

Welcome to the Copilot+ PC Generation

III.

Powered by Intel Core Ultra 200V Series Processors

Ryan Shrout

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Introduction

Copilot+ PCs are the fastest, most intelligent Windows PCs ever.

Microsoft is ushering in the next generation of Windows devices this year with the launch of the Copilot+ PC category. By partnering with a broad ecosystem of system integrators, silicon and technology providers, and software vendors, they are establishing a new paradigm in personal computing. With Windows 10 support ending on October 14th, 2025, now is the perfect time to consider upgrading. Copilot+ PCs provide cutting-edge AI capabilities, delivering unmatched power and performance that push the boundaries of what users can expect from their devices, making them an excellent choice for forward-thinking consumers and businesses.

Featuring powerful new silicon with an integrated NPU (neural processing unit) that delivers at least 40 TOPS (trillion

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operations per second), Copilot+ PCs offer all-day battery life and access to the most advanced AI models. These innovations enable you to do things previously impossible on the PC. With Recall (Preview), effortlessly find and search content you've viewed on your PC; generate and refine AI images instantly using Cocreator directly on your device; bridge those language barriers with Live Captions, translating audio from more than 40 languages into English; take advantage of Windows Studio Effects to add creative and high-quality processing to your conference calls.

This new category pushes the limits of traditional computing performance and battery longevity. Through partnerships with silicon giants including Intel, Microsoft and the Copilot+ program are providing systems with superior energy efficiency. Consequently, users of Copilot+ PCs can expect battery life surpassing that of earlier Windows laptops and even rival MacBook Air devices. Coupled with this remarkable endurance, the performance in both conventional and emerging Al-driven applications will establish a new standard for comparing laptops on Windows and Mac platforms in the future.

Copilot+ PCs are now available from every major system OEM and come in a wide range of form-factors, price points, and screen sizes. This report will look at the latest offerings powered by the new Intel Core Ultra 200V Series processors.

The New Intel Core Ultra 200V Series Processors

The latest processor family from Intel for Windows laptops offers a truly revolutionary product for the world of x86 platforms, focusing on power efficiency and battery life as the primary design point. That emphasis on battery life is paired with a host of new technology integrations including all-new P-core and E-core architectures, a faster integrated Arc graphics design, and of course, a much more performant integrated NPU to become Intel's first Microsoft Copilot+ PC ready chip.

Intel is known for its strong support of the broad ecosystems of system partners. It launched 9 different SKUs of Intel[®] Core[™]

Ultra 200V series processors to support the tidal wave of AI PCs coming this year and into 2025. The flagship Core Ultra 9 288V and the entire family of Core Ultra 7 options include 8 CPU cores (4 P-cores an 4 E-cores), 12MB of cache and an Intel Arc 140V integrated GPU. The 288V hits a pea clock of 5.1 GHz with a 30-watt base powe while the Core Ultra 7 parts range from 4.8 to 5.0 GHz peak clock and have a 17-watt CPU base power. The Core Ultra 5 family still has the same 8-core configuration, but includes slightly less cache, lower peak clocks, and a slower GPU implementation.

This new generation of processors Intel has built a powerful NPU on the Core from Intel is a unique step, building an Ultra 200V series of processors, offering up architecture and design that is focused less

intel CORE: ULTRA

	to 48 or 47 TOPS of compute on the Core
	Ultra 9 and Ultra 7 models. The Core Ultra
	5 offers 40 TOPS and maintains support
	for the full suite of Copilot+ capabilities
d	from Microsoft. Intel also offers Al compute
	metrics for its upgrade GPU, with a range
ak	of 53-67 TOPS of additional performance
r,	thanks to the XMX AI acceleration engines
3	built into the graphics architecture.
	Intel provides a significant amount of
	opportunity for software developers and
t	the ecosystem to utilize in the evolution of
	the AI PC.

on pure multi-threaded performance and is more about balancing power efficiency with the accelerators and technology needed to offer compelling Al and graphics capabilities, without sacrificing the standard computing performance consumers expect. This provides an impressive platform for what will likely be the largest family and collection of Copilot+ PC designs in the Window ecosystem, thanks to Intel wide-ranging partnerships and OEM partners.



Testing Comparison

For our system testing comparison, we are looking at two different laptops using the Core Ultra 200V series processors, the first featuring the higher performance Core Ultra 9 288V and the other with the Core Ultra 7 258V. To show the generational performance improvement that comes with this new Copilot+ PC lineup we have included results from a first-generation Core Ultra processor, the Core Ultra 7 155U, targeting a similar thin and light form factor, and an older Core i7-1185G7 laptop to see the 3-year upgrade comparison. Finally, to highlight how this segment of PCs compares to the Apple MacBook line we have performance from the 15" M3based MacBook Air using the latest MacOS Sequoia update.

