



Grow your AI capabilities

Over 2x the performance on the Procyon AI Computer Vision AI Benchmark*



Turn ideas into reality faster

19% less time to complete an Adobe Creative Cloud workflow*



Ease your everyday experience

84% better overall score on PassMark PerformanceTest 11*



Stay productive longer

Over 16 hours of battery life while playing video

*with the Lenovo ThinkBook 13x Gen 4 vs. the Lenovo ThinkBook 13x Gen 1

Meet the demands of today and tomorrow with a faster laptop for AI, creative, and everyday work

by choosing the Lenovo ThinkBook 13x Gen 4 with Intel Core Ultra 9 processor 185H

Picture the scene: It's 2021, you've never heard of ChatGPT, and you've just purchased a new laptop. Now fast forward to the present. AI is everywhere, compute demands have never been higher, and you still have that same laptop. It's lagging a little, but it's still basically fine...right?

The world has changed, and by waiting to buy a new laptop, you might be leaving value on the table. The right new system can bring innovative capabilities, extra power, and opportunities for increased productivity. To prove just how true that is, we tested the new Lenovo ThinkBook 13x Gen 4, featuring an Intel® Core™ Ultra 9 processor 185H, against a three-year-old Lenovo ThinkBook 13x Gen 1. The ThinkBook 13x Gen 4 offered performance improvements in every area we tested, from AI to creative applications to battery life. To thrive in a changing world with an expanding focus on AI, you may well need a new device—and this could be it.

Features of the Lenovo ThinkBook 13x Gen 4



This 13-inch Intel vPro® Intel Evo™ Edition ultrathin, ultralight laptop is powered by Intel Core Ultra processors and the Lenovo LA3 AI chip for “amazing AI experiences without lags or battery drain.”¹ Its narrow bezels enable a larger-than-standard display size for a 13” laptop, with a 97 percent screen-to-body ratio, and it boasts “an ultralow-power display panel with attention- and presence-based brightness and refresh rate.”²

- Learn more about the Lenovo ThinkBook 13x Gen 4 at [https://www.lenovo.com/us/en/p/laptops/thinkbook/thinkbook-x/lenovo-thinkbook-13x-gen-4-\(13-inch-intel\)/len101b0036](https://www.lenovo.com/us/en/p/laptops/thinkbook/thinkbook-x/lenovo-thinkbook-13x-gen-4-(13-inch-intel)/len101b0036).

Table 1: Feature comparison of the laptops we tested.

	Lenovo ThinkBook 13x Gen 4 Intel Core Ultra 9 processor 185H	Lenovo ThinkBook 13x Gen 1 Intel Core i7-1160G7 processor
Graphics	Integrated Intel Arc™ graphics and AI Boost	Intel Iris® Xe Graphics
Operating system	Windows 11 Pro	Windows 10 Pro
Display touchscreen	Yes	No
Ports	3x Thunderbolt™ 4 1x headphone/mic combo	1x Thunderbolt 4/power in 1x USB-C Thunderbolt 4 1x headphone/mic combo
Intel vPro	Yes	Yes
Intel Evo	Yes	Yes
Intel Unison™	Yes	No
Wi-Fi and Bluetooth	Intel Wi-Fi 6E (802.11ax) with Bluetooth 5.3	Wi-Fi 6 AX201 (802.11ax) with Bluetooth 5.2

About the Intel Core Ultra 9 processor 185H

The Lenovo ThinkBook 13x Gen 4 we tested features an Intel Core Ultra 9 processor 185H with integrated Intel Arc graphics and Intel AI Boost. This processor incorporates three separate engines: a central processing unit (CPU), a graphics processing unit (GPU), and a neural processing unit (NPU) architecture. This architectural shift, according to Intel, makes Intel Core Ultra processors “the most AI-capable and power-efficient client processor in Intel’s history.”³ Intel recommends Intel Core Ultra 9 processors for AI-enhanced video editing, video calling, and multitasking, among other workloads.⁴

- Learn more about Intel Core Ultra processors at <https://www.intel.com/content/www/us/en/products/docs/processors/core-ultra/core-ultra-series-1-product-brief.html>.

How we tested

We compared the Lenovo ThinkBook 13x Gen 4, powered by an Intel Core Ultra 9 processor 185H, to an older-generation Lenovo ThinkBook 13x Gen 1, powered by an Intel Core i7-1160G7 processor. Both laptops had 1 TB of SSD storage, and the newer system had 32 GB of memory, while the older one had 16 GB.

We used a wide range of tools and benchmarks to create a multifaceted picture of both devices' performance for AI workloads, graphics-intensive tasks, and everyday work.

AI performance benchmarks and tools

AI is everywhere, and if you're purchasing a system, you'll want to ensure it has enough firepower to handle the AI tasks of both today and tomorrow—whether you're working on AI at your organization or simply starting to use AI tools as part of your workflows. This set of tools and benchmarks quantifies the kind of performance you can expect for various AI tasks and models.

- ◆ Procyon® AI Computer Vision Benchmark (p4)
- ◆ Topaz Video AI (p4)

Graphics-intensive performance benchmarks and tools

If you regularly work with large photo, video, or 3D files, you need a system that enables you to manipulate and edit those objects with ease. These benchmarks and tools each take different approaches to measuring how well a device performs on graphics-intensive tasks and workflows.

- ◆ 3DMark® (p5)
- ◆ Blender (p5)
- ◆ Cinebench 2024 (p6)
- ◆ HandBrake (p6)
- ◆ Procyon Photo Editing Benchmark (p7)
- ◆ Procyon Video Editing Benchmark (p7)
- ◆ PugetBench for Creators (p7)

General performance benchmarks

These benchmarks aim to assess the performance you can expect as you tackle everyday tasks. Rather than focusing on any one type of work, the results of these benchmarks should be applicable to anyone using a laptop.

