

HOW TO: 5 WAYS TO GET BETTER WI-FI OUTSIDE

PCWorld

AUGUST 2023

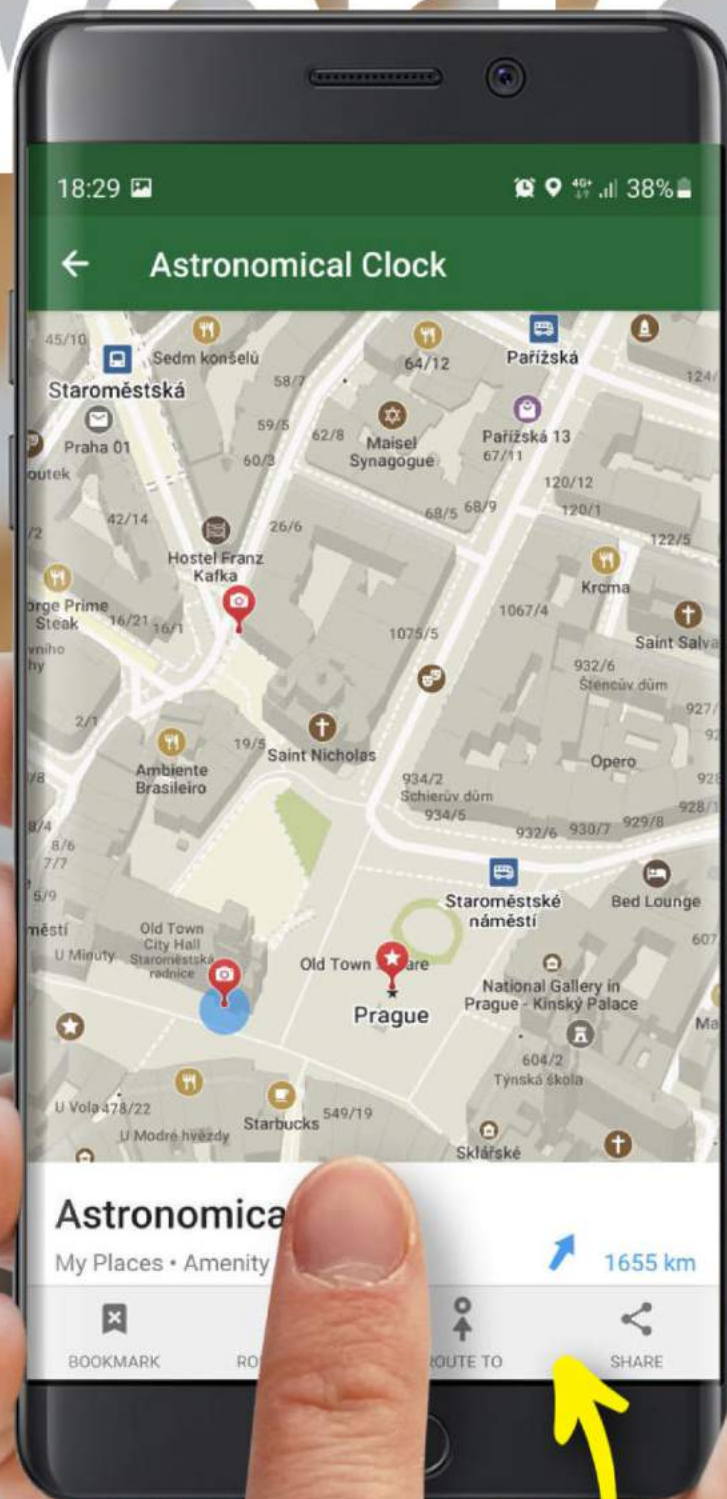
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TECHIE TRAVEL HACKS FOR YOUR NEXT TRIP

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WHAT IS ANTIVIRUS
SOFTWARE?

GETTING STARTED
WITH PC SECURITY



ORGANIC
MAPS



**WHEN IT COMES TO
MAKING PLANS
YOU'RE THE BEST**

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TO PROTECT YOU AND
YOUR LOVED ONES FROM
A NATURAL DISASTER

✓ **Sign up**
for local weather and
emergency alerts

✓ **Prepare**
an emergency kit

✓ **Make**
a family
communications plan

Get started at ready.gov/plan

Ready ✓



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**SAFETY IS
KEY**
WHEN BURNING
BACKYARD
DEBRIS

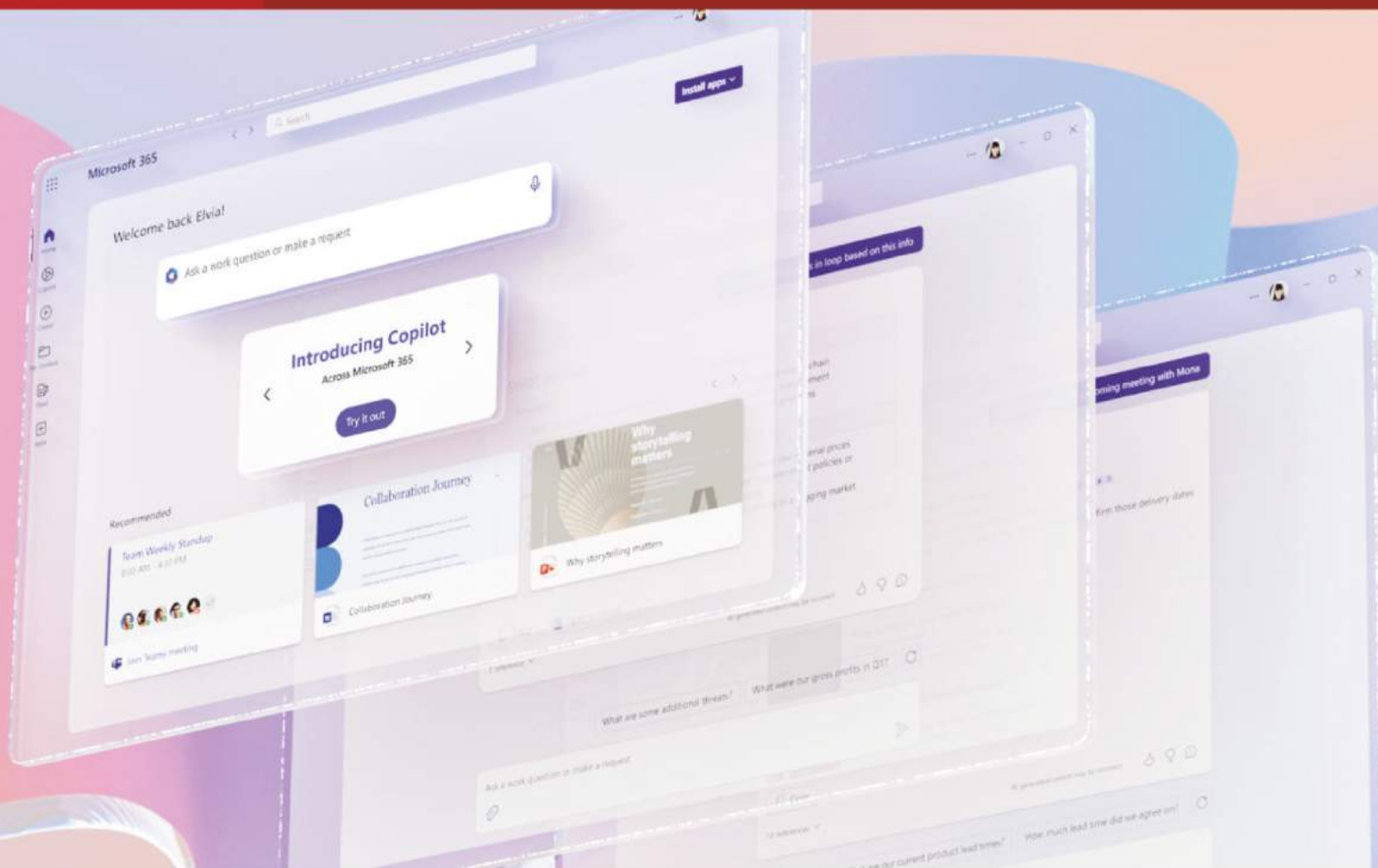


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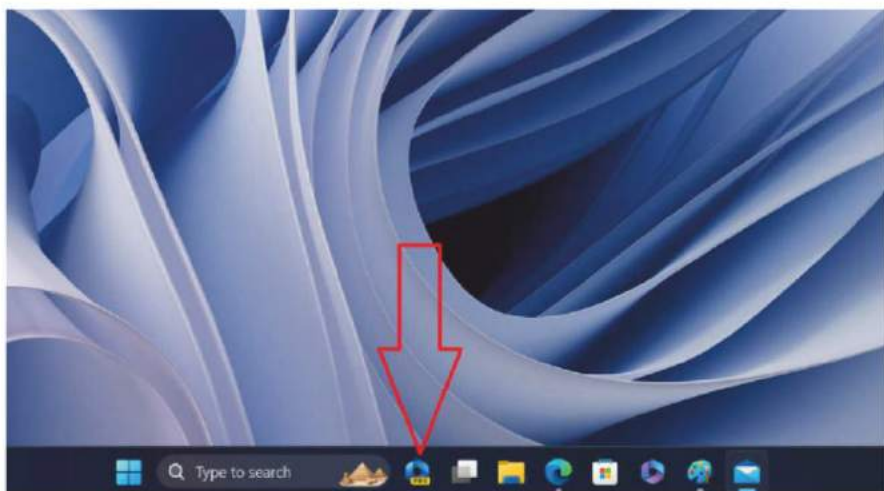


Hands on: Windows Copilot can't decide what it is

Is Windows Copilot just Bing Chat plus some additional artificial intelligence, or is it more? Right now, it doesn't seem to know. **BY MARK HACHMAN**

Windows Copilot is one part Bing, one part Windows. It's a ChatGPT artificial intelligence assistant that can perform tasks for you one moment, but then pleads ignorance the next. Microsoft's AI assistant within Windows 11 certainly has potential, but during my time with it, achieving a consistent experience was one of its unexpected challenges.

Windows Copilot, the migration of Microsoft's AI-powered Bing Chat into Windows, debuted in late June as part of the latest Windows Insider build for the Dev Channel (fave.co/46KXFPW). Microsoft announced Copilot (fave.co/3N0trzG) at the end of May, with a promise to bring it into testing by the end of June. It hasn't reached its full potential yet, but it will see a full release later this year.



You'll find Windows Copilot here on the Taskbar.

To experience Copilot, you'll need to sign up for the Windows Insider Dev Channel, download the build, and make sure that Microsoft Edge is also updated to its latest version. If you don't see the small Windows Copilot icon resting to the left of the search icon or box on the Taskbar, that's most likely why. Otherwise, you can click the icon (or use the **Windows + C** shortcut), and Windows Copilot will slide out from the right-hand navigation pane as a vertical column for conversation.

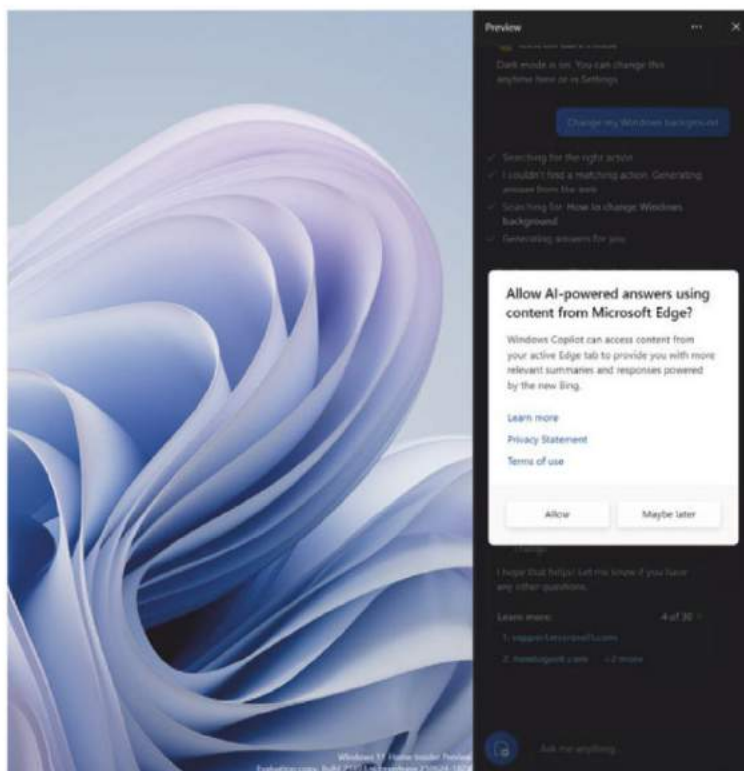
HOW TO USE WINDOWS COPILOT

Microsoft opened up the Bing Chat AI chatbot near the end of May, so you should be familiar with its basic structure: You can interact with Copilot a number of times (currently 30) before you have to start over and refresh the conversation.

That's still the case with Windows Copilot. You can also interact with Copilot in a Creative, Balanced, or Precise voice, though it won't affect how Copilot performs PC-centric tasks.

To be clear: Windows Copilot is almost entirely like Bing Chat, complete with the Microsoft Edge requirement, as Windows Central's Zac

Bowden noted. Windows Copilot, for now, is just a slight upgrade from when Microsoft added Bing Chat to the Windows search box (fave.co/3JYcfu4).

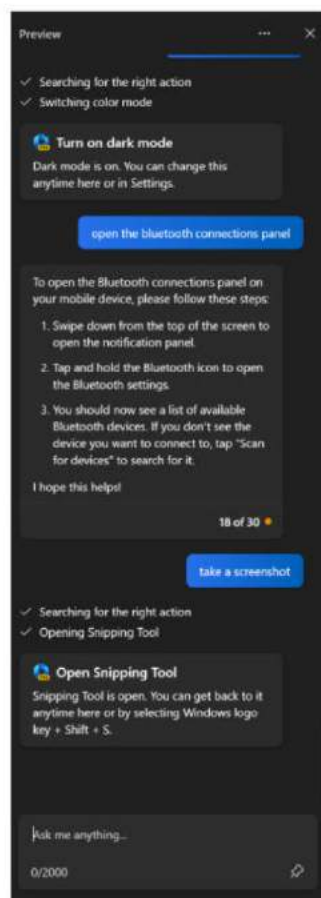


Windows Copilot will ask to capture information from the active Edge window, such as summarizing the page.

Windows Copilot can perform some tasks itself; for others, it will have to tell you how to perform them yourself.

Ask Copilot a question and you'll sometimes receive additional suggestions for follow-up queries. On other occasions, you'll see some visually jarring maps and/or ads for local businesses, if your query addresses those. As with Bing Chat, Copilot will add footnoted links for follow-up queries. NSFW queries continue to be out of bounds.

But that's where some of the problems begin. Windows Copilot isn't Copilot; it self-identifies as Bing, and in doing so it wanders back and forth between what it can do and what questions it can answer. This isn't a case of trying to force it to adopt the "Sydney" persona, which led to all sorts of unhinged conversations. Windows Copilot sometimes just isn't quite sure of what it is: a search engine, a chatbot, or a Windows assistant. The latter, however, is what's new.



Windows Copilot has been programmed to cut through all the clutter and menus, and to do what you tell it to do. So far, unfortunately, this has been limited to just a handful of actions, which include switching to light or dark mode, taking a screenshot, and little else. Phrasing occasionally matters, too: Just as some chatbots can be fooled into allowing an action or question by rephrasing it, Copilot refused to switch to light mode once when I phrased it poorly, though it then learned (?) and didn't repeat the mistake.

Advanced users probably won't see much value from this, as they can either navigate quickly to whatever submenu they need, use a shortcut, or find some other way of doing what they want. For the average user, though, this is extraordinary. Windows has always lacked a robust help function, and this is an opportunity to help users do what they want to do, full stop.

WINDOWS COPILOT HAS SEVERAL PROBLEMS TO SOLVE

Copilot has potential, clearly, and we'll talk about that a bit later. But right now Copilot has at least two major issues.

Perhaps the most significant is how Microsoft will handle tasks. Microsoft doesn't distinguish between actual questions ("What is heat?") and tasks ("Set my PC to dark mode"), but it's clear there are certain things Windows Copilot *will* do, and many more it won't. This

matters because users will inevitably find themselves in situations where Windows Copilot simply won't do what they want it to.

To its credit, I was impressed that Windows Copilot answered a question about using the Windows registry to modify the Windows 11 taskbar—but it didn't actually perform those modifications, and I'm not sure it ever will. But it's hard to see how users won't be left ultimately unsatisfied by what Windows Copilot offers, especially if its "magic" is just limited to a handful of tasks.


Windows Copilot is also unsure of what it can do. I asked it for the local temperature and a forecast, and it correctly identified my location. But when I asked for a list of nearby

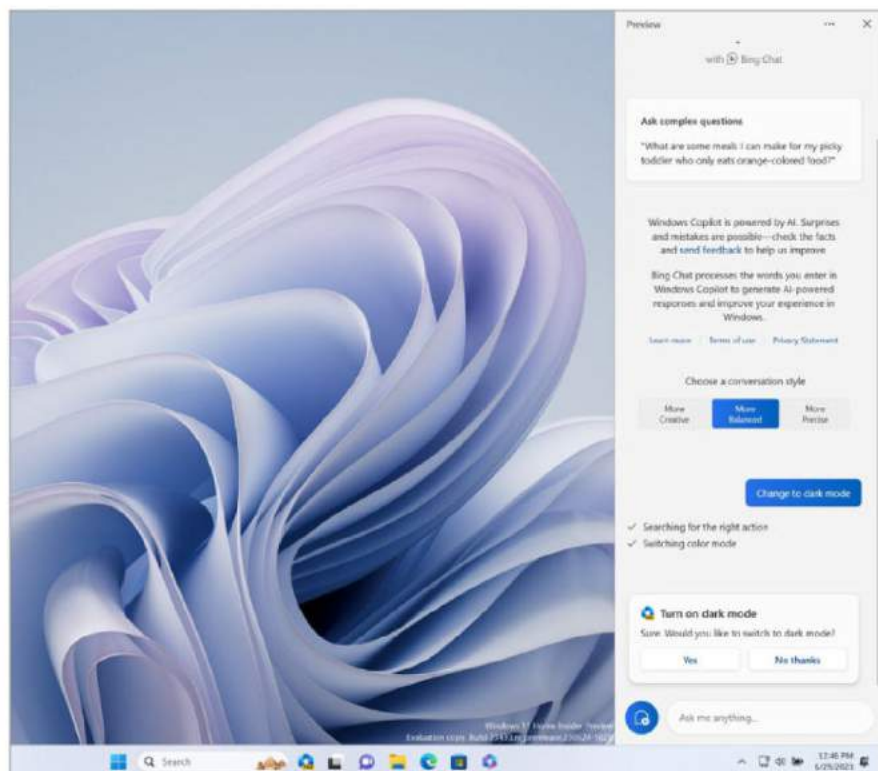
lunch places, Copilot suggested some restaurants in Austin, Texas, instead of the San Francisco Bay Area where I live. It's those discrepancies that may make perfect sense when seen in one context, but in another (does Copilot know me or not?) seem confusing and a trifle frustrating, too.

THE FUTURE COULD BE BRIGHT

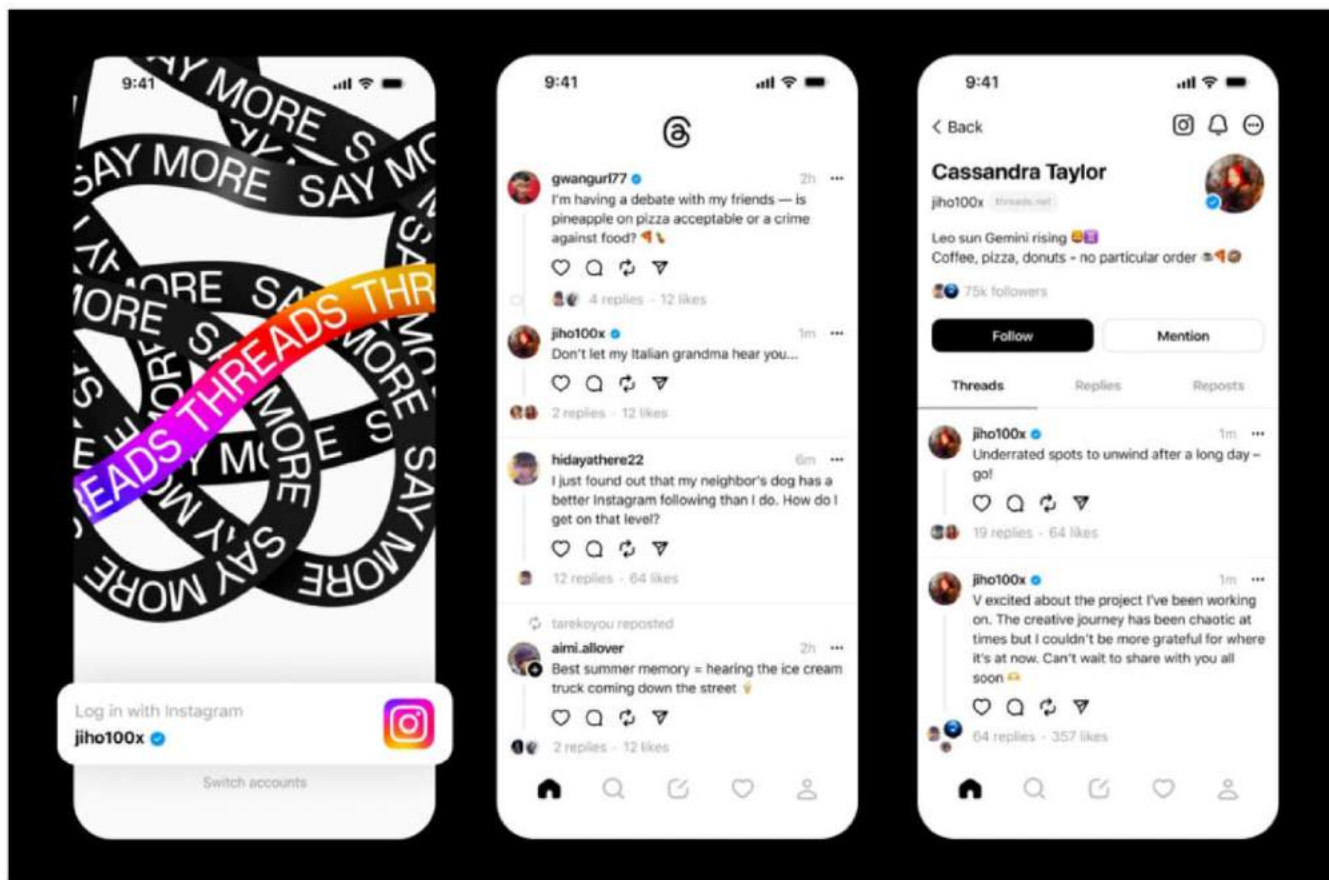
How successful Copilot will be is in Microsoft's hands. Users are going to quickly expect Copilot to do the vast majority of the tasks they either can't do themselves or are unwilling to spend the time on. If Microsoft opens up Windows to allow this, Copilot will

become a significant part of the Windows architecture. Will it be able to hook into apps? Perform backups? Query your PC for a file or files? Analyze CPU performance under load? The future is bright for Copilot as a platform, but it's not clear whether it will meet its potential.