	Core Ultra 200 Series (Vendor A)	Core Ultra 200 Series (Vendor B)	Core Ultra 100 Series (Vendor C)	11th Gen Core i7 (Vendor D)	Apple MacBook Air M3
CPU	Core Ultra 9 288V	Core Ultra 7 258V	Core Ultra 7 155U	Core i7-1185G7	Apple M3
CPU Cores	4 P-cores 4 E-cores	4 P-cores 4 E-cores	2 P-cores 8 E-cores 2 LP E-cores	4 cores	4 P-cores 4 E-cores
CPU Clock	Up to 5.1 GHz	Up to 4.8 GHz	Up to 4.8 GHz	Up to 4.8 GHz	Up to 4.0 GHz
GPU	Intel Arc 140V	Intel Arc 140V	Intel Graphics	Iris Xe Graphics	10-core
NPU	Up to 48 TOPS	Up to 47 TOPS	Up to 10 TOPS	N/A	18 TOPS
Memory	32GB	32GB	16GB	16GB	16GB
Screen Size	14"	15"	14"	13"	15"





Power Efficiency and Battery Life

One of the most important characteristics of picking a new PC is the real-world battery life you can expect from using the device day-in and day-out. All aspects of battery life are important: during active use in both high and low-performance workloads, while watching video or other passive activities, and the ability for the system to handle standby power so it's always ready when you pull it out of your bag, even if it has been a few days.

There are many considerations when looking at battery life of a laptop including battery capacity itself, but also screen size, screen technology, screen brightness, and of course the platform itself. Signal65 testing considers all of this in our analysis and testing, providing realworld results.



There are three different tests above. The first is the Procyon Office Productivity test that measures battery life while looping through some easy-tomoderate workloads using the Microsoft Office suite of applications. The Intel Core Ultra 200V series platforms provide up to 16.5 hours of battery life in this situation, more than enough for a full day's work, and then some. While the Core Ultra 155U system is

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Battery Life Testing

competitive with over 13.5 hours of usage in this test, you can see the massive upgrade when compared to the Core i7-1185G7 machine that was only able to produce 7.5 hours of measured battery life. The Apple MacBook Air systems do not support this benchmark, so results for it are not included.

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Power Efficiency and Battery Life

The second test looks at our custom Signal65 web browsing battery testing scenario, which uses Google Chrome and loops through different websites, scrolling, watching streaming video, all with multiple tabs open. At up to 13.3 hours, the Intel Core Ultra 288V system from Vendor A offers enough browsing time to get most any user through a day of research and work. The 3-year-old system from Intel, the Core i7-1185G7, was only able to hit 6 hours, giving that new Vendor A system a 2.2x increase in browsing battery life!

Finally, is the video playback test, where battery life is measured using an offline video, repeated for the duration of the test. This time the Vendor B system with the Intel Core Ultra 258V was the longest running system, hitting nearly 19 hours of usage, beating out even the Apple MacBook Air by more than a full hour. The previous generation system with the Core Ultra 155U did impressively well still, getting over 17 hours of usage in our testing. Compared to the laptop using the 3-year-old 11th gen platform, the new Core Ultra 200V series offers as much as 2.7x more battery life!

Summary

The battery and power efficiency results on the Intel Core Ultra 200V series Copilot+ PCs clearly show that the Windows laptop market is making battery life a critical component of the experience for your next laptop. One of Microsoft's key drivers for the Copilot+ PC segment is to advance and improve the entire ecosystem of Windows PCs relative to previous generation products and the competitive landscape that Apple has changed. And in our battery testing results, this goal is achieved.



NPU & Al Performance

The NPU on the Intel Core Ultra 200V series of processors is one of the most critical new features to provide the capabilities not just for the wide array of Copilot+ PC features but enable a new generation of AI application developer to take advantage of the performance and efficiency it provides. Microsoft has been incredibly bullish on the NPU as an accelerator for the PC space and its value for AI PCs that want to both operate in a high-performance manner, but also do so with extreme efficiency to not impact battery life and user experience.

Measuring the performance of the AI subsystems can be a complicated process as there are benchmarks and still a small (but growing) number of real-world applications.

