

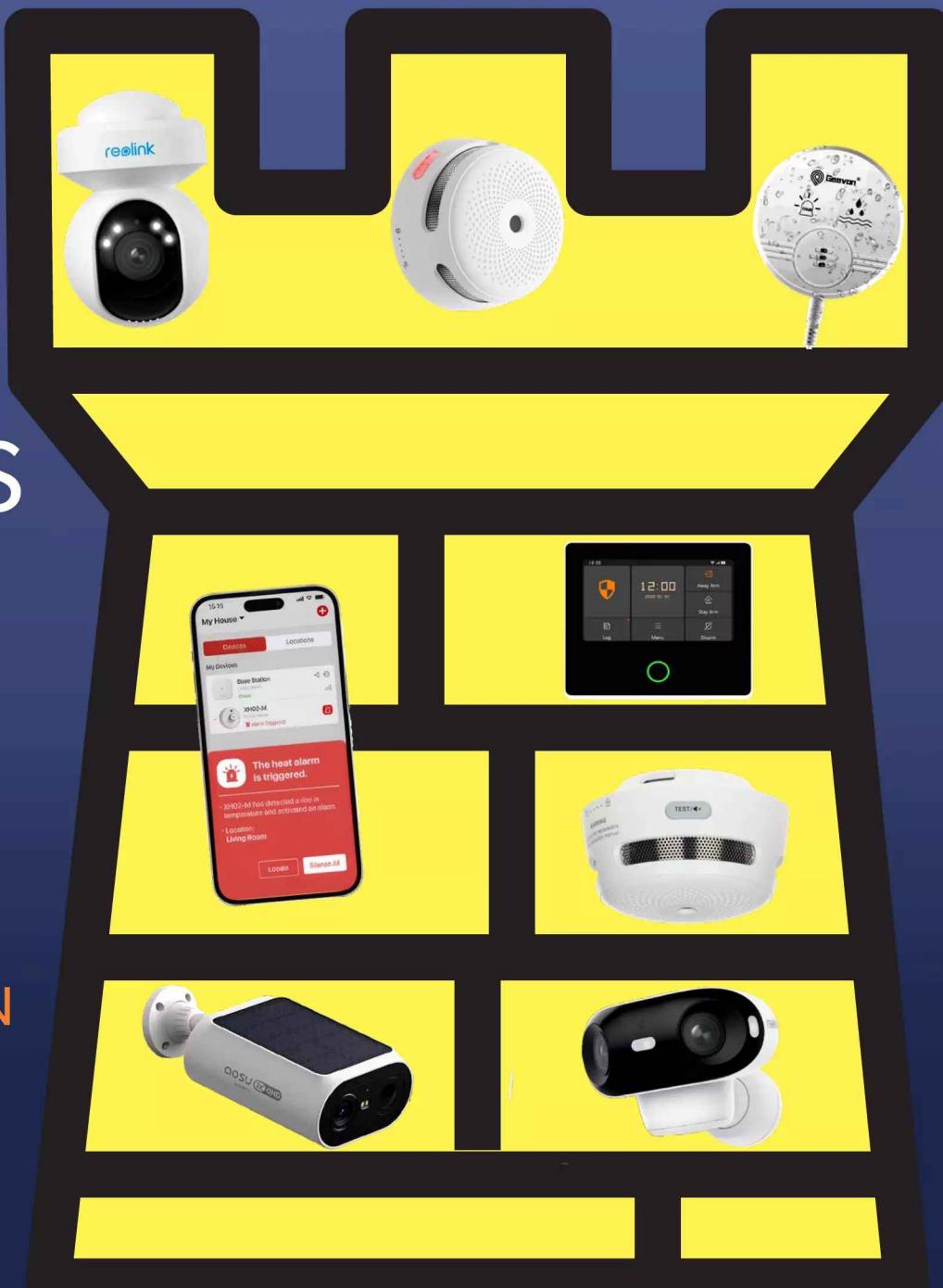
INSIDE: SEIZE CONTROL OF WINDOWS UPDATES

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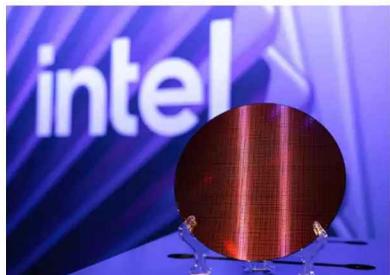
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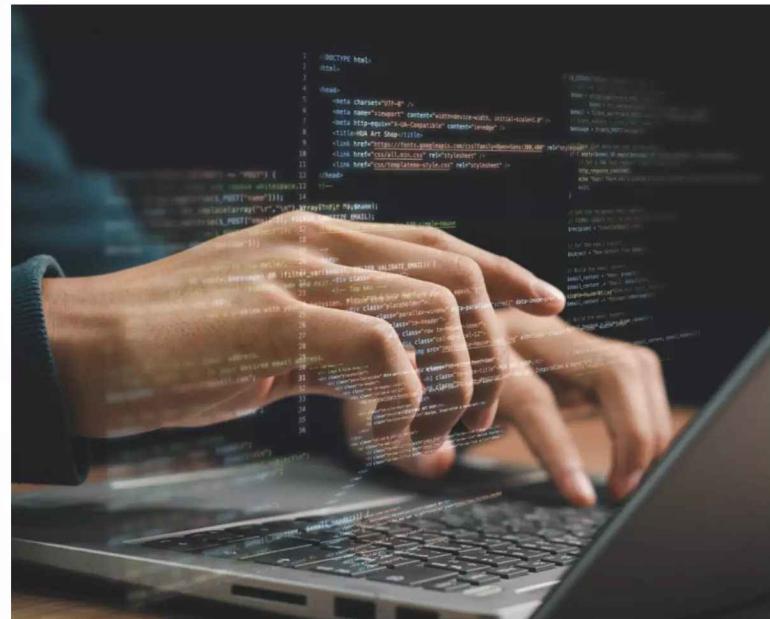
PCWorld

DECEMBER 2025

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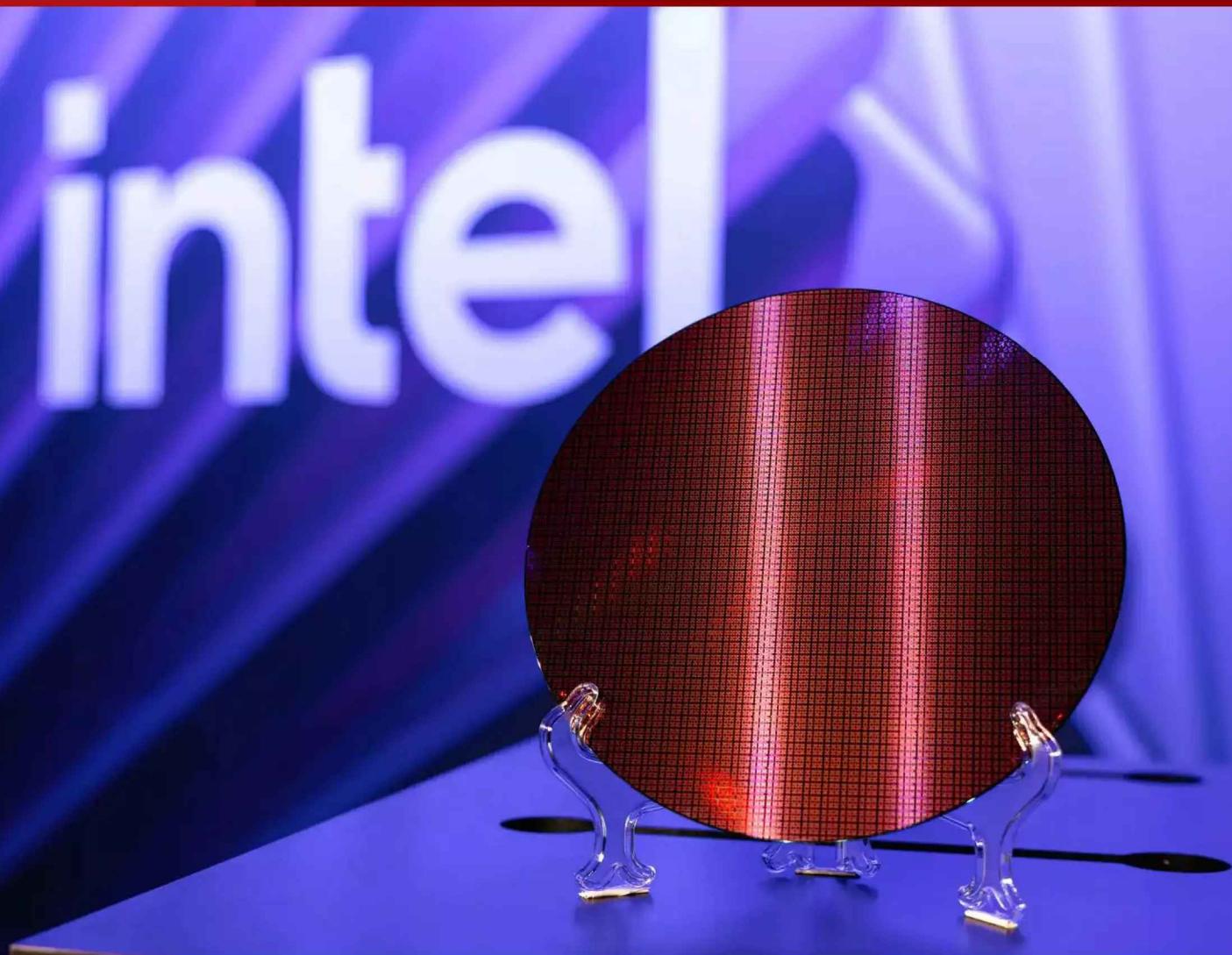
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Intel's new Panther Lake CPU: 11 essential facts you should know

If you just need the basics about Intel's new laptop CPU, you've come to the right place.

BY MARK HACHMAN

Panther Lake, the next generation of Intel's Core Ultra series of laptop processors, is nearly here. But what is it, exactly?

Intel spent several days explaining the fine details of Panther Lake to journalists at a

recent press event, including its new compute cores, graphics cores, NPU AI, and wireless. If you're interested, PCWorld has a deep dive into all of Panther Lake's technologies (fave.co/48ZnWhb). But if you just want the basics, stay here. Here's what

you need to know about Intel's Panther Lake chip, in brief.

1. EXPECT PANTHER LAKE IN 2026

Intel executives talked about some of the details of Panther Lake themselves. But the details that matter to laptop buyers (speed, price, and which laptops will have them) will have to wait for CES 2026 in Las Vegas this coming January. The actual laptops will ship soon after, perhaps even in January itself.

2. THREE CHIP FAMILIES, THREE CPUS

Each Panther Lake chip consists of three possible types of compute cores: a Cougar Cove performance core, a Darkmont efficiency core, and a Darkmont low-power efficiency core. Performance cores handle tasks like games; efficiency cores process less challenging duties like email and Microsoft Teams.

| Panther Lake Package Configurations | | |
|---------------------------------------|--|---|
| 8 core | Up to 8 cores | 16 core |
| GPU | Up to 4X ^e -cores X ^e 3 | Up to 16 cores |
| NPU | NPU 5 | |
| IPU | IPU 7.5 | |
| X ^e media & display engine | | |
| Memory | LPDDR5X Up to 6800MT/s DDR5 SO-DIMM Up to 6400MT/s | LPDDR5X Up to 8533MT/s DDR5 SO-DIMM Up to 7200MT/s |
| I/O | 12x PCIe lanes 8x PCIe Gen 4, 4x PCIe Gen 5 | 20x PCIe lanes 8x PCIe Gen 4, 12x PCIe Gen 5 |
| Connectivity | Intel® Wi-Fi 7 (R2) & Intel® Bluetooth® Core 6, Thunderbolt™ 5 and 4 | |

Intel Panther Lake package configurations.

Laptop makers will include one of these three Panther Lake chips inside their products:

- An 8-core chip, with 4 performance (P-cores), 4 low-power efficiency-cores (LP E-cores); 4 Xe3 GPU cores and 4 ray-tracing units
- A 16-core chip, with 4 P-cores, 8 efficiency cores (E-cores), and 4 LP E-cores; 4 Xe3 GPU cores and 4 ray-tracing units
- A 16-core chip, with 4 P-cores, 8 E-cores, and 4 LP E-cores; 12 Xe3 GPU cores and 12 ray-tracing units.

3. WHO IS EACH PANTHER LAKE CHIP FOR?

The 8-core chip will probably be for low-end PCs, though it's not quite clear how everything will break down. If you're looking for a gaming laptop with a Panther Lake chip inside, you may be surprised to learn that the middle 16-core/4 Xe3 chip will be the candidate here. The 16-core/12Xe3 chip sounds like it could be used as Intel's answer

to AMD's Strix Halo or Ryzen AI Max (fave. co/4aiBFhw): designed for gaming, local AI, and possibly handheld PCs as well.

4. A MODULAR CPU, AGAIN

Intel has built its processors from modular

chiplets, or tiles, for several generations now. In Panther Lake, there is a compute tile, a GPU tile, a platform controller tile, and a “base tile” that the other tiles are mounted upon. All of the tiles are connected together via a second-gen scalable I/O fabric and use Intel’s Foveros technology to stack them.

Intel built its GPU tile as a separate tile, which apparently allowed for flexibility in its graphics options. Eventually, Intel could use this disaggregated GPU tile as a way to bring the Nvidia RTX GPU tiles into its chips (fave.co/47MqBst), but this seems like it’s a ways off for now. Still, several tiles are built at TSMC, not Intel, even though the U.S. government has invested in the company (fave.co/4oeCAFb) to encourage domestic chipmaking.



Look closely, and you can see the tiles in this Panther Lake chip.

5. INTEL’S XE3 GPU PROVIDES A SHARP JUMP IN PERFORMANCE

Integrated graphics continually improves, and Intel believes that the Xe3 GPU core is 50 percent faster on average than Lunar Lake just by itself. The Xe3 core now supports

multiframe generation, too—probably its most controversial feature.

6. MULTIFRAME GENERATION: THE ‘FAKE FRAMES’ DEBATE COMES TO LAPTOPS

Perhaps the most important addition to PC graphics technology in the past



Intel is hoping that multiframe generation makes games like this revamp of Painkiller much more appealing to laptop gamers.

decade—even more than ray tracing—has been a transition from rendered frames to AI-generated frames. It's a bit like how your mind processes cartoon animations: It sees a still image and then another still image, and blurs them together. In this case, it's the GPU doing the work, creating a "made-up" frame between two "actual" frames.

With Panther Lake, multiframe generation adds three of these interpolated (some call them "fake") frames. Under the right conditions, it can look fantastic and drive up frame rates to make games look silky smooth. Under the wrong conditions, it can actually make a slowly rendered game look somewhat worse. We don't know how it will all play out.

7. EARLY PERFORMANCE ESTIMATES ARE OPTIMISTIC

Compared to predecessors Lunar Lake and Meteor Lake, Intel's Panther Lake offers more than 50 percent better multithreaded performance, Intel says. In single-threaded performance (often described as how "snappy" Windows feels), Panther Lake should be 10 percent better than Lunar Lake at the same power.

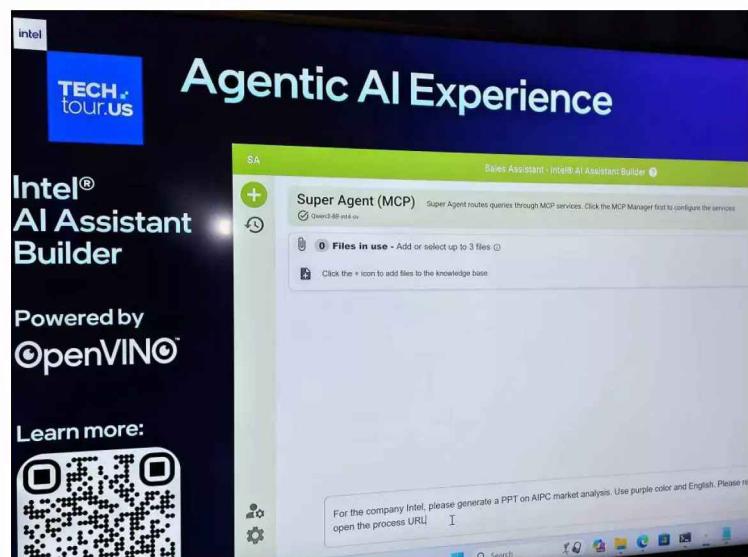
Intel is also claiming that the total Panther Lake system-on-chip will consume 10 percent less power than Lunar Lake, and demonstrated a trio of laptops

running a Core Ultra chip from each generation to back that up.

Unfortunately, we don't have any real-world gaming or application benchmark results yet. Expect those in January, or after our own tests.

8. PANTHER LAKE'S NPU POWER IS LARGELY UNCHANGED

TOPS is how chipmakers measure AI performance. At 50 TOPS, Panther Lake isn't much more powerful than its predecessor, Lunar Lake—though it pales in comparison to Qualcomm's Snapdragon X2 Elite. What Intel and other chipmakers are hoping for is agentic AI: little independent AI agents all roaming through your PC and the web, performing tasks that will suck up those available TOPS. Will it happen? Who knows?



What Intel and other chipmakers are hoping for is agentic AI.

9. THUNDERBOLT 4, AGAIN!

For whatever reason, Intel chose again not to integrate Thunderbolt 5 technology into its mobile processor. Instead, it's using Thunderbolt 4 and leaving laptop makers to integrate discrete Thunderbolt 5 chips themselves. Looks like we'll be prioritizing Thunderbolt 4 inside our recommendations for the best Thunderbolt docks for another year.



Tone mapping will improve how everything looks, by using either the NPU's AI or GPU.

10. PANTHER LAKE WILL KEEP YOU LOOKING GOOD

Intel's integrated laptop processors include an image processing unit that interacts with your webcam. The IPU 7.5, as Intel calls it, includes improved HDR capabilities as well as noise reduction for improved low-light performance. Tone mapping will improve how everything looks by using either the NPU's AI or GPU.

Incidentally, Intel's image processing will work with either your built-in webcam or standalone webcam.

11. SOME UNEXPECTEDLY COOL WIRELESS TECHNOLOGIES

I don't usually think of my laptop's wireless capabilities as anything special. Wi-Fi 7,

Bluetooth, yawn. Not this time. Panther Lake supports Auracast, which basically outputs to two devices, not just one.

Want to watch a YouTube video with a pal, but quietly? Now you don't have to share earbuds. A technique called platform sounding also provides far more accurate distance modeling, so if you've lost your laptop (or, conversely, your earbuds), you can use the onboard Bluetooth to quickly find them.

Intel's Wi-Fi 7 even supports some unreleased features, which should improve the performance and range of your wireless Panther Lake device.

We've now heard from Intel and Qualcomm about their upcoming laptop processors for 2026. Now, AMD—what do you have for us? 

Windows 10 is officially unsupported. Now what?

The day has finally come. If you're still on Windows 10, here are all your options going forward. **BY MICHAEL CRIDER**



October 14 officially marked the end of full support for Windows 10 (fave.co/4nLxHn), a whopping decade after Microsoft debuted the operating system. You're probably aware of this already, as Microsoft has been begging, pleading, cajoling, and almost demanding (fave.co/3VnF74d) that Windows 10 users switch over to Windows 11 by upgrading to a new

device or updating their operating system (if their hardware supports it). But if you haven't done anything about it yet, you probably should. Here's a quick summary of what you need to know and what to do about it.

YOUR OPTIONS FOR WINDOWS 10

You don't have to leave Windows 10 if you don't want to. Hundreds of millions of PCs

(about half of them, in fact, fave.co/495duVn) won't stop working just because of a specific date on the calendar. This is not a Y2K situation. Even Microsoft itself has backtracked on the ultimatum, offering regular users "free" ways to extend security support for another year (fave.co/4ouplBk), albeit with some distasteful strings attached.

(Many countries in Europe have strong-armed Microsoft into that extra year of security support for users [fave.co/4oxzYn0] with no need to jump through hoops. A cynical observer might ask why Microsoft can afford to give extended support without strings to residents of countries with more robust regulatory infrastructures but not to everyone else on the planet.)

Over the past few months, PCWorld has been covering the transition from Windows 10 to Windows 11, your options for upgrading or staying, or even moving to another platform entirely. This series of articles covers everything you need to know:

- Here are all your options for keeping your current laptop or desktop PC (fave.co/480RoCs), including Linux.
- How to keep using Windows 10 and keep getting security updates (fave.co/4ot4iix).
- How to update or upgrade to Windows 11 (fave.co/3LvQd57).
- Here are things that Windows 11 does better than Windows 10 (fave.co/3XbgzMq).
- Easy tweaks that can boost Windows 11's performance (fave.co/490EpBN).

- How to download a backup of Windows 10 installation media (ISO), fave.co/4ot4gap.
- Here's how to get a Windows 11 license for cheap (fave.co/3X0S5FP) or possibly free.
- Here's how to get started using Windows 11's new features (fave.co/4nFAMoI).

WHY NOW? WHY WINDOWS 11?

No piece of software lasts forever. Indeed, the preceding operating system Windows 8 was supported from 2012 to 2023, by at least some measures, so a 10-year stretch is not unprecedented. Meanwhile, Windows 11 has been available since 2021. But I think there are several reasons why Microsoft is seeing such strong pushback this time around.

One, there's nothing fundamentally wrong with Windows 10 that really necessitates an upgrade for most users. Windows 11's initial teething troubles are done, but many users still aren't happy with its less flexible setup, to say nothing of its more intense load of advertising integration with Microsoft services. Speaking as a life-long Windows user, I'm still annoyed that four years after launch, I need a third-party tool to get my taskbar on the top of my monitor, or even open widget links in the browser of my choice. Windows 11 is, in a word, annoying.

And Windows 11 doesn't offer much of anything to most people that isn't covered by Windows 10. Arguably, a newer suite of



A newer suite of Copilot tools is neat if you've hopped on the generative AI train, but Copilot hooks into services like ChatGPT.

Copilot tools is neat if you've hopped on the generative AI train, but Copilot hooks into services like ChatGPT (fave.co/4loj7N4) that work fine in a browser and don't need anything fancy in terms of local hardware—not even those NPUs (fave.co/4kORFMP) that are a headline feature of new laptops and processors. The most visible feature in Copilot+ PCs is Windows Recall, a tool that's so potentially devastating to the privacy and security of most users that my colleague Mark Hachman recommends you turn it off immediately (fave.co/4oTCL9D).

A DIFFERENT DIGITAL WORLD

But I think the biggest problem Microsoft is facing during this don't-call-it-forced transition is that we're in a much different digital

landscape than we were in 2015. An entire generation of young people sees their phone—not their laptop or their desktop—as their primary digital device. Alternatives to Windows are more visible and available than ever, with plenty of users adopting macOS for better

integration with iPhones and plenty of kids accustomed to Google's Chromebooks through deep penetration in the education market in many countries. Even Linux is finally having a moment in the spotlight, with millions of users now adopting it as a gaming platform via the Steam Deck (fave.co/4gUsAxX), even if they're not fully aware that it's Linux-powered.

This is, in short, a really bad time for Microsoft to try to force users onto a new operating system that they generally don't need and didn't ask for. The backtracking on another year (or two) of security updates, previously gated behind premium support and aimed only at corporate customers, indicates to me that at least someone in Redmond is sounding the alarm. 



Public Wi-Fi routers can identify you even if you have no phone

Security researchers have discovered that Wi-Fi signals can be used to image environments and identify people with near 100 percent accuracy. **BY VIVIANE OSSWALD**

Here's an unsettling development in this episode of "Everyday Tech Can Do Things You Probably Never Imagined": In the future, anyone who regularly walks past a café or restaurant with public Wi-Fi could be identified—even without a smartphone in their pocket.