Right now, however, Windows Copilot is just the Bing Chat robotic butler, helpfully answering questions and now holding a door open for you, too. To succeed, it must have more to offer. 



Windows Copilot is almost entirely like Bing Chat, complete with the Microsoft Edge requirement.



Meta Threads hands on: A cleaner, friendlier Twitter

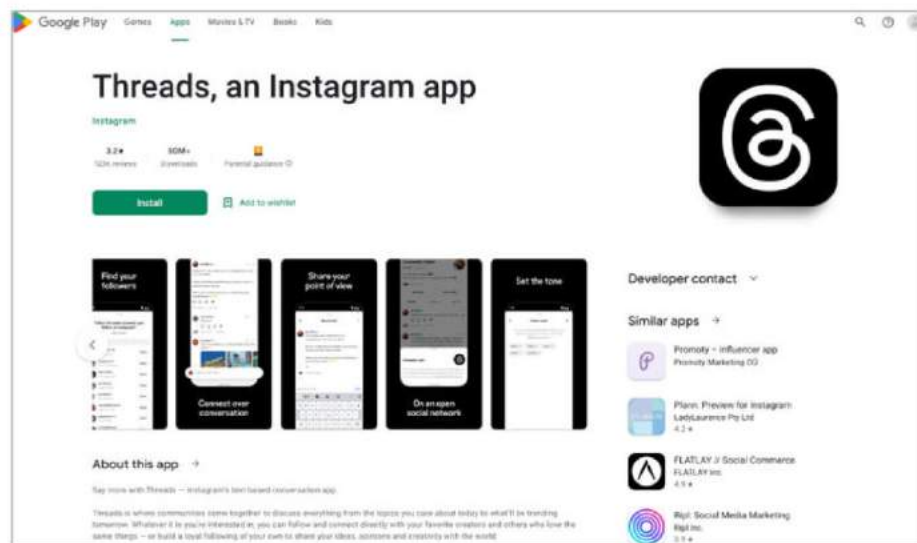
Is Threads Twitter, but better? Time will tell. **BY MARK HACHMAN**

With Twitter seemingly imploding in a new, spectacular way on a weekly basis, Meta has moved in with its own Twitter clone, Threads. The app for the new social media platform is now live for both Android and iOS.

Threads looks much like Twitter. Very much. You get to type 500 characters per post (versus 280 characters for Twitter), but

your “thread” is aligned in a vertical hierarchy of posts, just as in Twitter, and the user interface feels right at home. Naturally, you have the option of replying to and liking individual posts following others and responding to their own threads, too. And, of course, you can post photos.

Threads leverages your Instagram followers—which is important, because there are at least a few other apps named Threads



Threads can be downloaded from both Google Play (pictured) and Apple's App Store.

on the two major app stores. Download Threads, an Instagram app on Google Play (fave.co/3D6EimT) and Threads, an Instagram app on iOS as well (fave.co/44ASZuf). An unrelated productivity app called Threads is currently the first result for that term on each app store. Notably, there doesn't appear to be an Instagram Threads web app or website quite yet.

HOW TO JOIN THREADS

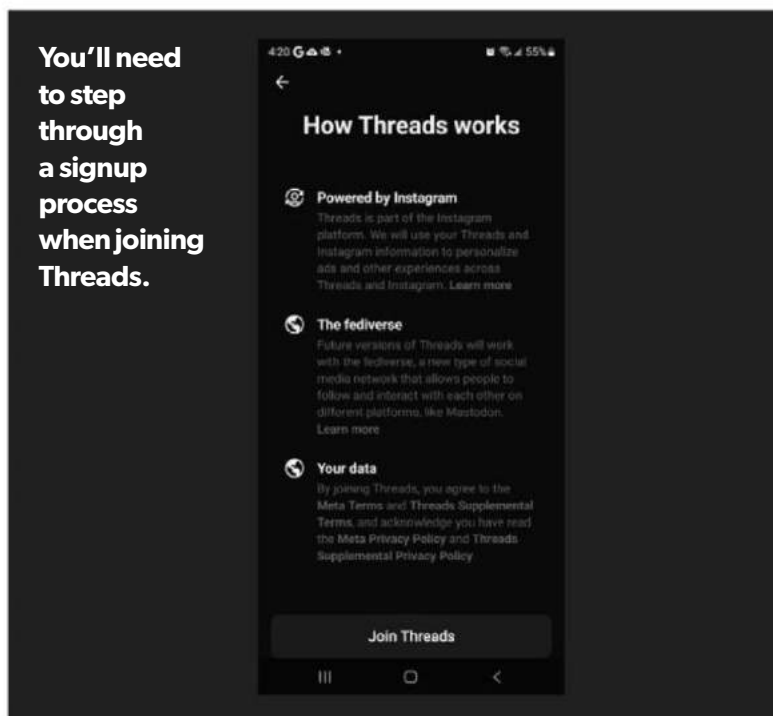
After you download the correct app from either app store, you'll be asked to approve the permissions for the Threads app. Meta seems to want the same amount of data as Instagram can sample: everything from your health data to your credit

score. Review the permissions before you decide to launch Threads.

The process to join Threads should feel very familiar to both Instagram and Twitter users. By default, your Threads name will be your Instagram handle, and those you've followed, as well as your followers, will migrate over after those users also join Threads.

And yes, Threads is free.

Meta and Twitter are owned by competing organizations, so there's no way of "migrating" your Twitter follows over to Threads, and vice versa.



The Threads main feed.



feed designated by a heart icon, and your profile page.

Right now, Threads will certainly benefit from the massive numbers of people already on Facebook, Instagram, and WhatsApp. Meta presumably hopes that the latter app's users will transition over from private messaging to the group messaging that Threads offers. Of course, it doesn't really matter that Threads is a relatively straightforward feature-copy of Twitter. The question is what Twitter CEO

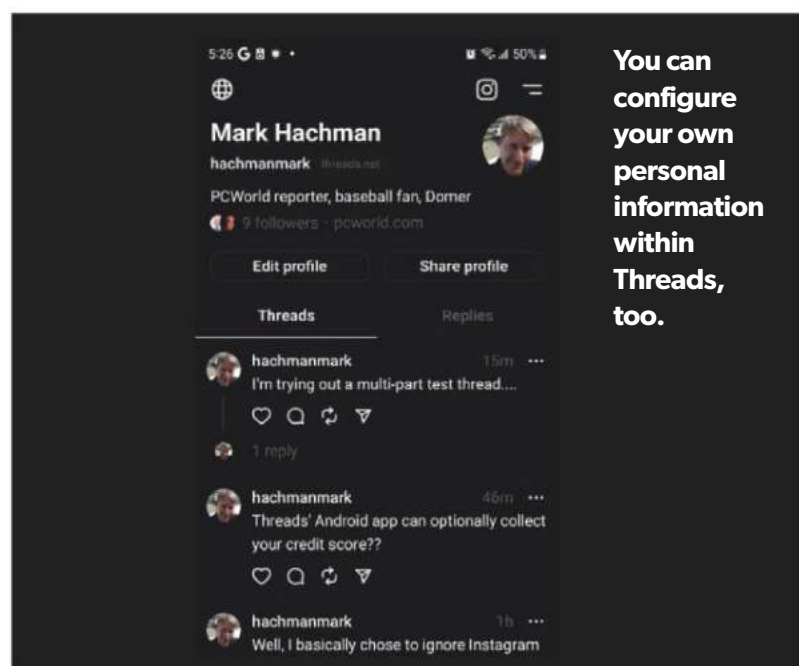
Elon Musk will do in return.

For now, however, there are no blue checks, no trolls cluttering up replies...just early-adopter nerds. Enjoy it while it lasts. 🔌

HANDS ON WITH THREADS

Threads boasts a simple, clean interface, with an emphasis on sharing text and simple photos. GIF support is nonexistent so far. You can create multiple-post threads yourself, and comment on other posts to contribute. There doesn't seem to be any direct messaging within the Threads app itself. You can turn on notifications for individual followers, and a link on their profile page will take you to their Instagram—nothing too out of the ordinary for an Instagram app.

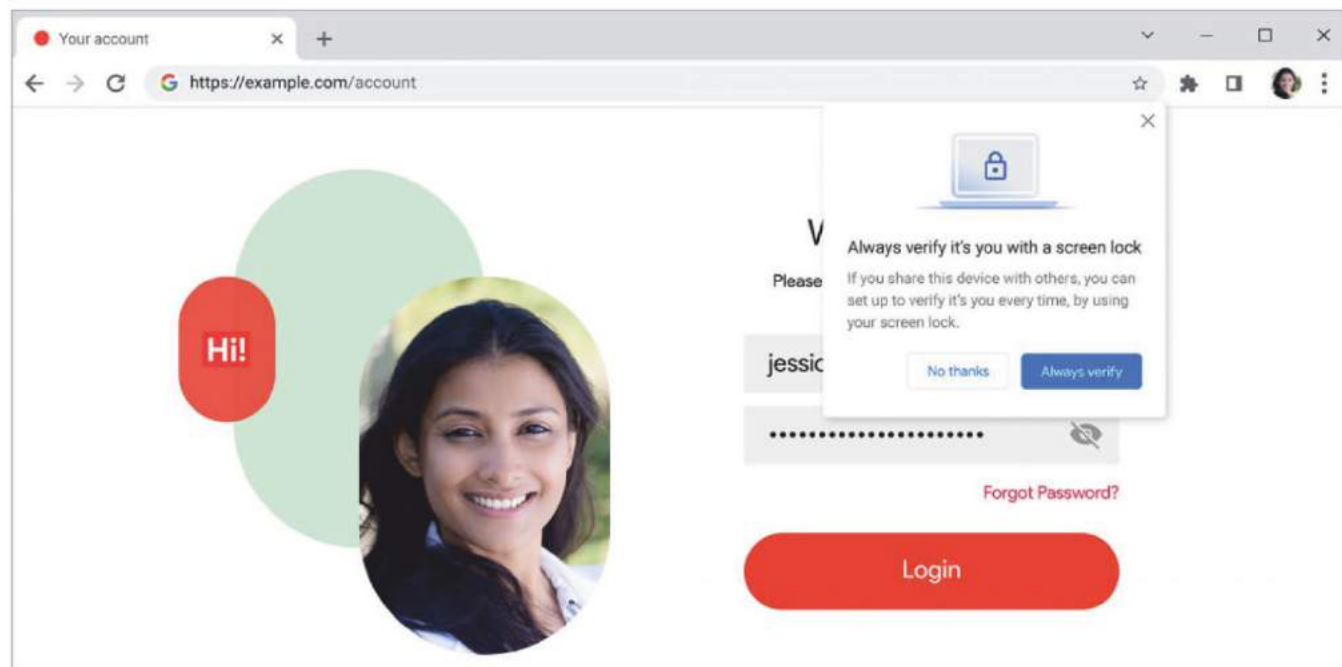
The app's interface is oriented around five icons: the home feed, a search function, the center icon for authoring new posts, an activity



You can configure your own personal information within Threads, too.

Chrome adds Windows biometric logins to its password powers

Fight to store passwords in a browser or password manager heats up. **BY MARK HACHMAN**



Google has made major improvements to how passwords are stored inside Chrome, taking some of its best features from its mobile browser and applying them to the desktop.

There has always been some tension between the browser and password managers (fave.co/3IRkfRz) in terms of which app holds the keys to your digital life. Google already offers to store your passwords within the Google cloud (fave.co/3NL4uZo), offering features such as trolling the deep web to ensure they haven't been leaked in a breach.

Recently Google and Chrome have added some new key features: a quick shortcut to your passwords from the desktop, the ability to import passwords stored elsewhere, and, perhaps most importantly, the ability to use biometric identification to unlock your password vault on the desktop browser. You'll also be able to add notes to a password file, to identify a PIN or store other useful information. Additionally, the note will be securely stored, with the same protections applied to the password. And Password Checkup is also coming to iOS.

Biometric authentication is probably the most important update. On mobile, that generally means using a fingerprint scanner to unlock the password vault or identify yourself to an app.

On the desktop, Google will use whatever biometric methods are available to your PC—Windows Hello depth cameras, typically. (If you don't own a Windows Hello webcam [fave.co/3lmacXy], you can buy one they're more available and much cheaper than they were a couple years ago.) This is an optional feature, but provides a powerful layer of security that takes little effort. Anecdotaly, facial logins via Windows Hello can "degrade" over time—as you shave or grow a beard, for example. However, if Windows Hello works for Windows, it will work for Chrome.

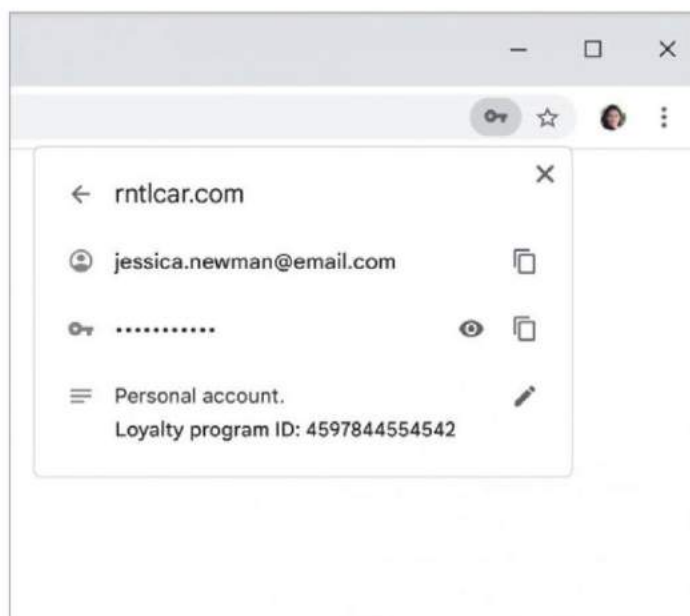
Google has also added a "home" for managing passwords within Chrome, via the new "Password Manager" heading in your Chrome settings menu.

You'll probably welcome the ability to add notes to your passwords, too. In most cases a site will simply ask for a username and password, but there may be cases where the site itself undergoes a revamp, or a username shifts, or any

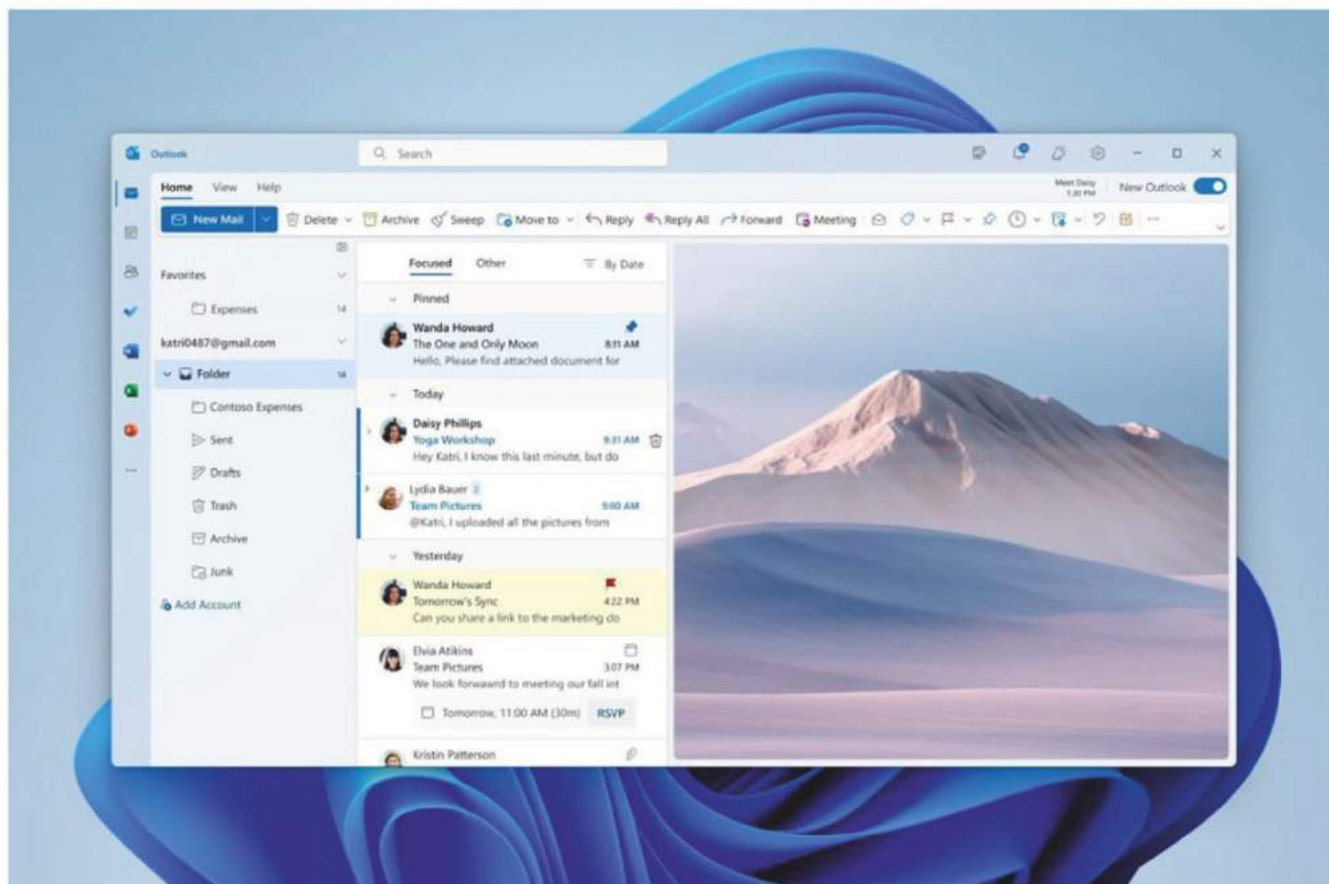
number of reasons where a note to yourself will clear up any lingering confusion.

Naturally, Google and Android are inseparable. But Google added that it's bringing its Password Checkup tool to iOS, too. If you've reused any passwords on your iPhone, or if they've been breached, Google Chrome on iOS will alert you to change your password. Google already added password autofill on iOS.

The one feature we'd question is the ability to import passwords from other password managers. Chrome now lets you do that by downloading those passwords as a CSV file, which sounds implicitly unsafe. Another weakness is that while you can import passwords to Chrome, Chrome is only a web browser. A password manager syncs your passwords across apps and services; Chrome doesn't. If you store your passwords within Chrome or Edge, that's where they'll stay. 🔌



Here's what the password notes within Google will look like.



I'm mad about Outlook replacing my Mail app, and here's why

Microsoft is apparently doing away with Mail in the name of AI, and it's wholly unnecessary.

BY MARK HACHMAN

It comes down to this: Microsoft is killing off its superior Mail and Calendar apps because it believes *its* brain is smarter than yours. One of my few stressful moments during an otherwise peaceful Hawaii vacation was when I learned Microsoft is doing away with the Mail and Calendar apps (fave.co/3D9fxqs). I've been an unabashed fan (fave.co/3pQmadX) of Mail for years because it

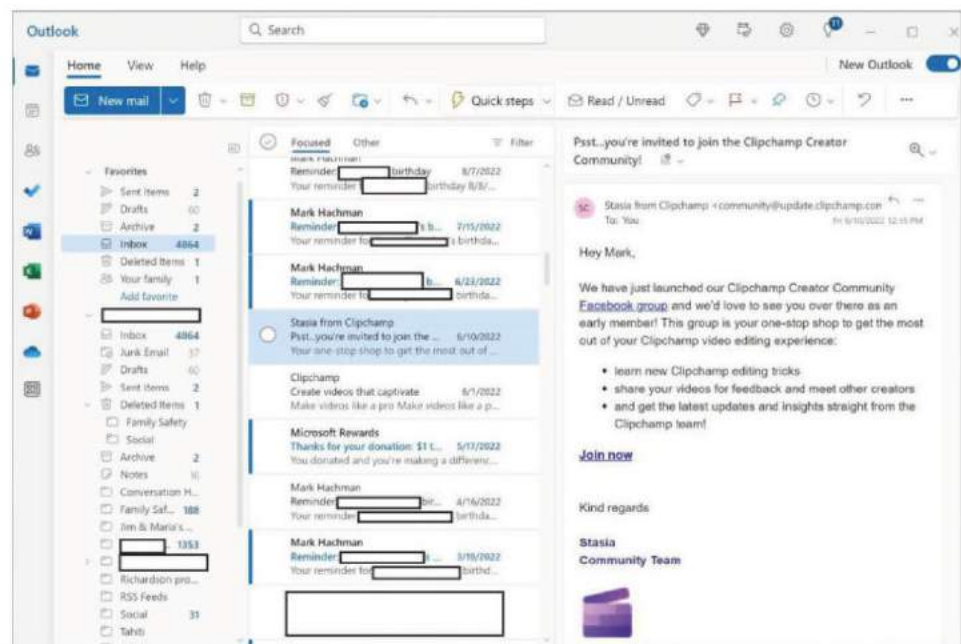
does what I want it to do, and nothing else. Mail has a simple, clean, pure interface.

But now Microsoft plans to replace Mail and Calendar with the unified Outlook app interface, beginning next year. Current Mail and Calendar users can test-run the new interface by toggling the "try the new Outlook" toggle in Outlook's upper-right corner, which flips the interface to the new

look. You can then flip back within Outlook by returning the toggle to its previous state. In my tests, the app crashed a couple of times, without losing any data, but then became stable.

So why is Microsoft force-feeding us Outlook? The reasons for Microsoft's decision are pretty much spelled out in Microsoft's Outlook announcement post (fave.co/3PSm6VU). First, by funneling everyone into a single email application for all our accounts (yes, even Gmail, Yahoo Mail, and more), Microsoft will learn more about what we're talking about. This matters because Outlook (and many other components within Windows) will eventually become inputs for Microsoft's Copilot AI engine (fave.co/3N0trzG). The more you feed it information about who you're talking to, what is being discussed, and so on, the better Copilot should theoretically operate.

The second major reason comes down to unification. There's always been a fundamental tension within Windows and Microsoft's apps: Should users work within a single, unified interface, or in separate, purpose-built apps? Mail and Calendar represent the latter approach in its purest form. Outlook believes



Outlook just displays so much unnecessary information.

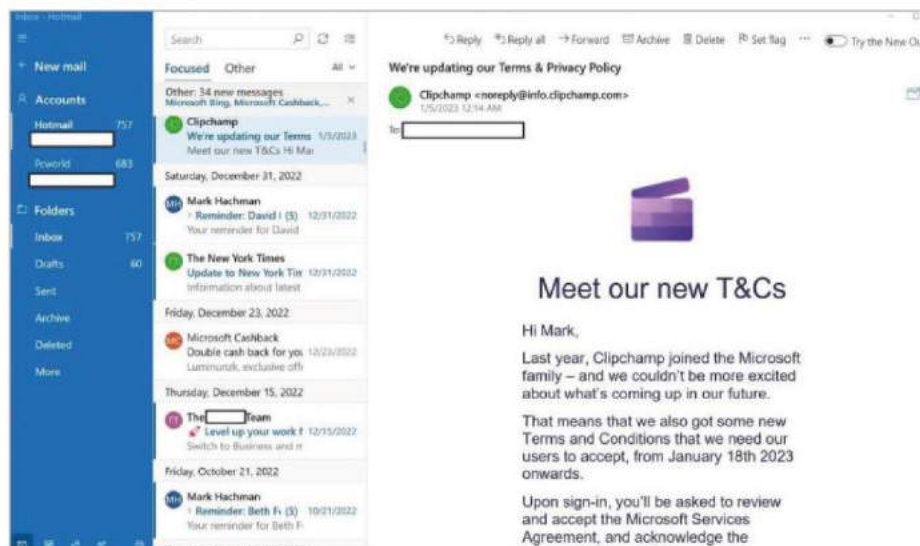
in the former approach, as your email becomes a jumping-off point for the rest of Microsoft's Office apps.

