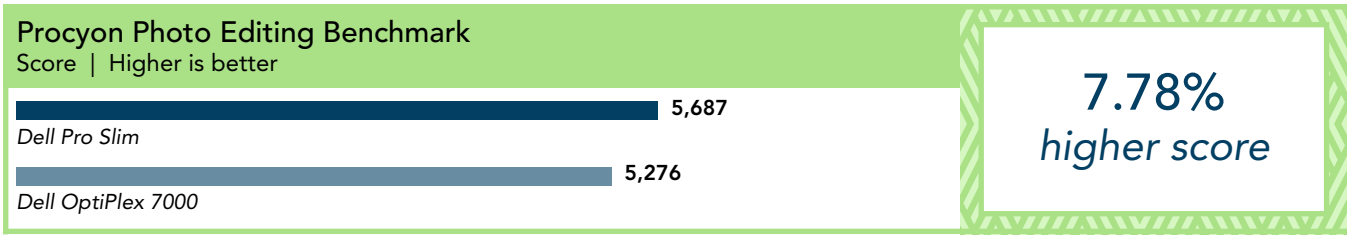


Figure 3: Procyon Photo Editing Benchmark measures CPU and GPU performance. This content creation benchmark uses Adobe® Photoshop® and Lightroom® Classic applications to mimic a "typical photo editing workflow that includes batch processing and image retouching."[20]

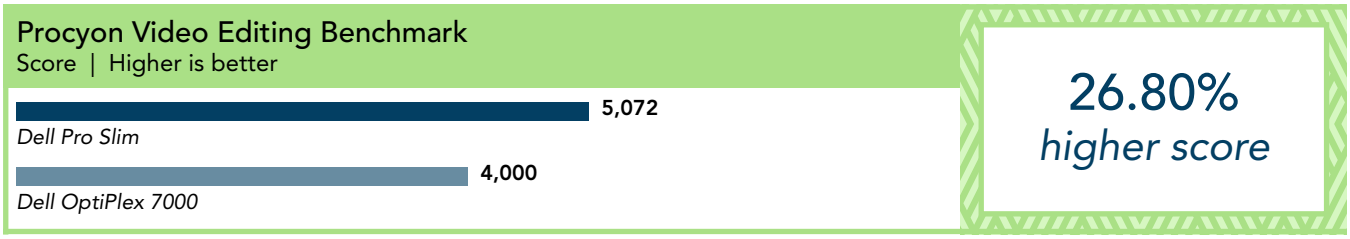


Figure 4: Procyon Video Editing Benchmark measures CPU and GPU performance. This content creation benchmark uses the Adobe Premiere® Pro application in a common video editing workflow that includes exporting video files.[21]

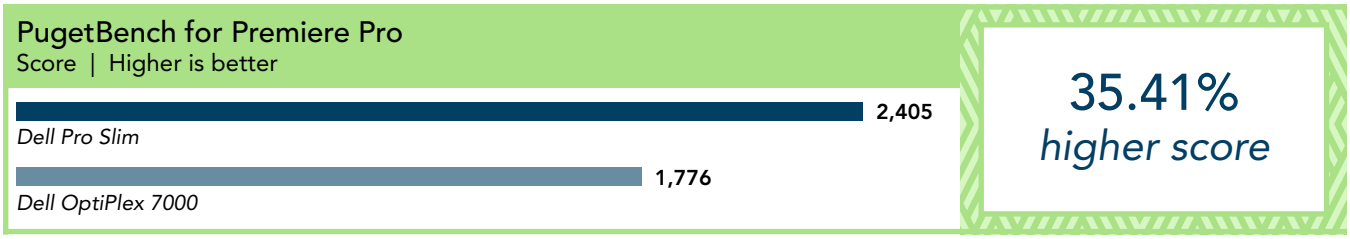
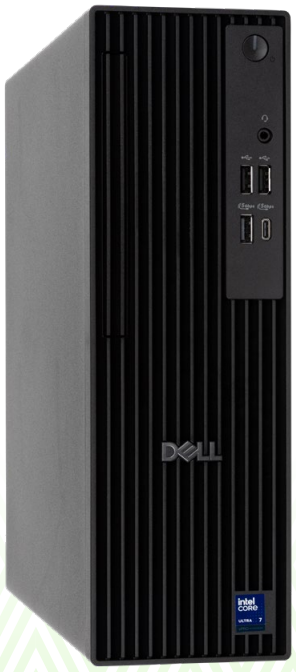


Figure 5: PugetBench for Premiere Pro measures CPU and GPU performance. This content creation benchmark uses the Adobe Creative Cloud app in real-world workflows.[22]

Increase resilience in the face of change

With advanced learning and decision-making capabilities, your organization is better able to handle the increasing influx of useful data. Plus, by investing in more powerful computers that speed the heavy data-based lifting process, your users regain some cognitive freedom to concoct more creative and out-of-the-box solutions to the challenges your business is facing.