Researchers at Karlsruhe Institute of Technology (KIT) have discovered that commercially available Wi-Fi routers can recognize and identify individual people

based on signal changes. All that's required is for other devices in the vicinity to be connected to the router.

Professor Thorsten Strufe from KASTEL—the Institute of Information Security and Dependability at KIT—explains (fave.co/4oO1QD0) that the propagation of Wi-Fi radio waves can be used to create an image of the router's physical environment and the people in it. This works in a similar way to cameras, except radio waves are used instead of light waves.

According to the cybersecurity expert, it doesn't matter whether someone has their own Wi-Fi device on them or not. Switching off their devices also offers no protection, since the imaging is performed by other active Wi-Fi devices in the vicinity.

HOW WI-FI SIGNAL IMAGING WORKS

Wi-Fi devices communicate with each other by exchanging so-called Beamforming Feedback Information (BFI). These feedback signals show how radio waves propagate throughout a room and are sent unencrypted from connected devices to the Wi-Fi router.

If a person moves through this Wi-Fi field, their body causes measurable changes to the Wi-Fi signals. Artificial intelligence can then analyze the data and signal changes well enough to associate it with an individual—with a nearly 100 percent accuracy rate.

In a study involving 197 test subjects (fave.co/4oO1QD0), the researchers were able to reliably identify people regardless of their walking style or perspective. Even objects like bags and boxes had little influence on the results.

PERVASIVE WI-FI NETWORKS COULD BE EMPLOYED AS A SURVEILLANCE TRAP

The KIT researchers see this Wi-Fi signal imaging technique as a serious risk to

personal privacy and data protection. Julian Todt, a PhD researcher at KASTEL, warns, "This technology turns every router into a potential means for surveillance."

Governments, companies, organizations, and even cybercriminals could identify people unnoticed, particularly in public places but also in the privacy of their own homes. The researchers emphasize that this is especially dangerous in authoritarian states where security authorities could use the technology to identify protesters and dissenters.

STRICTER WI-FI STANDARDS ARE NEEDED

Due to these findings, the research team is calling for data protection mechanisms to be integrated into the IEEE 802.11bf Wi-Fi standard that's slated for the future. This is the only way to prevent feedback signals like the BFI from being read without encryption.

"Wi-Fi networks are almost everywhere these days—in homes, offices, restaurants, and public spaces," says Strufe. "If this technology is used without protective measures, ubiquitous wireless networks could become a nearly universal surveillance infrastructure."

The research was funded as part of the Helmholtz "Engineering Secure Systems" topic area. The results will be presented at the ACM Conference on Computer and Communications Security (CCS) in Taipei. 

Microsoft's huge Copilot update with features like Clippy 2.0

The recent Copilot Fall Release includes more Copilot features across Windows and Edge, none of which require a Copilot+ PC. **BY MICHAEL CRIDER**



Now that Microsoft is almost but not quite forcing you to upgrade to Windows 11 (fave.co/4ot4iix), it's time for the company to take a break, let you settle in, lay off some of the heavy-handed marketing that's been its staple for the last two years...

Ha, just kidding. It's actually burying users under more Copilot features and integrations. Try to contain your excitement.

In a sprawling marketing post recently (fave.co/4ouBuGr), Microsoft announced a bunch of new features for Copilot...not a single one of which requires a laptop or

desktop that meets the Copilot+ requirements (fave.co/3GrKD1). "Copilot now connects you to yourself, to others, and to the tools you use every day. It's there for you, helps you stay organized, and even supports your health," says the blog post from Microsoft's CEO of AI.

Here's a breakdown of all the new and updated stuff announced:

Mico, Microsoft's AI companion

character: It's Clippy 2.0. And the new video showing off the character, which is supposed to be conversational, has no audio. What? Thankfully, Mico is only an "optional visual presence." You can still use Copilot in its standard text-based interface. Mico is currently rolling out in the U.S., though I haven't seen it in action yet. (By the way, it's called Mico because it's an interface for Microsoft Copilot. Riveting.)

Copilot Mode in Edge (fave.co/3WCTOAV).

co/3WCTOAV: Microsoft is pushing the Copilot integration to compete with new agentic browsers like Comet. Copilot will be able to "read" the pages you're looking at and remember your internet history, in a method that whiffs of Recall on Copilot+ PCs (fave.co/4oTCL9D). Don't everyone jump at once to give Microsoft even more of your web browsing information.

Copilot Groups: Up to 32 users can join a Copilot LLM session at once for collaboration.

Long-term memory: Copilot's LLM can now "remember" important information you

offer up to it, mirroring features from other AI chatbots like ChatGPT (which forms the basis for much of Copilot's functionality) and Google Gemini. Users can update, edit, or delete specific conversations in their history, allowing a measure of control over what Copilot remembers.

Integration with Google services

(fave.co/4hVpTxx): Copilot can now get into your Google account to "see" Gmail, Google Drive, and Google Calendar, something that was already announced. In Deep Research mode, it will offer up more insight based on recent activity.

Copilot for health: Microsoft promises some more credible search results, including "sources like Harvard Health." It will also help you find the correct local doctors based on your health needs, including location and language. All of these things are, of course, completely impossible to do with a standard search engine, like the one that Microsoft has been making for a couple of decades. Yes, I'm being ironic.

I've yet to see anything in Copilot (fave.co/4qID8FO) that makes me want to leave it running on my PC, much less pay \$20 per month for a Microsoft 365 subscription to get at its more potent capabilities. But if you want to try this stuff out, Microsoft says that all the above capabilities are rolling out in the U.S. now, with the U.K., Canada, "and beyond" coming later. 



Did PCs win the console war? The next Xbox will run Windows, report claims

Is it a console? Is it a PC? Maybe the debate over the next Xbox won't actually matter.

BY **MARK HACHMAN**

Microsoft's next Xbox will run Windows, a report says, blurring the line between PCs and consoles and making the latest Xbox Ally X (fave.co/4oVqn9c) the model of what Microsoft hopes to achieve in gaming.

Windows Central, which has established some good sources inside the console space, claims (fave.co/4orEBv) that the next Xbox will run Windows, with an Xbox Full Screen Experience layered on top. Given that Microsoft has already established a close working relationship with AMD, those chips should be inside the console as well, with

backward compatibility going all the way back to the Xbox 360, the site says.

Microsoft hasn't explicitly said that the next Xbox would run Windows, though the company hasn't really tried to hide it, either. In June, Xbox president Sarah Bond said that the Xbox team was working closely with the Windows team (fave.co/3Lo8TU) "to ensure that Windows is the number-one platform in gaming."

"It is almost two years to the day since I became the president of Xbox, and one of the first things that I observed was that Windows is the No. 1 platform for AAA gaming, but there was so much more that we could be

doing as Xbox with Windows that was completely untapped around the world,” Bond added in October, joined by Pavan Davuluri, Microsoft’s president of Windows and devices, in a joint interview recorded by Yahoo Finance (fave.co/3Lo8UYx).

Think of the next Xbox as Microsoft’s answer to the Steam Deck. Valve’s handheld device runs on Linux (fave.co/3wOrXjo), with a game overlay; the next Xbox will run on Windows, with its own Xbox Full Screen Experience layered on top. Microsoft buries Windows far beneath, but the company has also said that it only loads a stripped-down version of Windows (fave.co/4qlsL4K), with many of the productivity aspects of Windows simply cut out of the gaming experience.

Nevertheless, Windows Central’s sources seem to believe that you might be able to tap that full-fledged Windows if you so choose. “Similarly, the Xbox Full Screen Experience will allow you to exit out to full Windows if you want to, and run competing stores like Steam, Epic Games Store, Microsoft’s own Battle.net, the Riot Client, and indeed anything else you want,” the site said. “Indeed, you could run Adobe CC or Microsoft Office on the next Xbox, if you so choose.”

As far the actual hardware, that’s up in the air as well. Microsoft has spent big trying to convince people that “this is an Xbox”—a slogan applied to consoles, TVs, phones, the ROG Xbox Ally X, and other devices. The implication is that games can be played on a

variety of hardware, as long as Microsoft’s cloud gaming feature is enabled.

Of course, there’s a difference: Gamers can play games in the cloud, but many prefer running their own games locally, minimizing input lag and latency.

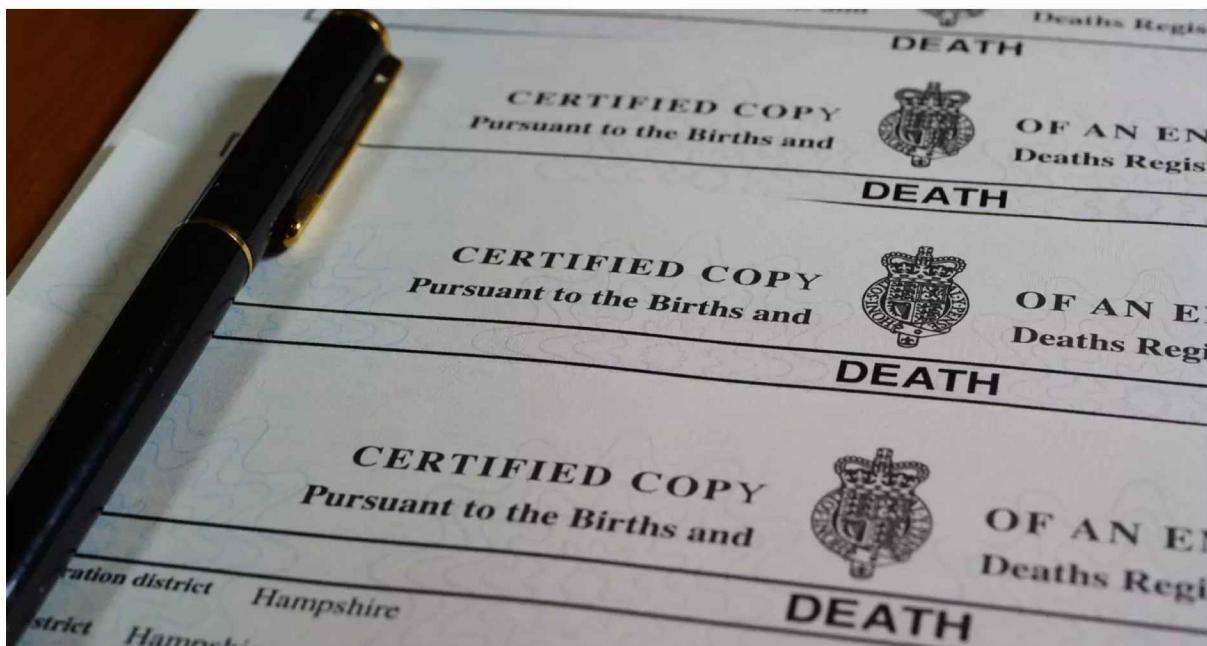
Right now, the ROG Xbox Ally appears to be the model for the next Xbox, based upon our own hands-on tests of the handheld (fave.co/4qlsL4K), what Bond continues to say in subsequent interviews, and Windows Central’s own reporting. Last week Bond spoke to Mashable (fave.co/47YhRAx), characterizing the next Xbox as a premium experience and pooh-poohing the need for exclusive titles that are locked to a specific console. So far, no one has been able to say or even speculate what the next-gen Xbox will cost, including Windows Central.

Naturally, features like Auto Super Resolution and whatever frame-generation technologies AMD can bring to the table will almost certainly be utilized as well, Windows Central points out.

When we will see the next Xbox? Windows Central thinks 2027, which seems reasonable. A 2027 launch would allow Microsoft a slow rollout of the name, the console’s capabilities, the price, and so on—the drip of news that consumers detest but that keeps interest focused in on the next Xbox. We’ve continually wondered when Microsoft would release its own branded gaming PC. Maybe it will, sort of. 

LastPass warns of 'digital will' phishing attack that uses fake death certificate emails

These fake emails claim that someone has uploaded your death certificate. It's all a trick to snatch your master password from you. **BY MICHAEL CRIDER**



With so much of our lives wrapped up in digital identities and platforms, you might want to spare a thought as to how your loved ones (alerts@lastpass.com) can get into things like your bank accounts or social media after you pay your coins to the ferryman. Password manager LastPass has a feature that can pass your credentials on to your next of kin...and,

unsurprisingly, it's being exploited by phishing scams.

It's a sneaky and distasteful campaign, starting with an email spoofed from "alerts@lastpass.com" that claims someone uploaded a death certificate to request access to your LastPass account. That's an alarming thing to read if you're still alive, so you might just lower your defenses long enough to click on the link to "lastpassrecovery[dot]com" in the phony



LastPass is warning users about a phishing campaign that targets cryptocurrency wallets and logins.

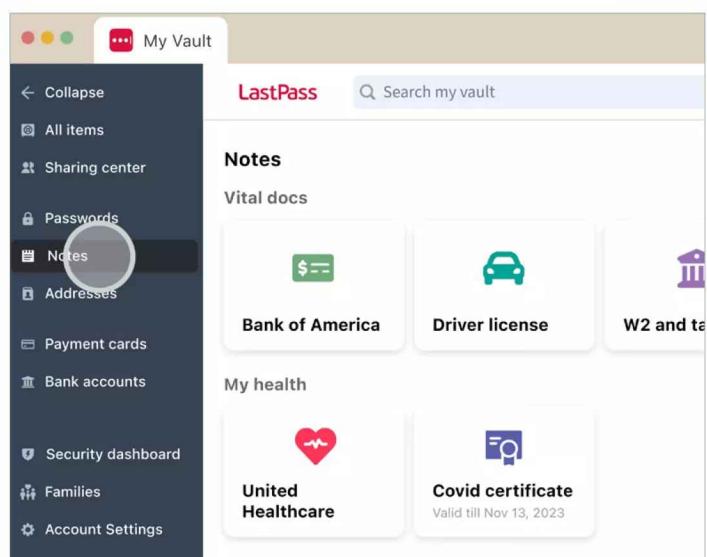
email that claims to stop the process. Bam, you've given your LastPass master password—or possibly a passkey—to a scammer, and now they have access to every password you've stored on the platform. According to the security post (fave.co/4ouE3lz), some phishers are actually *calling* victims (on the phone, with human voices, how retro!), pretending to be LastPass employees and directing them to a phony login site.

LastPass is warning users that the phishing campaign has been active since mid-October and is linked to the well-known CryptoChameleon group, which targets cryptocurrency wallets and logins for quick and hard-to-recover thefts. BleepingComputer (fave.co/4oZgAz6) reports that the scammers are targeting

Binance, Coinbase, Kraken, and Gemini platforms.

It should be noted that LastPass does have a legitimate digital will system (fave.co/4qM8oUp), and it's a good idea to make use of it, especially if you're older or have some pressing health concerns. But, of course, always be careful of *any* email that directs you to log into a service using a provided link. LastPass's actual systems have not been compromised in this attack—it's purely social engineering. The company posted a list of the IPs associated with the attack and a long stretch of associated URLs.

Password managers are an essential tool (fave.co/4hHW2bM) for most of us at this point, but they're also a juicy target as a single point of failure. Keep your guard up especially high for anything dealing with them. 



LastPass does have a legitimate digital will service.



Asus's ROG Xbox Ally nails the hardware. But Windows still needs work on handhelds

A hands-on session for the new devices left me thinking the Xbox Fullscreen Interface could use a little more time in the oven. **BY MICHAEL CRIDER**

Microsoft's Xbox brand is not doing great. Despite being a pillar of the modern gaming landscape, it seems like Xbox consoles are inconsequential thanks to stiff competition from within and without. Nintendo and Sony are playing to their strengths, and Microsoft itself seems more interested in pushing a platform and

subscription (fave.co/4r36Khx) than in maintaining its shrinking portion of the market. Add to this huge price increases, for both consoles (fave.co/3Lqdaa3) and



VIDEO: XBOX ALLY X: THIS ISN'T THE WINDOWS WE NEED FOR HANDHELDS

Watch now at fave.co/4oP430S

the linchpin Xbox Game Pass itself (fave.co/47JecFs), and it's not exactly happy days in Redmond.

Into this fractious and uncertain landscape landed the Asus ROG Xbox Ally handheld (fave.co/46UjEF3), and the more souped-up version, the ROG Xbox Ally X, in mid-October. Launched at \$600 and \$1,000, respectively, these gadgets are some major firsts for Microsoft. They're the first Xbox portable devices, even if their claim to being "Xboxes" is mostly a matter of marketing (fave.co/4qlsL4K). They're the first post-Steam Deck portable gaming PCs made explicitly in cooperation with Microsoft and Xbox, though Asus has made two generations before them. And they're the official debut of the Xbox Fullscreen Mode, Microsoft's answer to the Steam Deck user interface.

Asus asked me to check out the new Ally hardware at a pre-release event, which was my first chance to go literally hands-on with the device just a week or so before they

landed on shelves. And while the handhelds themselves are impressive, I don't think they're such a huge step forward that they'll convince anyone who wasn't sold on the concept already. And the new, semi-exclusive interface is pretty good, certainly an improvement over the pain point of running Windows 11 on smaller handheld devices, but it still needs work even as it's preparing for a full retail release.

PC gamers who are already fans of this form factor might find a new front-runner in the Xbox Ally, and maybe even the first true rival to the Steam Deck. But combined with the woes of the Xbox platform itself, and a pretty high price tag even if you don't want the \$1,000 upgraded X model, I don't think this is the Xbox hit that Microsoft has been waiting for.

FILL YOUR HANDS

The most striking difference between the older ROG Ally design (fave.co/3XrGVLx) and

the ROG Xbox Ally is those highly visible handles, now distinctly jutting from the device's body instead of smoothly integrated. And it's no surprise that these are the biggest change in actually using the handheld, too. Gripping the gadget was instantly familiar—I could close my eyes and imagine I really was holding an



There's a dedicated Xbox button near the left analog stick.



The more solid grip on the device makes it feel lighter than its predecessor, despite looking considerably chunkier.

official Xbox controller, as I've done for thousands of hours before. It's comfy is what I'm saying here, and the familiar staggered control layout might be a huge improvement if you have medium or small hands and the Steam Deck's interior thumbsticks are a pain point (fave.co/43j1jR7).

The more solid grip on the device makes it feel lighter, despite looking considerably chunkier, if only because my muscle memory makes it seem like I've held it so often before. This is an impressive trick, since the base model (the one in white) is almost exactly the same weight as the 2024 Ally X. The ROG Xbox Ally X (upgraded, in black—wow, these names are

awful) is a few grams heavier and feels it. But it needs a bigger, 65-watt battery to handle its more powerful and higher-wattage processor, 35W versus 20W. Even then, I didn't feel uncomfortable holding it—though I never got to do so for more than about 10 minutes at a time.

Aside from the adjusted ergonomics, the physical experience of the device feels very familiar. With a 7-inch,

1080p IPS display it's neither the biggest nor the sharpest screen available in a PC handheld. But it's plenty smooth at 120Hz, and 500 nits of brightness should keep it visible in almost any situation. The only other big shift is a dedicated Xbox button, conspicuously hanging out near the left



The display is smooth at 120Hz, and 500 nits of brightness should keep it visible in almost any situation.

analog stick. The upgraded black model also gets haptic feedback in its triggers, though I didn't play any game that seems to take advantage of it—this is still a rare find on PC games since it's mainly a PS5 feature.

So if you're already comfortable with any given 7- or 8-inch PC gaming handheld, I think you'll find the Xbox Ally easy to pick up, literally. It's impressively comfortable, sacrificing only a little extra space (about half an inch wider than the original Ally and a bit thicker). But given that you'll need either a full bag or a dedicated carrying case for it anyway, I don't think you're giving up too much...and it's still not as wide as the Steam Deck.

PERFORMANCE

To be honest, I'm not in a position to gauge minute differences in performance between the various flavors of PC gaming handhelds on the market right now. For that, be sure to check out Adam Patrick Murray's coverage over on the PCWorld YouTube channel ([fave.co/43VPiik](https://www.youtube.com/@fave.co/43VPiik))—he's a fiend when it comes to these things. Both these devices are based on AMD APUs, with integrated graphics that are nonetheless tuned for impressive gaming performance given their size and power



The ROG Xbox Ally X and Xbox Ally, disassembled, on top, Ally X and Ally on bottom. Look at them guts!

limitations. The white Xbox Ally has a Ryzen Z2 A with 4 cores and 16GB of memory. The Xbox Ally X gets a top-of-the-line Ryzen Z2 Extreme with 8 cores and a maximum speed of 5GHz, plus 24GB of memory.

2D games like *Hollow Knight: Silksong* (and those that mix a lot of low-poly 3D, like *Hades*) seem more than comfy running smoothly on the hardware, with no gaps or stuttering. That's hardly surprising, since even the low-priority integrated graphics on budget laptops can handle these games with few, if any, issues. The more interesting question in this application is how long the battery can last while intelligently giving the game just enough juice to keep it stable.

More strenuous games were a different story. Playing the graphically intense but well-optimized *Forza Horizon 5* on the Xbox Ally X was a treat, with smooth racing at

60-80fps and plenty of graphical extras...let down by a very obvious dip in 1 percent frame rate lows every 30 seconds or so. This is, to my mind, perfectly acceptable—despite years of optimizations, we're still talking about chips that were originally designed for laptops without discrete graphics cards. If you demand uninterrupted 4K/240Hz brilliance, you're not playing on a handheld anyway (or you're streaming from something more powerful).

But let's say you've got a hankering for more power, and you also have a massive budget. Asus also launched the latest generation of its XG Mobile dock (fave.co/42IfjAn), along with the new Xbox Ally. These docks come with discrete laptop GPUs (Nvidia RTX 5070 Ti and 5090 for the newest versions) and a Thunderbolt 5 port. Not only will this max out the connection with the Xbox Ally, it's compatible with almost any recent laptop or gaming handheld, granting them the boosted power too. This is a marked difference from the original XG design, which needed a proprietary connection (fave.co/3JNaSBe) designed only for ROG-branded laptops, tablets, and (later) the ROG Ally.

The combination of an explicitly portable device

with an extra sizable hunk of electronics to make it more powerful might seem strange. But Asus representatives told me that the ROG Ally family is the device most frequently paired with the XG dock, despite it being initially marketed as a companion for laptops and Surface-style tablets. Trying out the hardware at the event, I was impressed with the combination of the Xbox Ally X and the 5090-equipped dock, connected to a 4K display and running *Gears of War Reloaded* at full resolution and its maximum settings. While it wasn't breaking any records, it consistently hit 80 frames per second at 4K.

We're also talking about a pricey combination of hardware here. The ROG Xbox Ally X is \$1,000, and the 2025 version of the XG Mobile dock with an RTX 5090 laptop card is \$2,500. (The 5070 Ti version is a more palatable \$1,300.) So that's \$3,500 all in, not counting the monitor, keyboard, and mouse.



You can plug in an ROG XG Mobile dock to the Ally...or any laptop with Thunderbolt support.

That doesn't mean it's a direct comparison with a \$3,500 laptop—the combination setup is more portable (arguably), and that dock can work with almost any modern Windows-based device. But it's a *lot* to ask for in any case.