So there's the background. Are you ambivalent about losing Mail? You shouldn't be, and here's why...

OUTLOOK CLUTTER

Oh my, the clutter. Outlook simply has so *much* going on. A left-hand column of applications. A second column of email folders, with RSS, social feeds, and user-created folders...all with potential drop-down menus. Various ways of organizing email, such as Focused Inbox and more. Different preview options. It goes on and on and on.

Yes, Mail includes some of that complexity. But in general, it simply reflects how you've chosen to organize your inbox, and adds little



Mail does what you want it to and not much else.

more. Where Outlook begins to feel insulting is what we'll highlight next.

CLUTTER ON TOP OF CLUTTER

Microsoft Outlook already has a search box. And a help function. Both features show that Microsoft is attempting to cut through the complexity of its user interface. But look out, more is on the way. The new AI-driven Outlook Copilot (fave.co/3PWox7) will appear in a sidebar, and can be used to author emails, suggest appropriate language, or search out relevant documents. Do we really need this? These are all capabilities already built in.

I am absolutely in favor of simplifying and automating the processes I listed above, but do we really need even distracting clutter? The reality is that instead of making the interface "simpler" to use, swapping Mail for Outlook will simply add complexity.

STABILITY QUESTIONS

As I wrote this, Microsoft was wrestling with an issue that took down Microsoft Outlook for the Web (fave.co/3PTaHFm) for the better part of a day.

Yes, that version of Outlook is a Web app. Outlook for Windows implies that the replacement for Mail and

Calendar will be a standalone Windows app. Nonetheless, with the ability to tap-dance between dedicated native code and web apps (fave.co/3D7EkuP), I remain unconvinced that killing Mail and Calendar will go smoothly. Give me a dedicated Windows app that depends only on Exchange as a point of failure, and I'll be happy.

KILLING A CRITICAL FEATURE

With Mail and Calendar, I can keep my work meetings on the same calendar as my personal dentist and doctor appointments, simply because Calendar accommodates both work and personal accounts. The new Outlook app does not, and you'll receive a message saying so. Instead, the new app only consolidates multiple personal accounts. Apparently you'll need to have both the separate Outlook app for work, as well as the Outlook for Windows app for personal use. This is the whole stupid

“personal Teams” (fave.co/3IS72rP) and “professional Teams” thing again.

Surely we can figure out a way to preserve personal and corporate accounts in the same interface, and simply prevent employees from inadvertently copying data from one to the other. I like specific, purpose-built apps, but redundant apps? No thank you.

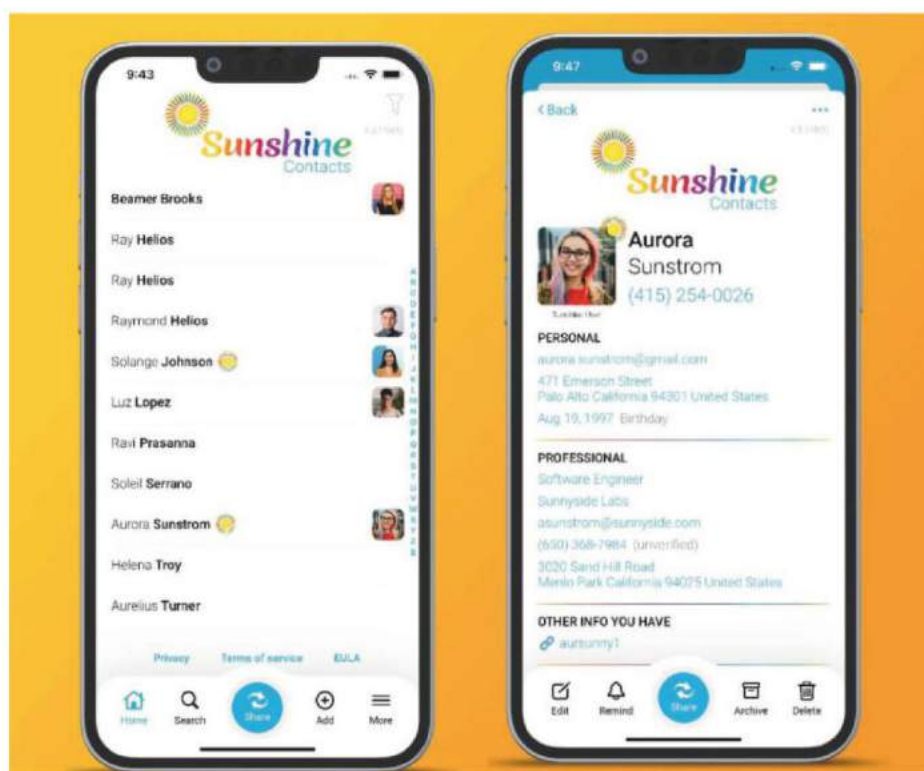
STIFLING COMPETITION

By having a discrete email client—Mail—Microsoft has always held the door open for potentially better email clients to step in. Ditto for Web browsers, calendaring apps, and so on. But now, by killing Mail and enforcing Outlook as your fully integrated Windows email solution, Microsoft is really squeezing the life out of third-party development. It’s already been difficult enough for third-party developers apps to step in and improve the increasingly integrated Windows interface. Now, it will be even harder.

For example, Yahoo’s Marissa Mayer has resurfaced as the driving force behind Sunshine (fave.co/3OiCFsZ), a new app that promises to streamline your contacts.

Anyone who tried out Windows’ awful My People app (fave.co/3DUMvsC) understands that Sunshine offers an opportunity—but where exactly? Not within Windows, as Sunshine is strictly a mobile app for now. So will Sunshine even take the time to build a Windows app, when Outlook, a driving vehicle for AI, connects so much of the Windows experience together?

Microsoft has said you’ll be able to download Mail and Calendar through 2024, even if your new PC ships with Outlook for Windows. I plan to and will use Copilot’s AI features, but I also intend to keep using Mail and Calendar as long as they’re available. You should too. 🔌



Integrating third-party apps into Microsoft’s core productivity apps becomes harder and harder the more tightly integrated they become.

Messenger and Instagram get new tools for parental control

These tools are designed to help teens stay safe and healthy online. **BY ALAINA YEE**



At long last, parents and guardians can now get better insight into their teens' social media—at least for Messenger and Instagram. Meta has launched a set of Parental Supervision tools to better aid with controlling usage of both apps.

In Meta's post announcing the new features, the company outlined several ways for parents to track and understand their

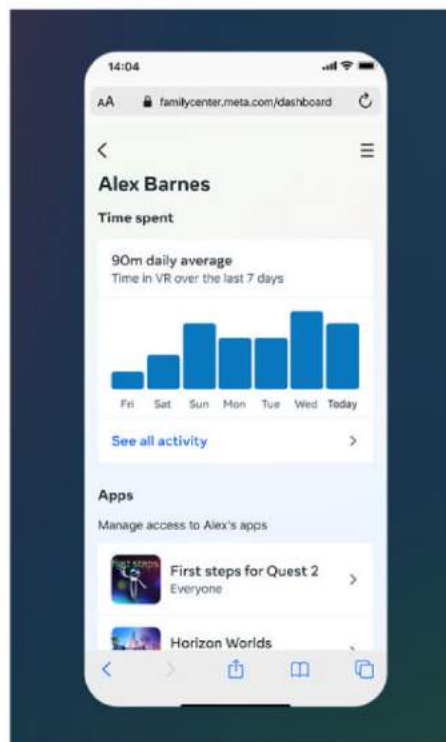
kids' habits on Messenger. For starters, you'll now be able to see how much time a teen spends on Messenger. You can also see their contact list, privacy and safety settings, who can view their Messenger stories, and who can message them (for instance, friends, friends of friends, or nobody), as well as get notifications when changes to those settings occur. If a teen allows, you'll get alerts if they report

someone, too. Parents will remain unable to read their teen's messages.


These tools are available now in the U.S., U.K., and Canada, with Meta saying worldwide expansion will happen "in the coming months." Further time and interaction Parental Supervision management tools should arrive over the next year, and will work in both unencrypted and end-to-end encrypted messages.

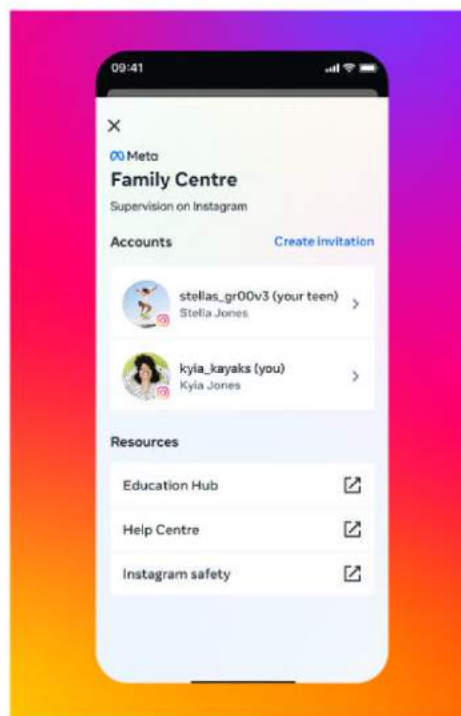
Instagram is also getting more parental control tools. Guardians will now be able to see the accounts their teen follows and is followed by, as well as how many friends they have in common with them. Behind the scenes, Meta is adding additional barriers to keep sketchy adults from contacting minors. An invite to connect must first be sent before a private message (much less photos, videos, or calls) can be sent—and only one invitation can be sent. This move builds on top of Instagram's previous restrictions, which prevented people over 19 from messaging younger teens who don't follow them.

These safety features for Messenger and Instagram are joined by a set aimed at boosting mental health. Facebook is getting Instagram's Take A Break (fave.co/3ObeYTm) feature, which encourages users to stop using the app and establish daily limits. For its part, Instagram will begin suggesting that teens close the app if they're scrolling through Reels at night. (In fairness, there are a lot of adults who could use that latter feature.) To get a walk-through of



You can now see how much time a teen spends on Messenger.

these features, or to learn more about others, you can visit Meta's Family Center page (fave.co/3D9fCKC). 



Guardians will now be able to see the accounts their teen follows on Instagram.



Microsoft Windows has a secret emergency restart button

Did you know Microsoft hid an emergency restart option in Windows 10 and Windows 11? Here's where to find it. **BY PANAGIOTIS KOLOKYTHAS**

Is nothing working on your Windows 10 or Windows 11 computer? Is an application hanging, or is your PC completely unresponsive? Most people will reach for the hallowed Ctrl + Alt + Del keyboard shortcut, which has been used since the earliest days of DOS to revive a stuck computer.

You can also use the shortcut to call up the task manager (although Ctrl + Shift + Esc is faster at that). What many people probably aren't aware of, however, is the emergency

restart function Microsoft hid inside the Ctrl + Alt + Del screen. I personally didn't know about it either until I read this article from BetaNews (fave.co/44kMVpR).

HOW TO ACTIVATE THE HIDDEN WINDOWS EMERGENCY RESTART

To get to the hidden emergency restart function, first press Ctrl + Alt + Del on your keyboard. The usual "lock," "switch user,"

“sign off,” and “Task manager” options will appear in a full screen.

You don’t want any of those. Instead, at the bottom right, next to buttons for network settings and accessibility functions, there is a power button for switching off or restarting the computer. You can use this button to access the hidden function:

Hold down the Ctrl key and click on the power button. Now the following note is displayed by Windows in full-screen mode:

“Click OK to immediately restart. Any unsaved data will be lost.” It then ends with this dramatic-sounding message: “Use this only as a last resort.” Click on the OK button and the expected happens: The computer restarts immediately without any further prompting.

Apparently, Microsoft integrated this method into Windows as an additional way of subjecting the computer to a warm start. Depending on the reason why Windows is having problems at the moment, the other options for a Windows warm start might not work. Before resorting to the last resort of a cold start (such as holding down the physical on/off button on your PC or briefly disconnecting the device from the power supply), the hidden emergency restart could offer a way out.

MANY WAYS TO SHUT DOWN WINDOWS

I have not yet been able to discover where Microsoft documented this

feature, but it’s nice to have another reboot option with the hidden Windows emergency restart.

Here are a bunch of other ways you can restart Windows:


Method 1: Click the Start button, and then click the power button.

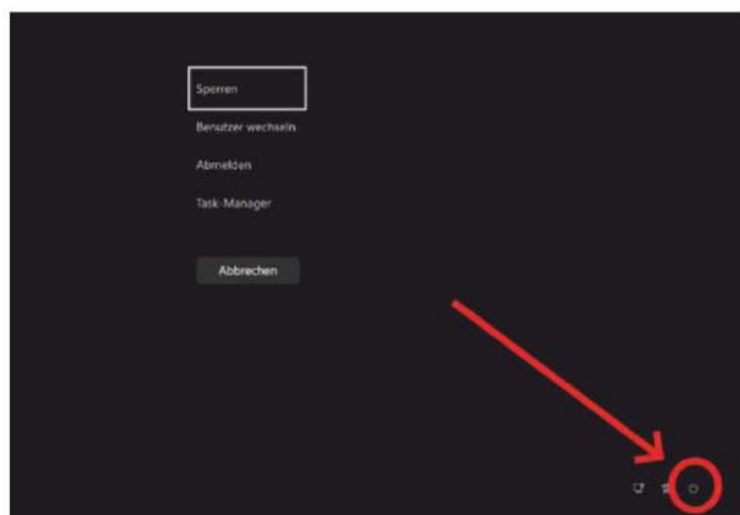
Method 2: Press Ctrl + Alt + Del, and then click on the power button in the bottom right corner.

Method 3: On the Windows desktop, press the combination Alt + F4, and then select Reboot from the drop-down menu.

Method 4: Open the command prompt with admin rights, type **-shutdown -r -t 00**, and then press Enter.

Method 5: Go to the Windows Powershell, type **Restart-Computer**, and then press Enter.

Method 6: The hidden emergency restart option. 



To initiate the emergency restart, hold down Ctrl and click the power button.

AI is filling up the internet with garbage spam sites

Hundreds of sites serving up real ads over AI-generated text are causing headaches for users and advertisers alike. **BY MICHAEL CRIDER**



A new wave of artificial intelligence tools like ChatGPT (fave.co/3wnuJwM) and Google Bard (fave.co/3zSZ1cq) may or may not change the way humans interact with technology forever. But before that happens, that wave is going to make the internet even more annoying. According to a new report, AI is being used to generate a huge amount of websites filled with random,

garbage strings of text targeted at search engines, then plastered with advertising to generate revenue.

NewsGuard reports (fave.co/44kTDMF) that AI text generation tools are being combined with software that autogenerates new sites, creating masses of domains filled with a huge amount of text. The sites are then filled with programmatic advertising slots (fave.co/46GY2v2), which serve up real ads over

the fake content. It could be argued that the process is fraudulent, since advertisers are paying in good faith for ads on copy that's presumably written by humans. The combination of largely automatic advertising systems and websites that can be generated by the dozen with a few clicks is creating a feedback loop, where AI-generated content with practically zero human input is being financed by advertising algorithms so vast and complex hardly any humans understand them.

AI-generated text can be difficult to distinguish from merely generic or bad writing—after all, filling up sites with low-quality content and selling advertising on top of it is hardly a new practice. To solve this problem, NewsGuard searched for telltale phrases that AI systems sometime return for queries, such as “Sorry, as an AI language model, I am not able to access external links or websites on my own.” That phrase was spotted in a headline for a jobs site...that was supposed to be Brazilian in origin. All in all, the investigation found over 200 “news” sites generated with AI text, one of which was publishing more than 1,200 new articles every day. And these were just the ones that were easily spotted by the error messages they displayed.

Not every single one of these sites was serving advertisements, but over a quarter were, with 141 major brands paying for ads over garbage content. Major banks, sports clothing vendors, broadband providers, and

streaming services are serving up ads aimed at web users in the U.S., Germany, France, and Italy, four of the most lucrative markets for web advertising. That likely means the creators are getting enough revenue to justify their efforts, even if the majority of the sites and content generated are duds.

With AI being used to create everything from novels sold on Amazon (fave.co/43flSLz), to fake political ads (fave.co/3rlAxHR), to bogus legal citations (fave.co/44BII20) used in a very real courtroom, it's clear that easy access to massive amounts of autogenerated text and images is a growing problem. 🔌



Available on Amazon, *The Wise Little Squirrel* was created using AI.



YouTube is blocking videos for users who block ads

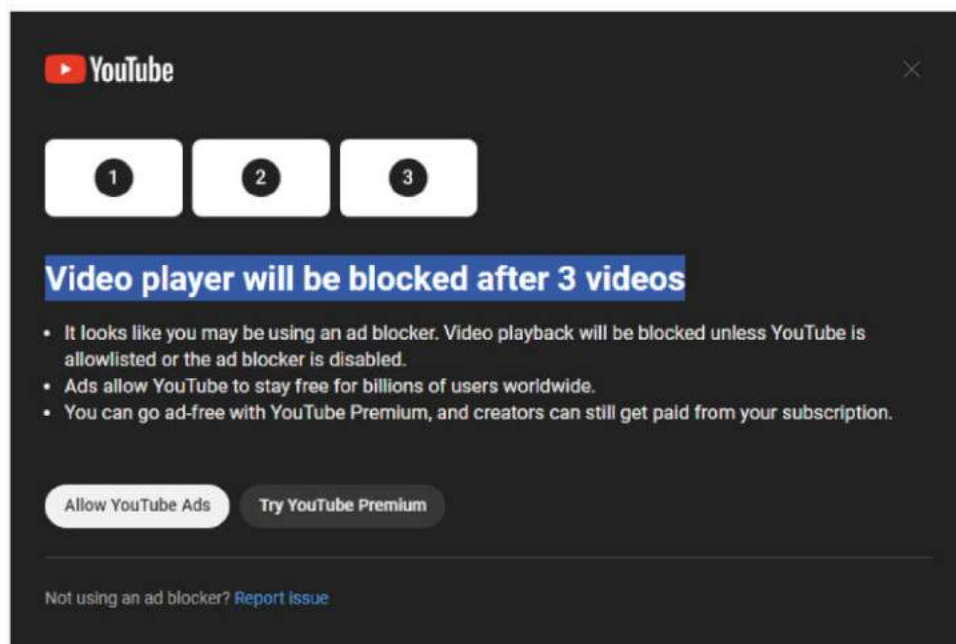
In this test run, users get a grace period of three videos before playback gets disabled.

BY ALAINA YEE

Your days spent watching YouTube with an ad blocker enabled may soon be over. In what the company is calling a “small experiment,” select users are currently being told to turn off their ad blocker or subscribe to Premium. The punishment if you don’t? Access to video playback gets shut off.

If you’re subject to this limitation, you’ll see a pop-up message that says, “It looks like

you may be using an ad blocker. Video playback will be blocked unless YouTube is allowlisted or the ad blocker is disabled.” It also states that ads “allow YouTube to stay free for billions of users worldwide,” and that to stay ad free, a subscription to YouTube Premium is necessary. Three video thumbnail slots appear in the notification as well, which presumably fill in as you slowly chew through your limit.



A screenshot of the warning message posted by u/Reddit_n_Me on Reddit.

The first sightings of this test surfaced on June 28 (as spotted by Bleeping Computer, [fave.co/3PNS31x](https://www.bleepingcomputer.com/news/youtube-testing-ad-blocker-warning/)), when Reddit users began sharing their encounters ([fave.co/3D9uClr](https://www.bleepingcomputer.com/news/youtube-testing-ad-blocker-warning/)) with the new warning. It follows not long after a similar experiment in May (also reported on Reddit, [fave.co/44IID1j](https://www.bleepingcomputer.com/news/youtube-testing-ad-blocker-warning/)), which blocked access to *all* videos

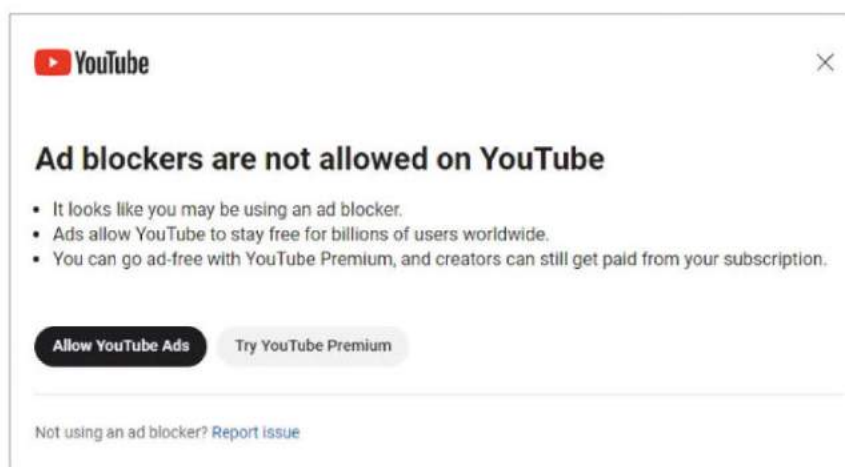
immediately. But this time around, users get a grace period of several videos before playback gets shut off.

In a statement to Bleeping Computer, YouTube explained it is “running a small experiment globally that urges users with ad blockers enabled to allow ads on YouTube or try YouTube Premium.” The company also

says it will disable playback for users who persist in using an ad blocker despite the warnings. Exactly where and how widely YouTube is running this test is not known.

One possible reason for the sudden intolerance of ad blockers is YouTube’s drop in ad revenue between the first quarter of 2022 and

2023, as reported by TechCrunch in April ([fave.co/43lgNRj](https://www.techcrunch.com/2023/04/11/youtube-ad-revenue-drops/)). Meanwhile, YouTube’s growing subscriber base, which currently stands at 80 million for its Premium and Music services, is growing. It gained over 30 million subscribers ([fave.co/3NQ2Gyl](https://www.techcrunch.com/2023/04/11/youtube-ad-revenue-drops/)) between 2021 and 2022. 🔌



Those using an ad blocker will be prevented from watching YouTube videos.

A woman with brown hair tied back, wearing a grey and white striped sweater, is smiling and looking down at a baby she is holding. The baby is lying down, wearing a light pink shirt. The background is a soft-focus indoor setting with a green plant visible on the right.

Vaping can
cause irreversible
lung damage.

**Talk About
Vaping.org**

Get the facts
about youth vaping.



**#DoThe
VapeTalk**



Dell XPS 17 9730: Luxurious, but where's the OLED display?