In our tests, we looked at two types of on-device AI performance—GenAI and analytic AI using LLMs. As these AI processes become better and more efficient, the datasets they produce are improving. More accurate data opens up new pathways for innovation and discovery and powers better decision-making. In addition to speeding analytical AI processes, improved performance enables you to redesign workflows, elevate governance, and better mitigate risks.



An AI primer

AI is software that mimics human behavior, decision-making, or intelligence. As we dive into AI, let's first look at a few definitions.

- **Machine learning** (ML) is a subset of AI. ML uses algorithms to learn from data and make decisions on patterns.
- **Deep learning** (DL) is a subset of ML that contains, among other things, Generative AI (GenAI). DL uses neural networks to learn from data and interactions.
- **GenAI** is a type of DL that produces context (text, image, video) based on input and training.
- **Small and large language models** (SLMs and LLMs) are trained on text data to process, understand, and generate natural language. In addition to powering customer service chatbots and virtual assistants, they can automate text-based tasks, such as email generation, document summarization, language translation, and customer data analysis.

For this analysis, we used benchmarks to measure both GenAI and LLM performance on the Dell Pro Slim and OptiPlex 7000 SFF desktops, with each running Windows 11 Pro.

GenAI apps can boost productivity in customer operations, research and development, sales and marketing, and software development.

LLMs can help companies identify emerging trends, make informed and strategic decisions, and improve the customer experience.

Get fresh perspectives

When you watch a skilled athlete play, their equipment and training provide the foundation—but it's the athlete's talent and strategy that turn those elements into a winning performance. GenAI may offer the tools and data, but it's the expert player who uses them to score the decisive goal or make the game-changing move. Beginners can rely on GenAI to get through the basics, but in the hands of a seasoned pro, the potential for greatness is limitless. Image and text generation are especially valuable tools for marketing and advertising, sales enablement, design conceptualization and exploration, and personalized learning experiences.

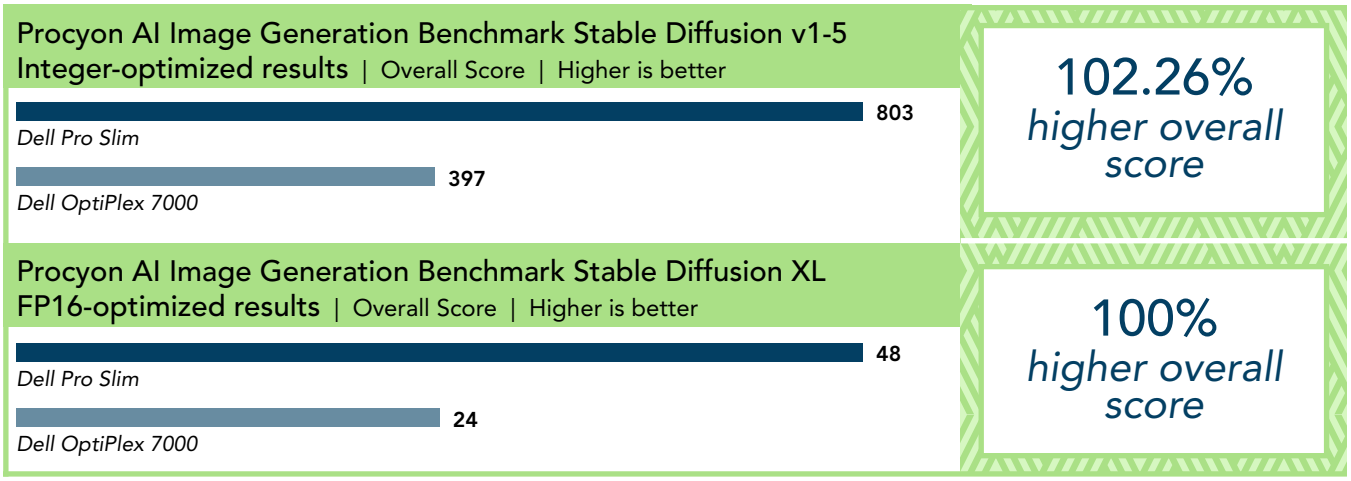


Figure 6: Procyon AI Image Generation Benchmark measures the inference performance of on-device AI accelerators.[23] Stable Diffusion v1-5 generates photo-realistic images from text prompts.[24] Stable Diffusion XL provides more detailed imagery and composition using shorter prompts.[25]