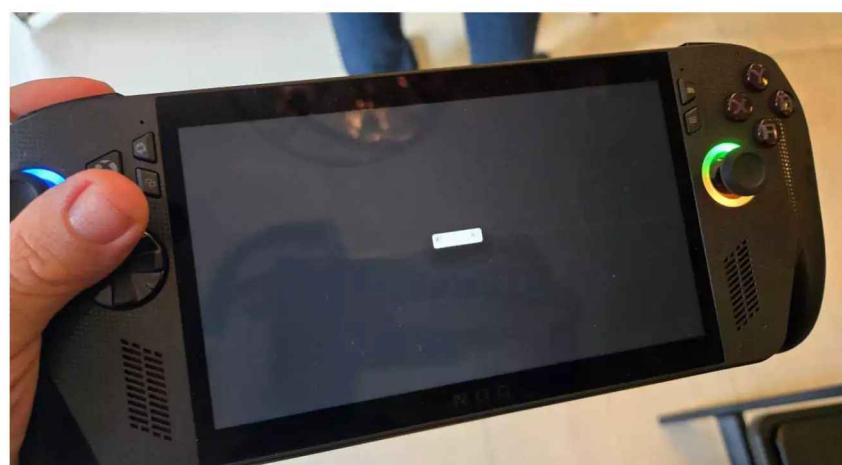
WINDOWS ON HANDHELDS STILL NEEDS WORK

The most interesting aspect of the Xbox Ally to me is the new "Xbox Fullscreen Experience," Microsoft's answer to the Steam Deck's software advantage. For the unaware, the Steam Deck runs on a custom Linux-based SteamOS, using the Proton compatibility layer to play Windows-based games when no Linux build is available. It also has a fully custom user interface, adapted from Steam's Big Picture Mode. That should mean that Windows-based handhelds have an advantage running native software...but the overhead of Windows 11, not to mention its pain points on devices with screens as small as 7 inches, means these more expensive machines are often slower and more cumbersome.

The Xbox Fullscreen Experience is the solution, or at least it hopes to be. Not only is it offering a more focused, console-style browsing interface,

with a unified library from the biggest Windows game stores, it helps the performance side of things by not loading the Windows taskbar, desktop, and various other behind-the-scenes stuff. This should be a one-two punch for the ROG Xbox Ally, making it feel like a much more integrated experience that's been lacking for Windows handhelds. The Xbox Fullscreen Experience is coming to other devices in 2026, though it's possible to test it out now if you put in a little elbow grease.

The system is getting something similar to Valve's Steam Deck Certified program, too. Microsoft calls it the "handheld compatibility program." Games labeled "Optimized" are good to go with no changes, while those marked "Compatible" might need a few settings tweaks or the occasional touchscreen input, but should run acceptably. A Microsoft representative said of the games tested so far (presumably mostly Game Pass titles), 85



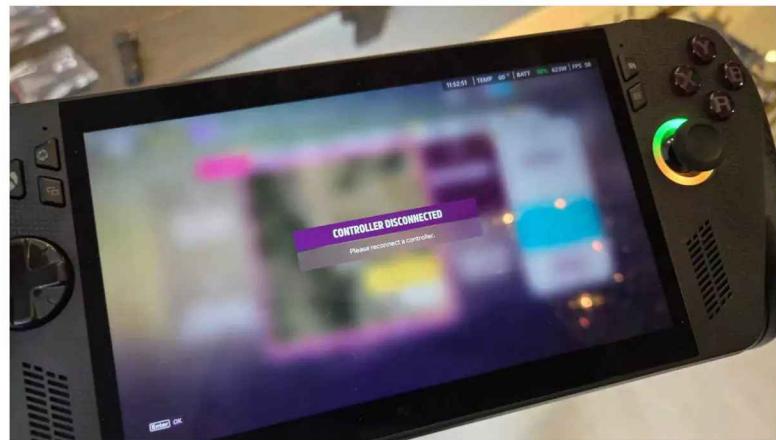
This is *Forza Horizon* running on the Xbox Ally X. Allegedly.

percent fell into one of those two categories. Expect the program to be expanded to more hardware, just like the UI.

This new approach to handheld gaming is an improvement, to be sure. Focusing on the combination of controller-style navigation and touchscreen makes the device feel a lot more complete and natural. If you told me this really was a portable Xbox, instead of a partnership device running on Windows, I might believe you...until I saw that you can still get to the full desktop if you want to.

And that's where the cracks started to show. When I first tried to launch *Forza*, it did so in a strange minimized floating window. That's not unheard of for a game running on Windows, but it's annoying—and a clear indication that yeah, the familiar and often clunky Windows 11 is still underneath all this nice UI. It might be smoother and faster than, say, the third-party launcher programs from Asus and Lenovo, but it's still there. I had to manually close the game and launch it again to try it out.

Being mindful of this, I tried to launch the standard Windows interface, which was easy enough. When I tried to switch back to the Xbox Fullscreen Experience, the Ally warned me that I should restart to get the intended performance boost. I thought this might



More weirdness.

mean restarting Explorer.exe or something similar...nope. It reboots the entire device, which takes a solid three minutes or so. Whatever tweaks are being made behind the curtain to keep this thing running smoothly, they aren't evident in the startup time.

I think that getting a unified, gaming-focused interface, provided and supported by Microsoft, is a great idea. (In fact, I asked a Microsoft representative if it was coming to desktops and laptops anytime soon...no comment.) But while I'm sure that both Microsoft and Asus have put a lot of work into this, it seems pretty clear that there are a lot of kinks left to work out, and a lot left to do as this thing gets in the hands of end users.

OUCH, THAT PRICE TAG

Speaking of which...that price. Oof. \$600 for a portable machine is a lot, albeit not in the context of Windows-powered handheld PCs launching this year (fave.co/437dPTD). At

that price, the ROG Xbox Ally is competing not with the base model Steam Deck, but its OLED upgrade, \$550 at the time of writing. And Asus said it intends this version of the device to be for “casual gamers.” Okay...but surely if someone considers themselves “casual,” they’re fine with their phone or tablet, or the console they already own. You can find an original Switch for half that much.

The upgraded ROG Xbox Ally X costs \$1,000 USD, which easily makes it the most expensive Xbox ever, if you want to call it that. And it’ll land somewhere between the Series S and Series X consoles in terms of its graphical power. Granted, the Windows operating system gives it far more flexibility, to say nothing of the option of throwing it in your bag without needing to lift with your legs. And let’s face it, there’s no major game coming out on Xbox that isn’t *also* coming to Windows at this point.



Three generations of Ally: original, top left, Ally X, bottom left, Xbox Ally X, top right, Xbox Ally, bottom right.

If you’re still looking at handheld PCs as an accessible way to get into the latest games, or even at consoles as a more affordable alternative to high-powered PC gaming, the new “Xbox” portables just don’t make sense as a value proposition. Of course, there are plenty of people who see no problem dropping more than a grand on a handheld device—our own Adam Patrick Murray is one of them. But looking at the ROG Xbox Ally as a major hope for Microsoft’s gaming ambitions, I can’t help but think it’s underwhelming. And that was before both the Xbox consoles and Game Pass became much more expensive.

Even if the price isn’t a problem for you, I’d wait until you can get your hands on it to put some money down—especially if you’re torn between the ROG Xbox Ally X and Lenovo’s alternative, the Legion Go 2 (fave.co/43CyQWP), which should get that upgraded Windows interface at some point

(fave.co/3L4PPKA). There are plenty of options from other suppliers, too (fave.co/43RbaxN), albeit ones less likely to show up on a retail shelf. With something this expensive, and with a satisfaction that depends this much on how it physically feels, I’d make liberal use of a Best Buy demo unit if I had the option. 

Microsoft's Windows XP Crocs are now officially a thing

No sweepstakes required: Just buy. **BY MARK HACHMAN**



Microsoft's release of its Limited Edition Crocs has moved out of beta and into general release. The \$79.95 customized Crocs are now available in several sizes.

Originally, Microsoft had made the Limited Edition Crocs available in October, timed with the company's 50th anniversary celebration. The "shoes" were originally made available as part of a Microsoft-sponsored sweepstakes. However, the

footwear has now become a viral hit of sorts.

"Based on the incredible response and positive engagement across social media, we're thrilled to share that the Microsoft Limited Edition Crocs Bundle officially drops globally beginning today," the company said in an October 1 blog post (fave.co/480F1WU).

The Crocs ship in a Windows XP-inspired theme. It's based upon the Bliss background (fave.co/4itFh33), inspired by a photograph from Charles O'Rear taken just a few miles from my home. (Like Windows, the Sonoma, Calif., vista looks nothing like the original photograph.) They also include custom Jibbitz charms taken from Microsoft iconography, such as the mouse

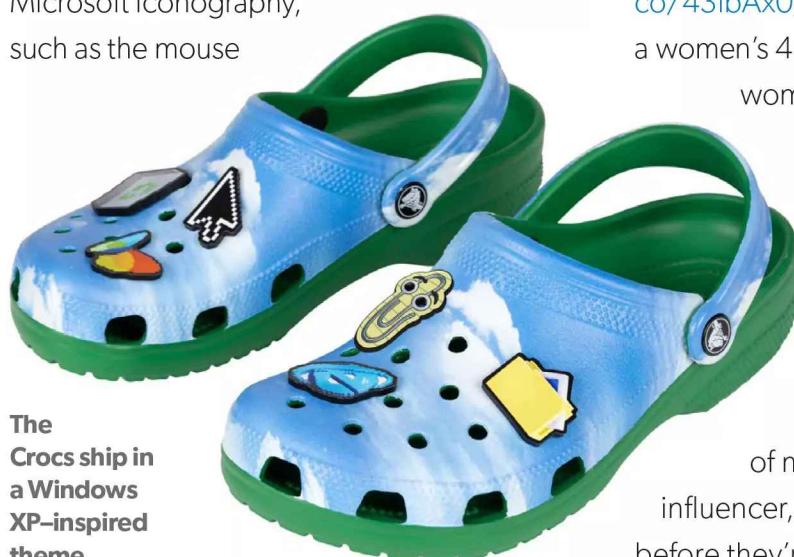


The Limited Edition Crocs release has been timed to coincide with Microsoft's 50th anniversary celebration.

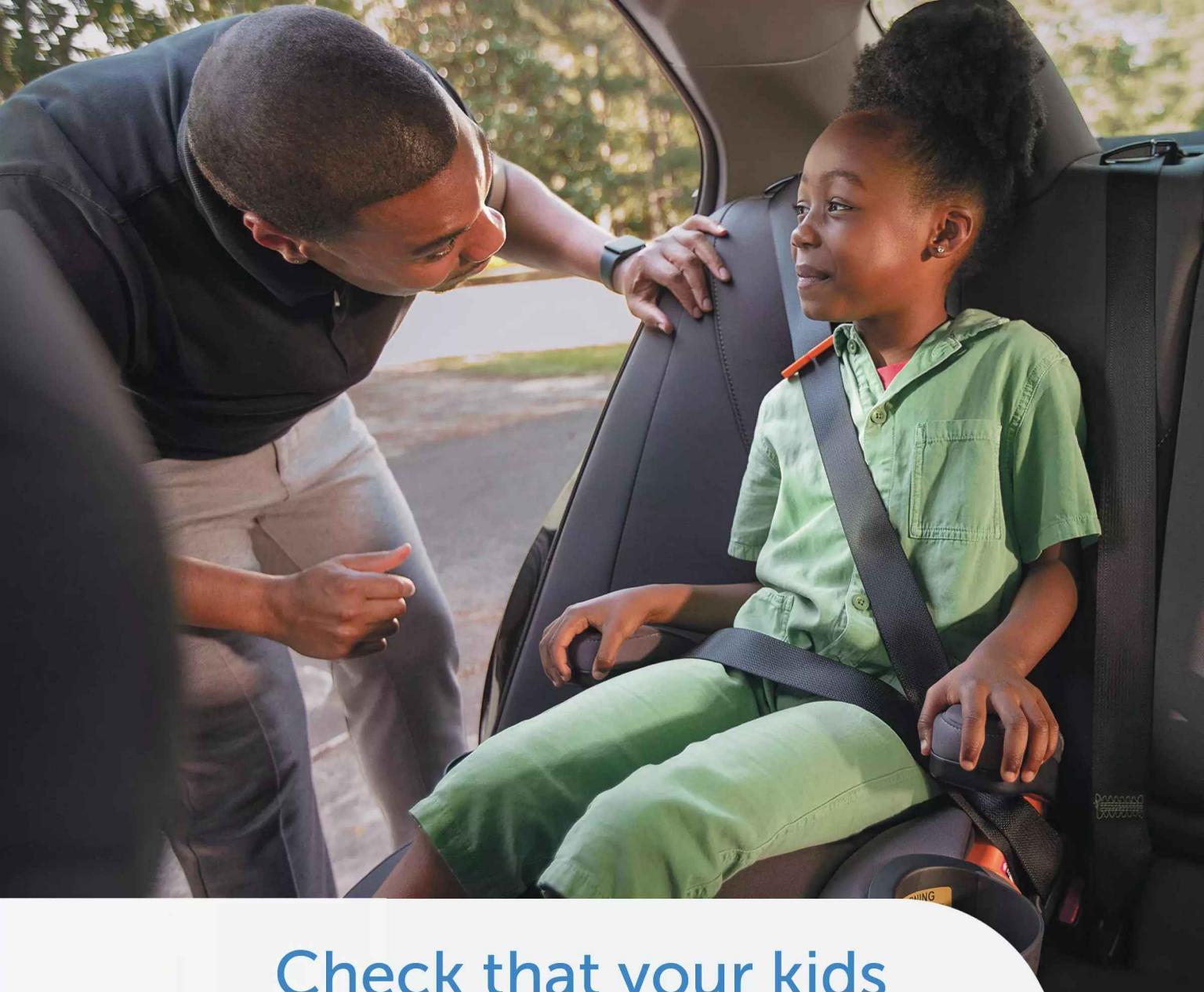
cursor. There's even a Bliss-themed drawstring backpack, perfect for carrying them to your next gala or shindig.

Where can you buy such wonders? At Microsoft's official merch site (fave.co/43ibAx0), where sizes are available from a women's 4, men's 2, all the way up to a women's 19, men's 17.

While I have actually purchased several Microsoft Windows ugly sweaters (fave.co/3WHnY5X) with my own hard-earned cash, for me the Crocs are a step too far—I'm well into the New Balance era of my life. But if you're a hip influencer, perhaps you can grab a pair before they're gone. 



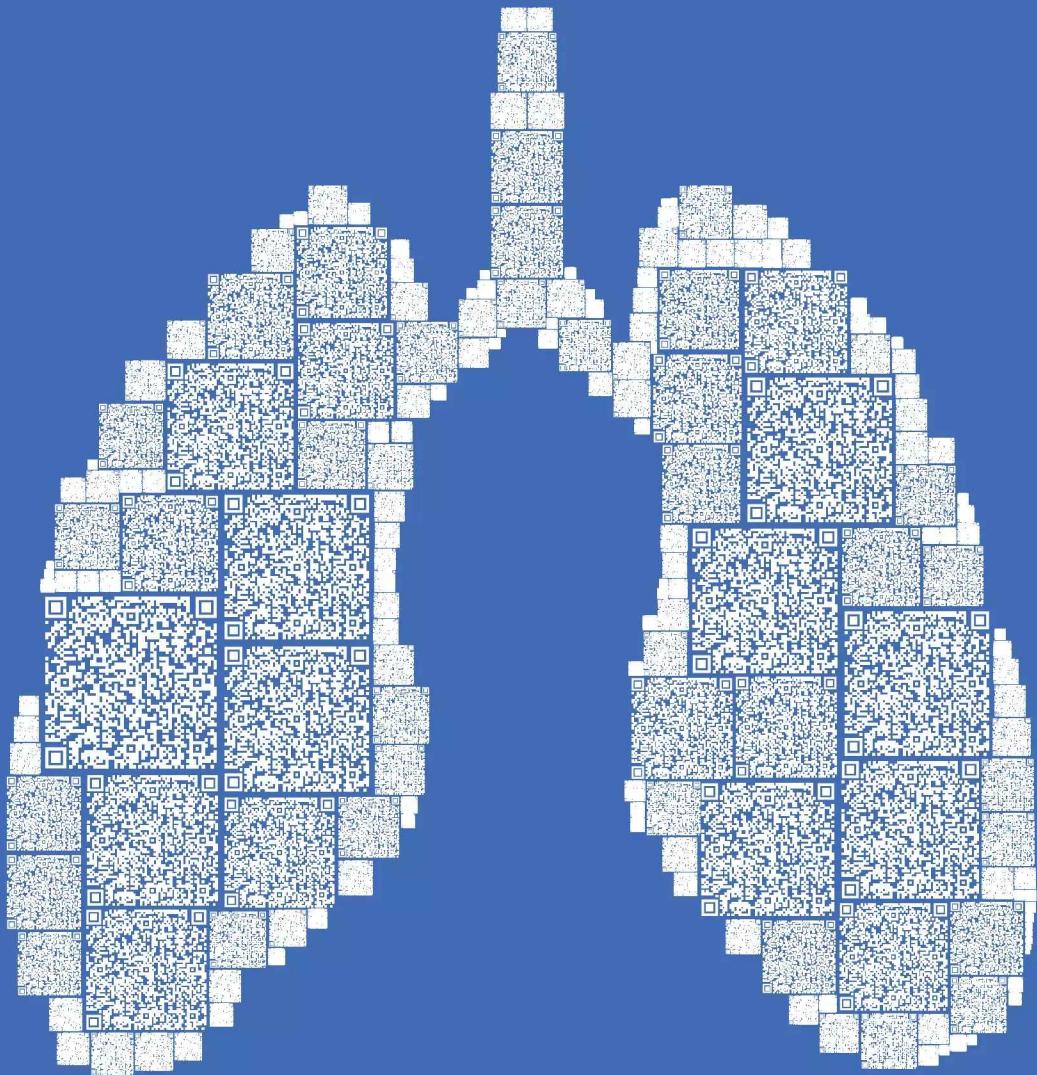
The Crocs ship in a Windows XP-inspired theme.



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PROTECTS

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If you used to smoke, scan these lungs to see
if you should scan yours.

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Acer Aspire Go 15: A brilliant budget laptop

This machine delivers solid value—with some compromises. **BY CHRIS HOFFMAN**

The Acer Aspire Go 15 is a 15.6-inch budget laptop that delivers great value for your dollar. With reasonable desktop performance, a nice 1080p display, 16 GB of RAM, and 512 GB of storage, there's a lot to like here.

But the Aspire Go 15 won't pass for a premium laptop any time soon. Acer's choice of budget-tier N-series Intel CPU and a small

battery are compromises that were likely necessary to hit this price point. You'll notice this compromise in day-to-day use.

SPECS

The Acer Aspire Go 15 pairs an Intel Core i3-N355 CPU with 16 GB of DDR5 RAM and a 512 GB SSD—that's a good amount of RAM and storage for a \$499 laptop.

It's available from both Best Buy (fave.co/43K0JvW) and Target (fave.co/4qlMkdc).

While I was wrapping up the review, Target had it on sale for \$429, which is a solid value.

Compared to last year's \$299 Acer Aspire Go 15 (fave.co/47y9BWs), this year's model delivers 16 GB of RAM and 512 GB of storage (up from 8 GB of RAM and 128 GB of storage.) There's been some inflation of laptop prices, but these spec bumps make the pill easier to swallow. This is a good amount of RAM (fave.co/3ec23xn) and storage (fave.co/47r7JAb), what you'd want in a laptop. Anything less can become hard to live with. You could probably get by with 256 GB of storage. Acer is being generous!

The big thing holding this laptop back is its Intel CPU and graphics. Intel N-series chips are designed for budget machines. It's fast enough for basic desktop and productivity application use, but this is a budget CPU experience. Additionally, the Intel graphics hardware here is very slow. This machine isn't a good fit if you plan on playing PC games or using other 3D apps.

Acer chooses to ship this laptop in S Mode, which is a strange decision in 2025. You can't install software from outside the Store unless you take it out of S Mode (fave.co/3Fet8fa), but that just takes a few clicks and is free. Our review model came preconfigured by Acer already out of S Mode.

Model number: Aspire Go 15 (AG15-32P-30YE)

CPU: Intel Core i3-N355

Memory: 16GB DDR5 RAM

Graphics/GPU: Intel graphics

NPU: None

Display: 15.6-inch 1920×1080 IPS display

Storage: 512 GB PCIe Gen4 SSD

Webcam: 720p webcam

Connectivity: 2× USB Type-C (USB 3.2 Gen 2), 2× USB Type-A (USB 3.2 Gen1), 1× HDMI 2.1, 1x combo audio jack, 1x Kensington Lock slot

Networking: Wi-Fi 6, Bluetooth 5.1

Biometrics: None

Battery capacity: 53 Watt-hours

Dimensions: 14.29×9.44×0.92 inches

Weight: 3.74 pounds

MSRP: \$499 as tested



Acer's laptop has a classic design.

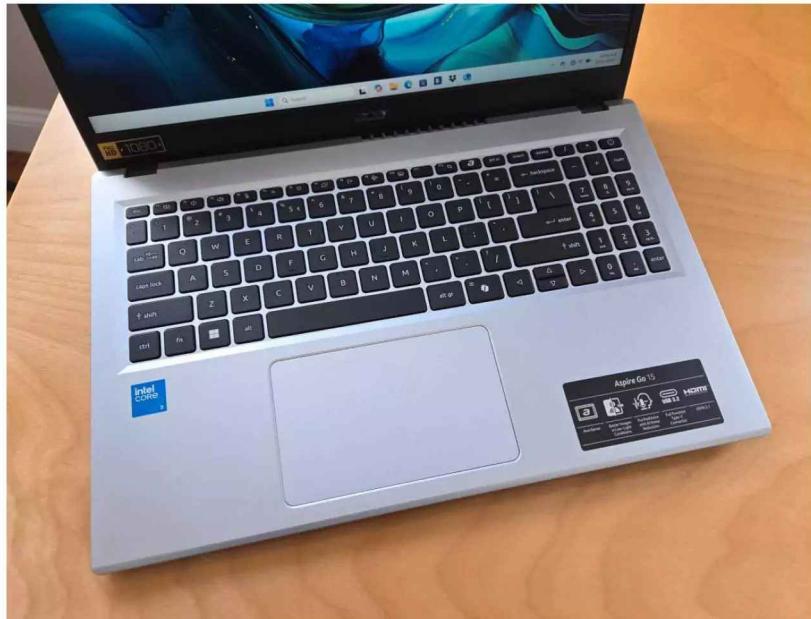
DESIGN AND BUILD QUALITY

The Acer Aspire Go 15 is a 15.6-inch laptop made of plastic. It's a combination of silver—a color Acer calls "Pure Silver"—and black. It's a classic design.

While this is a plastic chassis, it feels solid and there's no concerning creaking. With a weight of 3.74 pounds, it's possible to pick the laptop up by one hand on one side and hold it, if necessary. At 0.92 inches thick at the thickest point, it's a little chunky compared to the average thin-and-light machine, but it's a fine experience. The keyboard deck has a bit of flex to it, but I wasn't worried about it. It feels fine for the price.

The Aspire Go 15's hinge feels good and solid, with a nice action. I did have to hold it with two hands while I opened it. But, once opened, the screen stayed firmly in place and didn't shake around as I typed. You can keep pushing the screen back and the keyboard will tilt toward you. I was able to open it to a 145-degree angle or so.

The Acer Aspire Go 15 is also a classic experience in terms of bloatware, with icons like "Booking.com" and "Dropbox promotion" pinned right to the taskbar out of



This keyboard is nice to use and has a good amount of key travel.

the box. That's to be expected at this price range, and you can remove it.

KEYBOARD AND TRACKPAD

The Acer Aspire Go 15 has a full-size keyboard complete with a number pad at the right. Unfortunately, there's no keyboard backlighting. That's a shame, as it's the kind of nice-to-have feature that would make this laptop easier to use.

This machine's keyboard is quite nice to use. It feels like it has a good amount of key travel, perhaps 1.5mm or so. Thinner laptops often skimp on the key travel to get even smaller, which makes the typing experience less satisfying.

The trackpad also feels pleasant—it's a good size, the surface is smooth enough,

and it clicks down with a satisfying clunk rather than a noisy click. It's good for the price range.