For the most part, Dell sticks to the blueprint. **BY MATT ELLIOTT**

The big-screen laptop trend of recent has been moving from a 17.3-inch display with a widescreen 16:9 aspect ratio to a 16-inch 16:10 panel that results in a more compact and portable package with nearly the same screen real estate. Despite numerous refreshes over the past few years, the Dell XPS 17 still resides between these two popular panel sizes, with a 17-inch 16:10 display that's roomier than a

16-inch 16:10 display, but not quite as wide as a 17.3-inch 16:9 display. The result is an absolutely massive display for media editing, multitasking, and perhaps some light gaming.

Inside, the XPS 17 9730 (fave.co/3XOkn5C) serves up the latest Intel and Nvidia silicon. Our test system pairs a 13th-gen Core i7 CPU with RTX 4070 graphics. Dell prioritizes a thin enclosure over raw power, however, for this content creation

laptop and opts for a low-wattage RTX 4070 that can't match the frame rates of gaming laptops with full-wattage RTX 40-series GPUs. And while the display's sheer size is certainly impressive, its 60Hz refresh rate is meh. Further, it's merely an IPS panel and not an OLED, which graphics pros and hobbyists can rightly expect at this price. We'd steer content creators toward the similarly priced Samsung Galaxy Book3 Ultra (fave.co/3XOG7yE) or Asus VivoBook Pro 16X OLED (fave.co/3Skk3rr) that boast large OLED displays.

SPECS AND FEATURES

Our Dell XPS 17 9730 test system costs \$3,349 from Dell, and I've seen it on sale for as low as \$2,949. It features the following specifications.

CPU: Quad-core Intel Core i7-13700H

Memory: 32GB

Graphics: Nvidia GeForce RTX 4070

Storage: 1TB PCIe NVMe M.2 SSD

Display: 17-inch UHD+ (3840×2400) 60Hz touch display

Webcam: 720p

Connectivity: 4× Thunderbolt 4 USB Type-C, combo audio jack, SD card slot

Networking: Wi-Fi 6, Bluetooth 5.3

Biometrics: IR camera and fingerprint reader

Battery capacity: 95 Watt-hours

Dimensions: 14.7×9.8×0.77 inches

Measured weight: 5.4 pounds

Price: \$3,199.99

The Dell XPS 17 9730 starts at \$2,449 for a configuration with a Core i7-13700H CPU, RTX 4050 graphics, 16GB RAM, and a 512GB SSD. This baseline model features a 17-inch, non-touch display with a 1920×1080-pixel resolution. Our test system upgrades the graphics to an RTX 4070 GPU while doubling the RAM to 32GB and the solid-state storage to 1TB. The display also gets an upgrade to a 3840×2400 resolution and adds touch support. It was not included on our test system, but there is a CPU upgrade that moves you from the Core i7-13700H to a Core i9-13900H. In addition to the baseline RTX 4050 graphics and the RTX 4070 GPU on our test system, you also can configure the



The silver lid has the standard-issue, brushed-aluminum look.

XPS 17 9730 with RTX 4060 or RTX 4080 graphics. There are also options for additional RAM (up to 64GB) and SSD (up to 8TB).

THIN YET RIGID DESIGN

The XPS 17 9730 shares the same enclosure as the preceding XPS 17 9720. It's an enormous expanse of a laptop that stretches nearly 15 inches wide and almost 10 inches deep. There's very little wasted space; with thin bezels on all four sides, the 17-inch 16:10 dominates the scene. You might have trouble fitting the XPS 17 9730 into your backpack because of its width and depth, but it's not a hulky laptop. It measures a trim 0.77 inches thick and weighs a reasonable 5.4 pounds.

The silver lid has the standard-issue, brushed-aluminum look, but open the laptop and you're greeted with a black keyboard deck with a carbon fiber finish running along the wrist rest and the narrow strip above the keyboard. The two-tone color scheme lets the XPS 9730 stand out from the all-silver or dull gray crowd. And the carbon fiber keyboard deck has a rubberized finish that has a pleasing feel and is very effective at repelling fingerprints.

Constructed from machined aluminum and carbon fiber, the XPS 17 9730 feels firm and rigid, with little to no flex in the lid or keyboard deck, an impressive feat given its



The black keyboard deck has a carbon fiber finish running along the wrist rest.

immense dimensions. Many large laptops tend to sag or flex toward their middles, and thin laptops often have flimsy lids that offer a worrisome level of protection for the display. With the XPS 17 9730, Dell pulls off the neat trick of building a thin, large-screen laptop with a solid overall feel.

Without a notch or lip on the front edge, opening the lid is a two-handed operation. I struggled to lift the lid with my fingertip and had to lift it from the side with both hands. Once I opened it, however, I found the keyboard to be quite comfortable. The keys don't have the plush feeling you get with a ThinkPad and instead offer a light, snappy feedback with shallow travel. I felt fast typing on it. Despite having the room for it, Dell opted not to include a number pad on the XPS 17 9730. And I didn't miss it. I liked

having the keyboard centered below the display and above the giant touchpad.

The touchpad has a matte finish that allows for smooth, nearly friction-free gliding. It has a firm, quiet click response with the perfect amount of travel.

BIG, BRIGHT DISPLAY (SANS OLED)

Our test system features the \$300 display upgrade that bumps you up from a 17-inch 1,920×1,200 IPS non-touch display to a 3840×2400 IPS touchscreen. Brightness (500-nit rating) and refresh rate (60Hz) remain constant across the two display options. I found the display at 550 nits to be even brighter than its rating, and I found text and images to be razor sharp. And yet I'm only mildly impressed with the 4K



The touchpad has a matte finish that allows for smooth, nearly friction-free gliding.

touch panel. Why? Because at a price north of \$3,000, an OLED panel becomes a reasonable expectation. The XPS 17 9730's contrast ratio is fine, but it can't match that of an OLED with bright white and true black levels. For a high-end, large-screen laptop gear toward creative pros, a group that

benefits more than most from the added color fidelity and contrast, it's surprising and disappointing that an OLED panel isn't offered.

Likewise, the display's pedestrian 60Hz refresh rate will be a disappointment to would-be buyers that might want to put the laptops RTX graphics toward a bit of 3D gaming when the workday is done. And video editors will seek a faster 90Hz or 120Hz panel for smoother movement.



The OLED panel's contrast ratio is fine, but it can't match that of an OLED with bright white and true black levels.

The webcam is another disappointment. It's a grainy 720p camera of yore and not a high-res 1080p camera, like the ones offered on nearly even laptop released in the last year or two outside of budget models. Frankly, it's shocking that a laptop at this price doesn't have an upgraded webcam. The XPS 17's enclosure may not be in need of an overhaul, but its webcam certainly is.

The string of disappointments ends with the speakers. Dell packs four speakers into the XPS 17 9730 in the form of a pair of 1.5-watt tweeters and a pair of 2.5 woofers. The resulting sound is louder and fuller and more dynamic than that of a typical laptop with only two speakers. Dialog sounded clear and effects sounded realistic when watching movies and shows, and I even enjoyed music playback because there was a bit of a bass response to round out the sound.

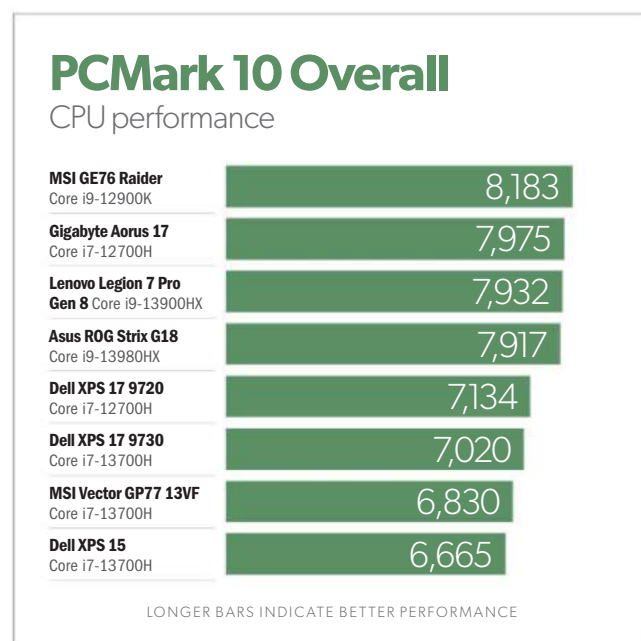
The modern port selection features four Thunderbolt 4 ports with DisplayPort and power delivery support, which should satisfy most of your external expansion needs. Dell includes an adapter in the box that provides USB-A and HDMI connectivity. There's also a combo audio jack and an SD card slot. Wireless connectivity, however, is a step behind the times. The XPS 17 9730 supports Wi-Fi 6 and not the newer Wi-Fi 6E standard.

PERFORMANCE

Our XPS 17 9730 test system is based on the Core i7-13970HX CPU and GeForce RTX 4070

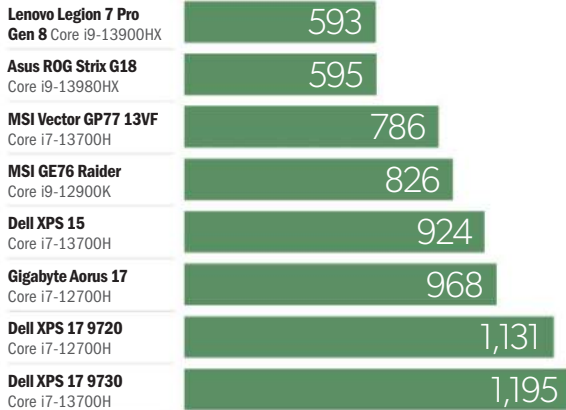
graphics. It also supplies a generous 32GB of RAM and a 1TB SSD. The 13th-gen Core i9-13900HX features Intel's hybrid architecture with performance and efficiency cores; it has six performance cores, eight efficiency cores, and a total of 20 processing threads. The RTX 4070 is a midrange GPU in Nvidia's latest GeForce 40 series behind the RTX 4080 and 4090 graphics processors. In our test system, it's set to run at only 60 watts, in large part to keep thermals in check inside the XPS 17's thin enclosure. By comparison, the gaming-focused Legion Pro 7 Gen 8 features an RTX 4070 GPU running at its maximum of 140 watts—a combination of the GPU's maximum power draw of 115 watts and 25 watts supplied by the CPU via Dynamic Boost.

First up in labs testing is PCMark 10, which measures performance on everyday computing work including office productivity



Handbrake 0.9.9 Encode

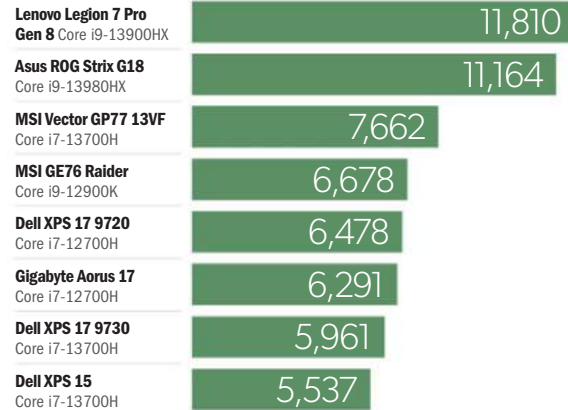
Seconds



SHORTER BARS INDICATE BETTER PERFORMANCE

Cinebench R20

CPU performance



LONGER BARS INDICATE BETTER PERFORMANCE

tasks, web browsing, and video chats. The XPS 17 9730 scored above a 7,000, which indicates elite application performance, but it still trailed last year's XPS 17 9720 and its 12th-gen Core i7 CPU.

Our HandBrake benchmark tests how a laptop is able to handle crushing CPU loads over a lengthy period—in this case, transcoding a 30GB MKV file to a format suitable for Android tablets using HandBrake, the free video-encoding utility. The XPS 17 9730 again finished behind last year's XPS 17 model and actually finished last among the group of similarly configured and priced systems that are either midrange gaming machines or other content creation laptops.

Next up is Cinebench, another CPU-intensive test but one that renders a complex 2D scene over a short period of time. Again, the XPS 17 9730 finished near the end of the

pack. The XPS 17 9730 is a capable content creation laptop but certainly not the fastest.

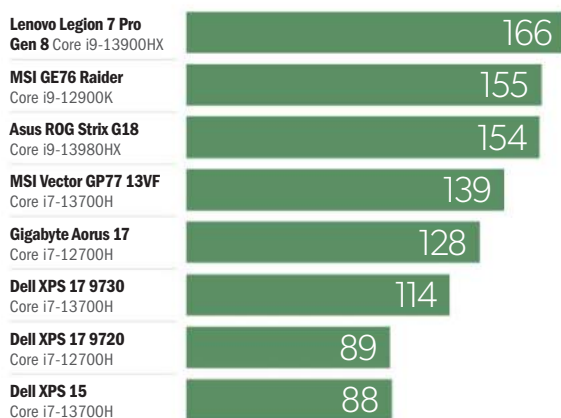
GRAPHICS PERFORMANCE

Although the XPS 17 9730 isn't a gaming laptop, we still wanted to put its RTX 4070 graphics to the test. On 3DMark's Time Spy and Port Royal tests, it finished in the back of the pack, the leaders of which feature higher-wattage GPUs than our test system's 60-watt RTX 4070 GPU.

On our real-world game benchmarks, the XPS 17 9730 produced playable framerates on our *Shadow of the Tomb Raider* benchmark at 1920×1080 resolution at the Highest quality preset but still trailed gaming laptops with GPUs operating at or near full throttle. We saw similar results on our *Metro Exodus* test, where the XPS 17 9730 averaged 39 fps. You'll need to dial back the quality

Shadow of the Tomb Raider; 19×10 Highest

Frames per second



LONGER BARS INDICATE BETTER PERFORMANCE

Metro Exodus; 19×10 Extreme

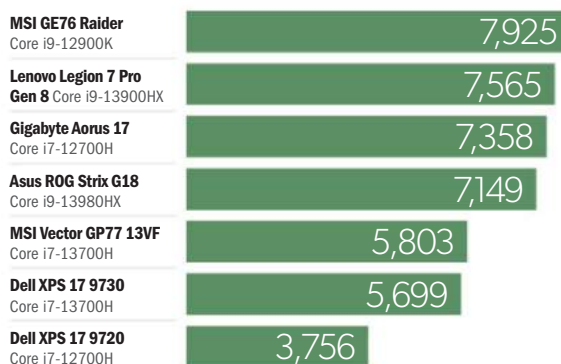
Frames per second



LONGER BARS INDICATE BETTER PERFORMANCE

3DMark Port Royal

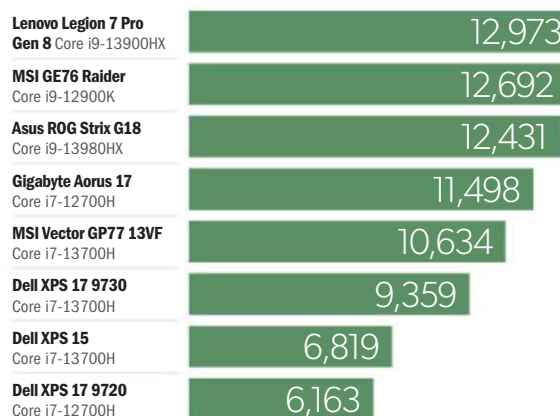
GPU performance



LONGER BARS INDICATE BETTER PERFORMANCE

3DMark Time Spy 1.2

GPU performance



LONGER BARS INDICATE BETTER PERFORMANCE

settings or resolution to creep closer to a smooth framerate of 60fps with *Metro Exodus*.

BATTERY LIFE

To test a laptop's battery life, we loop a 4K video using Windows 11's Movies & TV app,

with the laptop set to Airplane mode and earbuds plugged in. We set the screen brightness at a relatively bright 250 nits to 260 nits, which is a good brightness for watching a movie in an office with the lights on. The XPS 17 9730 excelled on our battery

test, running laps around its higher-powered gaming competition by lasting nearly 11 hours on our demanding battery drain test. Still, it fell a few minutes short of the runtime of last year's XPS 17 model.

BOTTOM LINE

There's lots to like about Dell XPS 9730, from its expansive, 17-inch 16:10 display and thin, rigid chassis to its comfortable keyboard, roomy touchpad and outstanding battery life. The lack of an OLED display option, however, is a negative that will outweigh those positives for many content creators. With absolute black levels and stunning contrast ratio, an OLED display is far superior to any IPS

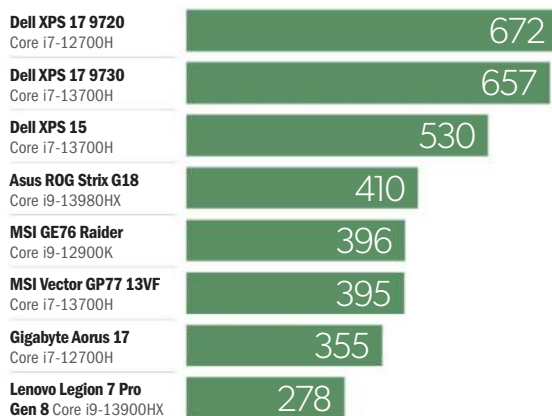


Dell's latest 17-inch laptop has a lot going for it.

panel and will be high on the priority list of any creative professional shopping for a laptop, if not at the very top. The lack of an OLED option prevents a stronger recommendation for the XPS 17 9730. 🔌

Battery life

Minutes



LONGER BARS INDICATE BETTER PERFORMANCE

Dell XPS 17 9730



PROS

- Expansive 17-inch 16:10 display.
- Thin chassis.
- Incredible battery life.

CONS

- High price without OLED display.
- Low-wattage GPU limits 3D performance.
- Low-res 720p webcam.

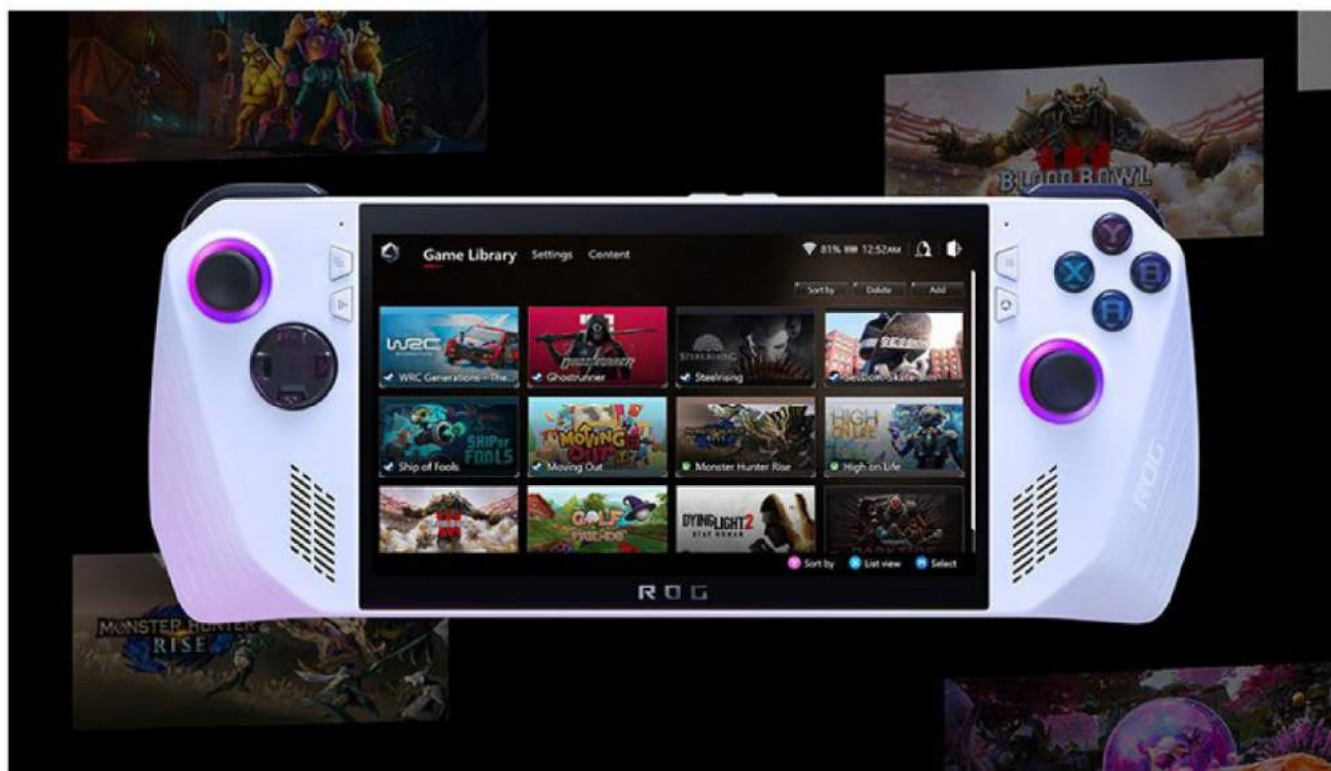
BOTTOM LINE

The Dell XPS 17 9730 boasts a sharp design, thin chassis, and long battery life, but the lack of an OLED display will be a deal breaker for many graphics pros.

\$3,199

Asus ROG Ally: A powerful, imperfect handheld gaming PC

The Asus ROG Ally's supreme power and versatility are impressive, but the console is buggy and has bad battery life. **BY ANYRON COPEMAN**



Handheld consoles have been around since the late 1980s, but it recently feels like we've entered a new era with home console gaming coming to portable devices.

From the Nintendo Switch (fave.co/43r3MWO) being the only realistic option for such handheld quality a few years ago, we now have credible competitors from the likes of Valve (fave.co/3Dc7FEk), Logitech (fave.co/3pSqOrT), and Onex (fave.co/3Dawfp7).

These are consoles that don't play traditional physical game cartridges, cards, or discs, but instead stream or download games from services such as Steam or Xbox Game Pass.

But with the ROG Ally, Asus wants to take things to the next level. Unlike rivals, it runs a



VIDEO: DOES THE ALLY BENEFIT FROM THERMAL PASTE UPGRADE?

Watch now at fave.co/3PMD9IS

full version of Windows 11 (fave.co/3XQmVAA), meaning you can play the same range of games as on any PC. Alongside dedicated AMD flagship processors and a 120Hz display, Asus means business.

But does it live up to the hype and, more importantly, that high price? I believe so, but only if you're willing to fully embrace the handheld form factor and its compromises.

DESIGN AND BUILD

The ROG Ally is a real statement of intent from Asus, and that starts with design. It's a bulky, imposing device with a distinctive gaming aesthetic, yet still feels slick enough to have mainstream appeal. I'm not hugely into modern gamer aesthetics, but I have no issue using this in public.

A reasonably light weight of 608g and a thickness of 21.2mm are big selling points of the Ally, as they mean you can take it almost anywhere with you. For context, that's thinner

and lighter than the Valve Steam Deck, even though both devices have a 7in display.