- ◆ CrossMark™ (p8)
- ◆ PassMark PerformanceTest 11 (p8)
- ◆ SYSmark® 30 (p9)
- ◆ Procyon Office Productivity Benchmark (p9)
- ◆ WebXPRT 4 (p9)

Battery life, workflow, and user experience tests

In addition to our benchmark testing, we completed several other real-world tests to sketch a rich picture of the experience you might have with each of these two devices. Those tests measured:

- ◆ Everyday productivity tasks (p10)
- ◆ Content creation tasks (p11)
- ◆ Real-world workflows (p11)
- ◆ Battery life (p13)
- ◆ Speaker and microphone experience (p14)
- ◆ Camera quality (p15)
- ◆ Thermal performance (p16)

Meet the computing demands of AI

The use of AI has exploded in recent years, with 65 percent of respondents to one McKinsey survey stating that their organizations regularly use GenAI.⁵ Whether or not you're already relying on AI for your work, the AI revolution is here—in the special effects you see in video conferences, the intelligent searches you're making, and the techniques you use for photo editing. You need a laptop that can keep up.



We tested with multiple benchmarks to assess the AI performance of the Lenovo ThinkBook 13x Gen 4 laptop and its older predecessor. The Procyon AI Computer Vision Benchmark uses multiple AI inference engines and neural network models, including MobileNet v3 and ResNet-50, to “[help] you decide which engines to support to achieve the best performance.”⁶ We ran the benchmark using three different precision levels: float32, float16, and int8. (Different precision levels change how precisely a model can complete its work; one precision level might require more time to run than another.)

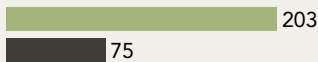
The Lenovo ThinkBook 13x Gen 4 laptop with Intel Core Ultra 9 processor 185H performed over twice as well as the ThinkBook 13x Gen 1, highlighting the power of the new Intel processor designed for AI (Figure 1). While you wouldn't plan to run inference operations on massive datasets on a laptop, you might well need to do development work on an AI model, test an existing model's accuracy, or work on refinement parameters.

Procyon AI Computer Vision Benchmark Intel OpenVINO

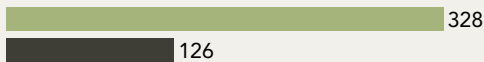
Overall rating | Higher is better

Lenovo ThinkBook 13x
■ Gen 4 ■ Gen 1

float32



float16



int8

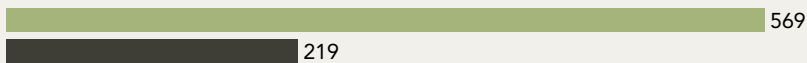


Figure 1: Procyon AI Computer Vision Benchmark Intel OpenVINO™ overall scores. Higher is better. Source: Principled Technologies.

The Topaz Video AI benchmark quantifies performance for the Topaz Labs™ Video AI application, which uses AI to enhance video by removing noise, upscaling resolution, and more.⁷ While the new Lenovo ThinkBook 13x Gen 4 laptop performed well on multiple Topaz Video AI tests, we were unable to run the test on the older device. (You can see the Topaz Video AI results for the Lenovo ThinkBook 13x Gen 4 laptop in the [science behind the report](#).) This is a clear indicator—if you're going to be working with compute-intensive AI-based video editing, the newer Intel Core Ultra 9 processor-powered device will serve you better.

We also evaluated the functionality of Windows Studio Effects, a new feature set from Windows that “leverages AI models built by Microsoft and compiled/optimized for devices with a Neural Processing Unit (NPU) to deliver high-fidelity, battery-friendly AI effects.”⁸ The effects include background blurs, fun filters, background noise minimization, and adjustments to framing and lighting. We enabled Windows Studio Effects on the Lenovo ThinkBook 13x Gen 4 laptop and found that they ran as we anticipated. (Because the ThinkBook 13x Gen 1 does not have an NPU, it is not compatible with Windows Studio Effects.)

- ▶ To learn more about these effects and how to enable them, visit <https://support.microsoft.com/en-us/windows/windows-studio-effects-273c1fa8-2b3f-41b1-a587-7cc7a24b62d8>.

Speed the pace of creativity

Marketing agencies, production houses, and architecture and engineering firms have long used applications that require a great deal of compute power. But with the current importance of social media and content creation, including photo and video posts, organizations across all industries require teams with photo and video editing skills. These teams need devices with enough power to manipulate media quickly and easily.



We tested how the two laptops handled heavy media workloads using several different benchmarks, starting with 3DMark. The 3DMark Fire Strike and Time Spy tests measure DirectX graphics performance.⁹ While it may sound like a benchmark specifically for gamers, 3DMark can also help indicate how a system performs while running compute-intensive multimedia and video workloads. As you can see in Figure 2, the Lenovo ThinkBook 13x Gen 4 with the Intel Core Ultra 9 processor 185H performed much better on both tests, delivering up to 2.3 times the score of the ThinkBook 13x Gen 1—a good sign if you regularly work with 3D models or videos.

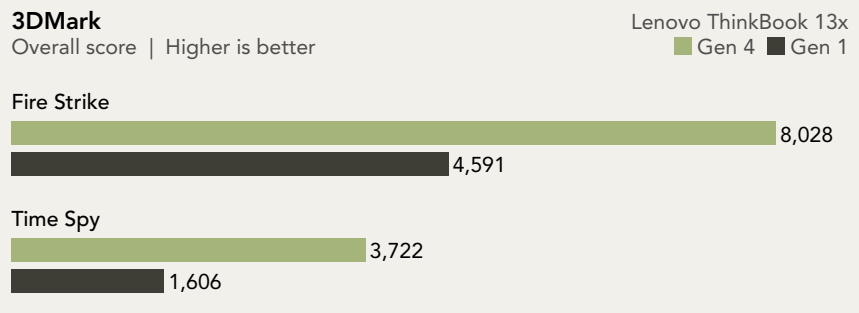


Figure 2: 3DMark overall scores. Higher is better. Source: Principled Technologies.

Path tracing is a type of 3D rendering focused on lighting that can help scenes and images appear more realistic and attractive. The Blender benchmark uses 3D rendering workloads to calculate how many path tracing samples a system can render per minute.¹⁰ For multiple angles on this type of performance, we tested with three different workloads. The Lenovo ThinkBook 13x Gen 4 with the Intel Core Ultra 9 processor 185H dramatically outperformed the Gen 1 device, handling 11 times the performance on the Monster workload (Figure 3). For game designers, 3D artists, and other professionals relying on realistic 3D renders, this is a major win.