Al Performance



The Procyon AI tests aim to look at performance of AI (across both the NPU and GPU) through different models that might apply to the consumer space. The Procyon AI Benchmark uses the OpenVINO open-source AI toolkit when being run on any Intel platform, using the software stack to place the workload on the best-available IP per processor. In our testing the new Core Ultra 200V processors offer 4.5x more AI computing power than the 11th generation laptop and over 3.3x more performance than the first-generation Core Ultra processors and the Vendor C system being tested. These are massive leaps and are what makes the Copilot+ PC category so interesting for consumers and developers.

Even compared to the Apple M3 and the MacBook Air, our two laptops with the Intel Core Ultra 200V processors provide nearly 50% more peak AI compute from the integrated neural processors.



Content Creation Performance

For users that are looking for a laptop with the ability to handle content creation tasks in a thin and light form factor, the Intel Core Ultra 200V series of processors provides performance from both the CPU and GPU to get the job done.



In our testing with the Procyon Photo and Video Editing benchmark suites, which utilize Adobe Photoshop, Lightroom, and Premiere Pro as the targeted applications, the results bode well for users that want to combine some content creation tasks with a thin, light, and battery efficient platform. In the photo editing workload, the Core Ultra 200V processors are 42% faster than the 11th generation laptop and 25% faster than the previous generation Core Ultra 100-based laptop from Vendor C. The MacBook Air pulls slightly ahead here, but only by about 7%.

The video editing test shows better results for the Core Ultra 288V and 258V systems, both providing more than 2.2x the performance of the 11th generation platform and 85% better performance than last year's Core Ultra 155U thin and light laptop. These increases combine the performance of the new CPU cores as leaning on the upgraded integrated graphics on the 200V family to really showcase the advantages of these Copilot+ system upgrades.

Content Creation Performance

3D Graphics Performance



3DMark Graphics Performance

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While the NPU and the CPU get a lot of (well deserved) attention in the new Copilot+ PC families, the value of high-performance integrated graphics is another key element. This graphics performance is relevant to mainstream gaming capabilities of course, but also is used by some third-party applications for AI compute and for content and media creation tasks.

A quick look at graphics performance through 3DMark Nomad and Solar Bay shows significant improvements (2x-2.5x) for the Core Ultra 200V laptops compared to the Core Ultra 7 155U system from Vendor C. Note that the U-series in the Core Ultra 100 lineup has a much smaller integrated GPU than the H-series laptops, so I'd expect the performance delta between a 155H part and something like the 288V to be much closer, but considering we are comparing these thin-and-light integrations with lower power levels, this comparison is accurate. In both benchmarks, including Solar Bay that utilizes ray tracing, the new Intel Arc 140V graphics is able to match or beat the Apple M3 performance.



High Performance CPU Cores

Building platforms that are power efficient doesn't mean that you need to sacrifice much on the performance side. In fact, the Intel Core Ultra 200V processor shows solid performance advantages over previous generation thin-and-light products from Intel and is competing strongly against Apple.



In this chart we compare performance on all platforms across the Geekbench and Cinebench family of tests. These help us understand the peak and sustained performance of the platforms, though of course more real-world application tests add to the clarity and focus of any comparisons. Scores are shown relative to the performance of the Core i7-1185G7 system.

The Intel Core Ultra 9 288V and Ultra 7 258V score fairly close to one another, with the exception of the all-core test of the Cinebench 2024 results. In the single threaded results, which are more important for user experience and bursty workloads, the new parts are 30-47% faster than the older 11th generation CPUs and are up to 23% faster than the earlier generation Core Ultra 100 series part tested. And even though the new processor family has fewer cores than the previous generation, in our Cinebench MT testing the Core Ultra 7 288V is 16% ahead of last year's product. In that same Cinebench test, the new Core Ultra 288V is more than twice as fast as the 11th generation system, highlighting amazing 3-year upgrade paths.

CPU Performance

The M3-based MacBook Air has strong performance on the single threaded results in both tests, but the gap closes slightly in the multithreaded Geekbench and Cinebench 2024 scores. The Apple M3 is considered one of the fastest CPUs available in the consumer market, so for Intel's new architecture match performance in the Cinebench 2024 multi-threaded results while remaining power efficient is a great sign of its competitiveness in the market.

High Performance CPU Cores



The Procyon Office Productivity performance data is measured while looping through some easyto-moderate workloads using the Microsoft Office suite of applications, focused on the time to complete the functions and observed performance of each system.