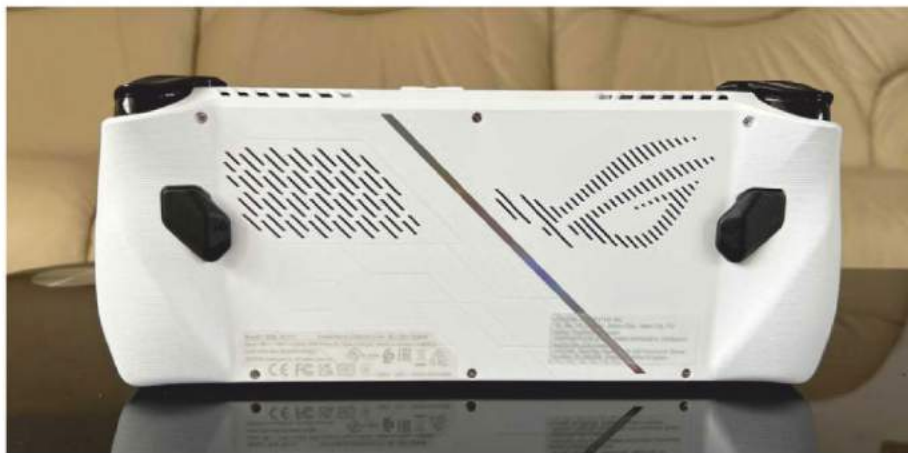
But crucially for such an expensive device, the premium look and feel isn't compromised to get there. The white finish won't be to everyone's tastes, but I feel it contributes to a design that's sleek and modern. If you've used the white Nintendo Switch OLED (fave.co/3O85Crl), you'll know what I mean.

As good as it looks, though, an alternative color option would've been nice. Unlike with phones, you can't just cover it up with a case. However, the device does a good job of avoiding picking up visible dirt marks, something I was concerned about. Your hands can get sweaty while playing, but it won't show.

While the design of the Ally is fairly generic, Asus has still managed to put its own stamp on the device. Small ROG-specific touches can be found across the device, from a large logo on the back to RGB lighting

around both joysticks. The latter can quickly become annoying, particularly if you leave it on the default rainbow mode, but this can easily be customized or turned off altogether.

The joysticks themselves are where my thumbs naturally rest, offering a comfortable experience. My only



Small ROG-specific touches can be found across the device, such as the large logo on the back.



The physical buttons and joysticks deliver a more convincing experience than even a dedicated controller.

complaint is the lack of padding, which can become uncomfortable when making lots of quick movements.

Asus has opted for Xbox-style ABXY buttons in the top-right corner, plus a directional pad diagonally opposite. Both are clicky and responsive, making them easy to press no matter the game.

Triggers and bumpers on the top of the Ally are just as good, but Asus has added a few extra physical buttons of its own. The most notable are two on the back of the device, which the company is calling Macro 1 and Macro 2. While not relevant in many games, one-tap access to functions

of your choice can make a big difference in some titles. It's certainly a nice option to have.

Shortcuts to the View, Command Center, Armoury Crate and Menu sections on the front of the device are more mundane but still worth having. Combined, the physical buttons and joysticks deliver a more convincing experience than even a dedicated controller.

At the top, the power button doubles as a fingerprint sensor, which is a cool addition. It's

quite small but still relatively fast and reliable. Next to it, you'll find volume controls and a surprisingly good port selection.

Alongside a USB-C port for charging, you get a microSD slot for expandable storage, a 3.5mm audio jack, and a dedicated connector for ROG XG Mobile, Asus' external GPU system.



At the top, the power button doubles as a fingerprint sensor, which is a cool addition.

The latter can supposedly deliver a big boost to the already excellent performance, but I wasn't sent one to test out. It also costs well over \$1,000/£1,000 and makes the Ally much less portable. For the vast majority of people, it's totally unnecessary.

SCREEN AND SPEAKERS

The display on the ROG Ally is one of its key strengths. It's a 7in, Full HD (1920×1080) IPS touchscreen, complete with Gorilla Glass Victus for extra durability. That resolution gives it a classic 16:9 aspect ratio, meaning almost all games can run natively.

It's a real step up from the Steam Deck (fave.co/3Dc7FEk) and Nintendo Switch OLED (fave.co/3O85Crl), which are both limited to 720p output. You also get a 120Hz refresh rate on the Ally, rather than the standard 60Hz on the other devices.

With all that in mind, it'll come as no surprise to learn that the display here is a joy to use. Gameplay looks superb, with rich, vibrant colors and lots of detail. On a screen of this size, you certainly don't need a higher resolution.

When loading up a game for the first time, I was genuinely shocked by how good the screen looked. It's not quite high-end PC or TV console level, but it's not far off. This is a premium display.

Prior to testing, I was concerned about how the LCD panel here would compare to OLED. But darker colors and contrast are still impressive on the ROG Ally, and it doesn't feel like you're missing out.

The display's 7ms response time isn't the greatest by PC gaming standards, but there was no noticeable input lag while playing. Only avid gamers will observe any difference

compared to more responsive screens.

Given how portable the Ally is, you might want to use it outside. A maximum brightness of 502 nits means that is very possible.

My only complaint here is the bezels, which are much thicker than they need to be. There's a ROG logo below the screen, but no webcam at the



When loading up a game for the first time, I was genuinely shocked by how good the screen looked.

top—there’s no camera at all. This is a shame. Unlike with a tablet, there’s plenty of space to comfortably hold the device already, so Asus has no real excuse for not squeezing a camera in.

However, the ROG Ally does benefit from dual stereo speakers, which emit sound from both the front and back of the device. The room-

filling audio they provide is solid, considering the size of the device, with an impressive depth to music and sound effects.

In-game character voices sound crystal-clear as well, though an extra hit of bass and higher max volume would be nice. For the best experience, you’ll still need to connect headphones—whether they’re wired (via the 3.5mm jack) or wireless (via Bluetooth).

SPECS AND GAMING PERFORMANCE

Asus has made a big deal of the performance abilities of the Asus ROG Ally, and it’s easy to see why.

The device is powered by the Ryzen Z1 Series, new AMD chips that are specifically designed for handheld consoles. Asus claims both Ryzen Z1 and Z1 Extreme models offer flagship-level performance, but only the

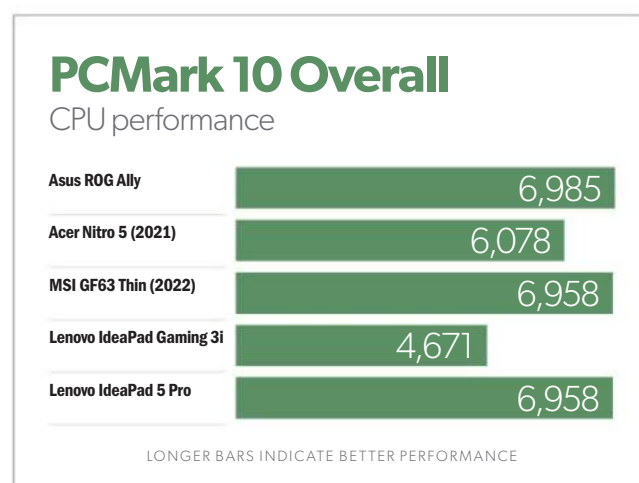


The ROG Ally comes with dual stereo speakers.

latter is coming to the U.K.—it’s the version I’ve been testing.

While integrated AMD Radeon graphics and 16GB of DDR5 RAM (on both models) doesn’t sound particularly impressive, the results are. Performance is excellent, and in line with cheap gaming laptops (fave.co/3XM8Y6u) in the £600 to £800 (\$785 to \$1,045) price range, as the benchmarks show.

Crucially, that’s reflected in real-world



3D Mark Night Raid

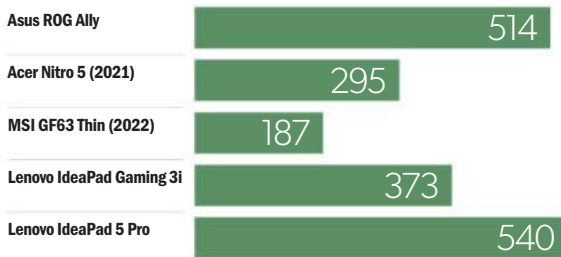
GPU performance



LONGER BARS INDICATE BETTER PERFORMANCE

Battery life

Minutes



LONGER BARS INDICATE BETTER PERFORMANCE

usage. I tried some of the most demanding PC games you can play, across three of the most popular platforms: Xbox Game Pass, EA Play, and Steam. Everything runs very smoothly at 1080p, with gameplay looking superb on the ROG Ally's excellent display.

It's not quite as good as a full PC gaming rig or next-gen console, but you won't be disappointed by the performance on offer here. There are no noticeable dropped frames, even during fast-paced action games. According to Asus, a June 2023 update supposedly increases framerates by around 10% to 20%, boosting performance even more.

Hesitations and lag aren't an issue while playing games, and other bugs seem related to software rather than hardware. I highly doubt more power would change anything, and it's worth putting up with them for the superb in-game performance.

One feature that can sometimes be overlooked is the vibration motor. It's excellent here, offering subtle feedback that really enhances the gaming experience.

After only a couple of minutes of playing, there was a noticeable build-up of heat. But the advanced cooling system means the Ally only ever gets warm to the touch, with both fans on the back of the device where they won't be covered by your hands. Even in full flow, they don't get too loud—Asus claims a maximum of just 20dB.

You have to keep the ROG Ally in one piece at all times, unlike the Nintendo Switch. The controllers aren't detachable, although you do have the option to connect it to a TV or monitor via HDMI. This works seamlessly, with great picture quality and no drop in performance. But the feature relies on the ROG Gaming Charger Dock, which costs £60 extra (\$78) in the U.K. Simply including an HDMI port on the device itself would have solved this problem.

In terms of connectivity, the ROG Ally features both Wi-Fi 6E and Bluetooth 5.2. There's no cellular connectivity, but it's easy to use a hotspot from your phone while you're out and about. This isn't a great solution, as

it's not a fast way to stream games and is not a method I recommend relying on. If you want to stream games, this is only realistically possible on good Wi-Fi.

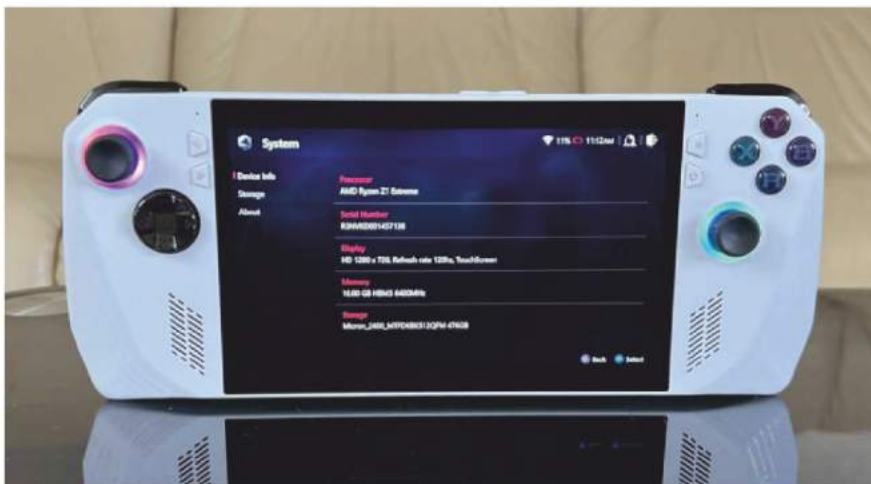
The upcoming Android-based Razer Edge (fave.co/3DbTkb0) has a 5G option, but that device is much less powerful than the ROG Ally.

The ROG Ally Z1 version includes a 256GB SSD, while the Z1 Extreme model I tested increases that to 512GB. But with around 54GB taken up by Windows system files, it doesn't leave much room for games.

Even with only five games installed, I got a pop-up message saying the device had insufficient storage when I was trying to download a sixth. Most titles I played, including *FIFA 22*, *F1 22*, and *Call of Duty: Warzone*, were between 50GB and 100GB.



FIFA 22 was just one of the games I tested.



The resolution can be increased to 1,920×1,080 in Settings.

But some—such as *Forza Horizon 5*—were significantly higher.

Thankfully, the storage capacity can be expanded via microSD, but that's another separate purchase.

SOFTWARE

A key advantage of the ROG Ally compared to other handheld consoles is software. It runs a full version of Windows 11 Home (fave.co/3XQmVAA), meaning you have full access to

the same range of games as on a PC. You can use several different game services, and you aren't tied to one company's.

The great advantage of the ROG Ally is that you can stream games if you go via a cloud gaming service, or play using on-device downloads. It's best with

the latter, but having the option is a luxury.

Whether you use Steam, Xbox Game Pass, the Epic Games Store, or even a cloud gaming service, they'll all work on the ROG Ally. All your downloaded games can be accessed via the Armoury Crate SE app, which opens by default when you turn on the device. It acts as a simple app launcher, but also as a hub for the extensive customization options available. You can adjust controls, performance, lighting, display and audio, most of which can also be accessed via the dedicated Command Center button mid-game.

You will need to make sure the gamepad is selected for many games, with keyboard and mouse often set as the default. But changing all these settings feels slick and intuitive.

Sadly, the same can't be said for the rest of the Windows 11 experience. Microsoft's operating system isn't optimized to run on this type of hardware, and it really shows. I ran into dozens of bugs and issues during my testing time, from app crashes and stuttering to games that simply refused to display in full screen. On a couple of occasions, the screen wouldn't turn on at all.

All of these were resolved within a couple of minutes, but it's frustrating to encounter them so frequently. As good as



You can adjust controls, performance, lighting, display, and audio, most of which can also be accessed via the dedicated Command Center button mid-game.

the gaming is, software bugs appear to be part and parcel of the ROG Ally experience at launch. I could fix every bug by closing or minimizing other apps and restarting software, but it was very frustrating.

But the benefits of Windows 11 can just about outweigh the drawbacks. You will just need to be patient when you're loading games, though.

BATTERY LIFE AND CHARGING

Battery life is the biggest reason not to buy the ROG Ally. It has a 40Wh cell, but clearly that's not enough for 1080p gaming on a 120Hz display.

I fully charged the device before each gaming session, yet would always hit 0% in less than two hours. It didn't matter which game I played—all AAA titles deplete the battery extremely quickly.

This is somewhat to be expected given the size of the battery and the power needed to drive PC-level gaming. But this console can't even last through a short-haul flight before needing a charge, which defeats the point—and the joy—of gaming on the go.

The Nintendo Switch (fave.co/43r3MWO) can hit about six hours at best, which is much better. Granted, those games are simpler and not PC-level, but if you want true portability, then this is where the compromise seems to be at the moment for such consoles; you get simpler games with good battery life, or PC-level games with terrible battery life.

A 720p video loop test at 120 nits of brightness isn't particularly relevant here, but a time of just five hours is well behind any Windows laptop we've reviewed. Having to worry about battery life so much rather defeats the point of a portable console. A June 2023 update supposedly improves it by around 10% to 20% compared to when I reviewed the device, but it doesn't stop battery life from being a key weakness.

Of course, there are things you can do to prolong it. Dropping down to 720p gameplay or 60Hz refresh rate will mean the ROG Ally lasts longer, as will lowering the brightness. But the gaming experience is nowhere near as good when you reduce these settings. Having to worry about battery life so much rather defeats the point of a portable console.

At least the charging speeds are decent. The 65W adapter included in the box can charge the Ally to 54% in 30 minutes and 89% in 1 hour, with a full charge taking around 1 hour and 45 minutes.

But when the battery lasts about the same length of time it takes to charge, this is scant consolation—as is playing the thing constantly plugged into the mains, which is possible.

PRICE AND AVAILABILITY

Poor battery life might not be a dealbreaker for you, but the price of the ROG Ally very well could be.

The Z1 Extreme model with 512GB SSD that I tested will set you back \$699/£535, and it's on sale now. In the U.S., you can buy one direct from Asus (fave.co/3pB4uTO) and Best Buy (fave.co/3pK2V5T). In the U.K., it's Asus (fave.co/3JVu9NT) or Currys (fave.co/3NGFRNm).

All purchases include 90 days of free Xbox Game Pass Ultimate, after which it costs \$14.99 (fave.co/3OkJ9rj)/£10.99 (fave.co/46HQ5FV) per month.

A regular Z1 version with a 256GB SSD will cost \$600 (£785), although this model is marked as Coming Soon at Best Buy (fave.co/3OC1jeK). It's expected sometime in Q3 (July to September) in the U.S., but there's no word on when (or if) it'll arrive in the U.K. or mainland Europe.

Both models are significantly more expensive than the \$399/£349 starting



The ROG Ally takes handheld console gaming to the next level.

price of the Steam Deck (fave.co/3Dc7FEk), although there are more expensive models. The Nintendo Switch OLED, fave.co/3O85Crl (\$349.99/£349.99), is cheaper still.

There are other affordable options worth considering, although none can match the performance and feature set of the ROG Ally. It just comes down to whether you're willing to pay the premium for it.

BOTTOM LINE

With the ROG Ally, Asus has taken handheld console gaming to the next level, but along with that it has highlighted the compromises still required in the category.

Dedicated AMD CPUs deliver top-tier performance across all the most demanding games, while the 120Hz touchscreen is a joy to behold. The Xbox-style controls are familiar and easy to use, even if they can't be detached.

The device is relatively light and comfortable to hold, while Windows 11

means you have access to the full range of PC games. However, the general software experience is buggy at times, and battery life is terrible.

Are you willing to put up with those compromises at this price? That's down to you. The ROG Ally, despite these downsides, is one of the best handheld gaming consoles you can buy. 🔌

Asus ROG Ally



PROS

- Superb gaming performance.
- Excellent 120Hz display.
- Runs all PC games.

CONS

- Poor battery life.
- Some software bugs.
- No LTE option.

BOTTOM LINE

Despite a few hiccups, the ROG Ally offers one of most complete gaming experience you'll find on any handheld console. But are you willing to pay its premium price tag and suffer its flaws?

\$599



Arq 7 Backup: Uniquely versatile local and online backup

This super-clean backup client connects to any number of local destinations and online storage services, including its own. **BY JON JACOBI**

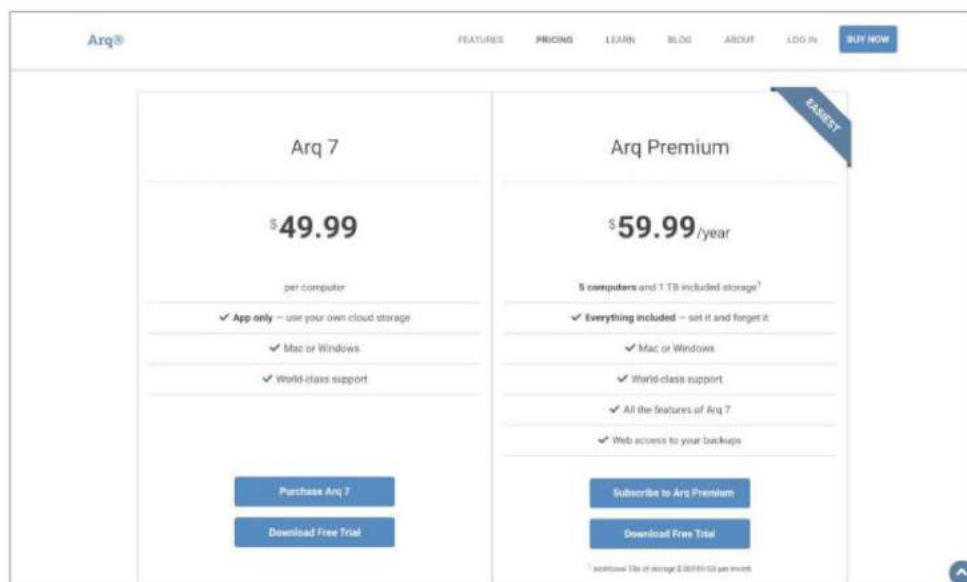
There are lots of good options for local and online backup, but Arq 7 Backup, which is both an online service and a client (fave.co/3NRvV3J), stands out thanks to its support for myriad third-party online backup services.

Arq even sells the client separately for use with said third-party online repositories. Due to our flawless testing experience with the program, that's something we can actually recommend.

BACKUP PLANS AND FEATURES

The Arq 7 backup program on its own (single-seat, perpetual license) is a tad pricey at \$49.99. But the alternative Arq Premium subscription plan covers five seats, along with 1TB of storage, for \$59.99 yearly.

That's \$10 less than I'm currently paying for OneDrive through Microsoft's Office 365 service. Of course, that has the Office apps, but I opted for it predominantly because it



Arq's online service is quite reasonably priced, but we'd like to see the client drop a few bucks.

was the cheapest 1TB online storage option at the time.

Note that the client software provided with the online storage plan becomes restore-only, not perpetual, if you cancel the service. Additional online storage is available at \$6 per TB per month.

The lengthy list of storage destinations and protocols that Arq 7 supports includes: Amazon Drive AWS S3, S3-compatible services, Glacier, Google Cloud Storage, Backblaze B2, Dropbox, Google Drive, Minio, OneDrive, SharePoint, Storj, Wasabi, SFTP, Network volume (SMB or AFP), and direct-attached storage. Whew.

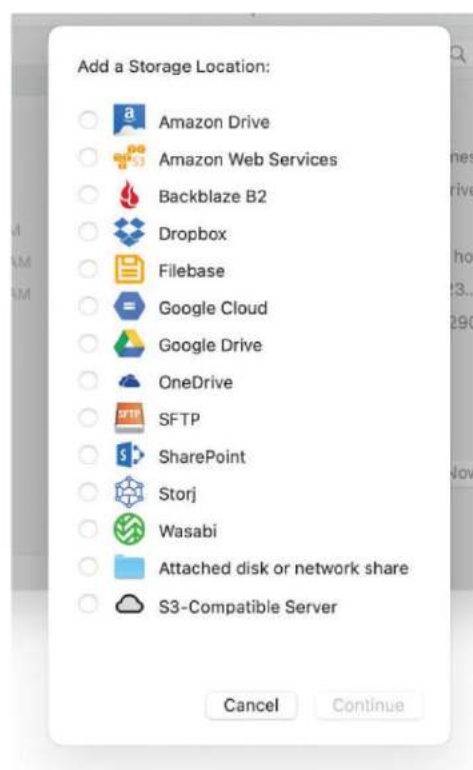
Arq 7 supports multiple jobs (or backup plans) that you can tailor to each particular service or device—that is, you can back up just your vital documents to a free cloud

service, and all your files to a more capacious account, a local hard drive, NAS box, and so on.