DISPLAY AND SPEAKERS

The Acer Aspire Go 15 has a 15.6-inch IPS display with a 1920×1080 resolution and up to 300 nits of brightness. It's not a touchscreen. It's matte and not glossy, so it will be better outdoors and in challenging lighting conditions than a glossy, reflective panel.

The display looks solid. It's a good size. Budget laptops tend to be 13 inches or smaller. A 15.6-inch 1080p display on a budget laptop is a great find. It has good viewing angles, which isn't guaranteed on a budget laptop display. More expensive models often deliver higher resolution displays, OLED panels, touchscreens, greater

brightness, and better color accuracy, but this is a good display for the price.

The display's brightness is a problem, though: I wanted to crank it up to 100% to make it readable in normal conditions. And that affects the battery life, as we'll see.

This machine's speakers are okay. They're on the quiet side, but there's enough volume to hear them clearly in a quiet room. I test each laptop's speakers I review by playing Steely Dan's *Aja* and Daft Punk's *Get Lucky*. While the instruments in *Aja* weren't particularly crisp, the high notes didn't run together. *Get Lucky* sounded fine, but there was less bass than even the average laptop speakers—not a surprise for the price here.

WEBCAM, MICROPHONE, BIOMETRICS

The Acer Aspire Go 15 has a 720p webcam.

It's fine, but it's nothing special. A 1080p webcam will look better. It's more than good enough for occasional video meetings, which is what matters. However, there's no physical webcam shutter switch.

Acer says this machine has "dual digital microphones" that "ensure voices are captured with precision." This laptop's microphones sound pretty good, actually. With a pair of headphones, this machine is



A 15.6-inch 1080p display on a budget laptop is a great find.

nicely equipped for online meetings and video chats.

This machine doesn't have any biometric hardware—no fingerprint reader or facial recognition for easy Windows Hello sign-ins (fave.co/3TsHLUV). It would've been nice to at least see a fingerprint reader. Without one, you'll likely be typing a PIN to sign in each time you use your laptop.

CONNECTIVITY

The Acer Aspire Go 15 has a good selection of ports. On the left side, it's got two USB Type-C ports, an HDMI 2.1 port, and a USB Type-A port. On the right side, you'll find a second USB Type-A port, a combo audio jack, and a Kensington lock slot.

This machine charges via USB Type-C, which is convenient, but the USB Type-C ports are only on the left side. It would be nice to have a USB-C port on each side for flexibility. Additionally, the USB-C ports are USB 3.2 Gen 2, while the USB Type-A ports are USB 3.2 Gen 1. You won't find Thunderbolt 4 or USB4 here, either. That's not a surprise given the price and hardware class, and people who would be looking at this machine probably won't need Thunderbolt 4 speeds anyway.



On the right side, you'll find a second USB Type-A port, a combo audio jack, and a Kensington lock slot.



On the left side, it's got two USB Type-C ports, an HDMI 2.1 port, and a USB Type-A port.

It doesn't have a microSD card reader or Ethernet jack, so you'll need a dongle or another laptop if those are priorities.

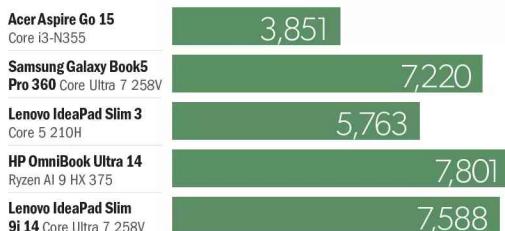
Under the hood, you're getting Wi-Fi 6 and Bluetooth 5.1 wireless hardware. While a bit dated, that's still reasonable. Wi-Fi 6E isn't critical, and Wi-Fi 7 is still just getting started.

PERFORMANCE

The Acer Aspire Go 15 isn't a speed demon on paper. Any Intel CPU with an "N" in its

PCMark 10 Overall

CPU performance



LONGER BARS INDICATE BETTER PERFORMANCE

name is suspect, as this is a slower budget line. But, with 16 GB of RAM and 512 GB SSD, this machine punches above its budget laptop weight. And in light usage—apps like web browsers, Microsoft Office, and Spotify—the laptop delivered reasonable day-to-day performance.

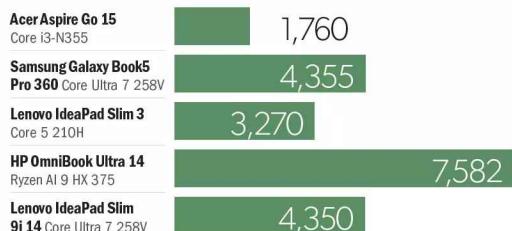
Intel's N-series CPUs have become better than I remembered them being for light desktop usage, but the CPU and GPU show their slow speeds when we put the machine through our standard benchmarks ([fave.co/4cjKcl4](https://www.pcworld.com/article/4cjKcl4)) to see how it performs.

First, we run PCMark 10 to get an idea of overall system performance. With an overall score of 3,851, the Acer Aspire Go 15 and its Core i3-N355 CPU were well behind other machines without Intel N-series CPUs.

Next, we run Cinebench R20. This heavily multithreaded benchmark focuses on overall CPU performance. It's a quick benchmark, so cooling under extended

Cinebench R20

CPU multi-thread performance



LONGER BARS INDICATE BETTER PERFORMANCE

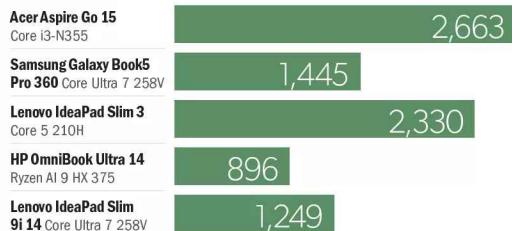
workloads isn't a factor. But, since it's heavily multithreaded, CPUs with more cores have a huge advantage.

With a multithreaded score of 1,760, this machine's eight-core CPU proved it isn't ideal for CPU-heavy workloads.

We also run an encode with Handbrake. This is another heavily multithreaded benchmark, but it runs over an extended period. This demands the laptop's cooling kick in, and many laptops will throttle and slow down under load.

Handbrake 0.9.9 Encode

Seconds



SHORTER BARS INDICATE BETTER PERFORMANCE

The Acer Aspire Go 15 took 2,663 seconds to complete the encode process—over 44 minutes, an unusually slow score.

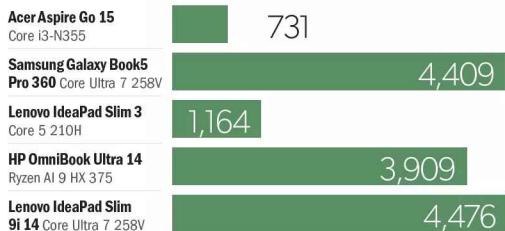
Next, we run a graphical benchmark. This isn't a gaming laptop (fave.co/4dEHNik), but it's still good to check how the GPU performs. We run 3DMark Time Spy, a graphical benchmark that focuses on GPU performance.

With an overall 3DMark Time Spy score of 731, the Intel graphics in this machine were unusually slow. If you want to do any PC gaming or use any professional apps that need GPU acceleration, this isn't the right laptop for you.

Overall, the benchmarks demonstrated that this laptop's hardware isn't particularly fast. It delivers reasonable day-to-day desktop performance with lightweight apps, but it isn't ideal for more demanding workflows, and you'll notice the speed difference on this machine compared to one with a higher-end CPU, even when you're using basic desktop apps and web browsers.

3DMark Time Spy 1.2

GPU performance



LONGER BARS INDICATE BETTER PERFORMANCE

BATTERY LIFE

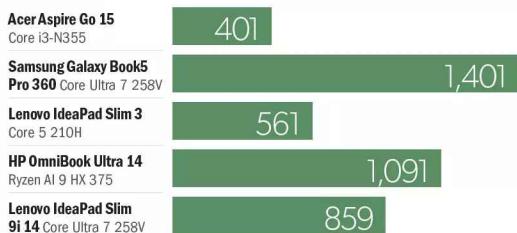
The Acer Aspire Go 15 has a 53 Watt-hour battery, which is on the small side. In day-to-day use, the battery life seemed below what Acer's reviewer guide promised and what I was led to expect in other reviews. The problem? I was cranking this 15.6-inch display up to 100 percent brightness, and that was hurting battery life

To benchmark the battery life, we play a 4K copy of *Tears of Steel* on repeat on Windows 11 with airplane mode enabled until the laptop suspends itself. We set the screen to around 250 nits of brightness for our battery benchmarks. This is usually a best-case scenario for any laptop since local video playback is so efficient, and real battery life in day-to-day use is always going to be less than this.

The Acer Aspire Go 15 lasted an average of 401 minutes before suspending itself. That's over six and a half hours, but not quite seven hours. Acer says to expect about ten

Battery Life

Minutes



LONGER BARS INDICATE BETTER PERFORMANCE



The Aspire Go 15 is a great pick if you're looking for a budget laptop under \$500.

and a half hours in this test, and I don't doubt I would have seen those numbers if I lowered the brightness.

In real-world use, you may get less battery life than you'd like unless you're prepared to turn the brightness down more than you may like. Thankfully, this being a 15.6-inch laptop, you may be planning to use it as a desk and plug it in frequently enough.

BOTTOM LINE

The Acer Aspire Go 15 is a great pick if you're looking for a budget Windows laptop under \$500 (fave.co/45BKIC7), especially if you can catch it on sale. The screen is solid, the build quality is reasonable, and the desktop performance is good enough for day-to-day

application usage. Even the webcam and mic are decent, you'd look and sound fine using these in online meetings.

But the compromises are real. This isn't a premium experience, the battery life is below what I'd like to see, and this machine isn't ready for you to put serious demands on its CPU or GPU.

But let's be honest: This machine will be more than enough for many people's needs. And I'm thrilled to see 16 GB of RAM and 512 GB of storage in a budget laptop like this one. 

Acer Aspire Go 15



PROS

- Great value.
- Solid display.
- Generous RAM and storage for the price.
- Reasonable webcam and mic.

CONS

- Slow Intel N-series CPU.
- No fingerprint reader or facial recognition.
- Middling battery life.

BOTTOM LINE

The Acer Aspire Go 15 is a great pick if you're looking for a budget Windows laptop under \$500 (fave.co/45BKIC7), especially if you can catch it on sale. The screen is solid, the build quality is reasonable, and the desktop performance is good enough for day-to-day

\$499

Logitech MX Master 4: The ultimate productivity mouse got even better

This isn't a gaming mouse—it's a work tool for those who spend long hours at their desk, work quickly, and want precision without sacrificing comfort. **BY ANTON LINDKVIST**



Picking up the Logitech MX Master 4 for the first time, I'm struck by how well it fits in my hand. Its shape is just right,

with a slope that allows the wrist to rest naturally and the thumb to fall onto the buttons. It's a mouse that feels long enough to keep your fingers from hitting the touch buttons—something that has annoyed me on

many other models. The MX Master 4 isn't about speed or RGB lights, it's about comfort, precision, and getting work done.

The surface is solid, the materials feel premium and the clicking sounds are almost nonexistent. The right and left buttons are extremely quiet and very sensitive, which is perfect in open-plan office environments but takes some getting used to. I quickly realize



The weight of the mouse gives it a solid feeling.

I'm pressing too lightly at first, but after a few days of use, everything feels natural.

The weight, on the other hand, is noticeable. The mouse is heavy, which gives a solid feeling, but it also becomes sluggish to move quickly. I mostly work in editing and office programs, so for me this isn't a disadvantage per se, but when I try to play a few rounds in FPS games, it feels that this is not the right mouse for that purpose.

SCROLL WHEEL AND CONTROL

The magnetic scroll wheel is absolutely amazing! You can switch between distinct incremental scrolling and free scrolling that just spins on for ages. It's handy, especially when I'm working in long documents or browsing

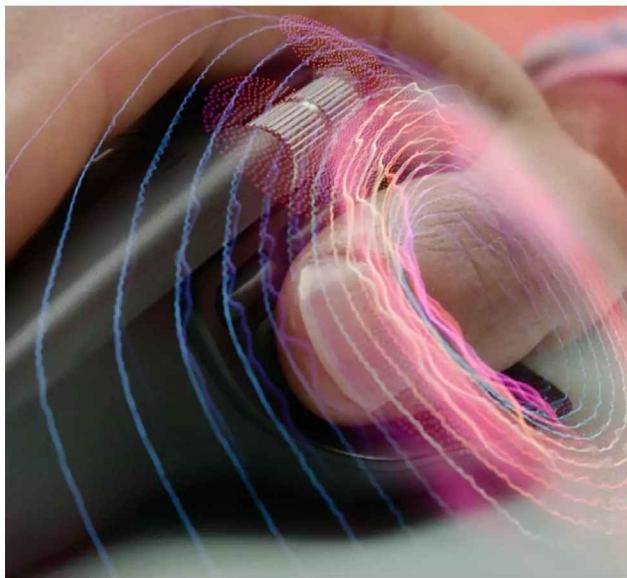
through image archives. At the same time, it has a small drawback: When moving quickly, the wheel can feel a little loose, almost like it's living its own life for a split second. This doesn't bother you in everyday use, but it's noticeable when the pace picks up.

Under the thumb is another scroll wheel, the horizontal scroll. It took a few days to get used to, but it's really handy when you're working in Excel, timelines in video editing or large whiteboard programs like Miro.

One novelty is the gesture button—holding it down and dragging the mouse in different directions lets you assign it its own functions. It's clever in theory, but in practice I rarely use it. Most of the time, pressing



The magnetic scroll wheel is absolutely amazing.



You can adjust the mouse's haptic feedback.

keyboard shortcuts is faster than remembering which movement does what.

SOFTWARE

All customization is done via Logitech's Logi Options software. There you can adjust haptics, scroll resistance, brightness, and define what each key should do in different programs. It works perfectly for app-specific commands, and by default the thumb buttons are programmed to general "undo" and "ready."

The software is very focused on workflows in specific apps rather than free automation. I like to customize everything to my own shortcuts, so it feels somewhat limited. You can build longer command chains or script your own sequences, but functionally it's limited which is a shame.

USER EXPERIENCE

In practical use, the MX Master 4 is still a delight. The sensor is extremely accurate, it works on almost any surface—even glass—and the response is immediate. I especially appreciate how smooth the feel is over time: no lag, no jerks, just steady precision.

Battery life is also impressive. After several weeks of daily use, I still have plenty of charge left, and charging it is quick via USB-C. I like the fact that I can continue to use the mouse while it is charging, something many manufacturers still miss.

The only thing that grates a bit is the polling speed. At 125 Hz, it doesn't feel as snappy as a real gaming mouse, and that's noticeable when I try to spin quickly or aim accurately in games. But again, this isn't a gaming mouse, and that's not the point. ⚡

Logitech MX Master 4



PROS

- Great ergonomics and build quality.
- Superb scroll wheel with adjustable resistance.
- Long battery life and reliable sensor.

CONS

- Heavy and slightly sluggish when moving quickly.
- Limited ability to create custom macros.
- Scroll wheel feels a little loose in free position.

BOTTOM LINE

The Logitech MX Master 4 shines where it belongs—on your desk. Built for productivity, not gaming, its ergonomics, materials, and scroll wheel feel make it a joy to use every day. I'd like a bit more software flexibility and a lighter weight, but overall, Logitech has refined a classic into something excellent.

From \$119



Keter Package Delivery Box: Simplicity is its superpower

This secure delivery box doesn't have a single smart feature, but its drop-and-go simplicity means couriers will be more likely to use it. **BY MICHAEL BROWN**

Keter is the latest manufacturer to take a shot at ending the epidemic of porch piracy plaguing online shoppers. Its Keter Package Delivery Box is the most basic solution I've tested—there's no smart lock, no broadband connectivity, and no delivery notifications.

What it lacks in technology, however, Keter's box makes up in practicality.

SPECIFICATIONS

Like the garden sheds that Keter is best known for, the Keter Package Delivery Box is fabricated almost entirely from resin, with metal handles on its lid and door, and a hasp



The top tray blocks access to the box's interior when the lid is lifted. Place a package here and close the lid, and the tray will lower, dropping the package to the bottom, where it can be retrieved via the front door.

for a user-provided padlock. It arrives as a 41-pound flat pack and takes about 45 minutes to assemble (I missed an early step in the illustration-only instructions, so it took me considerably longer because I had to partially disassemble it to fix my error).

The box is fairly tall, with exterior dimensions of $44 \times 24.4 \times 20.9$ inches (H×W×D). It has a hinged lid on top through which packages are delivered, and a lockable access door near the bottom for retrieving your packages. When the lid is lifted, a set of four steel cables opens a trap door by pulling up two trays, one that's the width and depth of the box's interior and a second tray beneath that's about

half the size and is mounted to the opposite side of the box.

With the lid open, these panels become perpendicular to the interior front and back sides of the box, so they block the sight line and physical access to the retrieval compartment that's below them. Place a package on the top panel, close the lid, and both panels drop until they're parallel with the front and back panels, dropping the package down into the retrieval compartment.

In terms of sophistication, Keter's product is the polar opposite of the Loxx Boxx smart delivery box I reviewed in August 2023 (fave.co/4nFDsIS). That battery-powered steel box connects to your home



The Keter Package Delivery Box will arrive at your home as a 41-pound flat pack.

Wi-Fi network; unlocks when you enter a PIN on its numeric keypad; tracks deliveries from Amazon, UPS, the U.S. Postal Service, and other couriers; and sends emails and text messages reporting related activity. The Keter Package Delivery Box is an inert box with drop-off and retrieval doors.

That very simplicity renders the Keter box more effective at deterring porch pirates—simply because couriers are more likely to use it. Unlike the Loxx Boxx, delivery personnel won't need instructions for figuring out the required PIN. And I didn't need to keep track of the box's battery level or check to ensure it hadn't dropped off my Wi-Fi network.

USING THE KETER PACKAGE DELIVERY BOX

My enthusiasm for the Keter Package Delivery Box, however, is considerably dampened

by its inability to accommodate larger packages. Its retrieval chamber is plenty big enough to store a dozen or so small to medium-size packages, but as large as this delivery box is, it can't accommodate anything remotely larger.

It's not just that the top opening isn't big enough, it's that the trap door mechanism won't let long or wide packages drop into the bottom of the box. Long boxes hit the interior backside of the box and *can't* drop through. So the box's interior dimensions of 39.4×19.7×15.7 inches (H×W×D) are somewhat misleading.

Ideally, you'll have enough room on your porch to place Keter's box next to your door, where couriers can't miss it. Its brown color shouldn't clash with any paint color, but the brown-on-brown lettering that spells "PACKAGES" is all but impossible to see if the sun isn't shining directly on the box. My tiny porch is barely wide enough for visitors, so I put it at the base of my porch steps. To help couriers find it, I zip-tied a sign to the railing next to it.

If you're concerned that an aggressive porch pirate might just pick up the entire box and throw it in the back of a pickup, you have a couple of options. I took the easier one, which was to lift up the false floor in the package retrieval chamber and



The Keter Package Delivery Box's design limits the size of boxes it can accommodate.



The lettering on the Keter Package Deliver Box is less than eye-catching, so I strapped this inexpensive metal sign to the handrail next to it. The severed hand is a Halloween decoration, but I'm thinking I'll leave it there all year as an extra attention-grabber.

pour in 100 pounds of sand to weigh it down. The more secure option would be to drive the provided bolts and expansion anchors into a concrete pad underneath the box.

BOTTOM LINE

The Keter Package Delivery Box isn't smart, so you'll need to rely on other means to know when deliveries are made. Most shippers provide tracking numbers for orders these days, but you could also place a security camera—or a video doorbell—within range of the box for more timely electronic notifications (as well as delivery verification).

And as I've already mentioned, this box's simplicity should increase compliance from all but the laziest couriers. It doesn't require much extra effort to lift the lid and drop the package compared to just tossing it on your porch.

From a budget perspective, Keter's box is much less expensive than competing—and, granted, more sophisticated—products from the likes of Loxx Boxx (fave.co/4nFDsI), BenchSentry (fave.co/3JI8FwT), and Yale (fave.co/4hUvbJO), although all three of those options can accommodate larger packages (and Loxx Boxx and Yale offer accessories to keep food deliveries cool).

When all is said and done, the Loxx Boxx's sophistication and strength keeps it my personal favorite delivery box. But if it's out of your budget or you think your couriers will resist using it, Keter's product is an excellent second-best.

Keter Package Delivery Box



PROS

- Simple for couriers to understand and use.
- Can hold lots of small to mid-size packages.
- Hasp accommodates very large padlocks.
- Relatively small footprint.

CONS

- No smart features.
- Larger packages won't fit.
- Signage is very difficult to read.

BOTTOM LINE

It has zero smart features, but even the most churlish couriers will be more likely to drop your packages in the Keter Package Delivery Box than anything that demands the least bit of extra thought or effort from them.

From \$189

Asus ROG Strix XG27AQDPG: This monitor just solved motion clarity

The Asus ROG Strix XG27AQDPG serves up a 500Hz OLED panel with great image quality, solid HDR, and gobs of features. **BY MATTHEW S. SMITH**



The Asus ROG Strix XG27AQDPG is one of two new 500Hz QD-OLED monitors that were launched in close succession (the other being Samsung's Odyssey OLED G6 G60SF). An

OLED monitor capable of 500Hz was a dream a decade ago, but now it's a reality, and the results are spectacular.

Read on to learn more, then see our roundup of the best gaming monitors (fave.co/40BxIkQ) for comparison.

SPECS AND FEATURES

The headliner here is obviously the refresh rate, which can hit a maximum of 500Hz. That's an incredibly high refresh rate for any monitor, and a new height for OLED—though a few other companies, like Samsung, also offer a 500Hz OLED display.

Display size: 26.5-inch 16:9 aspect ratio

Native resolution: 2560×1440

Panel type: Samsung QD-OLED

Refresh rate: 500Hz

Adaptive sync: Yes, Adaptive Sync/AMD FreeSync Premium Pro/Nvidia G-Sync Compatible

HDR: VESA DisplayHDR 500 True Black

Ports: DisplayPort 1.4, HDMI 2.1, 3.5mm audio jack, 1× USB-B 3.2 Gen 1 upstream, 2× USB-A 3.2 Gen 1 downstream

Audio: None

Additional features: Tripod mount, Aura Sync lighting, Neo Proximity Sensor

Price: \$899.99 MSRP

Refresh rate aside, the Strix XG27AQDPG is tightly focused on gaming. It has a wide range of adaptive sync support and is VESA DisplayHDR 500 True Black certified.

The monitor has an MSRP of \$899.99. That makes it a hair more expensive than Samsung's competitor, the Odyssey OLED G6, which is \$850.

DESIGN

The ASUS ROG Strix XG27AQDPG looks identical to the more recent ROG Strix

XG27AQDMG (fave.co/4dL9RTB). It has a stealthy yet aggressive matte-black look with slim bezels around the panel and a small, red LED Asus ROG logo on the chin.

Turn it around and you'll also find an RGB-LED Asus ROG logo. It's not as bright as the RGB-LED lighting on the back of the Samsung Odyssey OLED G6 G60SF (and some other competitors). On the other hand, the lighting can be controlled and coordinate with other Asus devices using Asus's Aura Sync, which is a solid software utility for managing RGB-LED customization.

A compact square stand keeps the Asus ROG Strix XG27AQDPG planted on a desktop. Asus used to insist on huge, tripod-style stands, but has recently changed course. As a result, the monitor doesn't take up much desk space. The stand also provides ergonomic adjustment for height, tilt, and swivel. It can also pivot 90 degrees into portrait orientation.

One unique feature found on the monitor's stand is a 1/4-inch tripod mount. It's included for mounting camera gear, such as a camera or light above the monitor. Though targeted at live streams, it could also be useful for anyone who regularly joins video calls. This is a feature you won't find on competitive monitors.