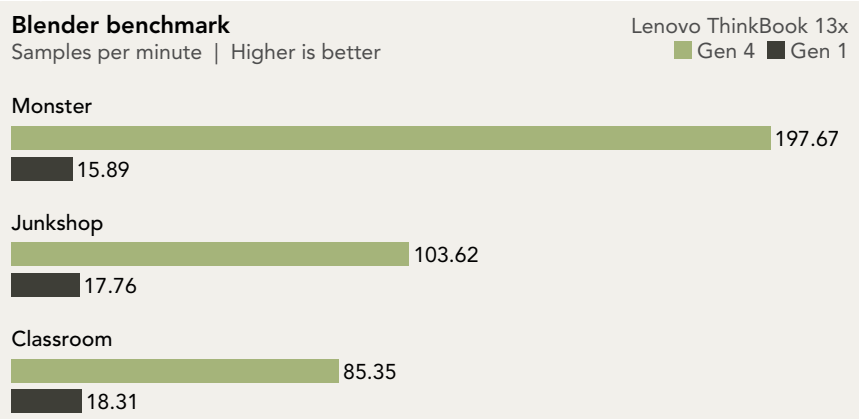


Figure 3: Blender benchmark samples per minute. Higher is better. Source: Principled Technologies.

Get end-to-end security with Intel and Lenovo

Intel and Lenovo both bring key security features to the Lenovo ThinkBook 13x Gen 4 with Intel Core Ultra 9 processor 185H. These include Intel Transparent Supply Chain, which protects hardware components and software during every step of the supply chain process with “a set of tools, policies, and procedures implemented on the factory floor at PC and server manufacturers that help enable enterprises to verify the authenticity and firmware version of systems and their components.”¹¹

Simultaneously, Lenovo ThinkShield provides full lifecycle security and protection, “allowing you to work from anywhere with extended detection and response against cyber-threats.”¹² Lenovo ThinkShield uses AI-powered endpoint protection for defense wherever and whenever work happens—both above and below the operating system.¹³

Next we looked at Cinebench 2024, which uses the Redshift render engine to evaluate CPU and GPU capabilities.¹⁴ Higher scores on this benchmark indicate faster response times on graphics-intensive games, product development and design software, and scientific simulations. We ran both single-threaded and multi-threaded tests to get a fuller understanding of performance. Figure 4 shows how the Lenovo ThinkBook 13x Gen 4 compared to the Lenovo ThinkBook 13x Gen 1. Equipped with the Intel Core Ultra 9 processor 185H, the Lenovo ThinkBook 13x Gen 4 significantly outperformed its older counterpart.



Figure 4: Cinebench 2024 scores. Higher is better. Source: Principled Technologies.

Because video files are so large, it is sometimes necessary to compress a video to make it compatible with web and mobile players—while, of course, maintaining good picture quality. This compute-intensive process is called encoding. We used HandBrake, an open-source encoding tool, to assess how long it took both systems to encode a video and how many frames per second (FPS) it could process. We did this with two different presets to see a more comprehensive picture of performance. The Lenovo ThinkBook 13x Gen 4 performed significantly better than the Lenovo ThinkBook 13x Gen 1 across the board (see Figures 5 and 6). In one of the tests, it took just 3 minutes 34 seconds to encode a video, while the older device required over 10 minutes.

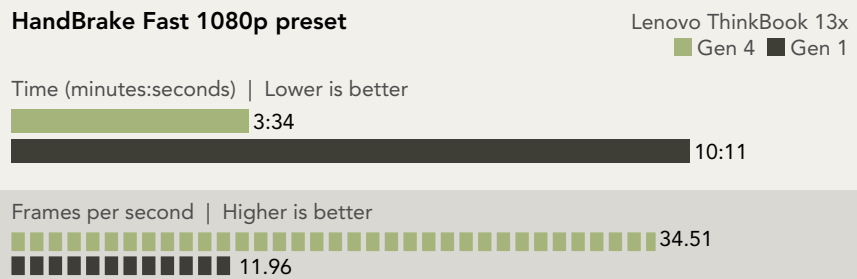


Figure 5: HandBrake Fast 1080p preset test results. Less time is better, and more FPS is better. Source: Principled Technologies.

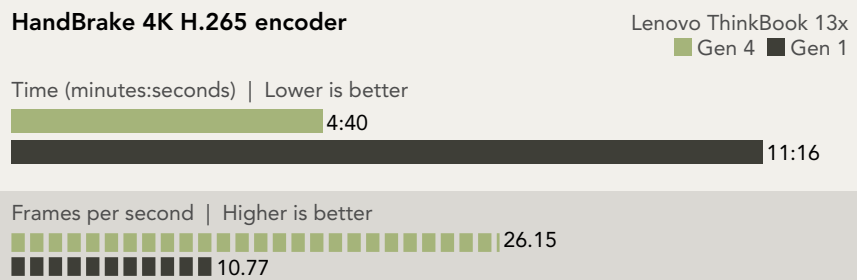


Figure 6: HandBrake Hardware 4K H.265 encoder test results. Less time is better, and more FPS is better. Source: Principled Technologies.

Many of those who work in multimedia creation and editing rely on the Adobe® Creative Cloud® applications, so we chose benchmarks that leverage those applications to assess real-world performance. The Procyon Photo Editing Benchmark measures performance using a real-world photo editing workflow in Adobe Lightroom® Classic and Adobe Photoshop®.¹⁵ True to its name, the Procyon Video Editing Benchmark takes a similar approach to the Photo Editing benchmark, measuring video editing performance in Adobe Premiere® Pro.¹⁶ Figures 7 and 8 show that the Lenovo ThinkBook 13x Gen 4 scored higher on both benchmarks, indicating that it can more readily handle the high compute demands of these key Adobe apps.

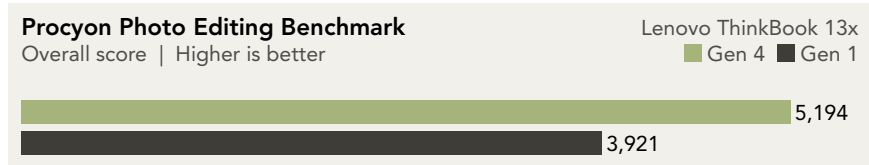


Figure 7: Procyon Photo Editing Benchmark overall scores. Higher is better. Source: Principled Technologies.