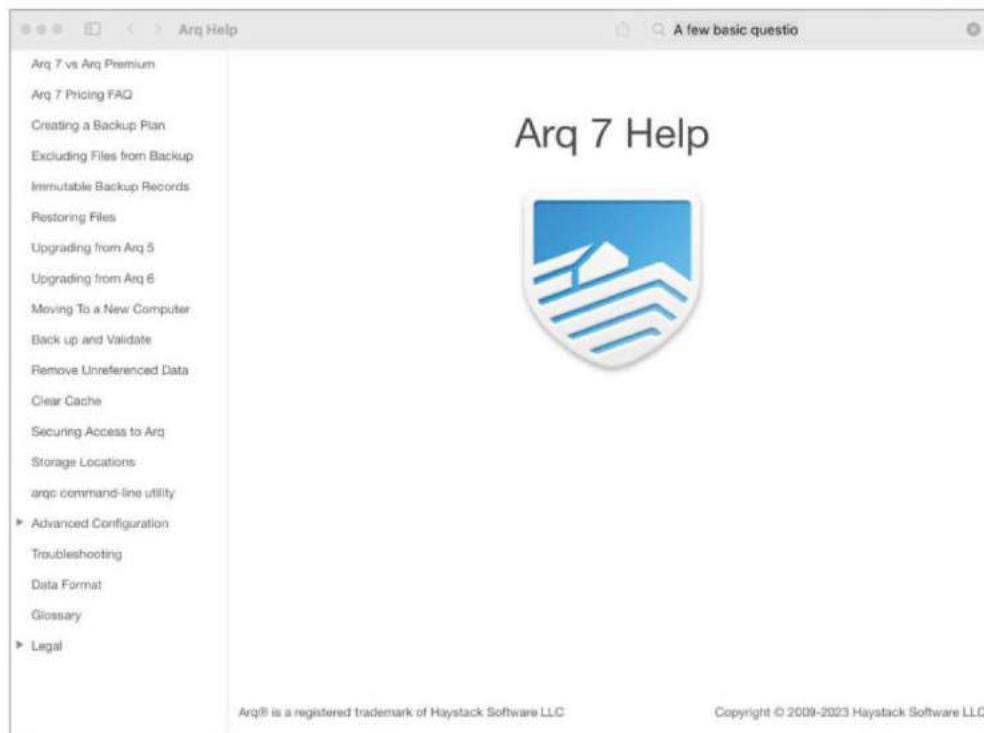
The list of options supported by Arq 7 Backup is extensive: granular scheduling, network transfer throttling and interface selection, extensive retention rules, email reporting, encryption settings, immutable

files (object locking), and a host of power, alert, and performance options.

One minor nitpick I have with Arq 7 (and



Arq 7 Backup supports a host of destinations, including most of the popular online storage services.



Arq 7's help is copious and well written.

with many other backup programs) is that you can't assign multiple storage locations to a single backup job or plan. Most users have a single data set they want to back up to multiple locations. There is, however, a workable alternative provided—exporting of your data selections as .json (Java Script Object Notation) data files that you can import into subsequently defined jobs or plans.

Another minor quibble about Arq 7 Backup is that there's no plain file backup option for simply copying files to another location. You need Arq 7 to restore your files from their proprietary containers (which do make many tasks easier and faster); you can't simply browse the destination using your OS and pull them off as you please.

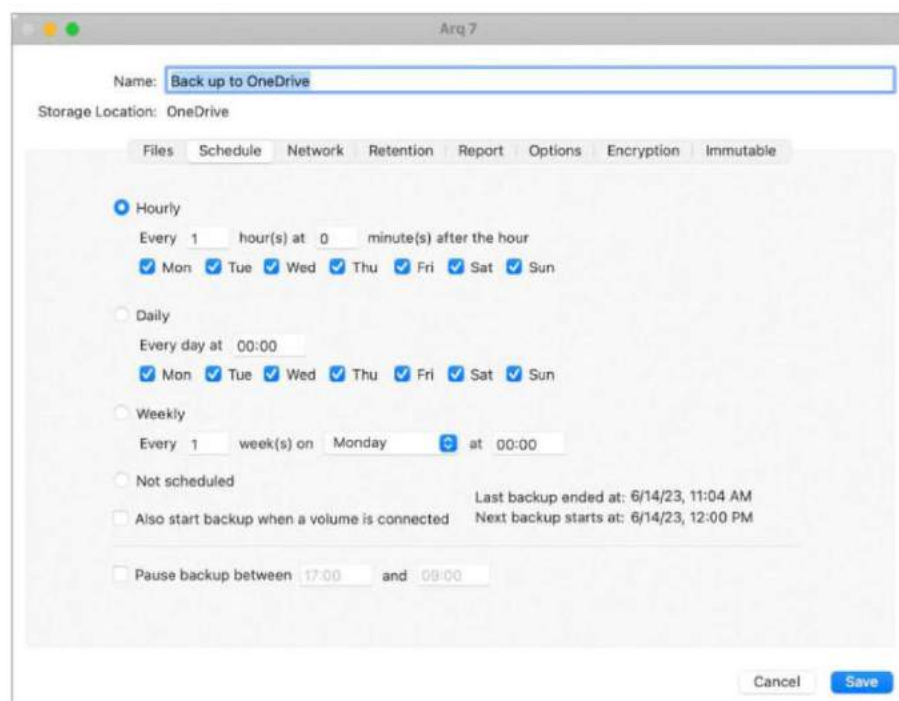
Arq 7 is a bit of a one-trick pony (straight backup), though it does that trick extremely well. But there are no goodies such as partition or drive image backups, cloning, disaster recovery via boot media, sync, and so on. That's not a dig, just an FYI—though it is why I consider the price to be a bit on the high side.

If you want something more versatile for local backup, try the top-ranked R-Drive Image (fave.co/3XRGUi3). But for leveraging multiple online services for pure backup, Arq 7 is unique.

THE INTERFACE

One of Arq 7's best attributes is its clean, concise interface. The backup chore can be intimidating to new users, so a logical, intuitive interface is an important consideration.

Arq 7 steps you through the destination and data selection, then leaves you on your own for advanced settings, offering a series of tabs with the related options. Hint: You're likely fine without adjusting the advanced



Highly granular scheduling is only one of Arq 7's many options.

settings. If not...

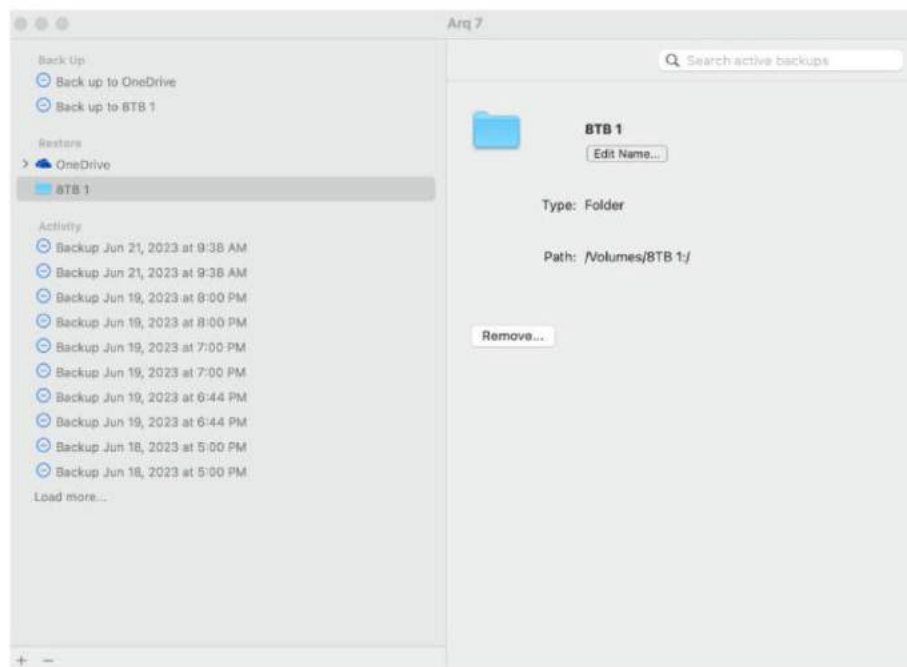
Just pretend you're the wizard, click on each logically arranged tab in turn, and you'll be okay. I promise. That said, if you're a complete neophyte, you might want to bone up a bit on the concepts involved.

Various information is displayed in a tree to the left of the main window (shown at right). This includes defined jobs (plans), dates of the backups, and so on. There's a separate restore section with entries for

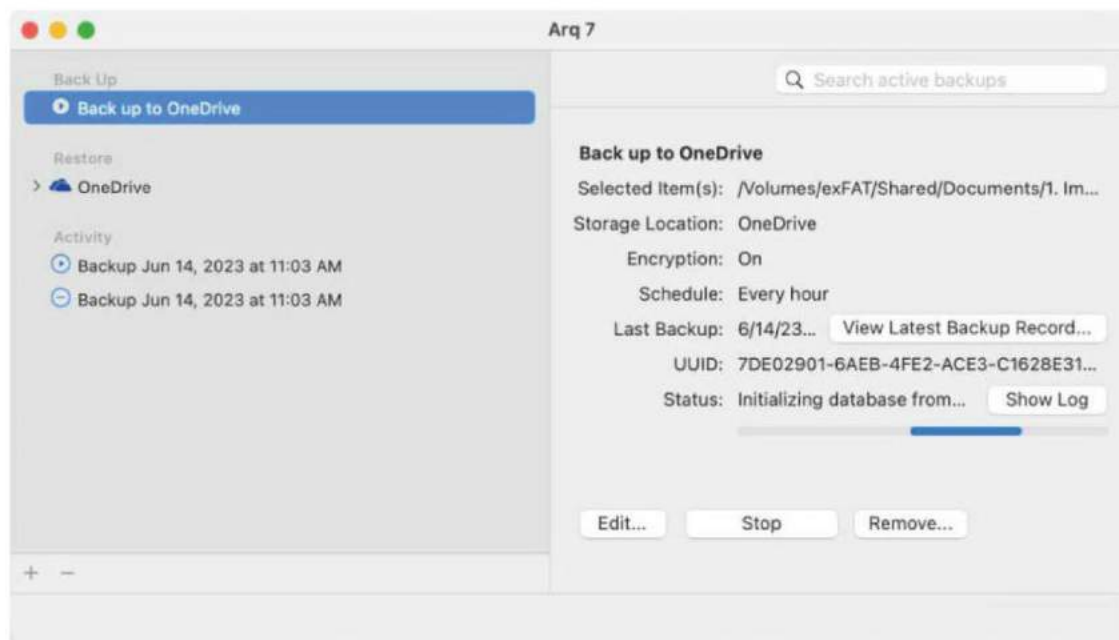
each storage destination, though you'll need to drill down to the actual backup and date for the restore option to appear. While it may take you a while to get up to speed on Arq 7's workflow, once you are, it's extremely efficient. I'll take that over the kind of hand-holding that slows you down in the long run any day.

PERFORMANCE

Arq 7 performed flawlessly in my tests. Specifically, I used Arq 7 to back up data sets to OneDrive, Dropbox, and the company's own storage service. I also backed



There's a restore section for each backup destination.



Arq 7 shows current performance to the right and defined jobs to the left.

up to a local SSD and my main NAS box, and, again, OneDrive. All of it proceeded quickly, without failure, and without unduly impacting my system's overall performance.


Backup is a task with no room for failure, and there were no glitches of any type to shake my confidence in the program. It's a matter of faith, and Arq 7 inspired that.

Note that while I found Arq 7 particularly speedy, online backup durations always depend on the speed of your connection to the remote server.

Put succinctly, Arq 7 works, and it works very well.

BOTTOM LINE

I can't emphasize enough how important flawless performance is when choosing a backup solution. Data safety isn't something to play around with, as anyone who's tried to

restore a bad backup can tell you. I rank Arq Premium top-tier as a storage service, and the standalone backup client is a boon for users of other online storage services. That said, I'd be more emphatic about the latter if it were a bit cheaper. 

Arq 7 Backup



PROS

- Super-clean interface and setup.
- Affordable online storage.
- Local and online backup.

CONS

- No plain file backup.
- Solo client software is a tad pricey.

BOTTOM LINE

A super-clean interface, flawless backups, and an affordable 1TB yearly plan make Arq 7 Backup one of our favorites for backup. It also supports local and third-party online storage, and you can buy the client separately to use for those.

\$49

Best mechanical keyboards 2023: Top picks for every need

The world of mechanical keyboards is wide and deep, with an incredible variety of options. Here is the best of the best. **BY MICHAEL CRIDER**



Mechanical keyboards have been around almost as long as personal computers, and the basic switch technology we're still using first popped up in the 1980s. But it's not an exaggeration to say that mechanical boards have never been as popular, or as stunningly variable, as they are right now. If you're just getting into the craze, you might feel paralyzed by the number of options.

Allow us to remove some of the questioning and doubt. Below are the best mechanical keyboards we've reviewed, in a variety of categories—best overall, on a budget, for gaming, wireless, and so on. Though they excel in different areas, each mechanical keyboard pick is absolutely the best in its class. Our selections are well worth both your attention and your hard-earned dough.

BEST MECHANICAL KEYBOARD OVERALL: KEYCHRON Q SERIES



We've singled out the Q1 Pro for its wireless prowess, but really, it's hard to go wrong with any of the Q series. Fantastic build quality, near-endless customization, and a surprisingly fair price (at least compared to keyboards with similar features) make it the brand to beat if you want a high-end mechanical board. Q boards come in a variety of sizes and layouts, from tiny 40% all the way to a massive 108-key



layout. And all of them include awesome aluminum frames, RGB lighting, hot-swap switches, internal sound damping, and easy programming with QMK or VIA.

BEST TYPING EXPERIENCE, BEST WIRELESS: KEYDOUS NJ80-AP



This unassuming little board is packing a shocking amount of high-quality hardware, like exotic BOX switches, PBT keycaps, a brass switch plate, tons of internal foam, and hot-swap switch sockets. It's easily the best typing experience out of the box of any keyboard on this list, but you can customize it even further if you want, and it also comes with both Bluetooth and 2.4GHz support, which makes this our pick for the best wireless mechanical



board. The plastic case and odd nonstandard programming software aren't great, but it's also significantly cheaper than similarly equipped boards, so the bargain helps even things out.

BEST LOW-PROFILE MECHANICAL KEYBOARD: KEYCHRON K3 PRO



Keychron's K Pro series has most of the features of the Q Pro keyboards, but with a fraction of the size and weight. The K3 Pro is an ideal combination of compact layout and comfort, requiring no extra programming or muscle memory for most users. Despite fewer options for switches and keycaps at this size, the K6 Pro also offers at least some

customization choices: Its RGB lighting and programming can be tweaked in VIA software, and its switches are hot-swappable. The same features are available in 65%, tenkeyless, and full-size layouts, but we like this one for its excellent travel capabilities.



BEST MECHANICAL KEYBOARD FOR GAMING: RAZER BLACKWIDOW V4



Gamers who want bombastic excess in their keyboards need look no further than Razer. The latest version of the BlackWidow ditches wireless to double down on superfast 8,000Hz polling (which means the keyboard is faster than your puny human reflexes) and enough RGB lighting to double as emergency illumination for the average jumbo jet. It's also absolutely massive in terms of keys, with an extra eight macro keys and

two—count 'em, two—programmable radial dials. Just make sure you have enough space on your desk for both the keyboard and the included light-up wrist rest.



BEST MECHANICAL KEYBOARD UNDER \$50: **G.SKILL KM250**



This little board crams so many features into such a small price, it's our pick for the best budget mechanical keyboard and the best budget gaming board. We're talking PBT keycaps, high-quality Kailh switches in hot-swap sockets, RGB lighting, a radial dial, and internal foam for sound damping. All that for under 50 bucks is absolutely nuts in terms of value, and it's a great place to start if you're not sure you



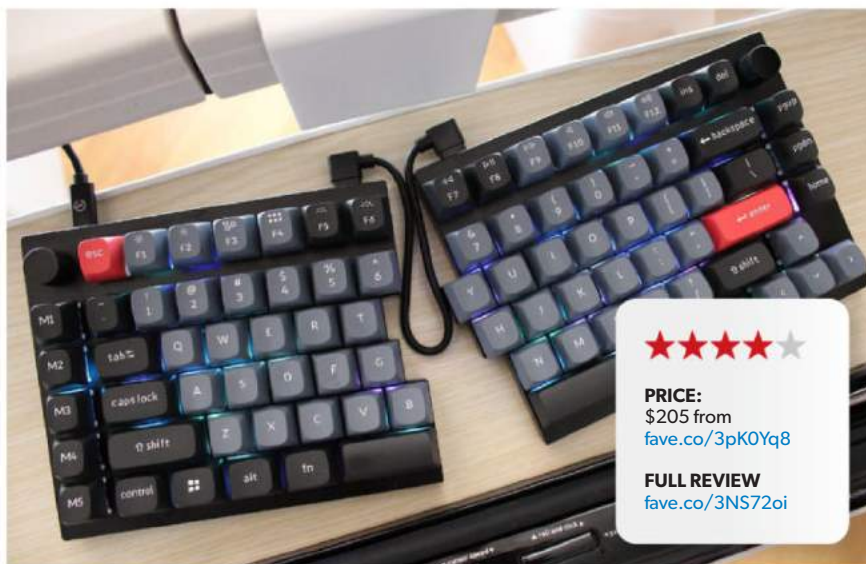
want to invest a lot into a fancier board. The only thing the KM250 is missing is a programming tool, but at this price, it's more than fair as a trade-off.

BEST ERGONOMIC MECHANICAL KEYBOARD: **KEYCHRON Q11**



Keychron's on this list again, thanks to the company's dedication to offering as many form factors as possible. The Q11 offers the same features as the rest of the Q series (fantastic aluminum body, hot-swap sockets, PBT keycaps, VIA programming), plus a split layout that's essential for users who need ergonomic customization. It's

also a fraction of the price of other high-end ergonomic mechanical boards, with the only real downside being that it doesn't offer a tenting kit.

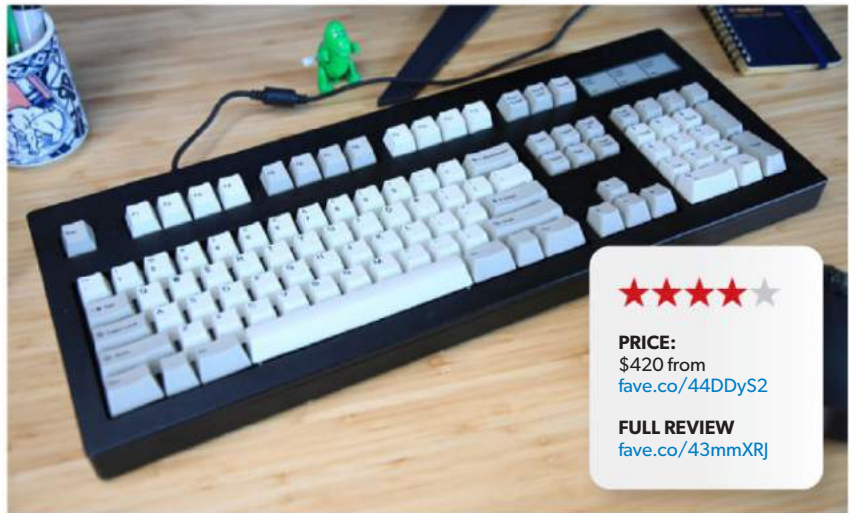


BEST OLD-SCHOOL MECHANICAL KEYBOARD: MODEL F ULTRA COMPACT



Arguably the most famous keyboard among mechanical enthusiasts is the IBM Model M, thanks to its unique and incredibly tactile (and noisy!) buckling spring switch mechanism. Some of these keyboards have been in continual use for more than 40 years, but if you're looking for something a little more accessible, Model F Labs is making reproductions with

exactly the same tank-like build and modern USB connections. The typing experience is like no other. Just don't be surprised if it's a little harder than you're used to—on both your fingers and your wallet.



WHAT TO CONSIDER WHEN SHOPPING FOR A MECHANICAL KEYBOARD

If you're just getting into mechanical keyboards, then you're probably most interested in how it feels to use one. In short, mechanical switches offer a deeper and more satisfying press on each key, which heavy-duty typists and gamers tend to prefer over standard inexpensive keyboards (not all of them, of course, but most people seem to favor at least a certain level of clickiness). But there are a lot of different variables that can affect how those keys feel.

Key switches

Modern mechanical keyboards come in a staggering array of switch varieties, from smooth and linear to loud and clicky, with



Mechanical keyboards such as the Keychron Q Series offer a more satisfying typing experience.

tons of options for mechanisms and spring strength. The only real way to know which one you prefer is to try them out (retail store displays are great for this). That said, more expensive keyboards tend to come with nicer, high-quality switches from name brands like Cherry and Gateron. For the ultimate in customization, track down a keyboard with hot-swap switches, which let you swap out the switches for new and different ones whenever you want.

Keycaps

Keycaps are the little pieces of plastic that sit on top of the switches—what your fingers press down on. Switching out the keycaps for a set of nicer ones, maybe made of better PBT plastic or themed after your favorite TV show, is a popular and easy keyboard mod. Some keyboard makers even sell their own upgrade sets. Keycaps with a Cherry MX-compatible stem will work with almost all modern mechanical switches. Just make sure you find a set that matches the layout of your keyboard.

Layout

The layout of the keys on a keyboard can vary more than you might think. Full-size



Switching out the keycaps for a set of nicer ones is a popular and easy keyboard mod.

keyboards include a 10-key area to the right of the arrow cluster, but gaming models often omit this to make more room for mouse movements, calling this the tenkeyless layout. Some keyboards go even smaller, with 60% being the smallest that mainstream brands use, chopping off the Function row, 10-key area, and even the arrow keys (which then have to be accessed via a Fn button). A few designs go even larger than the full layout, with an extra column or two of programmable keys for custom bindings or macros. Which one you want comes down to use case, available space, and, perhaps more pertinently, taste.

These general layouts shouldn't be confused with country- and region-specific key layouts, like ANSI and ISO. Most popular designs are available in at least those two variants.



The Razer BlackWidow V4 Pro features per-key RGB lighting and an RGB underglow.

Wireless options

Mechanical keyboards start with a standard wired USB connection, which may or may not be detachable from the keyboard itself for easier cable routing. Wireless boards tend to default to Bluetooth these days, since pretty much all PCs and mobile devices can use it. More premium models offer both Bluetooth and the faster, more reliable USB wireless dongle, typically on a 2.4GHz connection. Gamers definitely want to stick to wired or dongle options as Bluetooth's susceptibility to input lag and interference can hinder gaming.


Lighting

Even budget gaming keyboards come with LED backlights these days, though they might not be the fully programmable, device-synced lightshow that companies like Razer

and Corsair delight in. Unless you're constantly playing in the dark and you can't touch-type, it's entirely cosmetic. It's fun and that's about it.

Extras

Keyboard makers are forever trying to one-up each other with extra features. For a mechanical board you can generally expect a removable USB cable (maybe a braided one for nicer boards), and

possibly an included keycap puller and wrist rest. Larger boards usually include dedicated media controls, and the nicer ones get a fully programmable wheel or knob, as well as hot-swap switch sockets that let you experiment with different types of key switches. An especially nice option is on-device memory, allowing you to keep key layout programs without running a driver program on each new computer. 



Some keyboards, such as the Keydous NJ80-AP, include a fully programmable wheel or knob.



Seagate FireCuda 540 Gen5 SSD: Great real-world chops, and peace of mind

This PCIe 5.0 NVMe SSD from Seagate was aces in our 48GB transfers and is a bit more affordable than the competition. **BY JON L. JACOBI**

You know the PCIe 5.0 NVMe market is picking up when venerable storage vendor Seagate enters the fray. The company's new FireCuda 540 (fave.co/3NGK17K) leverages the fifth-gen bus to turn in outstanding real-world performance.

It wasn't quite the measure of the Crucial T700 (fave.co/3JvRNhl) in other tests, but it was close and is also a bit more affordable.