CONNECTIVITY

There's something else you won't find on the Asus ROG Strix XG27AQDPG: USB-C. It's

sadly absent, which means the monitor won't easily connect to some modern laptops that only offer USB-C ports for video-out.

USB-A connectivity is limited as well. There are just two USB-A 3.2 Gen 1 downstream ports, which are driven by a USB-B upstream port. That's enough to connect a wired keyboard and mouse, but not much else. A 3.5mm audio jack, used for audio pass-through, rounds out the connectivity options.

Video connectivity is provided by two HDMI 2.1 ports and one DisplayPort 1.4 port, all of which can drive the monitor's 2,560×1,440 resolution at its maximum refresh rate of 500Hz.

The Asus ROG Strix XG27AQDPG's connectivity is limited for a \$900 monitor, but it's not unusual in the gaming space. Samsung's Odyssey G6 G60SF has a similar array of ports. Alienware monitors are also sticking to minimalist connectivity in 2025. Shoppers who want USB-C with Power Delivery should consider monitors like the MSI MPG 272URX (fave.co/4jrg4ql).

MENUS AND AUDIO

Asus provides a long list of image quality customization with the Asus ROG Strix XG27AQDPG. It includes color temperature and gamma settings that



The menus are easy to navigate with a joystick centered on the monitor's chin.

target specific values, a long list of image quality presets, and six-axis color calibration, among other features.

The monitor also tosses in features that target gamers. It has an "AI crosshair" that changes color dynamically to enhance visibility. There are also two "aspect ratio control" modes. One restricts the viewable area to a 4:3 display, which may be useful for playing older games; the other restricts the viewable area to a 24.5-inch 16:9 aspect ratio, which is popular among competitive gamers.

The menus are easy to navigate with a joystick centered on the monitor's chin. Asus's menus are responsive and menu options are well labeled. Competitors like Alienware and Samsung are on a similar level, but Asus's menu is a step up from brands like Gigabyte and AOC.

You can also control the monitor through a software utility called DisplayWidget. It can be used to control most monitor features and can also be used to update the monitor's firmware. DisplayWidget is available for Windows 10, Windows 11, and MacOS.

The Strix XG27AQDPG includes a Neo Proximity sensor that is meant to reduce the burn-in problems that can occur on OLED screens. When on, it will detect whether you're near the display and turn the monitor's screen off if you're not (after a user-selected timeout period of 5 to 15 minutes). I can't say whether this is truly effective at combating burn-in, as I only used the monitor for a couple weeks, which isn't enough time to cause burn-in. Still, it makes sense in theory.

Speakers are nowhere to be found. That's typical for a gaming monitor, as most brands assume gamers will want to use a headset or desktop speakers for a better audio experience. Gamers who want great built-in audio should consider the LG UltraGear 32GS95UE (fave.co/3JL76Z0), which has powerful "pixel sound" audio. It's a more expensive 32-inch OLED monitor, though, and not a direct competitor to the Asus ROG Strix XG27AQDPG.

SDR IMAGE QUALITY

The Asus ROG Strix XG27AQDPG is yet another QD-OLED display, albeit one that can reach a refresh rate of 500Hz. The increased

refresh rate does little to dampen the panel's excellent SDR image quality.

First up is brightness, and here the Asus ROG Strix XG27AQDPG pulls ahead of the pack. Most OLED monitors land around 240 to 270 nits, but the XG27AQDPG manages to sneak above 300 nits. I don't think the gain is enough to be plainly obvious, but it does help the monitor provide usable brightness in a more brightly lit room. Every bit of brightness helps if you're trying to use the monitor near sunlit windows.

While the added brightness is excellent, the Strix XG27AQDPG uses a glossy finish, and glare can still be an issue even at maximum brightness. Samsung's Odyssey G6 G60SF has a "glare-free" finish if you'd like to go that route.

Next up is contrast where, as usual, there's not much to say. OLED panels all provide an effectively infinite contrast ratio because they achieve a perfect minimum luminance of zero

Maximum SDR Brightness

Nits

| | |
|------------------------------|-----|
| Asus ROG Strix XG27AQDPG | 304 |
| Alienware AW2725Q | 271 |
| Asus ROG Swift OLED PG27UCDM | 268 |
| LG UltraGear 27GX90A-B | 246 |
| MSI MPG 272URX QD-OLED | 269 |
| Acer Predator X27U X1 | 263 |

LONGER BARS INDICATE BETTER PERFORMANCE

Contrast Ratio at 50% Brightness

| | |
|------------------------------|----------|
| Asus ROG Strix XG27AQDPG | Infinite |
| Alienware AW2725Q | Infinite |
| Asus ROG Swift OLED PG27UCDM | Infinite |
| LG UltraGear 27GX90A-B | Infinite |
| MSI MPG 272URX QD-OLED | Infinite |
| Acer Predator X27U X1 | Infinite |

LONGER BARS INDICATE BETTER PERFORMANCE

nits. As a result, OLED panels deliver an outstanding sense of immersion in high-contrast scenes and can also render very dark scenes with convincing and realistic black levels. The XG27AQDPG's contrast ratio is a major advantage over LCD displays, but it's not an advantage over other OLED panels.

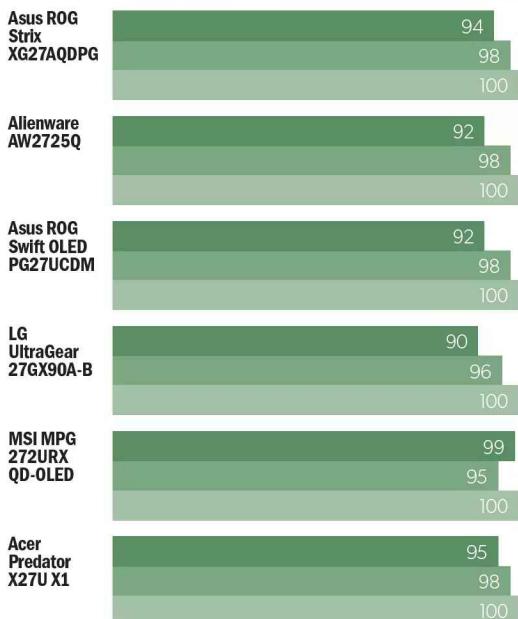
The XG27AQDPG has a very wide color gamut that spans 100 percent of sRGB, 98 percent of DCI-P3, and 94 percent of AdobeRGB. This is an excellent result that ranks among the widest color gamuts available from a monitor. However, this is another area where the XG27AQDPG doesn't stand out from most competitors, as most also provide a wide color gamut.

Still, the XG27AQDPG does have a small edge against monitors like the LG UltraGear 27GX90A-B (fave.co/3LNnaKr), which has an LG WOLED panel.

Color accuracy is a strength for the Asus ROG Strix XG27AQDPG. It has the

Color Gamut

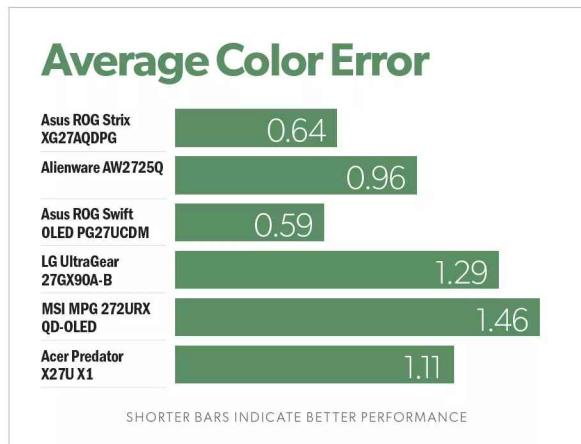
% AdobeRGB % DCI-P3 % RGB



LONGER BARS INDICATE BETTER PERFORMANCE

second-lowest color error of the monitors used for comparison and scores well by any standard. The image looks realistic and errors in color accuracy are difficult to notice even in close comparison with other monitors. That's good news if you want to use the monitor for photo editing, videography, digital art, or other tasks where color accuracy is important.

The monitor's gamma and color temperature results were a mix. On the plus side, the monitor scored a default gamma result of 2.2, and every gamma setting available is highly accurate. The XG27AQDPG



has an edge here, as many OLED monitors have a gamma curve that skews too dark. However, the XG27AQDPG was also warmer than it should be with a color temperature of 6100K, off the target of 6500K. That means the image can have a slightly reddish tinge.

Sharpness is a weak point. The 2560×1440 panel has a pixel density of about 110 pixels per inch. That's not bad, but it's a lot lower than a 4K panel, which packs 163 pixels per inch. The image on the XG27AQDPG is softer than a 4K competitor. Personally, I find this less noticeable in games, but it stands out when viewing 4K video content and using the Windows desktop.

The Asus ROG Strix XG27AQDPG's overall SDR image quality is excellent, though I'm not sure it's a reason to buy it over another QD-OLED monitor. The differences are often subtle and hard to notice in the real world. Still, the XG27AQDPG posts above-average results overall. It scores very well in color accuracy and brightness.

HDR IMAGE QUALITY

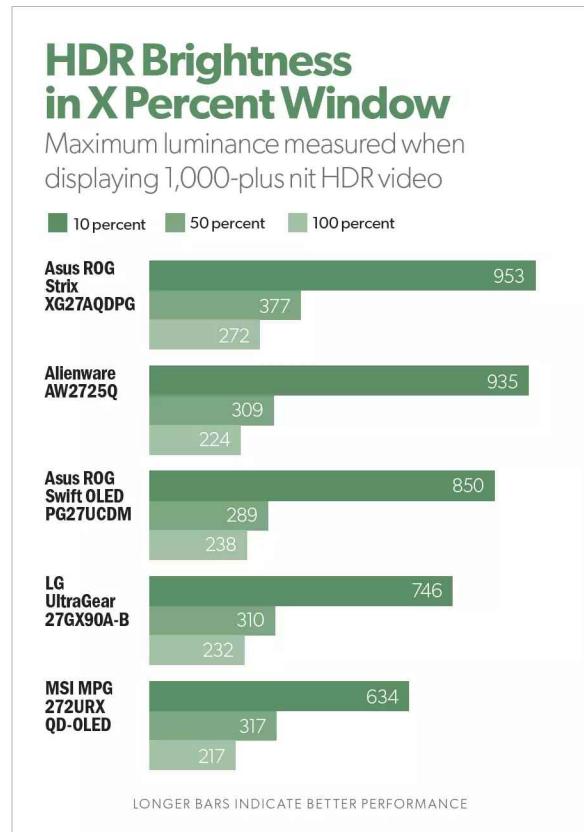
The Asus ROG Strix XG27AQDPG is VESA DisplayHDR 500 True Black certified. Virtually all OLED monitors have VESA DisplayHDR certification, but most have the less demanding DisplayHDR 400 True Black certification. The XG27AQDPG's higher level of certification suggests it should be brighter than most competitors, and that turns out to be true.

I measured a maximum peak brightness of 953 nits when a small portion of the display was lit. As the graph shows, that's a great result, though a few competitors offer comparable performance. The XG27AQDPG also did well when half the display, or the entire display, was asked to display a sheer white HDR image.

That's not to say it's perfect. OLED struggles most when asked to produce bright scenes that stretch across the entire display, and the XG27AQDPG is not an exception. Still, it performs well overall.

Subjectively, the XG27AQDPG makes for a great HDR experience. Bright highlights, like a flash of lightning, pop with brilliance. And scenes that have a bright gradient, such as a sunrise or sunset, show good detail in HDR highlights. We're not at premium HDTV levels yet, but it's good for a monitor, and also good enough to make HDR content worth viewing.

The XG27AQDPG also provides several HDR brightness modes. Some prioritize



accuracy, while others prioritize brightness. I tested the monitor in the ConsoleHDR mode with dynamic brightness on.

The monitor also has an HDR brightness adjustment. This is not typical, as HDR content is typically given control of brightness. This manual adjustment can override HDR content brightness to let you tone it down. That's useful, as HDR content can sometimes feel overly bright on a monitor.

MOTION PERFORMANCE

The Asus ROG Strix XG27AQDPG has me seriously contemplating whether motion

clarity is now more or less a solved problem. Pairing a 500Hz refresh rate with OLED's lightning-fast pixel response times makes for a truly outstanding experience.

Scrolling test images from DOTA 2, for example, show that virtually all details of the game are preserved in motion. I could easily make out the names above characters and even the individual ticks in HP bars. Scrolling text is equally crisp. That's not just handy in games, but also in Word documents and PDFs, where text remains readable as you scroll through a document.

Let me be clear: 500Hz on OLED is a big deal. Seeing it for the first time is at least as impressive as seeing the first 120Hz LCD displays after years of 60Hz panels. It's a night-and-day difference that's readily apparent not only when compared to a 60Hz panel, but also when compared to a 240Hz or 360Hz panel. It's not obviously better than last year's 480Hz OLED displays (fave.co/40Ue5xL), but those were already close to perfection, and I'm sure the extra 20Hz doesn't hurt.

While the XG27AQDPG's motion clarity is gob-smacking, it's important to remember that competitive monitors with the same 500Hz QD-OLED panel, like the Samsung Odyssey OLED G6 G60SF, will offer identical motion clarity.

But Asus does have a trick up its sleeve: Extreme Low Motion Blur (ELMB). This is a backlight mode that effectively inserts blank,

black frames between existing frames. Due to the quirks of human persistence of vision, this reduces apparent motion blur.

ELMB is only available at a refresh rate of 120Hz or 240Hz, which might seem odd, but it's still handy. Many games can't actually achieve a frame rate of 500 FPS, in which case the XG27AQDPG won't look any different from an OLED monitor with a maximum refresh rate of 240Hz. ELMB provides a way to boost clarity even at more modest frame rates.

The catch is brightness. Adding a blank, black frame every other frame halves the brightness shown. That will be a problem in bright rooms, but it's not an issue in dim settings. I found that with ELMB on, the XG27AQDPG was just barely bright enough to comfortably view in my office, which has two large windows that face away from the sun.

Most competitors don't have a feature like ELMB, and those that do often don't work quite as well. This gives Asus a motion clarity edge when playing games at 120Hz or 240Hz.

BOTTOM LINE

The Asus ROG Strix XG27AQDPG is a titan of motion clarity. It looks crystal clear at 500Hz and also has ELMB, which enhances motion clarity at 120Hz and 240Hz.

That alone would be noteworthy. But what really makes the XG27AQDPG worth your

money is the lack of compromise. The only significant issue is the monitor's 2560×1440 resolution, which definitely isn't as crisp as 4K. But 1440p still isn't bad, and in some cases can be preferred for high-refresh gaming, as it's less demanding on a video card than 4K. Toss in great color accuracy, bright HDR, and functional design, and the XG27AQDPG has everything covered.

Compared to Samsung's Odyssey G6 G60SF, I think Asus and Samsung are close to tied. Asus provides some extra features like ELMB, but the Samsung is \$50 less expensive. Samsung also uses a matte display finish, while Asus opts for glossy.

Don't get me wrong: A 4K QD-OLED with a refresh rate of 240Hz is still the better choice for most people. But if you're more concerned about clarity in motion than at a standstill, the XG27AQDPG will make you very happy. 

Asus ROG Strix XG27AQDPG



PROS

- Crystal-clear motion clarity.
- Attractive and functional design.
- Excellent image quality.
- Solid HDR performance.

CONS

- Only 1440p resolution.
- No USB-C.

BOTTOM LINE

The Asus ROG Strix XG27AQDPG serves up a 500Hz OLED panel with great image quality, solid HDR, and gobs of features.

\$899



Lenovo LOQ 15: A speedy budget laptop with one big flaw

Good specs can't make up for a bad screen. **BY MATTHEW S. SMITH**

Budget gaming laptops ([fave.co/44jP4EE](https://www.pcworld.com/reviews/lenovo-loq-15-review/)) are in a pickle. Gamers often expect them at a price around \$1,000 or less, but between rising GPU prices and internal trade wars, shipping a laptop with discrete graphics for under \$1,000 isn't easy.

The result is laptops like the Lenovo LOQ 15. It's successful in delivering solid game performance for the price, but Lenovo cuts a lot of corners to make that possible.

SPECS AND FEATURES

The Lenovo LOQ 15's specifications feel built around the Nvidia RTX 5060, which takes

center stage. The AMD Ryzen 7 250 is an acceptable processor, but based on the older Zen 4 architecture, which has consequences when it comes to performance.

Model number: 15AHP10

CPU: AMD Ryzen 7 250

Memory: 16GB DDR5-5600

Graphics/GPU: Nvidia RTX 5060 8GB (115W TGP)

NPU: Up to 16 TOPS

Display: 15.6-inch 1,920×1,080 IPS with 144Hz refresh rate, G-Sync

Storage: 512GB M.2 PCIe 4.0 solid state drive

Webcam: 5MP with electronic privacy shutter

Connectivity: 3× USB-A, 1× USB-C with 100 watts of Power Delivery and DisplayPort 1.4, 1× HDMI 2.1, 1× Gigabit Ethernet, 1× 3.5mm combo audio jack, 1× barrel plug power adapter

Networking: Wi-Fi 6, Bluetooth 5.3

Biometrics: None

Battery capacity: 60 watt-hours

Dimensions: 14.17×10.19×0.94 inches

Weight: 5.29 pounds

Operating System: Windows 11 Home

Price: \$809.99

The laptop also sticks with just 16GB of RAM and a 512GB solid state drive, both of which are really the bare minimum for a gaming laptop in 2025, regardless of price.

At least the price is attractive. Although it carries an MSRP of \$1,299.99, it's currently

sold for \$809.99 through Lenovo's website. Lenovo offers an upgrade to 32GB for \$65, and an upgrade to 1TB of solid state storage for \$60. The SSD upgrade is a must-have.

Lenovo offers a variety of alternative LOQ 15 configurations, new and old, so pay close attention to the specifications of any model before you buy. This review covers the late 2025 LOQ 15 model 15AHP10.

DESIGN AND BUILD QUALITY

Lenovo's PC gaming sub-brand, Legion, has earned a solid reputation in recent years—but the LOQ 15 isn't part of it. Or is it? Keen-eyed gamers might notice the LOQ logo shares the same stylized "O" found in the Legion logo.

In any case, the LOQ 15 definitely lacks the attractive design of Lenovo's Legion laptops. It's instead a simple gray machine with minimal branding. If Lenovo swapped the branding to IdeaPad and sold it as a budget desktop replacement, I don't think anyone would bat an eye. All of which is to say: The laptop looks a bit drab.

Functionally, it's about what anyone would expect from a 15-inch desktop replacement. It's a thick machine, measuring up to 0.94 inches in profile, and it weighs in at 5.29 pounds. It's only 14 inches wide and 10 inches deep, however, which are common dimensions for a 15- or 16-inch machine. As a result, the laptop fits snugly in my backpack's laptop compartment.

Build quality is adequate. Faux-metallic plastic is the material of choice. The chassis is reasonably rigid but some flex can be found along the keyboard, as well as when opening or closing the display. It's good enough for a budget machine, but it doesn't stand out.

KEYBOARD, TRACKPAD, MOUSE

Keyboard quality is often a highlight for Lenovo's laptops, but the LOQ 15's keyboard didn't leave the usual positive impression. I think the amount of key travel is fine, but the bottoming action felt more subtle than other recent Lenovo laptops. I'd like both tactile and audible feedback. If you like a quiet keyboard, though, you might enjoy it.

While the key action wasn't my preference, the keyboard layout is a positive. Lenovo squeezes in a keyboard with a numpad. Despite that, the primary alphanumeric keys

are generally large, while the numpad keys are slimmer than usual. The keyboard also provides oversize arrow keys, which I think is a good move for a gaming laptop.

As with most budget gaming laptops, the touchpad is just sort of...there. It measures about 4.5 inches wide and 3 inches deep, which isn't large for a 15-inch laptop. And while the surface is responsive enough, it feels inexpensive. The touchpad provides a physical mouse action, but it's shallow and seems hollow.

With that said, these downsides are common for a budget gaming laptop. PC games are often played with an external mouse, so the touchpad becomes less of a priority.

DISPLAY, AUDIO

The Lenovo LOQ 15 ships with a 15.6-inch 1080p IPS display with a 144Hz refresh rate.

And honestly? It's really a bit of a disaster.

See, there's one specification that stands out as rather odd on Lenovo's website. It lists "25ms." No context is provided, but I expect this is meant to be the panel's pixel response time. And when it comes to pixel response times, well, 25 milliseconds may as well be an eternity.

And here's the real problem: This specification wasn't my first



Lenovo has squeezed in a keyboard with a numpad.

indication that the panel was a problem. Instead, I noticed something was fishy while moving windows around the display on the Windows desktop. Normally, a 144Hz IPS panel will look crisp in motion. But on the LOQ 15 I noticed huge, smeary trails following text and icons. I noticed a similar issue in games, which invariably looked more like a 60Hz panel (or perhaps even worse) than a 144Hz display.

That's a big problem. It would be reasonable, of course, to expect even a budget gaming laptop to ship with a display that's good for gaming. But that's not what I saw from the LOQ 15.

But hey, at least the display supports Nvidia G-Sync. So that's something.

Motion performance aside, the IPS panel is otherwise a typical example of the breed. Color performance is decent, but the contrast ratio is low due to the display's inability to reach a true, inky black level. Because of that, the display is a better choice for bright, colorful games than for darker, more atmospheric content. The display is also rather dim even at maximum brightness, so it's uncomfortable to use in a brightly lit room.

Audio, meanwhile, is delivered by a pair of two-watt speakers. They're not going to impress but do manage to provide a healthy



The LOQ 15 ships with a 15.6-inch 1080p IPS display.

maximum volume and reasonable clarity in most situations. They will become muddy and harsh when listening to music at high volumes but they're fine for games where audio presentation isn't as critical.

WEBCAM, MICROPHONE, BIOMETRICS

There's not a lot to say about the Lenovo LOQ 15's webcam and microphone. It ships with a 5MP webcam that offers acceptable image quality for Zoom calls, but it's nothing special. The same can be said of the dual-array microphone, which is fine but doesn't stand out. An electronic privacy shutter is available.

Biometrics, on the other hand, are no-go. That's typical for a budget gaming laptop, but something you'll typically find if you spring for an alternative priced about \$1,000 and above.

CONNECTIVITY

The Lenovo LOQ 15 has a lot of connectivity. It includes three USB-A ports, one USB-C port with Power Delivery and DisplayPort, HDMI 2.1, Ethernet (RJ-45), and a 3.5mm combo audio jack. Power is delivered over a barrel-plug connector. This is a wide range of connectivity that can handle most situations. An SD card reader is the only option notably missing, but SD card readers aren't common on gaming laptops.

However, the available connectivity is basic in terms of technical specifications. The USB-A ports all support USB 3.2 Gen 1 with 5Gbps data speeds. The USB-C port is USB 3.2 Gen 2 with 10Gbps of data. There's no Thunderbolt and no high-data-rate USB. Also, the USB-C port's Power Delivery only reaches 100 watts, which isn't enough to fully power the laptop at load. To be fair, this is all more or less the norm for a budget gaming laptop. It's not reasonable to expect cutting-edge connectivity in a



The LOQ 15 has a wide selection of connectivity options.

laptop that has Nvidia discrete graphics and yet retails for under \$1,000.

The LOQ 15 also sticks to Wi-Fi 6 and Bluetooth 5.3 for wireless connectivity. Wi-Fi 7 is the latest standard, and many laptops support it, while budget machines often get by with Wi-Fi 6E. Wi-Fi 6 is a much older standard at this point and it lacks the high-speed 6GHz band that was introduced with Wi-Fi 6E.