Procyon AI Text Generation Benchmark measures LLM performance.[26] These are the models it uses and few of their common use cases:

- **PHI 3.5**: This Microsoft SLM provides text summarization for researchers, code generation and assistance for developers, and multi-lingual translations for customer service chatbots.[27]
- **Mistral 7B**: This LLM converts text between languages, generates educational materials, automates data analysis, and aids code generation and analysis.[28]
- **Llama 3.1**: This LLM provides advanced reasoning and context for multilingual customer service agents and coding assistants.[29]

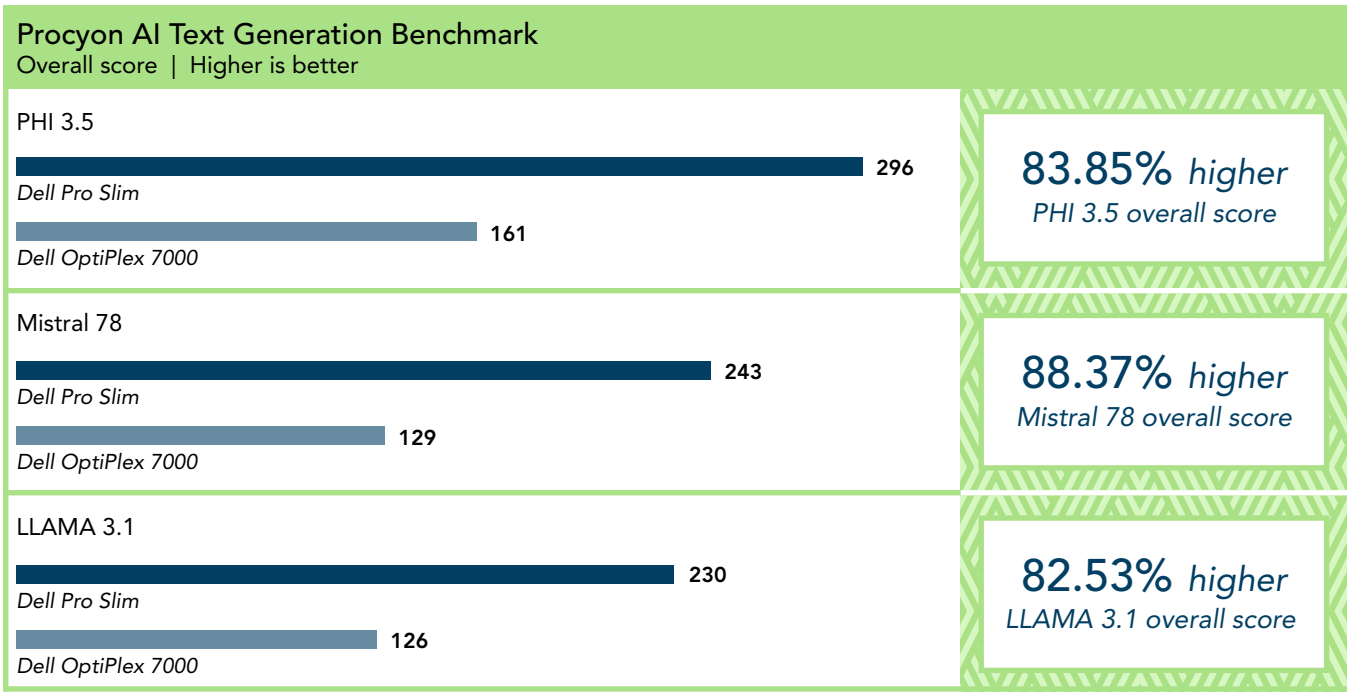


Figure 7: Procyon AI Text Generation Benchmark results. Source: PT.