SPECS AND DESIGN

The 540 is a 2280 (22mm wide, 80mm long) M.2 type utilizing four lanes of PCIe 5.0 for



The back of Seagate's FireCuda 540.

transfers. The NAND is Micron's B58R 232-layer TLC, and the controller is Phison's PS5026-E26. It's double-sided, but still thin enough to upgrade most laptops.

The 540 is currently available in 1TB/\$189.99 and 2TB/\$319.99 flavors, putting it at the high end of the market, albeit a tad cheaper than Crucial's top-rated T700 in a 2TB capacity. Note that some of the prices on Amazon at the time of this writing were ridiculously higher than that, so...

Fair warning. Before official pricing is announced, some unscrupulous online vendors charge far more than retail to take advantage of the overanxious. Hold your horses and wait for real pricing from the vendor to show up before you buy any computer component.

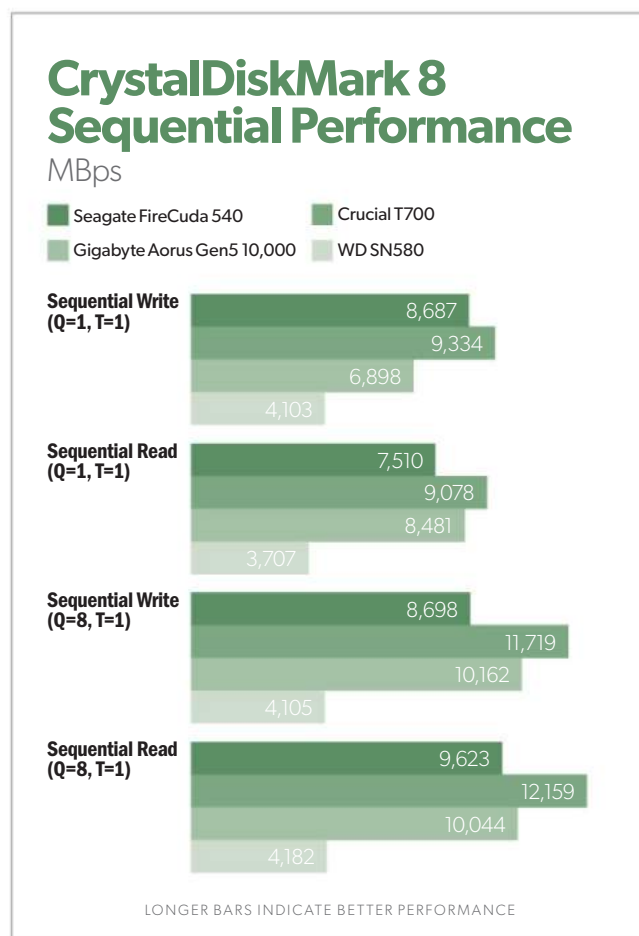
Seagate warrants the drive for five years and at 1TBW (terabytes written to the drive) for every terabyte of capacity. That's a very generous TBW rating, and the company also provides data rescue for three years should something monstrously evil befall the drive. Note that SSDs are now so

reliable, we've almost forgotten what failure is like.

PERFORMANCE

The 540's performance was one of the best we've seen, but a mixed bag with extreme highlights

and a couple of "low" points. The good news is that the drive set a record in our 48GB transfers, blasting its way past the previous

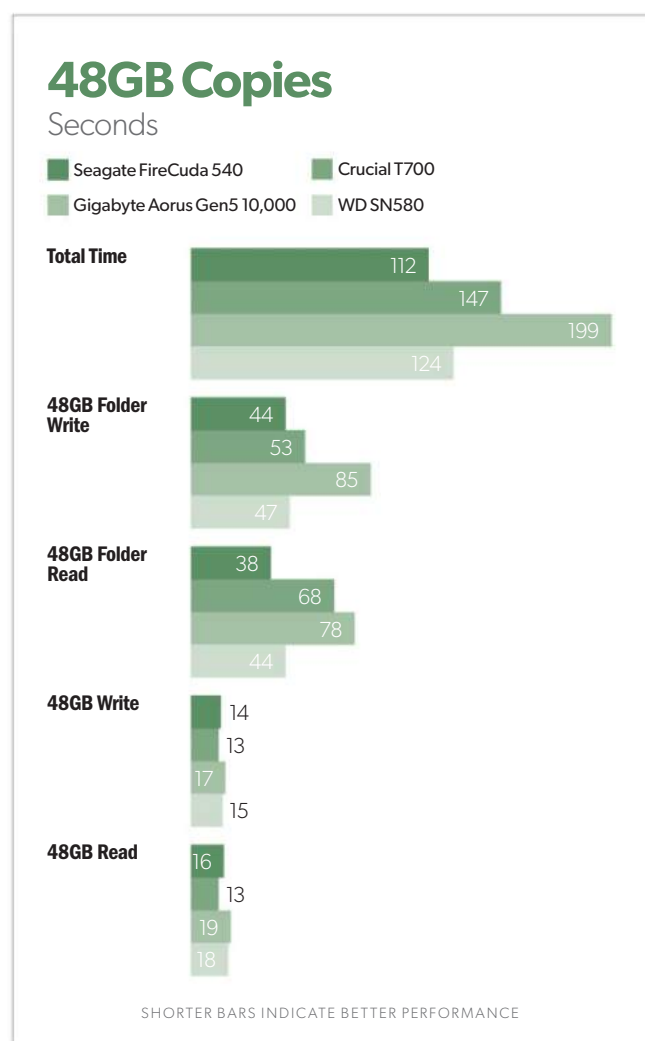


Though the Seagate FireCuda 540 was well behind the T700 in CrystalDiskMark 8, it was competitive with the Gigabyte.

record holder—the PCIe 4.0, host memory bus WD SN580 (fave.co/3OdnMYR). It also easily bested both of the PCIe 5.0 SSDs we’ve tested: the Gigabyte Aorus Gen5 10,000 (fave.co/3CnSkAg) and aforementioned Crucial T700.

The WD SN580 is included in these charts because of its stellar 48GB transfer performance, and the fact that it’s about a third the cost of the others.

The “low” points were that FireCuda

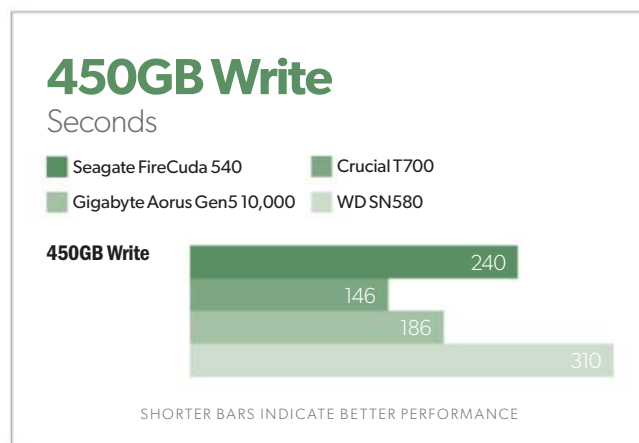


The Seagate FireCuda 540 trounced the competition in our 48GB transfers.

540 lost to both PCIe 5.0 competitors by a hair in the synthetic benchmarks (CrystalDiskMark 8 and AS SSD 2.0) and lagged considerably behind them in the 450GB write. Of course, those fifth-gen competitors were both 2TB drives, while Seagate sent us the 1TB version of the 540. That means less secondary cache and slower times in that test.

The FireCuda also behaved a bit oddly during the 450GB write. Normally, we see the top speed sustained until the secondary cache runs out, then a drop to the NAND’s native write speed (usually 250Mbps to 450Mbps). The 540, on the other hand, started out at top speed (over 3GBps), then about a quarter of the way in it dropped to around 1.7GBps and stayed there until the write was completed.

The overall time was acceptable in the grand scheme, but not on par for



The Seagate FireCuda 540 didn’t fare particularly well in the 450GB write. That’s at least partially because it’s a 1TB drive, while the other two PCIe 5.0 drives were 2TB with more secondary cache.

fifth-gen, with the previously caveat concerning capacity.

The only other facet of the FireCuda 540's performance worth mentioning is that it was just a bit slow formatting. As you'll likely only do this once (we reformat continually during testing), that's not something you should ever worry about.

BOTTOM LINE


The FireCuda 540's real-world performance with the 48GB transfers bodes well for the average user, and it's a bit cheaper in its 2TB incarnation than the Crucial T700. The outstanding TBW rating and data recovery make it a good fit for the average user with a PCIe 5.0 M.2 slot.

However, I'd be remiss if I didn't inform you that you can get almost the same real-world performance for far, far less. Some of the latest HMB PCIe 4.0 designs, such as the WD Blue SN580 (fave.co/3OdnMYR) listed in the charts or the Sabrent Rocket Q4 (fave.co/43pPaXP), are also very fast at our 48GB transfers. Again, the former is less than one-third the price of the FireCuda 540.

HOW WE TEST

Internal drive tests currently utilize Windows 11, 64-bit running on an X790 (PCIe 4.0/5.0) motherboard/i5-12400 CPU combo with two Kingston Fury 32GB DDR5 4800MHz modules (64GB of memory total). Both 20Gbps USB and Thunderbolt 4 are integrated to the back

panel and Intel CPU/GPU graphics are used. The 48GB transfer tests utilize an ImDisk RAM disk taking up 58GB of the 64GB of total memory. The 450GB file is transferred from a Samsung 990 Pro 2TB (fave.co/3NLMU7v), which also runs the OS. Each test is performed on a newly formatted and TRIM'd drive so the results are optimal. Note that in normal use, as a drive fills up, performance will decrease due to less NAND for secondary caching, as well as other factors.

Caveat: The performance numbers shown apply only to the drive we were shipped and to the capacity tested. SSD performance can and will vary by capacity due to more or fewer chips to shotgun reads/writes across and the amount of NAND available for secondary caching. Vendors also occasionally swap components. If you ever notice a large discrepancy between the performance you experience and what we report, by all means let us know. 

Seagate FireCuda 540 Gen5 SSD



PROS

- Excellent performer.
- Slightly cheaper than the PCIe 5.0 competition.
- Excellent TBW rating and warranty.

CONS

- Slightly slow at our 450GB write.

BOTTOM LINE

Though it's not the fastest PCIe 5.0 SSD we've seen with synthetic benchmarks, Seagate's FireCuda 540 blazed to a first-place finish in our real world 48GB transfers. That makes it a top choice.

From \$189



Dell G2724D: Standard-bearer for budget gaming monitors

Affordable monitor provides decent image quality. **BY MATTHEW S. SMITH**



Gamers looking to buy a monitor on a budget have a lot of choices, but sorting through them can be difficult.

Small flaws and details can hold back the appeal of many inexpensive monitors. The Dell G2724D (fave.co/3XM0357) is an

alluring and reliable budget pick that delivers everything gamers expect and has no significant flaws.

SPECS AND FEATURES

The Dell G2724D's specifications are typical for a budget gaming monitor sold at \$300 or

less. It provides 1440p resolution and a 165Hz refresh rate, and it supports HDR—though it's only certified for VESA DisplayHDR 400, which is the lowest level of certification provided by VESA.

Display size: 27-inch 16:9 widescreen

Native resolution: 2560×1440

Panel type: IPS LCD

Refresh rate: 165Hz

Adaptive Sync: VESA Adaptive Sync, AMD FreeSync Premium, Nvidia G-Sync Compatible

HDR: Yes, VESA DisplayHDR 400

Ports: 1× HDMI 2.1, 2× DisplayPort 1.4

VESA mount: Yes, 100×100mm

Speakers: None

Price: \$299.99

There is just one specification that stands out, and that's Adaptive Sync. Dell lists

official support for VESA Adaptive Sync, AMD FreeSync Premium, and Nvidia G-Sync. Most budget monitors only bother to support AMD FreeSync.

DESIGN

The Dell G2724D has a matte black and gray chassis with racy vents along the rear panel that remind me of window louvers on a vintage sports car. It's appealing and aggressive, yet not so bold that it looks wildly out of place in a home office or living room.

Build quality is commendable. The chassis is entirely plastic, which is true of nearly all monitors, but most surfaces feel rigid and the monitor doesn't creak or groan in protest when it's picked up. Though inexpensive, the G2724D's look and feel is comparable to that of many gaming monitors sold for twice the price.

Dell includes an ergonomic stand that adjusts for height, tilt, and swivel, and that can pivot 90 degrees for use in portrait orientation. The stand is compact and requires minimal space, and the stand base is relatively flat, which leaves most of your desk usable when the monitor is in place. A 100x100mm VESA mount is also included for use with third-party monitor stands and arms.



It's not often that a budget monitor offers attractive design details like the sporty vents on the back of the Dell G2724D.



The Dell G2724D has one of the better menu systems.

FEATURES AND MENUS

Dell equips the G2724D with a single HDMI 2.1 port and two DisplayPort 1.4 connections. Only the DisplayPort connections can handle the maximum refresh rate of 165Hz, while the HDMI provides a maximum of 144Hz.

Connectivity is otherwise limited. The monitor doesn't include a 3.5mm audio-out jack. USB is missing as well. This lack of additional connectivity is understandable given the monitor's price, but most competitors offer these ports.

The G2724D's menu system is easy to navigate thanks to a joystick located on the rear right side of the monitor. The joystick is flanked by several buttons that provide shortcuts or can be used to assist in

navigation. Dell also offers a software tool, Dell Display Manager, that can adjust many monitor settings within Windows. Finding and adjusting settings is rarely a chore and the menu system is more responsive than those found on competitors like AOC, Gigabyte, and Acer's Nitro sub-brand, to name a few.

The monitor offers a healthy range of customization options, including color saturation, hue, gain, and offset (though only in custom color mode). The monitor also provides gamma and color temperature adjustments. Gaming features include black equalizer, which is designed to enhance brightness in dark scenes so that details are more visible, and Chroma Vision, which dramatically alters the image to make hidden enemies noticeable. An on-screen crosshair is available, too.

Speakers aren't included. That might seem like a drawback, but budget gaming monitors that include speakers fail to deliver usable audio quality, so their absence is easy to excuse. Gamers shopping for a monitor in this price range should expect to add desktop speakers or use a headset.

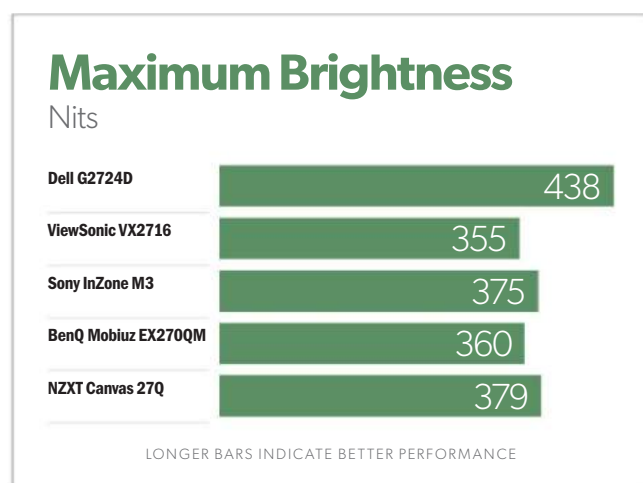
SDR IMAGE QUALITY

Although the Dell G2724D is inexpensive, SDR image quality is critical as gamers will expect an immersive visual experience. Fortunately, the monitor is up to the task, providing good image quality in a variety of content and avoiding potential pitfalls.

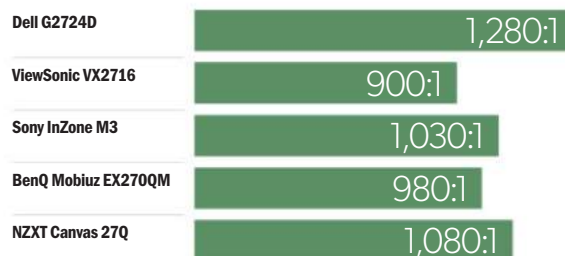
The G2724D's maximum brightness of 438 nits is much higher than for alternatives in this price bracket and, combined with the monitor's matte display coat, should make the display easy to view even in a bright, sunlit room.

I recorded a maximum contrast ratio of 1280:1, which is a strong result for a budget gaming monitor and defeats alternatives within this price bracket.

The G2724D can deliver a sense of depth and dimensionality lacking in other budget gaming monitors, which can look dull and flat by comparison. It's best when displaying bright, vivid content in a lit room, as this obscures the monitor's inability to reach low levels of luminance in dark scenes.



Contrast Ratio



LONGER BARS INDICATE BETTER PERFORMANCE

Gamers who play in a dark room are likely to notice a hazy gray look present in dark scenes. This is known as "IPS glow" and is common to all IPS monitors with a conventional edge-lit LED backlight. However, the problem is slightly less noticeable on the G2724D than on most budget monitors.

The G2724D's color gamut spans 100 percent of sRGB, 86 percent of DCI-P3, and 82 percent of Adobe RGB. That's not enough to qualify as a wide-gamut monitor, but it's certainly at the high end of what's available for \$300 or less.

Some monitors can provide a better color gamut, such as the NZXT Canvas 27Q (fave.co/3S0mY8X) and the BenQ Mobiuz EX270QM, but they're also more expensive than the G2724D. Those who want a wider color gamut should expect to pay more for the privilege.

Still, the G2724D is adequate for most content creation tasks. Photographers, video

editors, and digital artists who work in media with less demanding color requirements, such as YouTube or social media, should find this monitor up to the task.

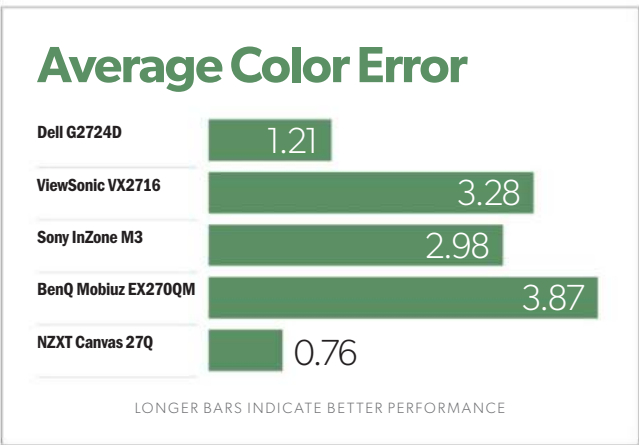
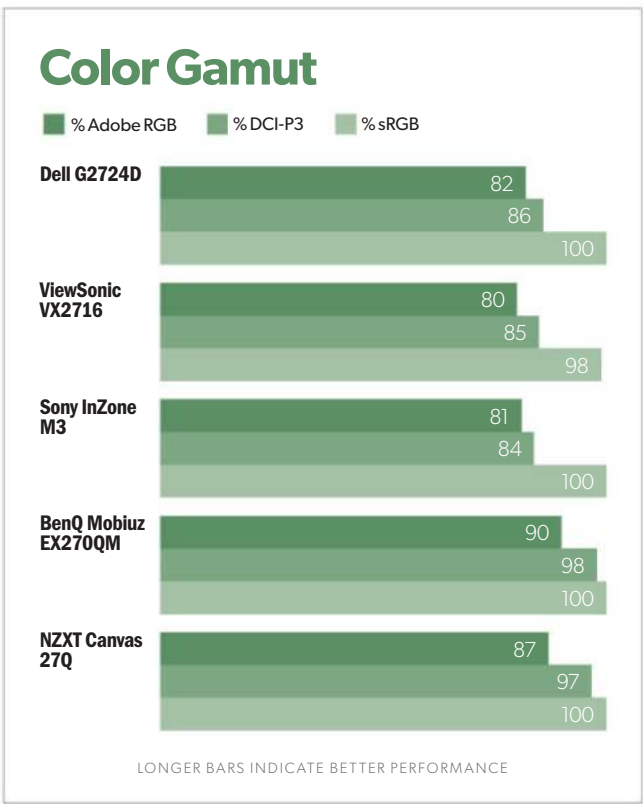
Color accuracy turns out to be a highlight for the G2724D, which performs better than most competitors except for the NZXT Canvas 27Q. Color appears realistic and lifelike and holds up well against similarly priced monitors.

The monitor’s color accuracy is aided by good gamma and color temperature results. I saw a gamma curve of 2.3, which is slightly off the preference of 2.2. This indicates content may appear a little darker than it should, but it’s not enough to cause serious concern. Color temperature is excellent at a

default of 6600K, which is barely off the preferred target of 6500K. The monitor’s white levels don’t appear overly red and warm or too cool and sterile, and they provide a realistic and inviting image.

The monitor delivers a sharp picture with a resolution of 2560×1440, better known as 1440p. It provides a pixel density of roughly 109 pixels per inch (ppi) across the 27-inch panel. A 4K 27-inch monitor has a much higher pixel density of 163ppi, but a 1080p alternative is notably lower at around 81ppi. The G2724D looks sharp in games, and I’d argue that 1440p is preferable to 4K at this price point, as delivering acceptable frame rates at 4K will require an expensive video card. However, 1440p resolution is not the best for content creation, since it’s not possible to view 4K video or (similarly sized images) at their native resolution.

The Dell G2724D’s image quality results add up to great value for money. It delivers several wins, such as high brightness, good contrast, and strong color accuracy, and



avoids any significant problems or downsides. It's among the best currently available at \$300 or less.

HDR IMAGE QUALITY

The Dell G2724D does well in SDR, but HDR is a different story.

Brightness is a problem. That might seem surprising given its results in SDR, and HDR brightness is roughly equal at a maximum of 442 nits. But while this level of brightness is more than adequate in SDR, it's lacking in HDR, where brightness of up to 1,000 nits (or more) is preferable. The G2724D's lack of brightness will obscure details in bright scenes that are visible on better HDR displays.

The G2724D lacks a dynamic backlight that can dim or brighten only small areas of the display, so even a small, bright object will

cause the entire image to brighten. That's a big problem when it's displaying a starfield in the night sky or explosions in a dark alleyway.

HDR is not a high-quality experience on this monitor, and I don't recommend buying it if HDR is your priority. No monitor currently sold below \$500 performs well in HDR, however, so this is an unsurprising result. Gamers who want excellent HDR on the PC should consider a monitor like the AOC Agon Pro AG27QZM (fave.co/44LkMs7), which retails for \$1,000.

GAMING PERFORMANCE

Gamers will appreciate the Dell G2724D's maximum refresh rate of 165Hz, which is available over both DisplayPort 1.4 ports. The HDMI 2.1 port is limited to 144Hz.

Motion clarity is much improved over that of a 60Hz monitor.

Small objects and fine details are easy to see, and moving objects present with modest motion blur. Scrolling test images from *League of Legends* and *DOTA2* showed that character silhouettes and map terrain were easy to make out, as were character health bars. However, details like character names



The Dell G2724D does well in SDR, but HDR is a different story.



BOTTOM LINE


The Dell G2724D is the model of what a quality budget gaming monitor should be. It delivers everything that is required for enjoyable gaming, including attractive image quality, solid motion clarity, and

Gamers will appreciate the G2724D's maximum refresh rate of 165Hz.

fluid gameplay delivered over Adaptive Sync. My

weren't easy to see in motion. That's the performance I expect to see at 165Hz, and most budget gaming monitors with an IPS display panel and a 165Hz refresh rate will deliver similar results.