PERFORMANCE

The Lenovo LOQ 15's internals pair an AMD Ryzen 7 250 processor with Nvidia's RTX 5060 discrete graphics. The Ryzen 7 250 is an eight-core, 16-thread processor with a maximum clock speed of 5.1GHz. The RTX 5060, meanwhile, has 8GB of VRAM and a maximum graphics power of 115 watts. This core duo is flanked by 16GB of DDR5-5600 memory and 512GB of solid state storage.

First up is PCMark 10, and you might notice something odd about the results. The

LOQ 15 actually crashed midway through the benchmark, at the moment the Nvidia GPU had to be engaged, despite efforts to adjust settings (like turning off Nvidia Optimus and G-Sync) to smooth things over. This is not a novel issue for the LOQ 15. PCWorld reviews have, on rare occasions, run into issues with PCMark 10 failing to finish a benchmark run for opaque reasons.

PCMark 10 Overall

CPU performance



LONGER BARS INDICATE BETTER PERFORMANCE

Still, the Lenovo LOQ 15 did report Productivity a score for the Essentials portion of the benchmark, which is the first half, and PCWorld has records of those scores posted by other laptops. That's what you see above.

And, truth be told, it's not too exciting. The Essentials tasks—which include web browsing and videoconferencing—are important, but not exactly difficult for a modern Windows gaming laptop.

Let's move on to a more illuminating benchmark: Cinebench 2024. This is a heavily multithreaded CPU test that benefits from lots of high-performance cores. The AMD Ryzen 7 250 has just eight cores, however—which isn't all that many in 2025. On top of that, the Ryzen 7 250 is based on the Zen 4 processor architecture, not AMD's newer Zen 5.

The Cinebench 2024 results suffer as a result. The multi-core score of 818 isn't terrible but, when compared to a range of gaming laptops, it's certainly toward the lower end of what's available.

Cinebench 2024

CPU multithread performance



LONGER BARS INDICATE BETTER PERFORMANCE

Next up is Handbrake, a program that can transcode a variety of video formats. We use it to convert a feature length film from .MP4 to .MKV format, a task that takes roughly six minutes on the Lenovo LOQ 15. That once again is toward the higher end of what's available from a modern gaming laptop. However, the Ryzen 7 250 is competitive with Intel Core 7 chips like the Core i7 240H, as well as older hardware like the Intel Core i7-13650HX.

It's clear the Ryzen 7 250, though a decent performer for a budget gaming

Handbrake 0.9.9 Encode

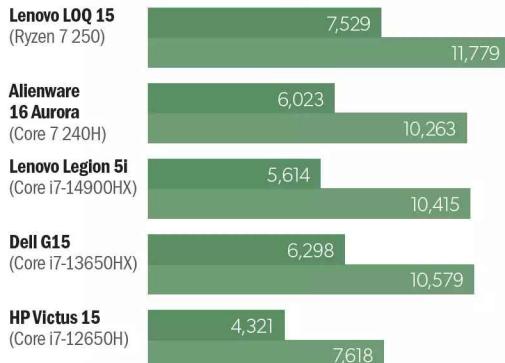
Seconds



SHORTER BARS INDICATE BETTER PERFORMANCE

3DMark Port Royale & Time Spy

■ Port Royale ■ Time Spy



LONGER BARS INDICATE BETTER PERFORMANCE

laptop, isn't going to set records. But what about the Nvidia RTX 5060 mobile? It's arguably the most important piece of silicon in the laptop, as it contributes the most to game performance.

3DMark Fire Strike returned a score of 11,779, while Port Royale (a ray traced benchmark) reported a score of 7,529.

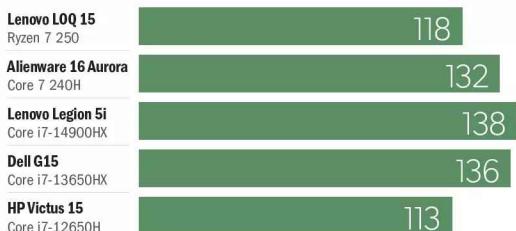
These results are a bit of a mix. On the plus side, the Lenovo LOQ 15 provides good performance for an RTX 5060 laptop. The RTX 5060 also posts modest but noticeable improvements in both benchmarks.

On the other hand, though, the RTX 5060's gain over the RTX 4060 is slim for a new generation of hardware. It's there, but it's slim.

Moving on to real games, we first come to *Shadow of the Tomb Raider*, and an older title

Shadow of the Tomb Raider

Frames per second; 1080p Highest



LONGER BARS INDICATE BETTER PERFORMANCE

most modern gaming laptops can handle with ease. The LOQ 15 is no exception, as it averaged 118 frames per second at 1080p and the Highest detail setting.

The LOQ 15's score is unremarkable for a gaming laptop with RTX 5060, though. Perhaps we're looking at a CPU bottleneck, as the competitive systems that score better in this game also beat the LOQ 15 in CPU benchmarks.

Metro Exodus is also an older title, but one that's still difficult for modern laptops to run at the Extreme detail preset. Here, the LOQ 15 managed to reach an average of 49 frames per second, which is a solid result. The Alienware 16 Aurora with RTX 5060 isn't nearly as quick.

The LOQ 15 with RTX 5060 also has a commanding lead over older RTX 4060 laptops, which cluster around 40 FPS on average.

We wrap things up with *Cyberpunk 2077*. Though the game has a reputation for

Metro Exodus

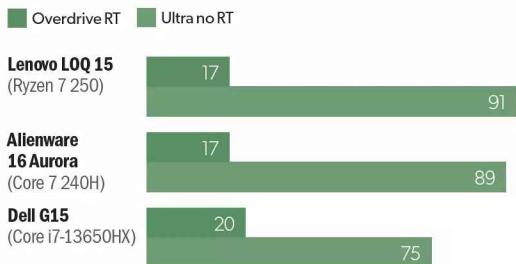
Frames per second; 1080p Extreme, no RT



LONGER BARS INDICATE BETTER PERFORMANCE

Cyberpunk 2077

Frames per second; 1080p no DLSS/FSR/etc



LONGER BARS INDICATE BETTER PERFORMANCE

demanding system requirements, the LOQ 15 didn't have much trouble, as it managed to reach an average of 91 frames per second at 1080p and the Ultra preset without ray tracing.

The system-slaying Overdrive preset tanked performance down to just 17 FPS. But that's hardly a surprise, as even RTX 5080 laptops barely nudge over 30 FPS at that preset.

It should be noted that games with DLSS 4, like *Cyberpunk 2077*, can reach much better performance with DLSS 4 and frame generation engaged. For example, the LOQ 15 averaged only 36 FPS at Ultra when ray tracing was turned on—but DLSS 4 with 2x Frame Gen boosted performance to 99 FPS.

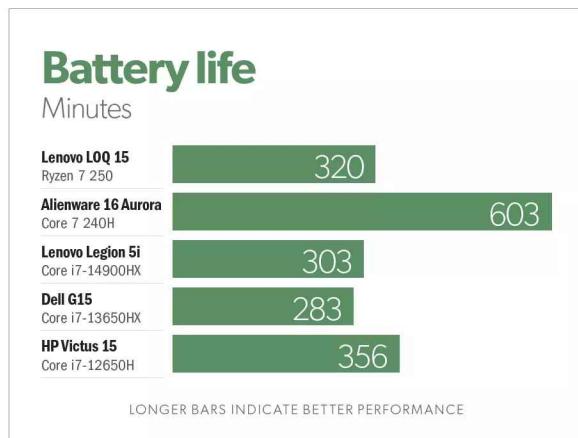
One final hardware concern worth mentioning is the laptop's 16GB of RAM and 512GB of solid state storage. The RAM should be enough for most modern titles, but it doesn't leave much room for future-proofing. The 512GB SSD, on the other

hand, is already borderline unusable for a gaming laptop. Just three or four modern games, like Fortnite or *Call of Duty*, will fill up the drive. You'll need an external SSD or a high-speed Internet connection that makes installing and uninstalling digitally owned titles less painful.

BATTERY LIFE AND PORTABILITY

The LOQ 15's lower price forces a concession in battery life. It provides just 60 watt-hours of capacity. That's not a lot of capacity for a gaming laptop—or any modern Windows laptop, really. The HP Victus 15 has a 70 watt-hour battery, for example, and the Dell G15 has an 86 watt-hour battery.

On the plus side, the LOQ 15 supports Nvidia Optimus switchable graphics. That means the Nvidia RTX 5060 can be turned off in favor of the integrated AMD Radeon graphics in less demanding situations.



I measured just over five hours of battery life in our standard battery test, which loops a 4K clip of the short film *Tears of Steel*. That's not a lengthy result. With that said, however, it's about what I would expect from a modern gaming laptop. As the graph above shows, some competitors with larger batteries turn in even less appealing results.

BOTTOM LINE

The Lenovo LOQ 15 could be a decent budget gaming pick if not for one serious issue: the display. I noticed serious ghosting and blurring while using the laptop. This was an issue both in-game and also on the Windows desktop. It's a shame, because the LOQ 15's performance level is respectable for its price tag, but I can't recommend the laptop unless you don't want to use the included display and instead intend to use the laptop with an external monitor.

Indeed, I think that's arguably the one appealing use case for the LOQ 15. You could

just use it as a portable RTX 5060. At \$809.99, the LOQ 15 isn't that much more expensive than a desktop RTX 5060 paired with a PCIe dock and power supply, and it's way easier to travel with, or even move around your house.

Gamers should also be aware that though the LOQ 15 is inexpensive, you arguably get more value if you can spend around \$1,000 to \$1,200. For example, the Lenovo Legion 5 (fave.co/3XdDI6e) with an AMD Ryzen 7 260, Nvidia RTX 5060, OLED display, and 512GB SSD can be had for \$1,150, or \$1,215 with a 1TB solid state drive. A \$350 to \$400 price leap is nothing to scoff at, but a laptop like the Legion 5 is a far more well-rounded system that should keep you happy a few years longer than the LOQ 15, making the higher price worthwhile if you can stretch your budget. 

Lenovo LOQ 15



PROS

- Simple design with good build quality.
- Lots of physical connectivity.
- Great GPU and game performance for the price.

CONS

- Moderate CPU performance.
- Lacks latest connectivity such as Wi-Fi 7 and USB4.
- Disappointing motion clarity from 144Hz display.

BOTTOM LINE

The Lenovo LOQ 15 is effectively a portable RTX 5060 graphics card. Its game performance is a good value for its current sale price, but a few flaws drag down the laptop experience.

From \$809

SwitchBot K20+ Pro Patrol Kit: A fun but flawed robot guard

This multifunction household robot can tote a security camera and other smart home devices around your house and clean your floors at the same time. **BY GABRIELA VATU**



SwitchBot is known for manufacturing quirky smart home products, and its SwitchBot K20+ Pro Patrol Kit is certainly no exception. One part mini robot vacuum cleaner and mop, one part automated security guard, it promises to clean your floors while patrolling your home with an indoor security camera mounted atop a piggybacked mobile base—like a triple-decker bus.

Yes, it's a weird combo, but it works—although it won't in every home (I'll get to that later). The bundle reviewed here includes the tiny SwitchBot K20+ Pro robot vac and mop, its self-emptying base station, a mobile dock that can host various accessories, and a SwitchBot Pan/Tilt Cam Plus 3K security camera (fave.co/4nL5z3p). You'll also need to have the \$120 SwitchBot Hub 3 Matter-certified smart home hub for everything to work.

FEATURES AND DESIGN

The diminutive SwitchBot K20+ Pro robot vac and mop is the core of the system. It docks to a rolling platform that can support *other* SwitchBot modules for various tasks, ranging from the camera included in this bundle to your choice of a battery-powered cooling fan, one of two battery-powered air purifier models (both with table-top surfaces), or a telescopic smartphone and tablet stand.

The rolling platform can host the camera with any one of those other accessories, and they all have secure mounts. There is also, of course, a self-emptying base for the vacuum itself. SwitchBot sells a cordless stick vac, too, but it mounts to the mobile vac's base station—taking advantage of its auto-empty feature—but the stick vac is not autonomous.

Each product boasts a clean design with no sharp edges in sight for those who love rounded corners. Everything felt sturdy and polished with excellent build quality.

The security camera is equally well designed. It twist-locks onto a purpose-built peg that plunges into the top of the mobile base, and it comes with a short USB-C cable for drawing power from the vacuum's battery (an AC adapter and a longer cable are provided if you'd prefer to set up the camera somewhere other than on the

mobile base). The camera can pan 360 degrees and it tilts 115 degrees, which is ideal for tracking a moving subject.

The camera can host up to a 256GB microSD card (not included) for storing video recordings, or you can sign up for SwitchBot's cloud-storage service, which also grants you access to some AI features, such as pet detection. SwitchBot's least expensive plan costs \$3.99 per month or \$34.99 per year for a single device. A family plan that supports up to 10 devices costs \$20.99 per month or \$209.99 per year.

SETUP AND PERFORMANCE

Setting up this thing is an experience—and not necessarily a pleasant one given the number of components involved. What's more, you must also have—or acquire and set up *before* you set up the K20+—the SwitchBot Hub 3 (a Matter-certified, multifunction smart home hub). The SwitchBot K20+ Pro Patrol Kit cannot work



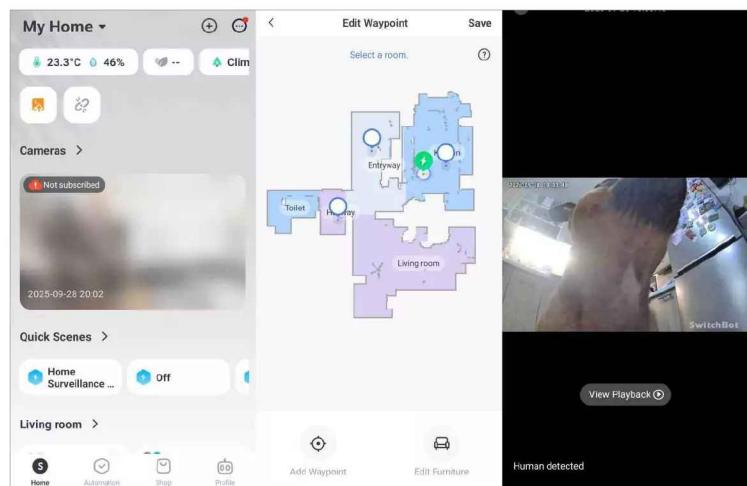
You'll buy this system to have a security camera patrol your house.

without it. Fortunately, the Hub 3 itself is fairly easy to set up; just plug it in and connect it to the SwitchBot app. That's the simplest step in the process.

Next, you need to decide where to place the robot vacuum's charging station, which must be near an electrical outlet. The mobile base docks into the charging station and the robot vacuum goes underneath, docking into the station. It's a whole matryoshka situation, and you need to make sure the pins are aligned correctly so everything charges.

At this point in the process, you can only connect the docking station to the SwitchBot app, because it will be the only component with power. To save yourself from unnecessary frustration, step away and focus on other tasks for a couple of hours. The devices won't function properly—nor can they be added to the app—until they're nearly fully charged.

I know we're here to review this product's home security element, but I must tell you that the K20+ Pro vacuum does a decent enough job. It's super tiny and fits into places most other larger models wouldn't, but it's definitely *not* a product you'd use as your main cleaning device. There's also a "mopping" plate you can install, but the mops in question are just glorified wet wipes that get dragged across your floor.



From the mobile base interface, you can set up three Waypoints.

Now, on to the important bit. The camera (along with any other K20+ accessories you add) will appear in the mobile base menu. So you must go to the SwitchBot—Mobile Base—camera icon in the top right corner. This takes you to a full-screen view of the camera's live feed, complete with an overlay of your home's map and quick access to two-way talk or Privacy mode. There's also the option of going through the Cameras menu that shows up on the app's main page, but that one takes you to *all* the SwitchBot cameras you have before loading your desired feed.

But you're not getting this whole ensemble just for static camera images, right? If that's all you wanted, you could just plug in the SwitchBot camera anywhere in your home. No, you're buying this system to have a camera patrol your house. And patrol it will.

From the mobile base interface, you can set up three Waypoints. Once the robot

vacuum has mapped out your home, you can add these spots wherever you see fit, such as next to doors and windows in your home. Then you can just send the whole ensemble on patrol. It will go around your home, checking out all surroundings and sending push notifications when humans are detected.

The camera's settings are quite extensive, allowing you to enable motion detection, adjust sensitivity, set up what types of notifications you want to get, and more. If you want to use the patrolling feature while you're asleep, for instance, or when you're at work, you can set up schedules. You can set up various other automations, too.

The camera itself does a good-enough job, delivering great video resolution and clear video. Pair it up with the mobile base and you have a really cool way to keep an eye on your home when you're on vacation, or to keep watch on your pets while you're at work. Since it comes with two-way audio, you can chat with your pets or warn an intruder that they've been spotted. When you're home and want privacy, you can instruct the camera to roll its lens back into its enclosure for instant privacy.

THE INEVITABLE CAVEATS

So far, so good. Now let's discuss the caveats, and the first one is a biggie:



The rolling base station element of SwitchBot K20+ Pro Patrol Kit couldn't manage to traverse this slightly sloped transition between the author's hardwood and tile floors.

SwitchBot's app is somewhat of a nightmare. It's hard to figure out how to access features and fiddle with settings at times, and while you can set up Scenes and activate them with a single tap, the app's user interface is hopelessly cluttered.

And then there's the fact that the mobile base cannot manage to cross a threshold—that is, any type of elevated transition between two floor surfaces. I had to move the vacuum's base unit to a different location and remap the whole house because of this. The Robovac itself crosses thresholds just fine, but the mobile base simply cannot.

And don't imagine I have this giant step that must be crossed—it's a simple baguette-type plastic thing in between the hardwood flooring in my living room to the tile flooring in my hallways and kitchen area. The transition is even rounded so it doesn't pose a tripping hazard, but the mobile base just

cannot manage to roll over it. And you can forget about expecting the mobile base to traverse plush carpeting or thick rugs—anything more than 3mm (0.12 inches) high will be insurmountable.

That said, one of the other use cases SwitchBot posits for this kit is to put one of its tabletop-equipped air purifiers on the mobile base, so you can ferry things like drinking glasses from one room to another. So you wouldn't want the table to jiggle much in that scenario, especially with long-stemmed wine glasses on it.

During my first test runs, I tried having it cross the threshold for several minutes before muttering "I'm done" and sending it back to its station. If your home has any sort of transitions between flooring, this whole SwitchBot K20+ ensemble is not for you.

BOTTOM LINE

Well, the answer truly hinges on whether you have transitions between the floors in any of the rooms in your home. If you do, don't count on the robot patrolling your entire home—you'll be left with blind spots wherever there's a transition—not to mention stairs. The SwitchBot K20+ Pro Patrol Kit isn't an inexpensive security system, either. The complete rig costs \$750, although you'll find it on sale relatively often. And don't forget to factor in the cost of the required SwitchBot Hub 3 (fave.co/3LoL2Ee), which

will cost you another \$120 (if you don't already have one). That's quite a bit of money for a tiny robot vacuum and a mobile base that will carry a security camera around your home without being able to cross thresholds.

To be frank, I'm a bit peeved because I really wanted to like this thing. It's such a cool idea: one gadget that can both clean your floors and patrol your house with a security camera to show you what's happening inside it—and warn you if it detects someone who shouldn't be there. Genius! But its inability to cross the lowest transitions between flooring defeats its entire purpose.

Perhaps a more powerful motor in the vacuum element or larger wheels on the mobile base would do the trick. But that would be a wholly different product from what's on offer today. 

SwitchBot K20+ Pro Patrol Kit



PROS

- Innovative modular design.
- Camera delivers 3K video resolution.
- Moves around to keep an eye on your home.

CONS

- Pricy.
- App is cluttered and unintuitive.
- Mobile base station can't cross thresholds as low as 3mm.

BOTTOM LINE

The SwitchBot K20+ Pro Patrol Kit is such an interesting product that it's unfortunate it has so many downsides.

\$750



I WAS ROBBED. THEN I TURNED MY HOME INTO A SMART SE FORTRESS FOR \$200



A BRAZEN THEFT WAS THE WAKE-UP CALL. I TURNED MY HOUSE INTO A FORTRESS WITH SECURITY CAMERAS, SENSORS, AND EVEN PROTECTION FROM FIRE AND WATER DAMAGE.

BY **CHRISTOPH HOFFMANN**

Y HOME SECURITY 400

IMAGE: APCHANEL/SHUTTERSTOCK



The plan was to create a smart and networked system that would act as a deterrent and immediately raise the alarm in the event of an emergency.

As an IT expert, I'm used to building digital fortresses. Firewalls, virus scanners, complex passwords, two-factor authentication: My tech life is a high-security zone. I thought my physical home was, too—at least until I went into my garage one morning and realized the brackets for my planned solar-panel installation, which had been stored on a pallet in front of it, were missing. Foil cut, opened, and stolen. In the middle of the night.

After the initial anger and the police report, my rage gave way to cool analysis: It was time to invest in more security. But my goal was to spend less than \$500.

BURGLARS ARE AT THEIR PEAK IN AUTUMN

The risk of burglary increases dramatically during the darker months of the year, when dusk can set late in the afternoon. The darkness provides criminals with the anonymity they need to operate undisturbed. Contrary to the cliché, burglars don't just come in the middle of the night, but specifically exploit the evening hours between 5 and 9 p.m., when unlit windows signal that no one's home.

While the FBI reported (fave.co/4ovm9p5) an 8.1 percent decline in property crime in the U.S., it still tracked an estimated 5,986,400 property crime offenses in 2024.

Fortunately, many of these offenses get stuck at the *attempted* stage, often due to existing security technology at the scene. This was the decisive motivation for me to act to protect my own property from future losses.

MY SECURITY PRODUCT SELECTION

My plan was to create a smart and networked system that would act as a deterrent and immediately raise the alarm in the event of an emergency. I chose an expandable alarm system from X-Sense, one of the best-rated providers on Amazon, as the central control unit.

The **X-Sense AS08** (fave.co/4qJmYvS) is a wireless smart home security system with four door or window sensors, two motion sensors, a numeric keypad (for arming and disarming), and a base station that connects everything to the internet. It costs less than \$140.

You can conveniently control your home remotely via the app or with Alexa. With a 100dB alarm, real-time notifications, simple installation, and up to five years of battery life, the X-Sense system offers reliable protection and flexible expansion options.

The visible presence of cameras alone often acts as a deterrent. For outdoor use, I opted for the weatherproof Reolink Argus 4



X-Sense's AS08 is a wireless smart home security system.

Pro (fave.co/3JNRDHK) Wi-Fi camera with night vision and motion detection.

This 4K surveillance camera normally costs around \$180, but it's nearly always on sale for less: \$145 at Amazon as of this writing.

Thanks to the solar panel and rechargeable battery, the surveillance camera is independent of electricity. As soon as someone enters my property, I receive a push notification on my smartphone and can call up the live stream.

For the interior of my home, especially on the ground floor, I have placed two



The Reolink Argus 4 Pro Wi-Fi camera has night vision and motion detection.

inconspicuous Reolink E1 Pro (fave.co/47Nj5c0) indoor cameras for a total expenditure of about \$90. They cover the entrance and living area and deliver razor-sharp images even in low light thanks to their 3K resolution (2,880×1,616 pixels) and large F1.6 aperture.

These cameras are easy to set up, thanks to their Bluetooth and dual-band Wi-Fi connectivity (2.4-/5GHz), and their auto-tracking pan/tilt functions capture every movement. AI-based detection reliably differentiates between people and pets, and they even recognize baby noises.