In addition to scoring higher in both image generation benchmarks, the Intel® Core™ Ultra 7 265 processor-powered Dell Pro Slim completed both tasks in half the time as the Intel® Core™ i7-12700 processor-powered Dell OptiPlex 7000 SFF. To check out the overall duration and image generation speed sub-scores, go to the science behind the report.

Significantly reducing the wait time for LLM-based text or image generation can improve the user experience and supercharge content creation efforts. This is relevant for marketing, training, and design teams, who, with help from GenAI automations, can find themselves with more time to improve their work. They can use that time to create more concepts and prototypes, refine existing concepts a bit further, and brainstorm possible additional initiatives and solutions.

Enable new possibilities

In addition to using GenAI for content creation and marketing, savvy users can use GenAI in conjunction with LLMs to make context-aware recommendations tailored to their specific audience. According to an article providing takeaways from the recent Morgan Stanley Technology, Media & Telecom Conference, biotechnology and law were among the earliest industries to fully harness tailored AI for applications such as clinical trials, regulatory submissions, and paralegal work.[30] Imagine how quickly your researchers, students, and clinicians could get answers with better on-device AI performance at their fingertips. This is where you really begin to see how the built-in NPU architecture in the Dell Pro Slim desktop reduces the load on the CPU and the GPU.

Geekbench AI uses LLMs to measure CPU, GPU, and NPU capabilities for on-device machine learning capabilities. We chose to highlight the Half Precision scores because "FP16 provides a good balance between speed and accuracy."[31] In our testing, we used the Intel OpenVINO™ AI framework. For a deeper dive into our results, which includes Single Precision (FP32), Half Precision (FP16), and Quantized (Int8) scores, go to the science behind the report.

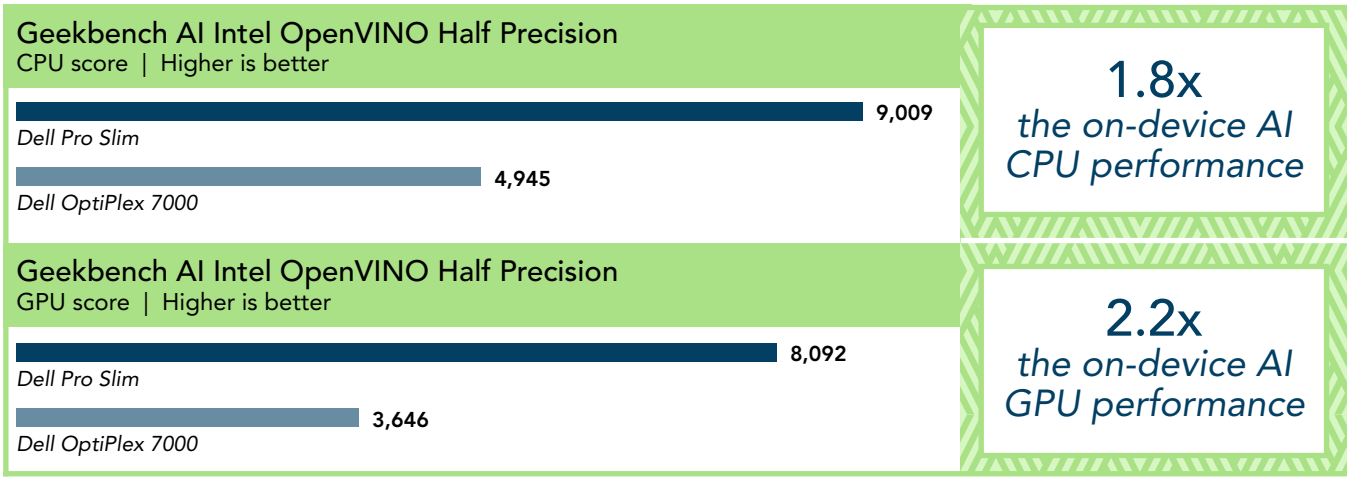


Figure 8: Geekbench AI benchmark results. Source: PT.

Better on-device AI performance means users can keep sensitive data local, enhancing privacy and security across various sectors. For example, in healthcare, on-device AI can quickly analyze medical images to assist in diagnostics without transmitting patient data to the cloud. The ability to rapidly interpret, analyze, and extract data from images and videos also speeds many common tasks, such as identifying people, objects, and scenes in photos. Additionally, extracting text from images facilitates instant translation for global communication. Overall, these capabilities help improve employee productivity through automation, reducing the amount of effort individual tasks require and thus freeing time to take on additional work.