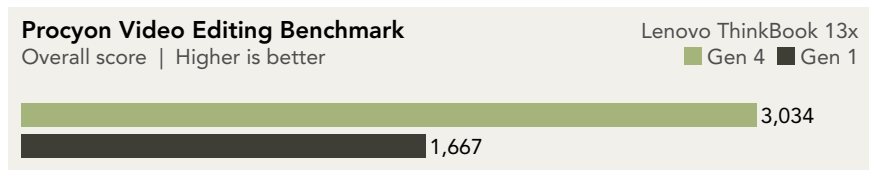


Figure 8: Procyon Video Editing Benchmark overall scores. Higher is better. Source: Principled Technologies.

For another angle on Adobe Creative Cloud performance, we utilized the PugetBench for Creators benchmarks, which test performance using popular, real-world creative workflows in Photoshop and Premiere Pro.¹⁷ Here, we saw an even greater difference between the Lenovo ThinkBook 13x Gen 4 and the Lenovo ThinkBook 13x Gen 1. The newer Intel Core Ultra 9 processor-powered device had a score over twice that of the older device—see Figure 9—proving that users could see a significantly faster experience for Photoshop and Premiere Pro work.

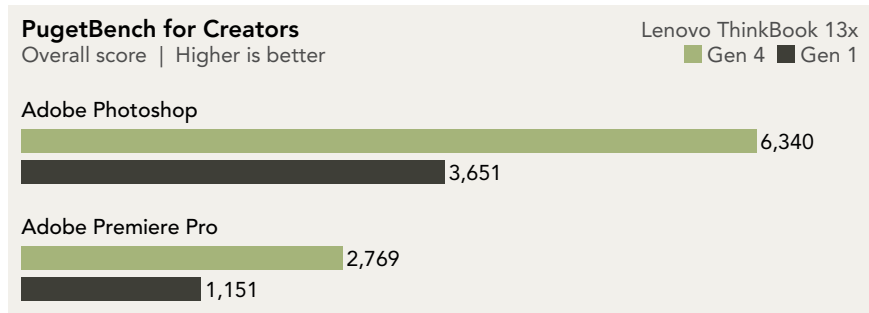


Figure 9: PugetBench for Creators overall scores. Higher is better. Source: Principled Technologies.





Boost everyday performance for everyone's to-do list

Different jobs require different tools. While a video editor fires up Adobe Premiere Pro when they sit down at their desk in the morning, a game designer working with 3D renders might use Agisoft Metashape every day. But many people who work on their laptops, regardless of role, rely on Microsoft 365 applications and web browsing. If you lose seconds or even fractions of seconds every time you write in a Word document or open a new web page, the cost adds up in both time and frustration. To explore how the Lenovo ThinkBook 13x Gen 4 and ThinkBook 13x Gen 1 handled this kind of work, we tested both devices with several general productivity benchmarks.

The CrossMark benchmark is an industry-standard tool that "measures the overall system performance and system responsiveness using models of real-world applications."¹⁸ It incorporates a number of workloads, from file read/write to object detection and video colorization, to give a more holistic perspective on a system's performance.¹⁹ Figure 10 shows that the Intel Core Ultra 9 processor-powered Lenovo ThinkBook 13x Gen 4 scored 30.6 percent higher than its older-generation counterpart, indicating better, more responsive performance for everyday work.

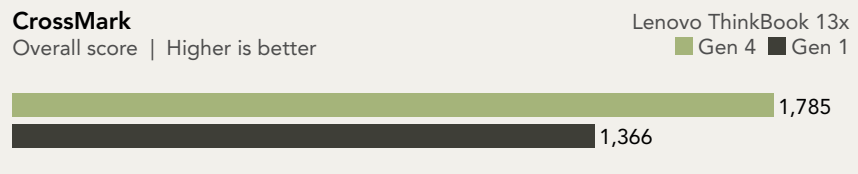


Figure 10: CrossMark overall scores. Higher is better. Source: Principled Technologies.

Next, we tested the systems using PassMark PerformanceTest 11, which uses 28 different speed tests to assess the performance of a system's CPU, 2D and 3D graphics, disk, and memory.²⁰ With performance improvements here, you could expect to get a smoother, faster experience when you open your laptop. That's what we saw when we tested the Lenovo ThinkBook 13x Gen 4 against the ThinkBook 13x Gen 1. The Lenovo ThinkBook 13x Gen 4, with its Intel Core Ultra 9 processor 185H, offered 84.0 percent higher performance on this test (Figure 11).

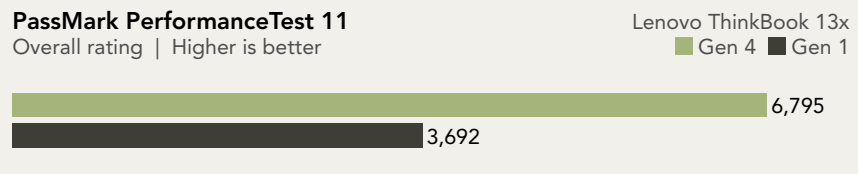


Figure 11: PassMark PerformanceTest 11 results. Higher is better. Source: Principled Technologies.

Enhance your commitment to sustainability

More and more consumers are considering sustainability when they make purchasing decisions. According to an October 2023 Harvard Business Review article, “we’re on the brink of a major shift in consumption patterns, where truly sustainable brands — those that make good on their promises to people and the planet — will seize the advantage from brands that make flimsy claims or that have not invested sufficiently in sustainability.”²¹

In the *Lenovo 2023/24 Environmental, Social, and Governance* report, Lenovo outlines its approaches to and goals for sustainability, including targeting net-zero greenhouse gas emissions by 2050. The report outlines the Lenovo commitment to utilize post-consumer recycled content in its products, improve its products’ energy efficiency, and utilize renewable and bio-based materials in its packaging, among other practices.²²

- ▶ Learn more at <https://investor.lenovo.com/en/sustainability/reports/FY2024-lenovo-sustainability-report.pdf>.

We also used the Procyon Office Productivity Benchmark to gauge performance for professional users who rely on Microsoft 365 applications. This benchmark simulates how people use those applications every day, switching between windows and completing common, real-world tasks in Word, Excel, PowerPoint, and Outlook.²³ The Lenovo ThinkBook 13x Gen 4 was significantly faster on this benchmark, delivering an overall score 34.9 percent higher than that of the Gen 1 device and indicating that you could have a smoother experience with Microsoft 365 applications if you chose the newer device. Figure 12 highlights these results.