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One of the first things we notice looking at the data is that significant jump in performance over the 3-year-old Core i7-1185G7 system is more than 30% on the overall results, and more than 50% in the Word subtest, indicating that even in what many would consider simple tasks, a new PC can offer impressive performance increases. Even on a yearover-year basis, the new Core Ultra 200V processors offer up to 11% faster overall performance in office productivity compared to the first-generation Core Ultra parts.

The Apple MacBook Air 15" can't keep up with the Core Ultra 200V parts, coming in slower in the overall results and every subtest that is measured across the range of Microsoft Office applications.

Summary

The general CPU performance of the new Copilot+ PCs based on the Intel Core Ultra 200V series processors is a noticeable improvement over the previous generation while providing up to a 2x increase in performance over the 3-year-old laptop from Vendor D with its 11th generation Core CPU. Against the fastest MacBook Air available today, the Core Ultra 288V and 258V laptops show leadership performance in our office testing and compete very well against the Apple M3 in both Cinebench 2024 and Geekbench 6.3.

Windows Copilot+ Features and Capabilities

In addition to the emphasis on performance and battery life that Microsoft has put on this new laptop category, a brand-new set of features on Windows 11 will only work when you have a Copilot+ PC with a dedicated NPU.

Customers will begin to see Copilot+ PC experiences on Intel-powered devices later this year through free Windows updates but availability will vary by device and market.

Recall (Preview)

Recall (Preview) is a feature that allows you to find things on your computer that you have seen, viewed, or read previously. It works by monitoring activity on the PC, using Al language models to analyze the images and words to really understand them, then creates a highly secure on-device vector database of that content for easy searching later. It can be quite difficult to just describe the power of this kind of feature, so it's better to look at a video of Recall (Preview) in action. Recall (Preview) is shifting from a preview broadly available for Copilot+ PCs on June 18, 2024, to a preview available first to members of Microsoft's Windows Insider Program starting in October. After Microsoft gets feedback on Recall (Preview) from the Windows Insider community, they plan to make Recall (Preview) available more widely to customers with Copilot+ PCs through a post-launch Windows Update.

Did you happen to look at a pair of shoes on your social media browsing last week but can't remember the brand or the style?



Using Recall (Preview) to search for "red shoes Instagram" utilizes the on-device AI engines to search that database and find what you were looking at, bringing it back on the screen so you can read the page and find all the information you need. Remember a video conference you had with a potential client that was wearing a black hat but not their name? Searching for "teams call man wearing black hat" can save you once again!

Recall (Preview) is a feature that has the power to fundamentally change how we interact with the data, ideas, and content that we use on our PC every day and it requires high performance, highly efficient Al processing on the NPU in the background to make this possible.

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Windows Copilot+ Features and Capabilities

Cocreator

With an update to the Paint app on your Windows Copilot+ PC, Cocreator is multimodal with support for both text-to-image and image-to-image generation, and allows you to combine both an input field and a drawing pad input where you use your finger, mouse or cursor to roughly outline an idea, to create an Al-generated image. There is a slider that allows you adjust the level of 'creativity' – basically how much you want it to adhere to your original sketch or not – and some additional style options like 8-bit or watercolor, to add a specific tone.



This function utilizes the NPU on the Copilot+ PC and you can see in the image above the activity running on that NPU when you move the slider position, change the text prompt, or change the drawing pad.



Windows Copilot+ Features and Capabilities



Photos Restyle Image and Image Creator

Restyle Image and Image Creator are features in the Microsoft Photos app, exclusive to Copilot+ PCs, that let you reimagine your photos or create new imagery with the help of Al. With Restyle Image you can add contextual Al-generated styles to your pictures, by choosing one of the curated, pre-built options and adjusting the creativity slider, or by creating your own custom style with a text prompt.

With Image Creator, you can create new images by entering a text description of what you'd like to see. Both features use proprietary and open-source AI models that are finetuned by Microsoft. The models come with your Copilot+ PC







Windows Copilot+ Features and Capabilities



Windows Studio Effects

Windows Studio Effects is the name for the AI-powered video and audio effects that are available on Copilot+ PCs with compatible NPUs. They include creative filters, portrait light & blur, eye contact adjustment, and voice focus. This works by modifying the outbound and inbound audio and video feed to enhance the conference call experience for users on both sides. Some Windows Studio Effects features, like creative filters, portrait light, and eye contact: teleprompter, are unique to Copilot+ PCs.

Live Captions can detect up to 44 different languages and handle real-time translations of that audio into English, making more content across the globe more accessible to users anywhere. And it works across any audio stream on your laptop without requiring any developer intervention.