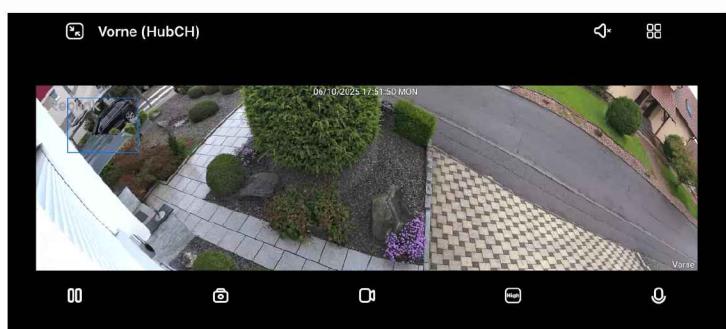
Another feature I like about Reolink's security cameras that

they can connect to a central storage and management device that eliminates the need for a subscription to store video in the cloud. The Reolink Home Hub (\$100, fave.co/4oUrfLb) acts as a central management and storage solution for up to eight Reolink cameras.

Whether you use its Ethernet port or its onboard Wi-Fi 6 adapter, you'll get smooth 4K live views and fast transmission of recorded video. A dedicated siren alerts you when it detects uninvited guests.

WHAT YOU CAN AND CANNOT MONITOR WITH AN OUTDOOR SECURITY CAMERA OR VIDEO DOORBELL

When installing cameras outdoors, the legal situation is clear. You are only allowed to film your own private property. Public areas such as pavements or roads and neighbors' properties are off limits. Even if these areas are only recorded slightly, this can constitute



As soon as someone enters my property, I receive a push notification on my smartphone and can call up the live stream.



Reolink's E1 Pro indoor cameras are easy to install.

a violation of personal rights with legal consequences (fave.co/4hIBCiQ).

An inexpensive sign (fave.co/4orO8Wx) warning that your property is subject to video surveillance can also act as a deterrent to potential offenders, and it might even be required by law (check your jurisdiction). Such a sign also ensures transparency, while creating a bond of trust with your neighbors. And if you need to use a recording as forensic evidence of a crime, it should be admissible in a court of law. It's a small effort that can have a big protective impact.

EVEN MORE SECURITY WITH SMART SENSORS

For me, a comprehensive security concept does not end with burglary protection. Fire, smoke, water, and invisible gases pose just as great a threat. That's why I expanded my setup with additional X-Sense component.

Since I already have the X-Sense SBS50 base station, these security add-ons cost me just 130 euros.

Instead of relying on individual stand-alone solutions, the manufacturer offers networkable smoke, heat, and carbon monoxide detectors as well as water-leak sensors. And as an added bonus, some of the can be integrated with the X-Sense SBS50 base station in the home security system I mentioned

earlier. TechHive has favorably reviewed the X-Sense XS01-M interconnected smoke alarm system (fave.co/4qHJPrT). I use that system myself as well as the X-Sense XH02-M Interconnected Smart Heat Alarm (fave.co/43jHB7P) and the X-Sense SWSOA Ultra-thin Smart Water Leak Alarm (fave.co/3WEkTDN).

The interconnected advantage: If a detector in one room triggers an alarm, the signal is relayed to every other sensor of the same type that you've installed in the house. So if there's a water leak in the basement, you'll get a warning even if you're in the attic (assuming you installed a sensor there, of course).

Some of the sensors don't require the base station. Those then don't have this interconnected feature and work independently. But the X-Sense smartphone app will send notifications about alarms,



The Reolink Home Hub comes with 64GB of onboard storage, but it also has two microSD card slots, each of which can handle user-provided cards offering up to 512GB each.

battery level, and test status, so you're informed at all times. Up to 12 family members can access and manage alarms via the app.

BEWARE THE WI-FI TRAP

If your Wi-Fi network goes down, many smart cameras and sensors will lose their connection to their smartphone app and/or the cloud. Live transmission and push notifications will no longer possible. Devices with local storage—such as cameras with microSD card slots—will continue to record video. As soon as the connection is re-established, that data will be synchronized and the events transmitted accordingly. Systems that rely exclusively on cloud storage, on the other hand, stop working completely, as they can neither stream nor

record without a connection to internet. The recent Amazon Web Services debacle (fave.co/4nHwQni) is a case in point.

The behavior of smart sensors depends on whether they are connected to a base station or operate solely via Wi-Fi. Sensors with their own wireless connection to a base station, as is the case with many security hubs, continue to function even without Wi-Fi, and they will trigger alarms locally. More sophisticated home security systems—read about TechHive's

top picks in home security system (fave.co/4nMN2Uj)—have hubs that establish back-up internet connections via cellular connections should your regular broadband connection fail.

Independent wireless sensors will also remain active, but they will only emit local alarms, such as tones or voice warnings. To avoid the so-called Wi-Fi trap, you should therefore look out for devices with local storage, integrated alarms, and secondary wireless connections, so your home remains reliably protected in the event of an internet failure.

GOAL ACHIEVED!

My total expenditure for all the devices listed above? Just \$403. Smart home protection doesn't have to break the bank. 

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I CUSTOMIZE
WINDOWS 11
IN SECONDS
WITH **VIBE-CODED** AI
SCRIPTS.
HERE'S HOW

YOU CAN NOW TAKE ADVANTAGE
OF THIS CLASSIC WINDOWS
SCRIPTING TOOL EVEN IF YOU HAVE
ZERO PROGRAMMING EXPERIENCE.

BY CHRIS HOFFMANN



AutoHotkey (AHK, fave.co/3G7r4FA) is a free and simple yet powerful Windows scripting language. It doesn't get a lot of press these days, but Windows geeks used to love writing and swapping AHK scripts.

You can learn AHK and write the scripts yourself if you want to—the AutoHotkey documentation is pretty good (fave.co/43XI53I)—or you could use an AI tool like ChatGPT (fave.co/3U80iV9), Gemini (fave.co/4fg8SvX), Claude (fave.co/4os6A1a), Copilot (fave.co/48W9CSI), and so on to do the work for you.

Well, that's what I did. Months ago, I vibe-coded a script that changes how scrolling works on Windows (fave.co/43QkqSH). (Vibe coding is when you use prompt instructions to generate code via AI, fave.co/3TAXmSL.) I still use it every day because

it's a huge help on my desktop PC's big monitor. With AI, creating the script took less than an hour. All I needed was the right idea.

WHAT CAN YOU VIBE-CODE WITH AUTOHOTKEY?

AutoHotkey scripts can create custom hotkeys, remap existing shortcuts, create custom text expansion rules, transform how your mouse works, and even take actions based on game controller inputs.

AutoHotkey is also powerful enough to create full graphical user interfaces, so you can use AHK to create your own little utilities. Imagine creating a custom quick access launcher with shortcut icons to commonly used apps when you press a specific shortcut (fave.co/4ovj2NU). Or make your own unique canned response utility where you press a key to bring up a menu of responses that can be inserted into emails,



Vibe coding is simple and feels like magic when it works.

productivity apps, and so on. These are just a few examples that are simple and quick to create.

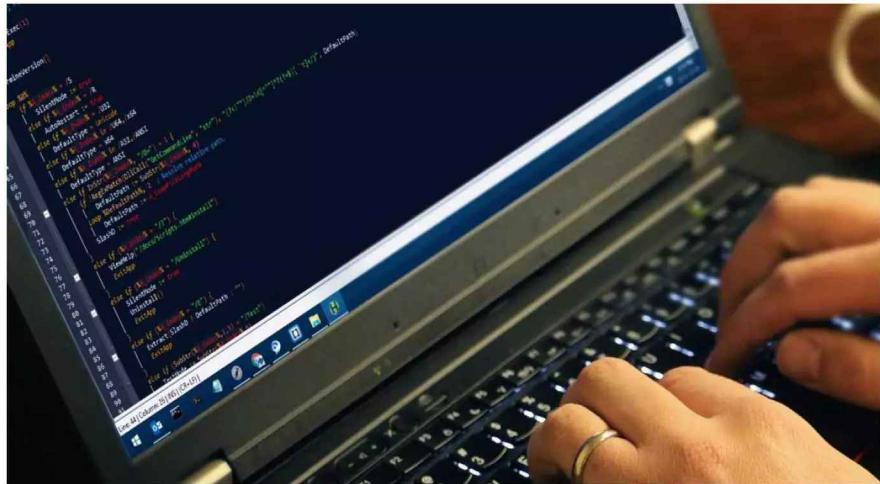
Vibe coding with AI is simple, too (fave.co/4ovj7Rl), and it feels like magic when it works... but it doesn't always work on the first try. The simpler the software you want to create, the easier it is for an LLM to generate it—and not only that, but easier for you to troubleshoot any bugs that might arise.

Because AutoHotkey scripts are short and simple, and because you can quickly test an AHK script to see if it's working as intended, this is an excellent use case for AI-driven vibe coding.

HOW TO VIBE-CODE AN AUTOHOTKEY SCRIPT

First, you need an idea. Then, before the actual coding part, you need to figure out if AutoHotkey can actually do what you want it to do. AutoHotkey is powerful, but it has limitations.

Simply ask your AI model of choice: **Could you write an AutoHotkey script that [does whatever it is you want to do]?** If it responds in the negative, ask what similar things it can do instead. (Or



AutoHotkey can create full graphical user interfaces.

simply ask for your desired AHK script anyway and see what happens!)

Be very specific about what you want it to do. If it's a simple request (for example, remapping your PC's Copilot key to some other action, fave.co/3JP5tt), then it'll probably succeed on the first try. But once

Write an AHK v2 script that makes the Caps Lock key function as a Mute key — unless I hold the Ctrl key. While I hold the Ctrl key, it functions as a normal Caps Lock key.

Sure! Here's a clean AutoHotkey v2 script that does exactly what you're asking:

```
ahk
Copy code
$CapsLock:::
    if GetKeyState("Ctrl", "P") {
        Send("{CapsLock}")
    } else {
        SoundSetMute(-1) ; Toggle system mute
    }
}
```

What this script does:

- Pressing Caps Lock toggles mute.
- Holding Ctrl while pressing Caps Lock lets it behave like a normal Caps Lock key.

Let me know if you'd like to add a sound, visual confirmation, or tweak the behavior further.

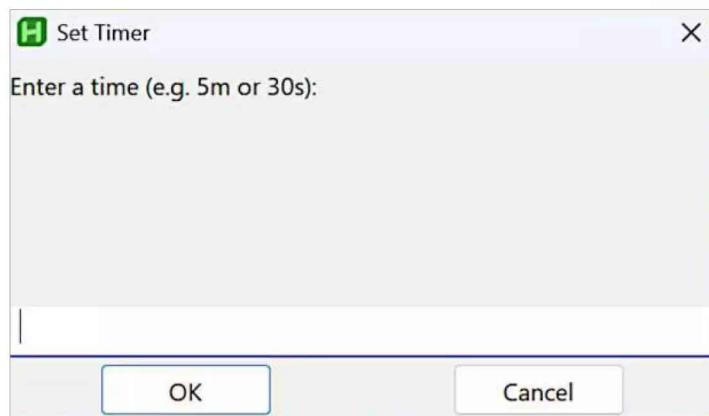
...

ChatGPT generating AI AutoHotkey script.

you start getting into complicated territory (like adding a Recycle Bin to the system tray), you may have to go back and forth a while.

Also, be sure to specify that you want an **AutoHotkey v2 script**. Both v1 and v2 versions are still available, but the older AHK v1 is deprecated. You might as well start with the current supported version. Don't know where to begin? Try these basic prompts:

- "Write an AHK v2 script that makes the Caps Lock key function as a Mute key unless I hold the Ctrl key. While I hold the Ctrl key, it functions as a normal Caps Lock key."
- "Write an AHK v2 script that pops up a custom app launcher window with buttons to open Chrome, OneNote, Spotify, Steam, and my Documents folder. Make it open when I press Ctrl + Alt + L."
- "Write an AHK v2 script that asks me to type a time like '30s' or '5m' and then waits that long before showing a pop-up message saying 'Time is up.' Make it ask for a time when I press Ctrl + Alt + T."



AI generated AutoHotkey timer script in action.

The vibe-coding process is normally a back-and-forth one. You may want to make refinements. You will need to test the resulting script yourself and see if it works. If it doesn't work the way you want it to—or if you encounter an error message—you'll need to continue the conversation and explain that something isn't working the way you want it to.

The more complex your idea, the more likely you'll have to go back and forth. Be specific! The more information you can share, the better the LLM can understand what you're looking for. If you see an error message, copy and paste it, then show the LLM. (Providing lots of context is the overall secret to using AI chatbots effectively; fave.co/4oo4yz7.)

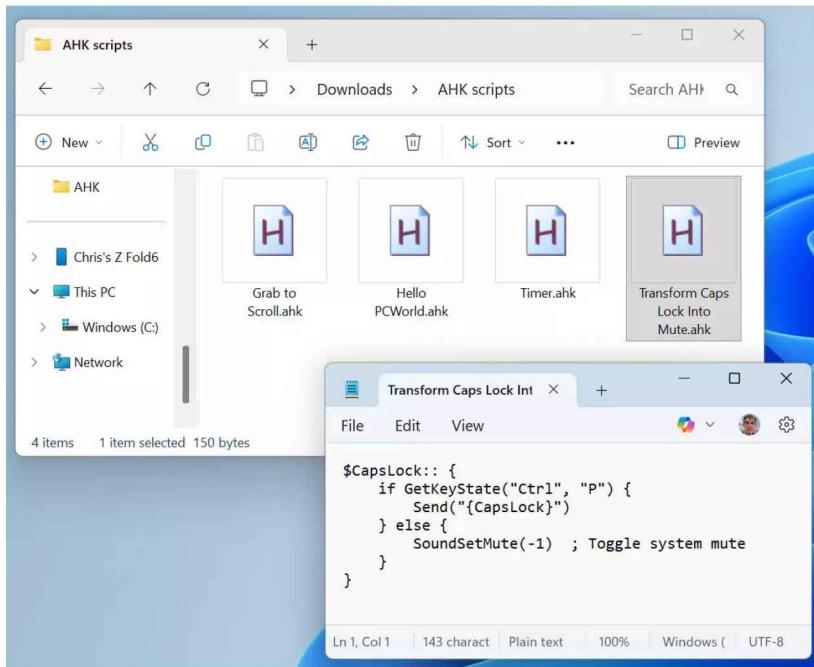
HOW TO RUN AN AUTOHOTKEY SCRIPT

AutoHotkey scripts are trivial to run. To get started, download and install AutoHotkey (fave.co/3G7r4FA). Don't worry, it's free! I

highly recommend AutoHotkey v2 because AutoHotkey v1.1 is obsolete.

AutoHotkey scripts are just text files with an **.ahk** file extension. To create one, open Notepad (or any other text editor) and paste in the script text that's generated by the LLM. Then save it with the **.ahk** file extension (for example, **script.ahk**).

Double-click any AHK file in File Explorer and it'll open in



Writing and running an AutoHotkey script.

AutoHotkey. Now you can test it. Does it work like you'd expect? Do you want it to do something different? Do you see any errors? In any of those cases, tell your LLM and continue the conversation.

To update the script, just change the contents of the **.ahk** file in the same text editor, then save the file again. You'll need to reload the script in AutoHotkey, too. (To reload AHK scripts, look for a green "H" icon in your system tray, right-click it, and select Reload Script.)

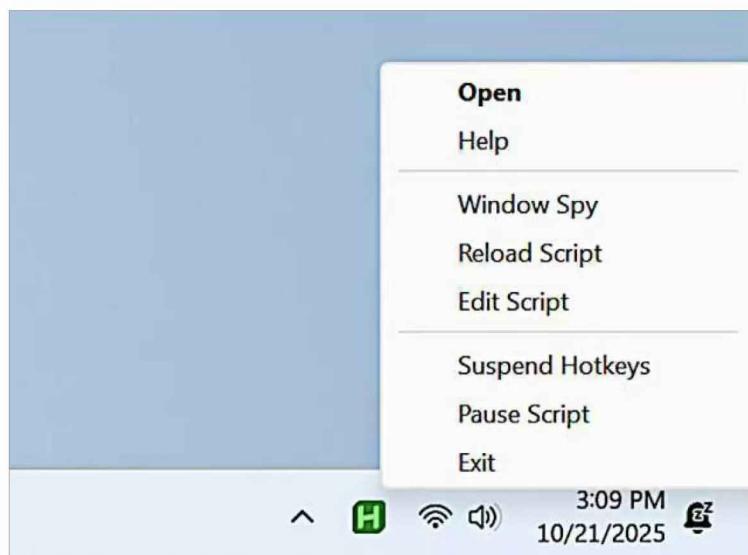
If you'd like the AHK script to run at startup, just add a

shortcut to it to your user account's startup folder (fave.co/4qHde5r).

HOW WOULD YOU CHANGE WINDOWS?

If you've always wanted Windows to work differently—like I did with the middle mouse button scrolling script—now's your chance. You can add new features, change existing behaviors, and eradicate annoying system headaches (fave.co/47urs21).

all without being a programmer. Thanks to the power of LLMs and vibe coding, you just need imagination. 



Reloading the AI generated AutoHotkey script.

Q
♥



PLAN SO
YOUR FUTURE
FOLLOWS SUIT.

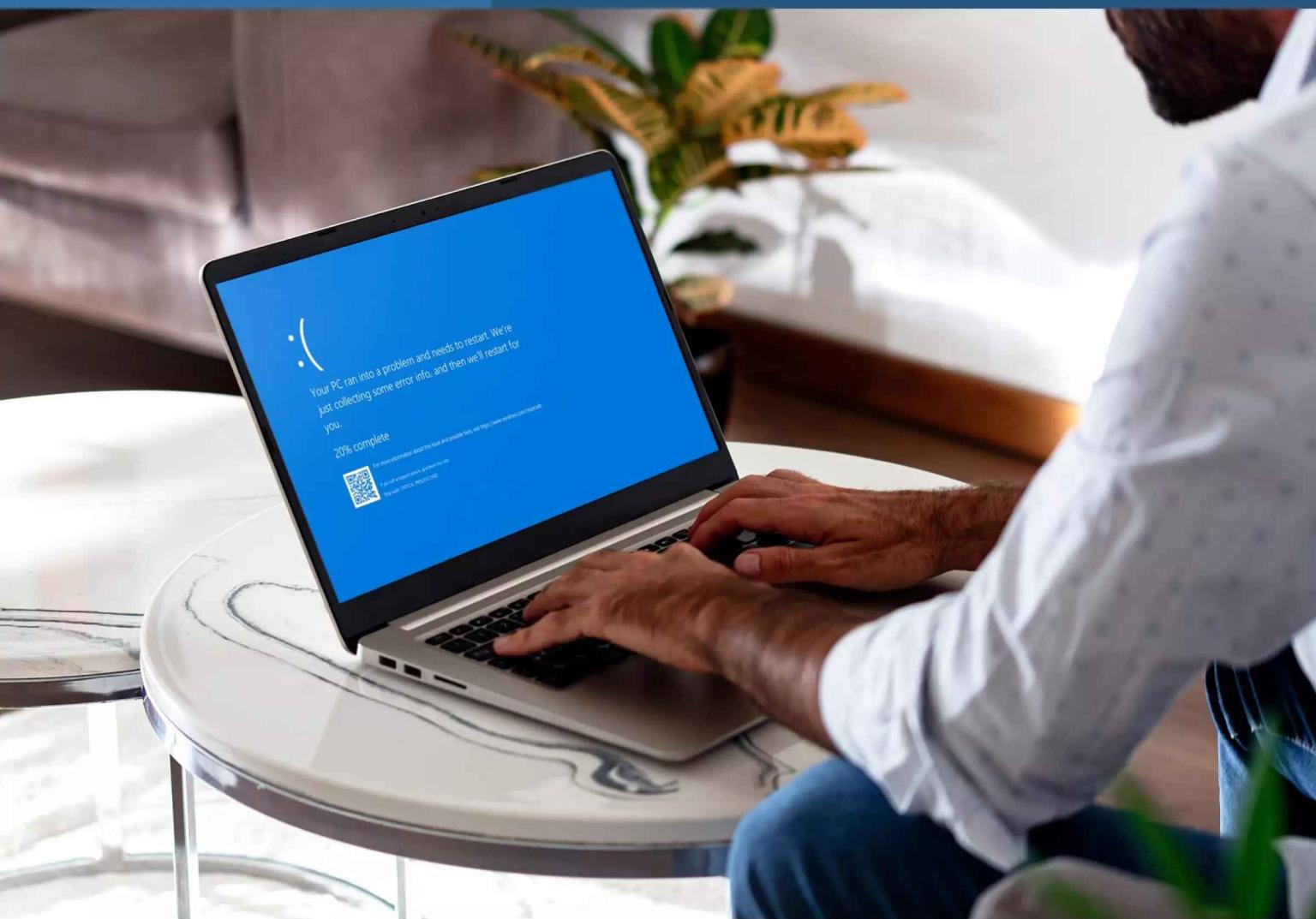
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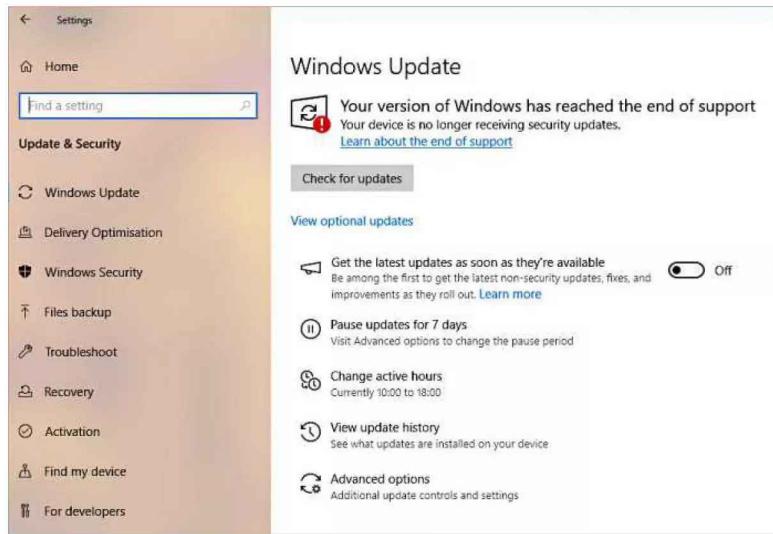
I used to dread Windows updates. Then I took control of them

Windows updates are a necessary evil. If they're a source of stress and frustration for you, heed these quick tips to reclaim control. **BY DAVE PARRACK**

I know I'm not alone in the frustration that comes from dreaded Windows updates hitting at the worst times. The small, incremental updates aren't too bad, but the larger updates that turn up every so often can be a real source of stress—that is, until

you choose to be proactive and take control of them like I eventually learned to do.

To be clear, Windows updates are important. Without them, you leave your PC open to malware, instability, and performance issues. (That's why the end of Windows 10



Microsoft has let up on some of the bigger pain points associated with Windows updates.

support [fave.co/4ot4iix] is such a big deal and why you should only stick with Windows 10 if you have extended support [fave.co/4nLxHnI].) We recommend keeping your Windows PC updated whenever you can.

Fortunately, while Microsoft is in charge of releasing the various Windows updates, you're (somewhat) in control of *installing* them. Here are some simple tips you can use to stay on top of Windows updates and take the stress and dread out of them.

WINDOWS UPDATES HAVE GOTTEN BETTER, BUT THEY'RE STILL A PAIN

I've been using Windows for many years, and I remember back when updates were forced on me, downloaded and installed without my knowledge or permission...and then

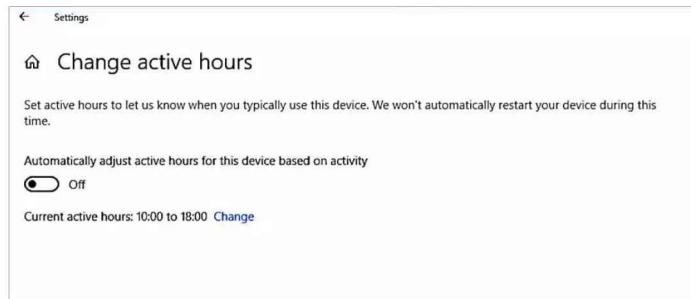
Windows would reboot my PC without any warning. It sucked. No wonder it's one of those things that annoys every single Windows user (fave.co/43XkTm6).