Procyon Office Productivity Benchmark

Overall scores | Higher is better

Lenovo ThinkBook 13x
■ Gen 4 ■ Gen 1



Figure 12: Procyon Office Productivity Benchmark overall scores. Higher is better. Source: Principled Technologies.

Next, we ran SYSmark 30 on both devices. This tool measures a system’s performance by running office and media tasks and scenarios modeling areas that can commonly trip up less powerful systems, such as launching files and multitasking.²⁴ Figure 13 shows that the new Intel Core Ultra 9 processor-powered Lenovo ThinkBook 13x Gen 4 performed 53.7 percent better overall on this benchmark, offering a potentially smoother and more responsive multitasking experience.

SYSmark 30

Overall rating | Higher is better

Lenovo ThinkBook 13x
■ Gen 4 ■ Gen 1



Figure 13: SYSmark 30 overall ratings. Higher is better. Source: Principled Technologies.

Finally, we tested the systems’ web browsing performance using WebXPRT 4. An industry-standard browser benchmark, WebXPRT 4 uses HTML5, JavaScript, and WebAssembly-based scenarios to simulate a range of real-world activities.²⁵ Web browsing is an integral part of jobs from project manager to teacher to stock broker, and it’s critical to understand how your system will handle this everyday task. As Figure 14 shows, the Intel Core Ultra 9 processor-powered Lenovo ThinkBook 13x Gen 4 was able to sustain better web-browsing performance than its older-generation counterpart in our testing, with a 38.4 percent higher overall WebXPRT score.

WebXPRT 4 using Google Chrome

Overall score | Higher is better

Lenovo ThinkBook 13x
■ Gen 4 ■ Gen 1



Figure 14: WebXPRT 4 overall scores with the Google Chrome browser. Higher is better. Source: Principled Technologies.

Finish your daily work faster

As we discussed in the previous section, many of us do a great deal of our daily work in Microsoft 365 applications, such as Word, Excel, and PowerPoint. On days when you have hundreds of small interactions with these programs, small delays can quickly add up to big frustrations and reduced productivity. Faster, more responsive performance in Microsoft 365 applications is a boon for everyone from creatives to engineers.

We performed 10 different tasks in Microsoft 365 apps with the two devices, from quick jobs such as finding and replacing a word in Microsoft Word to more compute-intensive tasks such as exporting a large PowerPoint to PDF. Figure 15 shows our results: The new Intel Core Ultra 9 processor-powered ThinkBook 13x Gen 4 handled every task faster than its predecessor, with time savings of up to 9 seconds. While you might not be counting the seconds like we did, you certainly notice more responsive performance on the kinds of tasks you do every day.

Time to complete tasks in Microsoft Office

Seconds | Lower is better

Lenovo ThinkBook 13x
■ Gen 4 ■ Gen 1

Microsoft Word

Launch Word



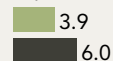
Perform find/replace



Open 90MB document



Export PDF



Microsoft Excel

Launch Excel



Open 650KB 10k-row spreadsheet



Open 92MB spreadsheet containing macro



Insert 3D 100% stacked column chart



Microsoft PowerPoint

Launch PowerPoint



Export 180MB .PPTX to PDF



Start slide show



Figure 15: Time to perform various tasks in Microsoft 365. Less time is better. Source: Principled Technologies

Integrate Android and iOS devices with Intel Unison

The Intel Unison app promises to be a game changer for millions of Windows PC users with iPhone® devices.²⁶ While Apple® Continuity connects only devices in the Apple ecosystem,²⁷ Intel Unison “seamlessly connects your PC, phone, and tablet for a universal, easy-to-use experience,” according to Intel.²⁸ For Intel Evo-certified Windows PCs and Android™ or iOS™ phones and tablets, Intel Unison can enable you to:

- ▶ Fully access Android or iOS mobile photo galleries from your PC
- ▶ Transfer files between your PC and Android or iOS phones and tablets
- ▶ Make and receive Android or iOS phone calls on your PC
- ▶ Send and receive Android or iOS text messages on your PC
- ▶ Manage, filter, and customize Android or iOS device notifications through your PC²⁹

Photographers, video editors, and other creators rely on Adobe Creative Cloud applications in the same way a writer might depend on Microsoft Word: They utilize these applications all day, every day. But dealing with large, complex assets in Creative Cloud applications can cause long delays—and even crashes—on less capable systems. Nothing gets you out of the creative zone like waiting long seconds or minutes for a task to complete. Faster performance for common tasks in these apps can directly translate to increased productivity for creative professionals.

We performed several tasks in Adobe Creative Cloud applications on both devices and found that the new Lenovo ThinkBook 13x Gen 4 completed each of them faster than the older ThinkBook 13x Gen 1 (see Figure 16). For some tasks, the difference was significant: It took 30 seconds less to create a photomerge panorama in Adobe Lightroom with the ThinkBook 13x Gen 4. Even a handful of seconds can feel like a big difference when you’re trying to stay in a creative flow.

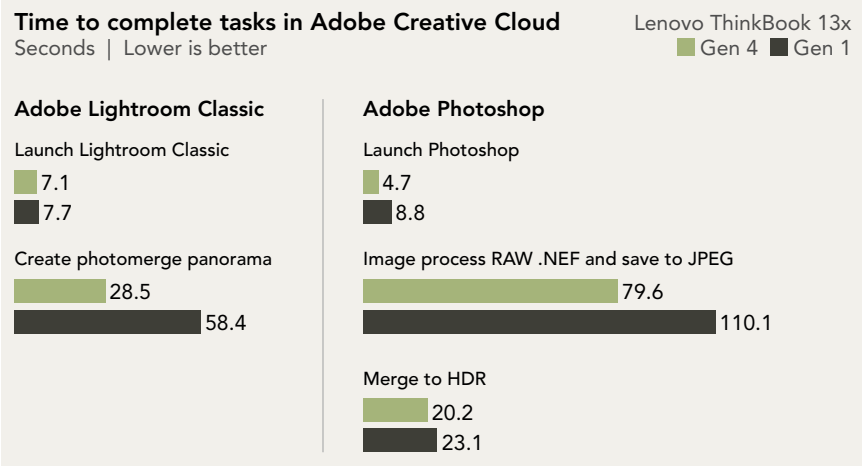


Figure 16: Time to perform various tasks in Adobe Lightroom Classic and Photoshop. Less time is better. Source: Principled Technologies.