Live Captions

Conclusion

The era of the Copilot+ PC is here today, and Microsoft has partnered with Intel and its impressive Core Ultra 200V series of processors to offer a host of unique options to the market. While the emphasis on the Copilot+ PC is clearly around the adoption of Al-enabled Windows features and applications courtesy of the dedicated NPU AI acceleration engine that is built into the Intel Core Ultra 200V processors, that's not all the initiative represents. Consumers buying a Copilot+ PC can be sure they are getting one of the fastest and most efficient laptops with some of the best performance on the market; and we aren't only referring to the Windows laptop market.

No silicon provider has a wider array of partnerships in the market, or powers more laptops and designs wins, than Intel, and for the Copilot+ PC segment to really grow and thrive, the Core Ultra 200V parts will need to be the seed planted in the market. With systems shipping worldwide today from nearly every system OEM and in dozens of form factors, screen sizes, and configurations, no other chip provider can match the scale Intel will wield.

The performance of the new integrated NPU on the Core Ultra 200V processors was impressive, with a more than 3x increase over the previous generation Al PC from Intel and nearly 50% faster than



the best Apple has built in the M3 chip. This means users will get the power they need from the NPU for Copilot+ features and the power efficiency to make sure that AI doesn't drain their battery while getting work done.

Add in the improved performance of the Intel Arc integrated graphics based on a new GPU architecture, that also happens to include some amazing AI acceleration engines called XMX, and you have a combined IP that provides a lot of opportunity for software innovation to grow and expand in the market. The new CPU design actually lowers core count relative to the previous generation but improves per-core performance to win our CPU benchmarks and does so while emphasizing power efficiency.

Which brings us to battery life, an area where Intel has been bullish with this new family of processors. And Intel delivered: the Core Ultra 258V system offered up to 19 hours of battery life in our testing, beating out the MacBook Air in our video playback results. That means a Copilot+ PC based on the Intel Core Ultra 200V parts will be able to offer performance, battery life, and advanced AI features that we have not seen from any other Intel-based system in the market.



Important Information About this Report

Contact Information

Signal65 | signal65.com | info@signal65.com

Contributors

Ryan Shrout President & GM - Signal65 **Ken Addison Client Performance Director - Signal65**

Inquiries

Contact us if you would like to discuss this report and Signal65 will respond promptly.

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About Signal65

Signal65 exists to be a source of data in a world where technology markets and product landscapes create complex and distorted views of product truth. We strive to provide honest and comprehensive feedback and analysis for our clients in order for them to better understand their own competitive positioning and create optimal opportunities to market and message their devices and services.



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System Configurations

	Core Ultra 9 288V (Vendor A)	Core Ultra 7 258V (Vendor B)	Core Ultra 7 155U (Vendor C)	Core i7-1185G7 (Vendor D)	MacBook Air 15" - M3
CPU	Intel Core Ultra 9 288V	Core Ultra 7 258V	Intel Core Ultra 7 155U	Intel Core i7-1185G7	Apple M3
Graphics	Intel Arc 140V	Intel Arc 140V	Intel Graphics	Intel Iris Xe Graphics	Integrated
NPU	Intel Al Boost	Intel Al Boost	Intel Al Boost	N/A	Apple Neural Engine
RAM	32GB LPDDR5X-8533	32GB LPDDR5X-8533	16GB LPDDR5X-7467	DDR4-3200	16GB LPDDR5X-6400
Storage	Micron 1TB MTFDKCD1T0THE-1BKAABLA	512GB Samsung MZVL7512HELU-00BTW	1TB Samsung MZAL81T0HDLB-00BL2	512GB Intel SSDPEKKW512G8	256GB NVMe
OS Build	26100.1742	26100.1742	26100.1742	26100.1742	MacOS Sequoia 15.0
Windows Power Mode (Performance)	Best Performance	Best Performance	Best Performance	Best Performance	N/A
Windows Power Mode (Battery Tests)	Best Power Efficiency	Best Power Efficiency	Best Power Efficiency	Best Power Efficiency	N/A
OEM Power Settings (Performance)	N/A	Performance	Performance	N/A	N/A
OEM Power Settings (Battery Tests)	N/A	Whisper	Battery Saver	N/A	N/A
Virtualization Based Security	Enabled	Enabled	Enabled	Enabled	N/A

Applications Used

Geekbench 6.3.0	Microsoft Office 365 2409
Cinebench 2024.0.1	Adobe Photoshop 25.12
3DMark 2.29.8294	Adobe Lightroom Classic 13.5.1
UL Procyon 2.8.1352	Adobe Premiere Pro 24.6.1

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