Over the past few years, though, Microsoft has actually let up on some of the bigger pain points associated with Windows updates. We now have some control over when and how updates are applied, and it's even better if you're willing to use third-party tools (fave.co/47urs21).

Here are the three main ways I've wrested back control of Windows updates from Microsoft. The first two are simple, while the third requires a little more time and effort. However, when all three are combined, they provide a level of control and confidence that should help prevent the usual dread associated with Windows updates.

SET ACTIVE HOURS TO PREVENT WINDOWS FROM UPDATING AT INCONVENIENT TIMES

The first way to take back control of Windows updates is to set **Active Hours**. It's quick and easy to set up, and it helps guard against unexpected downloads and installations of updates.



The first way to take back control of Windows updates is to set Active Hours.

To set your Active Hours, open **Settings** > **Windows Update** > **Advanced options**

options. You should see an option for changing or adjusting Active Hours, which you can click on and switch to manual hours. Set the time period to the hours you're most active on your PC. Windows will respect that period and won't download or install updates during it, nor will it automatically restart your PC during those hours.

Note that the Active Hours period is limited to a maximum of 18 hours. (If you're actually active on your PC for longer than that, you may have some bigger issues than Windows updating at inconvenient moments!)

You also have the option to leave the Active Hours set automatically, in which case Windows will adjust the hour range

according to your past activity, behavior, and PC usage.

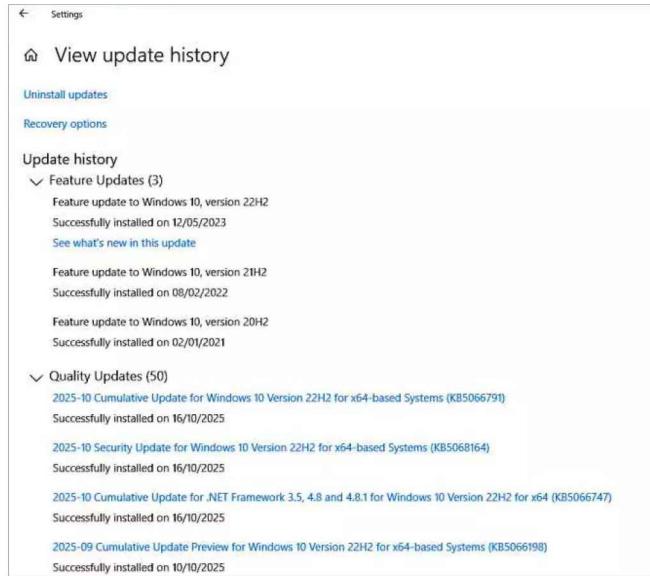
PAUSE WINDOWS UPDATES WHEN YOU CAN'T TAKE THE RISK OF UPDATING

Another simple measure, though one that's slightly more extreme than Active Hours, is to pause Windows updates for a period of time. When paused, the whole Windows update process will halt until the period passes and the resume date arrives.

On Windows 10, you can pause for the next 7 days or switch to an advanced option that allows you to go up to 35 days. On Windows 11, you can choose to pause for 1, 2, 3, 4, or 5 weeks. When paused, the Windows Update section of Settings will



To pause Windows updates, go to Settings > Windows Update.



If you decide to roll back a Windows update, the first step is to view your update history.

show the pause symbol along with a button for **Resume updates**.

To pause Windows updates, navigate to **Settings > Windows Update** and scroll down to the **More options** section, where you can see the “Pause updates” option.

LEARN HOW TO FIX OR ROLL BACK TROUBLESOME WINDOWS UPDATES

The last (but not least) tip is to learn how to restore your Windows PC if a Windows update ever causes an issue. Methods can range from simply restarting your PC to running the Windows Update troubleshooter to rolling back an update that's causing the issue. These are Windows survival skills that every user should know (fave.co/49CEg7J).

If you decide to roll back a Windows update, the first step is to view your update history, which you can do by navigating to **Settings > Windows Update > Update history**.

From here, you can see what updates you've installed and, if needed, choose to uninstall them. Learn more about prepping to roll back a Windows update and doing it safely (fave.co/4idHGyG).

Another option is to run the Windows Update troubleshooter. On Windows 10, this can be found under **Settings > Update & Security > Troubleshoot > Additional Troubleshooters > Windows Update**. On Windows 11, it can be found under **Settings > System > Troubleshoot > Other troubleshooters > Windows Update**.

WHEN MICROSOFT PUSHES, PUSH BACK

Taking control of Windows updates with these simple tips turned me from a submissive victim who dreaded unexpected PC updates to an active administrator in charge of it all.

Ultimately, I still need to allow Windows to update when needed for security reasons, but at least I'm now involved in the process rather than being a passive participant who's caught off guard. And if something goes wrong with a Windows update, I now have the knowledge required to identify the problem and fix it. 

How wrapping keys in aluminum foil protects your car from thieves

Thieves are increasingly using radio amplifiers to break into cars with passive keyless entry. Here's what you can do to protect yourself and your vehicle. **BY FLORIAN KASTNER**



Keyless systems are supposed to make driving more convenient. However, it's precisely this technology that has become one of the biggest security risks in modern vehicles. Criminals are increasingly using radio devices to extend the signals of car keys and unlock vehicles without their owners realizing. This method is particularly widespread at night and in parking garages.

The good news? A simple piece of aluminum foil can help protect your car

from such attacks. Here's how it works and what you can do.

HOW KEYLESS CAR THEFT WORKS

A smart key (also known as "keyless go" or "passive keyless entry") continuously transmits an RFID radio signal that's recognized by your car. As soon as the key is within range, you can unlock, enter, and start the car without pulling the smart key out from your pocket.

This always-on RFID signal is what thieves intercept. Using something called a relay device, they can extend the always-on RFID signal so that it reaches your vehicle even when you aren't near it.

Your car "believes" that its rightful owner is standing next to it, so the doors can unlock and the engine can start. Boom! Stolen.

HOW ALUMINUM HELPS FOIL CAR THIEVES

Aluminum reliably shields electromagnetic signals. Wrapping your car key in aluminum foil creates a kind of miniature Faraday cage that RFID waves can't penetrate. The smart key's always-on RFID signal can therefore no longer be intercepted by a relay device.

If your smart key is securely stored in aluminum foil or a metal container, your car will remain locked even if thieves are standing right outside the front door with their devices in hand.

USING THE ALUMINUM FOIL TRICK CORRECTLY

For the aluminum foil protection trick to actually work, the aluminum foil wrapping must be tight and wrinkle-free. Two to three layers are usually sufficient. Here's how you should proceed:

- Wrap the key completely in several layers of aluminum foil.
- Test it! If your car no longer opens, the insulation is working.

Alternatively, you can put your smart key inside a small box that's lined on the inside and covered on the outside with aluminum foil.

IS THERE A BETTER SOLUTION?

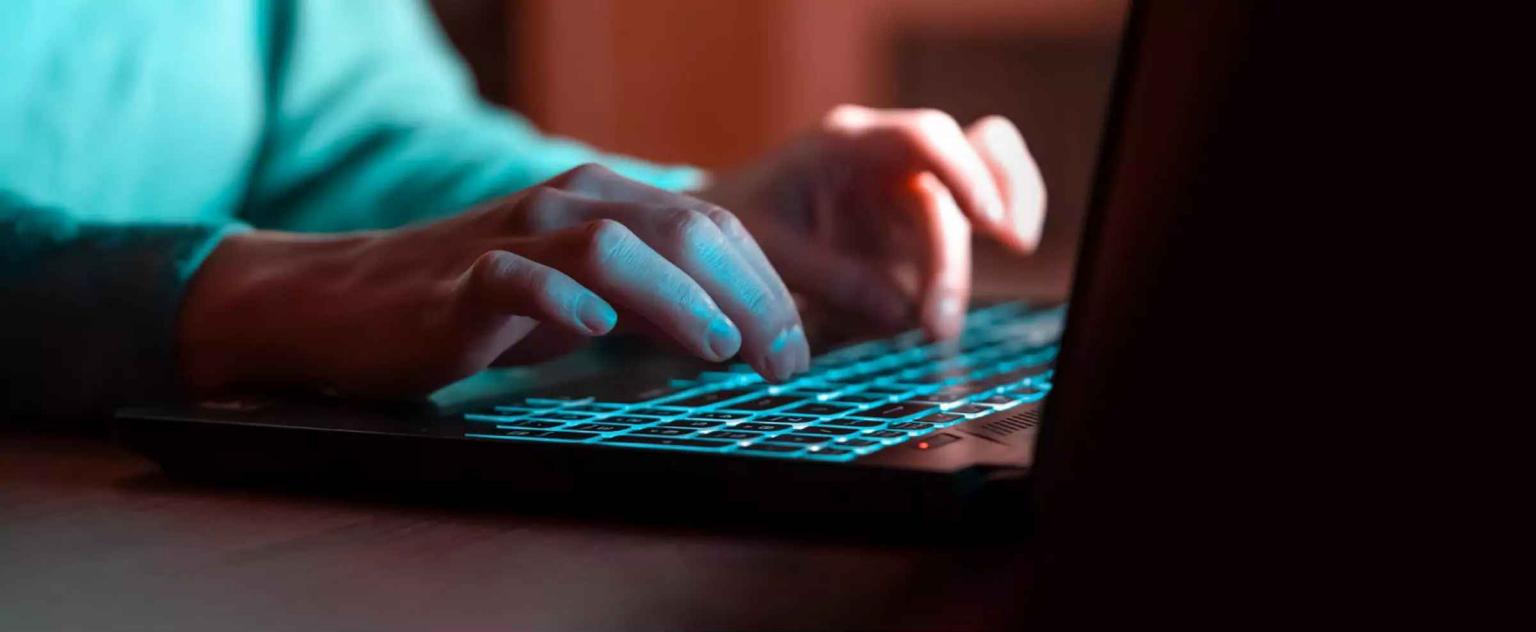
Aluminum foil is a simple trick that works as an immediate stopgap measure. However, if you regularly park in densely populated areas, or if you park your vehicle on the street at night, or if you travel frequently, then you should consider a more permanent solution.

RFID-blocking Faraday (fave.co/47IOVet) pouches are convenient, durable, and protective. They're extremely affordable and they come in different sizes to best fit your particular key fob. You can find them on Amazon for between \$7 to \$15, depending on size and brand.

Security experts recommend that smart car keys should never be left near doors or windows, as this is where the signal is most easily intercepted. You should also check whether the passive keyless function on your car can be deactivated. Some manufacturers offer corresponding options via the menu or a key combination.

Other smart car security tips include:

- Park your vehicle in well-lit, visible areas.
- Use visible anti-theft devices such as steering wheel claws as an additional deterrent.
- Check the behavior of your key regularly. A change in range may indicate malfunctions or technical problems. 



From rookie to Windows 11 ninja: 17 keyboard shortcuts to master

Navigate Windows at lightning speed. **BY DOMINIC BAYLEY**

Over time I've learned quite a lot of useful shortcuts for Windows. Shortcuts can save a lot of time, so I'd like to share some of them with y'all. You could call these "power shortcuts" because you'll find yourself using them all the time.

POWER SHORTCUTS

Win + A: Opens quick settings panel

Win + N: Opens notification center

Win + U: Open Ease of Access settings

Win + Ctrl + D: Create a new virtual desktop

Win + Ctrl + F4: Close the current virtual desktop

Win + Ctrl + Q: Open Quick Assist (for remote help)

Win + Shift + M: Restore minimized windows

Win + Spacebar: Switch input language or keyboard layout

Ctrl + Shift + N: Create a new folder

Alt + Enter: View file or folder properties

Shift + Delete: Permanently delete files (skip Recycle Bin)

Alt + Left/Right Arrow: Go back or forward in file explorer

Win + Home: Minimize all windows except the active one

Win + Ctrl + F: Open search for PCs on a network

Ctrl + Shift + Escape: Open Task manager

Ctrl + Alt + Del: Security options screen

Alt + Space + N: Minimize current window

I hope that's got you moving around Windows a bit faster. Keep using them and they'll become like second nature. 

Zoom isn't as private as you think. Here's how to lock it down

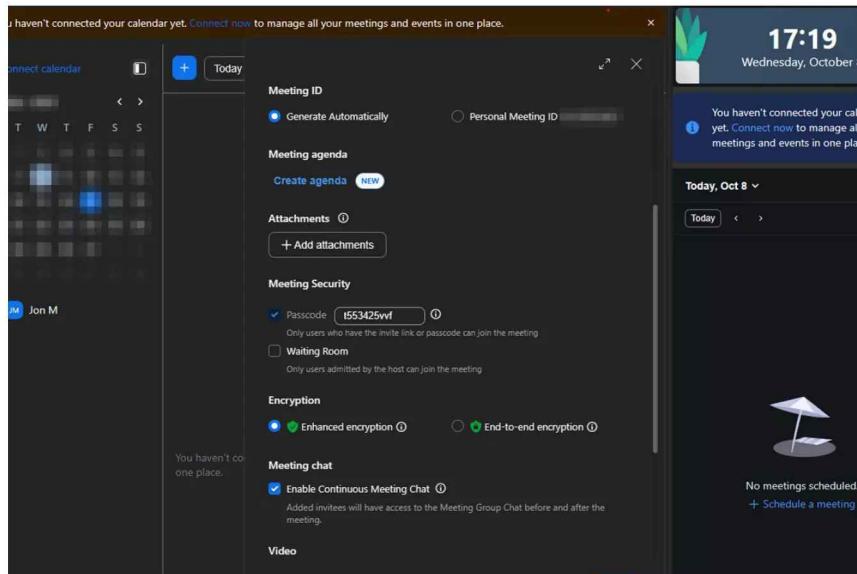
Keep your online meetings and the data shared in them more private and secure with these tips. **BY JON MARTINDALE**



For one reason or another, we've all become very familiar with Zoom calls in recent years. Although we thankfully don't need to use them quite as much as we used to, they're still an important part of many people's work and

socializing. Unfortunately, Zoom isn't 100% private, and there are ways nefarious individuals and organizations can use your calls to steal your information, identity, or private data.

Fortunately, however, there are ways in which you can protect yourself and make



Passwords protect your meeting from unwanted visitors.

Zoom more of the secure platform it can be. Here are some of our top tips.

USE A MEETING PASSWORD

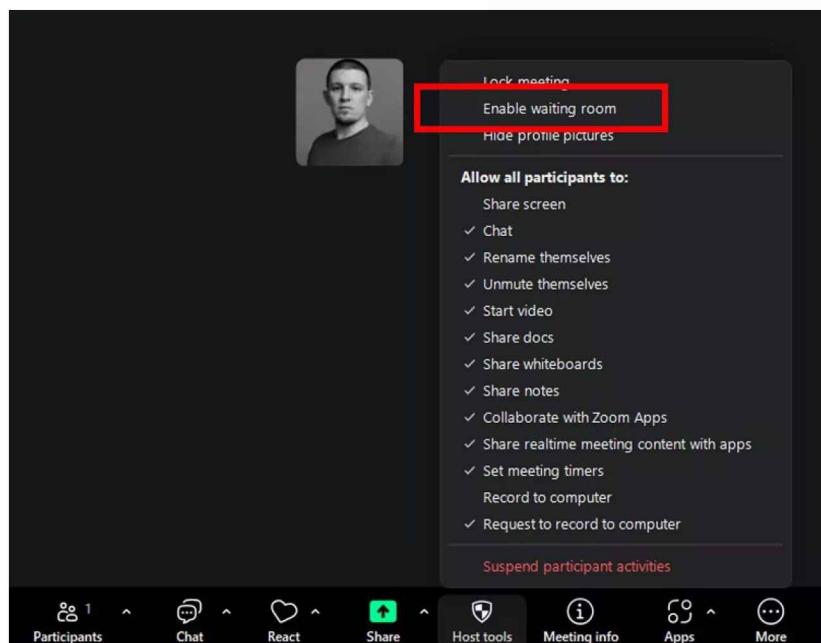
The most important safeguard you can have in place to protect you, your meeting participants, and any information and data shared there, is to put a password on your meeting room. This ensures no one can just wander in unexpected, shutting down Zoom-bombing opportunities. It also means that no one can enter without your knowledge

and snoop on what you're discussing.

Passwords are enabled by default on all meetings for free users, as well as licensed users, so it should be enabled, but it never hurts to check. Similarly, when setting up your meeting, you can set a custom password in the meeting settings if you prefer.

USE A WAITING ROOM

A password ensures no one can just enter your room uninvited, but if that password



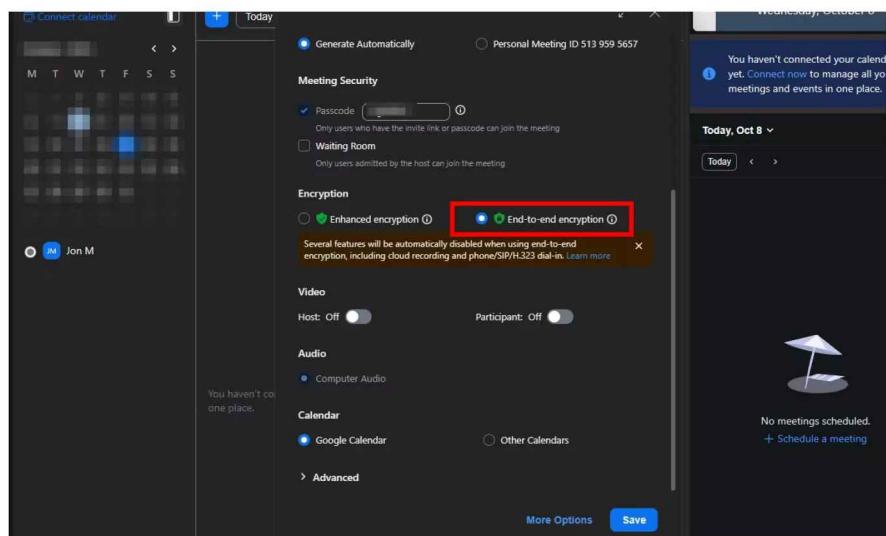
Enable a waiting room in Zoom for enhanced security.

leaks, someone shares it without realizing it, or someone's system is compromised, it can still be possible for troublemakers to enter your meeting. The best way to ensure that doesn't happen by surprise and disrupt your proceedings, is with a waiting room. This means anyone wanting to join the meeting has to receive your approval to enter. If they don't belong, you can boot them easily.

You can add a waiting room to a meeting using the toggle option when you set up the meeting under the Meeting Security heading. Alternatively, if you've started a meeting already and want to add a waiting room to it, select **Host Tools** and then tick the **Waiting room** setting.

ENABLE END-TO-END ENCRYPTION

Zoom's standard "Enhanced encryption" is pretty good at securing your data, but if you want to make it so that no one but the meeting participants can see you or what you've talked about (even Zoom itself) enabling End to End encryption is a more secure solution. When it's enabled, your devices



Use end-to-end encryption to hide meeting contents from outsiders, including Zoom itself.

store your private encryption keys locally, so any intercepted data will be garbled and illegible. To enable end-to-end encryption, when you're setting up the meeting, navigate to the **Encryption** section and toggle on the **End-to-end encryption**.

Note: The end-to-end encryption is not supported by the Zoom web client, so all meeting participants will need to use the Zoom app to take advantage of it. Video recording is also not possible when end-to-end encryption is enabled. Other disabled features include AI companion, live streaming, polling, and companion Zoom apps like Whiteboard and Notes.

USE A RANDOM MEETING ID

When you set up a meeting, you have the option of using your own personal meeting

ID or a random one. Although using your own ID can be useful for repeat meetings with friends, family, or select colleagues, it does let people enter your personal meeting space even after the meeting is over. Instead, use a randomly generated meeting ID for each meeting.

IF YOU CAN, USE 2FA

If you have a Pro, Business, Education, or Enterprise account, or your work administrator has enabled Two-Factor-Authentication (2FA), you can use it to better secure your account. It means that when you log in, you'll have to input a code from an authentication app as well as your username and password, making it much harder for someone else to break into your account.

Sign in to your chosen authentication app, and tap the option to scan a QR code. Sign in the Zoom web portal and navigate to **Profile > Sign In**, then toggle Two Factor Authentication to **On**.

Once it's enabled, select **Set up** and scan the QR code using your phone in the Authentication app. Follow the on-screen instructions to complete setup.

DON'T SHARE MEETING LINKS IN PUBLIC

When you're inviting people to a meeting, make sure to only share the links with each participant directly. That way you reduce the chance of

someone you don't want in the meeting from trying to get in—they can't if they don't have the meeting ID and/or password.

There are range of ways you can share meeting IDs or links with people you want to join. Private messages, emails, individual messaging apps are all fine ways to distribute the details of the meeting.

MANAGE PARTICIPANTS

As the person who set up the meeting and its host and administrator, you are in charge of the meeting and its participants, and can set the tone for what is acceptable. Make sure everyone conducts themselves in a manner that respects other users and the privacy.

Restrict file sharing and screen sharing in the meeting if you have any concerns over malware or information theft. Equally, watch out for phishing scams. Although they're unlikely in pre-arranged meetings, any unauthorized participants could use fake login screens or requests for personal information to steal the identities of participants. Each user should exercise strong personal caution in this regard, but as the meeting administrator you can also play a role in keeping everyone safe.

TURN OFF OPTIONAL DATA GATHERING

Zoom does gather some data on its users. It's anonymized and nothing to do with the actual

The screenshot shows the Zoom Data & Privacy settings. On the left, there's a sidebar with links like Home, My Products, Meetings, Recordings, Hub (NEW), Whiteboards, Notes, Clips, Docs, Tasks, and Discover More Products. The main area is titled 'Data & Privacy' and 'Data settings'. It has sections for 'Diagnostic Data Preferences' (which includes 'Required Diagnostic Data' and 'Optional Diagnostic Data'). The 'Optional Diagnostic Data' section is highlighted with a red box and contains a toggle switch. Below the switch, there's a description: 'Allow collection of additional data that helps Zoom make product improvements and provide enhanced information to help Zoom detect, diagnose, and remediate issues.' There's also a 'Learn more' link.

Turn off Optional Diagnostic Data to keep any personal data from being shared with Zoom.

content of your meeting, but if you want to cut out any extra data Zoom has on you, you can disable the collection.

Navigate to the Zoom web portal and login to your account. Then navigate to **My Account > Data & Privacy** and toggle off **Optional Diagnostic Data**.

KEEP ZOOM UP TO DATE

Zoom, like every app and program out there, gets updates from time to time and some of them improve security and privacy, or fix a bug in the system that might allow your data to be leaked. Keeping your Zoom client up to date and using the latest version for all your meetings, rather than the web client, is a good way to make sure your meetings are as secure as they can be.

REAL WORLD OPSEC

This doesn't relate to Zoom itself, but operational security that you and your meeting participants should consider as part of the meeting. They're the kind of things you can do to enhance your privacy and that of everyone in the meeting by adjusting the way you conduct it.

- Only participate in meetings in a private place

where no one else can look at your screen.

- Use headphones and a headset microphone to limit what anyone else can hear.
- Use a mute switch on your microphone, rather than the mute function in Zoom itself (or as well as). This way you can be doubly sure that no one can hear what you're saying.

- Consider using a camera cover when you don't want to be seen. This ensures that even if you accidentally enable your camera, no one can see you.
- If you have to conduct a meeting using Wi-Fi that you aren't sure is 100% secure, such as in a hotel or public space, consider using a VPN (fave.co/43k8lZX) to hide your data from anyone else on the network. 

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