We also measured how long it took each device to complete a creative workflow across multiple Adobe Creative Cloud apps. The workflow included creating a photo merge in Photoshop and rendering a file in After Effects. (See the [science behind the report](#) for the complete methodology.) Looking at all of these tasks together in Figure 17, it’s easy to see what a big impact the cumulative time savings can make. By performing this sequence with the Intel Core Ultra 9 processor-powered ThinkBook 13x Gen 4, you would save almost two minutes. That’s valuable time you could spend creating or refining new assets, ultimately building a better product for your client.

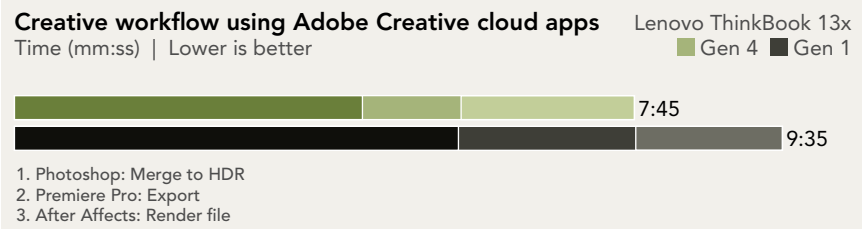


Figure 17: Time to perform a creative workflow using Adobe Creative Cloud apps. Less time is better. Source: Principled Technologies.



3D modeling software is notoriously resource-intensive, and users who regularly deal with these types of applications can expect extremely long wait times from less powerful devices. To test the laptops' performance handling 3D graphic projects, we ran a workflow in Agisoft Metashape. This photogrammetry and 3D modeling software is valuable for those working in gaming, archeology and conservation, and city planning, among others. Our workflow involved opening and aligning 148 photos and building a point cloud with mesh and texture—essentially, a realistic 3D shape.

Because 3D modeling is such a demanding task, we expected to see longer wait times for this workflow compared to our Adobe Creative Cloud workflows. While it did take a significant amount of time for the ThinkBook 13x Gen 4 to complete the workflow, the difference between the newer and older systems was staggering (see Figure 18). The ThinkBook 13x Gen 1 took almost 11 hours to complete the workflow, more than double the amount of time that the ThinkBook 13x Gen 4 required.

With the ThinkBook 13x Gen 4, powered by an Intel Core Ultra 9 processor 185H, you could kick off our workflow when you arrived at work and have it complete and ready to work with after lunch. The ThinkBook 13x Gen 1 wouldn't give you that luxury. With the older device, if you started the workflow at 9 a.m., you'd be staying late at work waiting for it to finish.

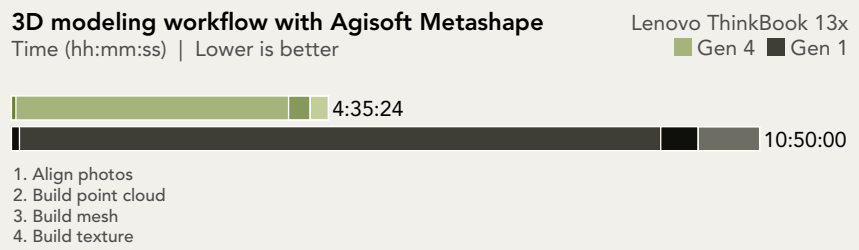
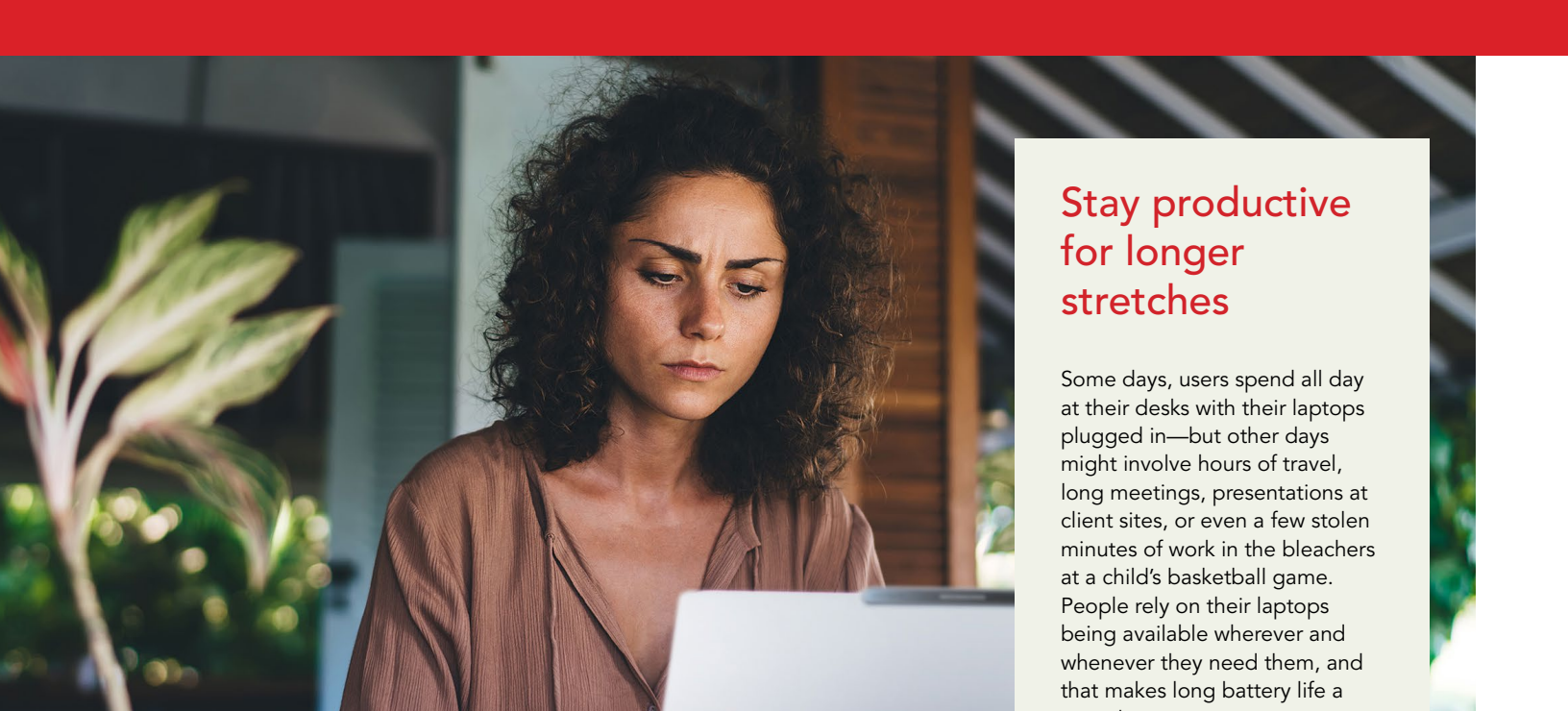