Procyon AI Computer Vision Benchmark measures AI inference performance using different AI inference engines.[32] In our testing, we used the Intel OpenVINO™ toolkit. To complete these workloads, the Dell Pro Slim utilized its NPU architecture, and the Dell OptiPlex 7000 SFF utilized its GPU. These are the inference engines and their use cases:

- **MobileNetV3, ResNet-50, and Inception-v4**: Research institutions, tech companies, and individuals use these models for image recognition, object detection, and image classification tasks.[33,34,35]
- **DeepLabv3 and YOLOv3**: Video surveillance companies, healthcare providers, and manufacturers use these Deep Neural Network (DNN) architectures to distinguish between different objects and features within images and videos.[36,37]
- **Real-ESRGAN**: Digital artists, medical professionals, and real estate firms use this generator and discriminator network (GAN) architecture to enhance image quality and resolution.[38]

In the integer-optimized testing, we found the inference counts (the number of times the system processed inputs and produced results within a defined timeframe) were highest on the Real-ESRGAN model, which is a super-resolution model that uses complex calculations to restore and improve existing media.[39] And inference counts were lowest on the DeepLabv3 model, which is best suited for semantic segmentation tasks used in medical image and satellite image analysis.[40] For a deeper dive into our results, which include integer, float16, and float32 scores, go to the science behind the report.

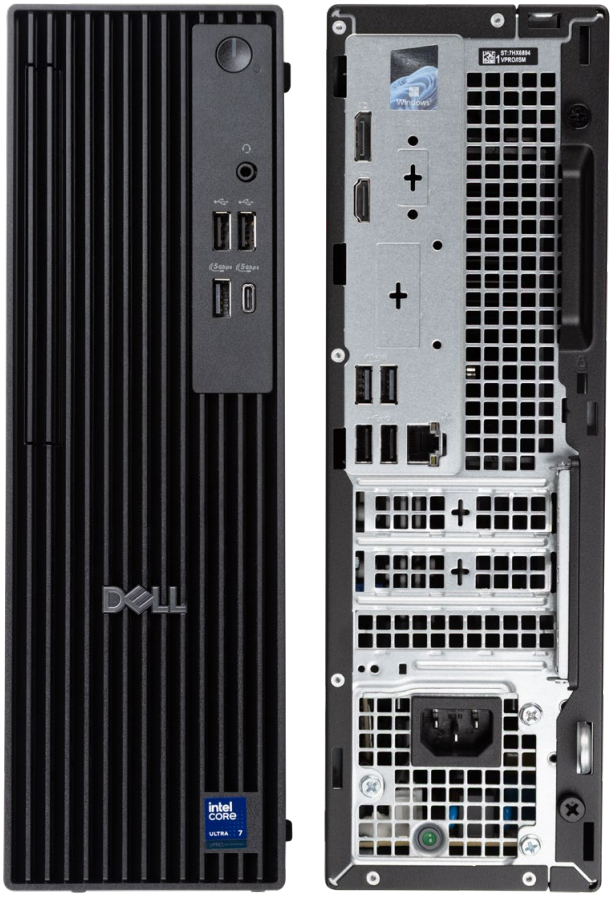
Figure 9: Procyon AI Computer Vision Benchmark results. Source: PT.

Better on-device AI inference performance means users can process images and video more efficiently—shortening the time it takes to get results and important answers. This is critical for actions that require immediate responses, including fraud detection, facial recognition, and video surveillance. It's also helpful for anyone enhancing image quality and resolution on existing media.

Conclusion

Upgrading from 2022 Dell OptiPlex 7000 SFF desktops to new Dell Pro Slim desktops powered by Intel® Core™ Ultra 7 265 processors with Intel vPro® delivers substantial improvements in graphics, and on-device AI performance. With higher benchmark scores across GPU, CPU, and on-device AI tasks—including GenAI and LLM workloads—these Window 11 Pro desktops enable faster, more efficient workflows and enhanced productivity for businesses. Built-in innovations such as advanced security, simplified IT management, and sustainability features can help your team meet their goals.

By upgrading to Windows 11 Pro and these cutting-edge AI PCs, organizations can better adapt to evolving technology demands, unlock new opportunities for innovation, and maintain a competitive edge in today's rapidly changing business landscape.



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Read the science behind this report at https://facts.pt/X6T39Yj ►

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