Figure 18: Time to perform a 3D modeling workflow using Agisoft Metashape. Less time is better. Source: Principled Technologies.





Stay productive for longer stretches

Some days, users spend all day at their desks with their laptops plugged in—but other days might involve hours of travel, long meetings, presentations at client sites, or even a few stolen minutes of work in the bleachers at a child’s basketball game. People rely on their laptops being available wherever and whenever they need them, and that makes long battery life a critical requirement.

To assess real-world battery life, we ran two custom workloads continuously until the devices’ batteries died. In the first, a local video playback test, we played a local MP4 video in full screen mode. In the second, we had the system join a Zoom video virtual meeting connected to several other systems, one of which was broadcasting a video to the meeting. For both tests, we set the devices’ screen brightness to as close as 250 nits as possible to simulate a user keeping their screen on a high brightness, and we changed settings to ensure that the devices never went to sleep or reduced their brightness.

In both tests, the new Lenovo ThinkBook 13x Gen 4, powered by an Intel Core Ultra 9 processor 185H, ran significantly longer than its older counterpart. As Figure 19 shows, even on a heavy virtual meeting workload, the ThinkBook 13x Gen 4 delivered over 6 hours of battery life in comparison to under 4 hours from the ThinkBook 13x Gen 1. When you’re on the go and away from an outlet, that extra time could allow you to make it to a critical Zoom call or put the finishing touches on a key deliverable before the deadline.

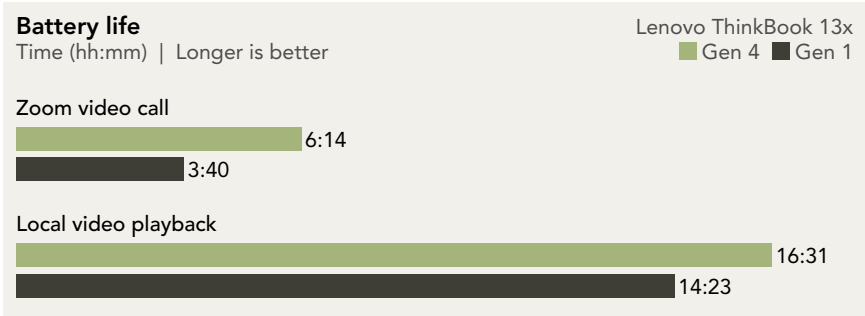


Figure 19: Battery life, in hours and minutes, that the devices sustained while attending a virtual meeting and while running a local video playback workload. Higher is better. Source: Principled Technologies.

Elevate your video conferences

If you work with team members or clients in different time zones, you likely attend at least some meetings virtually. To make the most of your meeting time—and to make a good impression on colleagues—it’s helpful to have audio and video capabilities you can rely on.



We looked at how loud each system’s speakers projected when we turned them up as loud as possible (Figure 20). Of course, you won’t always want to work at maximum volume, but a higher possible max volume gives you more options. That can come in handy in the middle of a multi-hour meeting, when you might need to step away from your laptop to grab a snack but don’t want to miss what’s going on.



Figure 20: Maximum speaker volume output levels. Higher is better. Source: Principled Technologies.

Your system’s onboard microphone is another important piece of the video conference puzzle. If you’re working in a noisy space, whether it’s loud air conditioning or someone blowing leaves outside the window, your colleagues on the other end of the meeting will have a better experience if your microphone can reduce the background noise. In a test that measured how well both systems could reduce the noise of a fan, we found that the Lenovo ThinkBook 13x Gen 4 handled noise reduction better than the older ThinkBook 13x Gen 1 (see Figure 21).

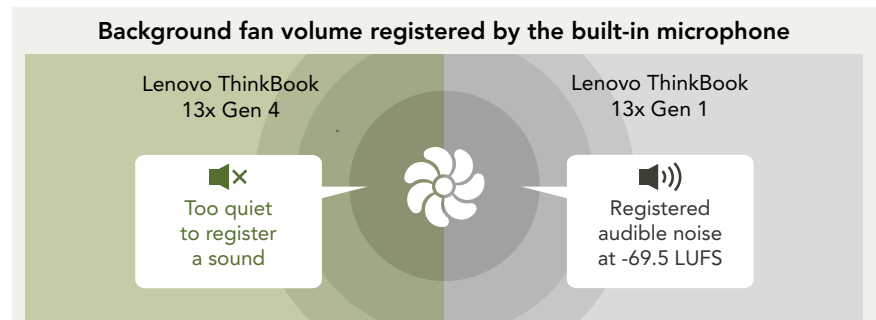


Figure 21: Results of our microphone noise reduction test. Lower LUFS, which are a standard loudness measurement, are better. Source: Principled Technologies.



As critical as audio considerations are, video conferences often involve just that: video. Putting your best face forward can be tough if your camera is low quality. The Lenovo ThinkBook 13x Gen 4 comes with the detachable Lenovo Magic Bay Light to address exactly this concern. We snapped selfies using the cameras on both devices, first in a well-lit room and then in a dimly lit room; next, in the dimly lit room, we switched on the Lenovo Magic Bay Light on the ThinkBook 13x Gen 4. You can see those photos in Figures 22, 23, and 24. Which device would you rather have for your next client presentation?

Selfies in a dimly lit room

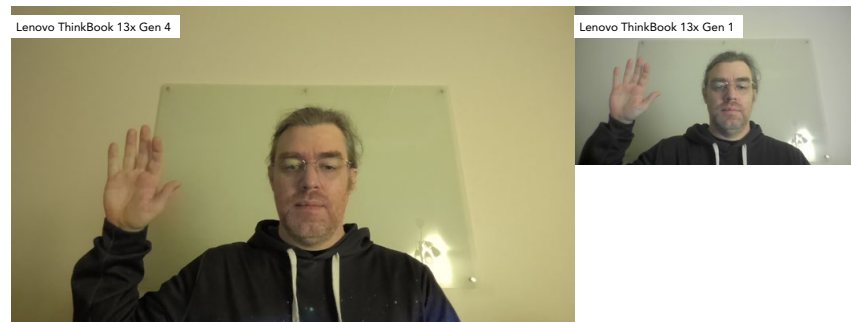


Figure 22: Unedited photos from the ThinkBook 13x Gen 4 (left) and the ThinkBook 13x Gen 1 (right) in a ~38 lux room with screen brightness set to ~200 nits. The image on the left is larger because the ThinkBook 13x Gen 4 has a higher resolution. Source: Principled Technologies.

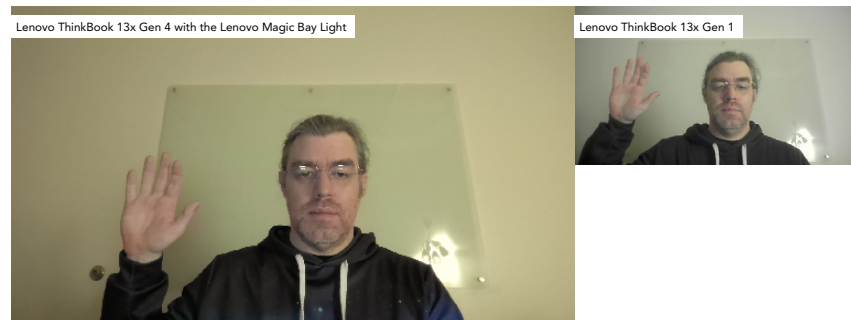


Figure 23: Unedited photos from the ThinkBook 13x Gen 4 with the Lenovo Magic Bay Light (left) and the ThinkBook 13x Gen 1 (right) in a ~38 lux room with screen brightness set to ~200 nits. The image on the left is larger because the ThinkBook 13x Gen 4 has a higher resolution. Source: Principled Technologies.

Selfies in a well-lit room

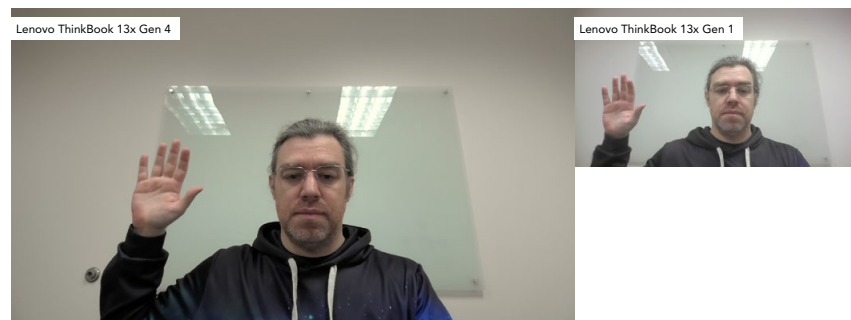


Figure 24: Unedited photos from the ThinkBook 13x Gen 4 (left) and the ThinkBook 13x Gen 1 (right) in a ~622 lux room with screen brightness set to ~200 nits. The image on the left is larger because the ThinkBook 13x Gen 4 has a higher resolution. Source: Principled Technologies.

Low heat, high performance

We've all had the experience of working on a laptop and slowly realizing—like a frog in boiling water—that our knees have gone from pleasantly warm to burning up, forcing us to take a break or move to a desk. (Some of us also may have seen our laptops shut down due to excess heat!) For users who sometimes work during commutes, on couches, or in communal spaces, it's important for both comfort and focus that their devices stay cool under pressure.



We ran a sustained, heavy workload on the ThinkBook 13x Gen 4 and the ThinkBook 13x Gen 1 while measuring the temperatures of the keyboard decks, or where your wrists rest while typing, and the undersides of the chassis. The newer Intel Core Ultra 9 processor-powered ThinkBook 13x Gen 4 was slightly warmer on the keyboard deck than the older device, but its underside temperatures were dramatically cooler (Figure 25). The newer device ran more than 23°F cooler than the older one, a noticeable difference to someone just trying to wrap up a few final edits to a photo before their train stop.

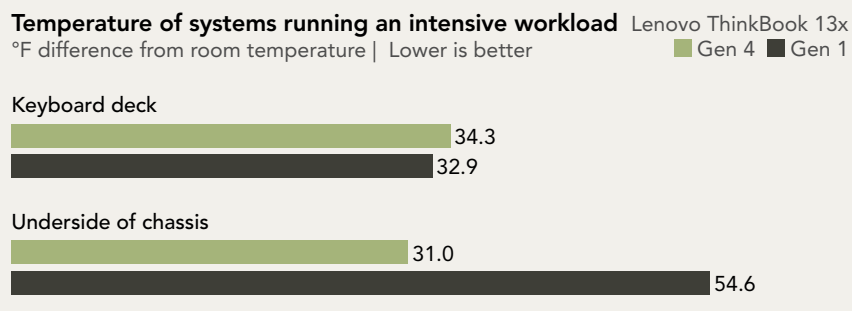


Figure 25: Thermal testing results while running a sustained Cinebench 2024 multi-core workload. Lower temperatures are better. Source: Principled Technologies.



Conclusion

Whether you spend most of your workday jumping between a web browser and Microsoft 365 applications or you regularly settle in for hours of intense AI work or 3D rendering, the ideal system is one that will respond quickly and last a long time on battery. In a host of real-world tests, we found that the new Lenovo ThinkBook 13x Gen 4, featuring an Intel Core Ultra 9 processor 185H, delivered stronger performance, longer battery life, and other user experience improvements over a three-year-old Lenovo ThinkBook 13x Gen 1. If you've been holding off on an upgrade, that's a whole lot of reasons to take the plunge.

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