Dell is ahead of the competition in its support for Adaptive Sync, a technology that improves motion fluidity and eliminates screen tearing. The G2724D includes official support for VESA Adaptive Sync, AMD FreeSync Premium, and Nvidia G-Sync. Most gaming monitors that support any form of Adaptive Sync can function with all three technologies, but most only seek certification for AMD FreeSync, which means G-Sync support is unofficial. I'm happy to see Dell go the extra mile to provide peace of mind for gamers who own an Nvidia video card.

only serious complaint is the monitor's lack of USB or audio-out connectivity and disappointing HDR, but given everything else that's provided for \$300, these downsides are trivial. The Dell G2724D is an excellent choice for any gamer on a tight budget. 

Dell G2724D



PROS

- Handsome design with functional stand.
- Attractive SDR image quality.
- Good motion clarity at 165Hz.
- Supports all Adaptive Sync standards.

CONS

- No USB connectivity or 3.5mm audio-out.
- Lackluster HDR.

BOTTOM LINE

The inexpensive Dell G2724D provides good image quality, strong motion clarity, and broad Adaptive Sync support at an obtainable price.

\$299





9 TECHIE TRAVEL HACKS FOR YOUR NEXT TRIP

USE THESE APPS
AND TOOLS TO
MAKE YOUR
VACATION GO
EXTRA SMOOTHLY.

**BY JARED
NEWMAN**

Whether you're about to take a vacation or just dreaming of one, it's helpful to have the right tech tools at your disposal. I've certainly sampled my fair share, and found that many of them waste more time, energy, money than they purport to save. Below are the apps and tech tips that have become a permanent part of my travel arsenal. Keep these in mind before heading off on your next trip.

1. COZYCOZY FOR HOTEL AND HOME SEARCH

When you're torn between staying at a hotel or in an Airbnb, CozyCozy (fave.co/452rlqr) can search across both at the same time (along with checking VRBO for good measure). Even better, its search results highlight the actual average price per night, including Airbnb's cleaning and service fees.

The screenshot displays the CozyCozy search interface for Ann Arbor, MI, from Friday, July 22 to Sunday, July 24, for 2 nights and 2 guests. The search results are filtered by 'Price' and show three accommodation options:

- Hotel 3*** • Sonesta Simply Suites Detroit Ann Arbor: 2.7 miles from the city center, 8.4 very good (737 reviews), \$146/night for 2 nights (\$292), +14 offers, VIEW DEAL.
- House • New Private Suite in Tech-enabled townh...**: 1.4 miles from the city center, 9.6 excellent (247 reviews), \$149/night for 2 nights (\$297), +1 offer, VIEW DEAL.
- Guesthouse / B&B • 1 bed • 2 guests**: 0.9 miles from the city center, 9.8 excellent (103 reviews), \$149/night for 2 nights (\$297), Private room (private bath), VIEW DEAL.

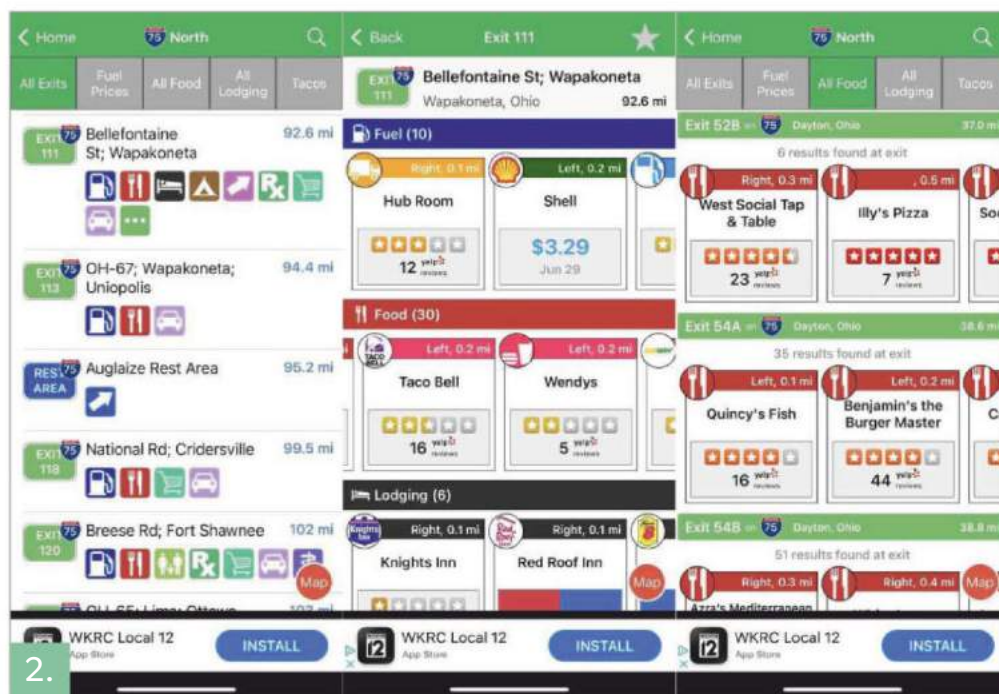
A map on the right shows the location of these properties in Ann Arbor, MI, with a 'VIEW DEAL' button and a 'VIEW DEAL' button.

A couple of suggestions for using it, though: On CozyCozy's results page, uncheck Instant Booking to make sure that you're seeing all possible results, and consider sorting by "price" instead of "price/value" to find the cheapest available options. You can always use the Filters tab to set a minimum rating on top of that or to narrow down specific accommodations.

2. IEXIT TO PLOT YOUR REST STOP STRATEGY

Pop quiz: You're coming up on an exit that advertises a Wendy's, a Taco Bell, and a Dunkin' Donuts. But you're also approaching In-N-Out Burger territory, and if you press on just a little further, maybe you'll strike gold. What do you do? The correct answer is to download iExit (fave.co/3JVJiyF), which lists all the upcoming

restaurants, hotels, lodging options, and gas stations (with fuel prices) along U.S. interstates. No more playing rest station roulette for you!



2.

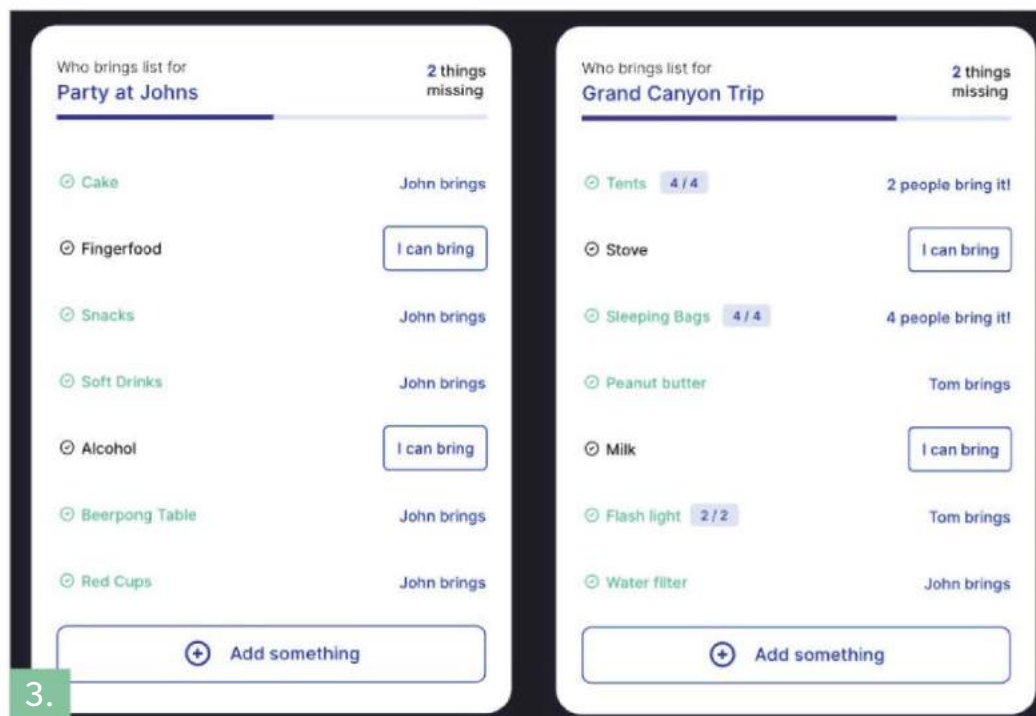
3. WHOBRINGS FOR GROUP PACKING LISTS

As an alternative to clunky spreadsheets or endless email chains, WhoBrings (fave.co/3K1WO3J) is a brilliantly simple way to figure out who's bringing what. It doesn't require any registration, so anyone can use it with practically no friction. Just type the name of your packing list, add some items, then share the link with the rest of the

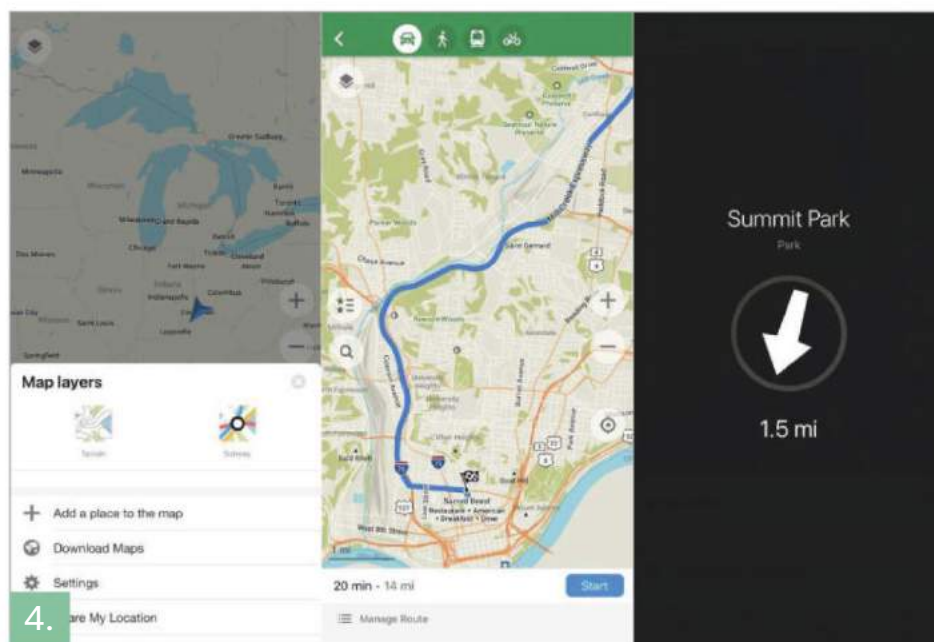
4. ORGANIC MAPS FOR WALKING DIRECTIONS

This free app for iOS and Android lets you download detailed maps from

group. Anyone who has the link can then claim responsibility for an item or add new items to the list. You can also specify a number of units for any item—12 beach towels, for instance, or three packs of beer—and people can choose how many they'll bring.



3.



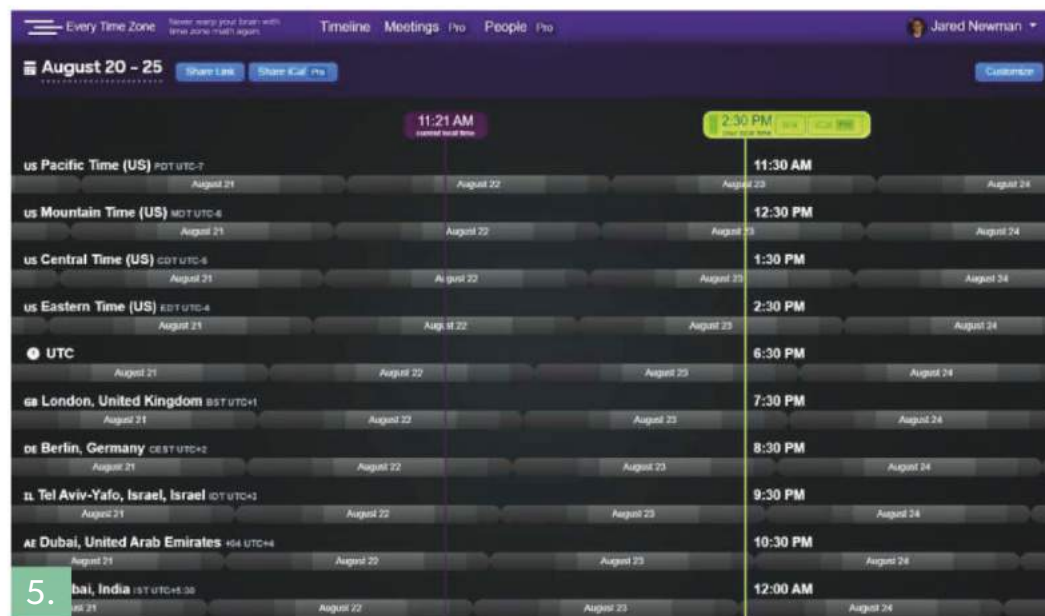
brings up a simple arrow pointing in the direction of your destination, giving you some freedom to explore while still telling you generally where to go. (Apple Watch users should also check out Walk Wellbeyond (fave.co/3DjZiqh), which can put a similar arrow-based pointer on your wrist.)

OpenStreetMap (fave.co/3JYkNRc), complete with business names and other points of interest, and it provides turn-by-turn voice navigation without requiring an internet connection.

While you can also use Google Maps for this purpose (fave.co/3NZ88iu), Organic Maps (fave.co/3PQltY4) has the advantage of supporting offline walking directions. It also has one especially neat trick: After searching for a location, try tapping the little arrow icon in the bottom right. This

5. EVERYTIMEZONE.COM TO KEEP TRACK OF TIME

Every Time Zone (fave.co/3pN7Bbe) is a free website that does exactly what it says on the box, displaying the current time in every major time zone. By moving the time zone slider around, you can quickly look for

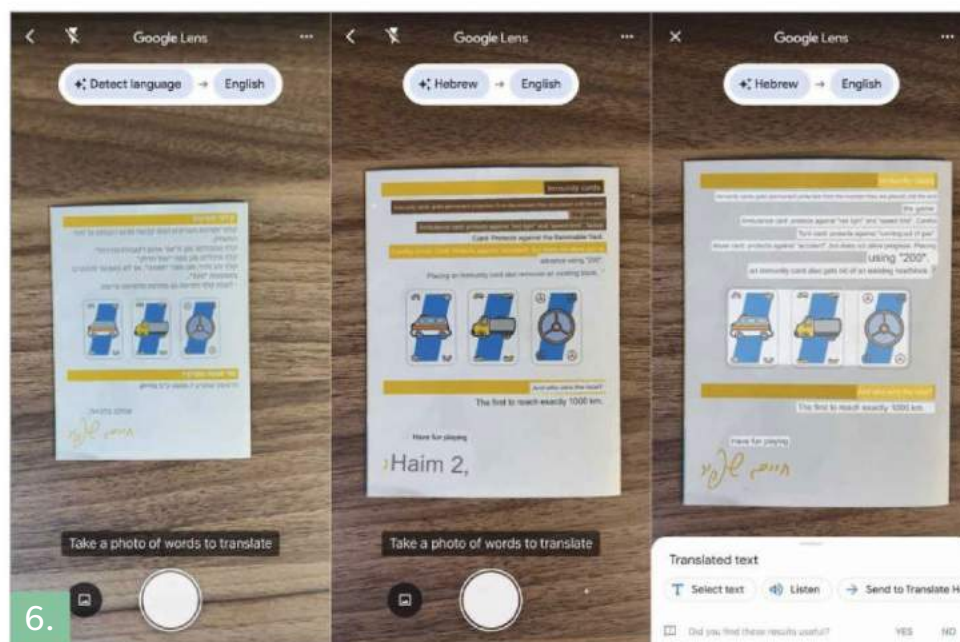


potential meeting times with folks in other parts of the country or world.

6. GOOGLE TRANSLATE FOR SIGNS AND MENUS

Traveling abroad? While you may be familiar with Google Translate on the web, the iOS (fave.co/3pRwker) and Android (fave.co/3JZh06)

app's visual translation tool is where the real magic happens. Just tap the little camera icon near the top of the screen, and any text that appears in the viewfinder will switch to the language of your choosing. The hardest part is getting over the social awkwardness of pointing your phone at a street sign or food stand menu.



7. TEMPORARY EMAIL FOLDERS TO STAY ORGANIZED

While planning your next trip, create a folder in whatever email app you use, and drop all your confirmation and reservation emails into it as they arrive. That way you don't have to fumble through your inbox while trying to look up basic information. When the trip is

over, delete the folder to avoid cluttering your email's sidebar menu.



8. iMESSAGE OR GOOGLE ASSISTANT FOR FLIGHT STATUS

If you're an iPhone user, texting upcoming flight codes to yourself is a great

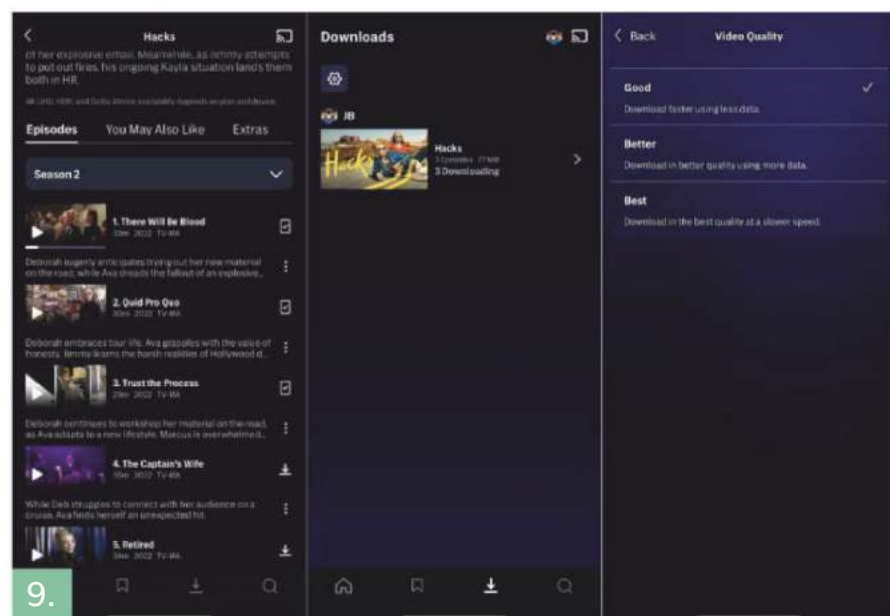
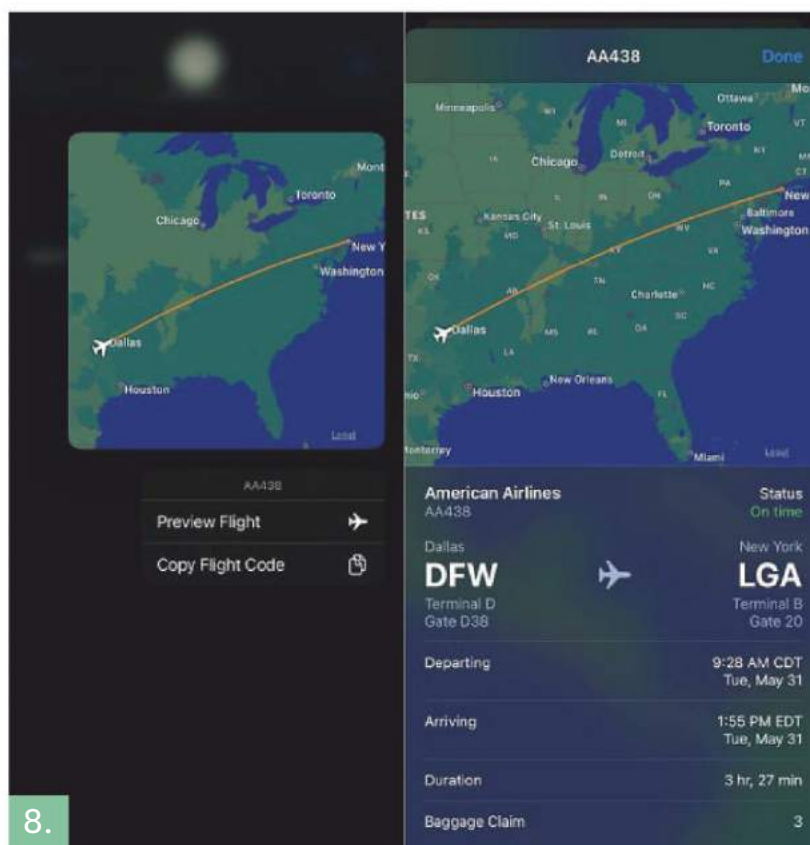
way to keep track of departure and arrival times. Long-press the code and select Preview Flight for a quick status check.

Got Android instead? If you've enabled Smart features in Gmail (fave.co/3pQg6SY), just summon Google Assistant on your phone and say, "What's my flight status?" or "When's my flight?"


9. DON'T FORGET VIDEO DOWNLOADS

Do you really want to leave your TV and movie options in the hand of some in-flight infotainment system? Before you head out, prepare to be offline with some video downloads on your phone or tablet. You can save videos for offline viewing in the following apps:

- Netflix
- Amazon Prime Video
- Disney+



- Apple TV+
- Showtime
- Starz
- Epix
- Hulu
- Max
- Paramount+
- Peacock

Note that for services that offer an ad-supported tier, you'll only be able to download if you have an ad-free plan. 

MADDY TURNED HATE

Maddy Park
Founder,
@CafeMaddyCab

INTO HOPE

AND STARTED A MOVEMENT

In 2021, the rise of violence against the Asian community made even the simple act of taking public transportation unsafe. So, Maddy started a fund to pay for cab rides for those in the Asian community that needed it most, including women, the elderly, and the LGBTQ+ community. With over \$100,000 raised in just two days, she started a movement based on love that lives on today.

love
has
no
labels



Join Maddy's cause and get the tools
to support the Asian community now at
LoveHasNoLabels.com



WHAT IS ANTIVIRUS SOFTWARE? GETTING STARTED WITH PC SECURITY

WHAT DOES ANTIVIRUS SOFTWARE DO, AND HOW DOES IT WORK? HERE'S WHAT YOU NEED TO KNOW ABOUT THE ESSENTIAL TOOLS TO KEEP YOU SAFE ONLINE AND BEYOND.

BY MICHAEL CRIDER



The most dangerous type of virus is designed to steal from users.

As our lives become more and more digital, keeping our information and devices secure has become more important than ever. And that starts with good security software. An antivirus program is a piece of software that keeps your computer (or phone, tablet, and so forth) safe from other software that tries to attack it. This includes detecting and blocking viruses, a very specific type of program, but also a wide variety of other digital threats.

PCWorld is constantly covering the latest news in viruses and other threats, and how to defend against them. For the best antivirus software in 2023, be sure to check out our

extensive roundup of the best antivirus programs (fave.co/3CnDHuk).

WHAT IS A COMPUTER VIRUS?

To understand what antivirus software does, you need to know what a computer virus is. “Virus” in this context has a broad definition, but to put it simply, it’s a program that gets installed on your computer, then automatically spreads itself to other computers across a network or the internet, mimicking the spread of a biological virus spreading through an organism’s cells.

What precisely a virus does depends on the specific virus, but it’s never good. In the

early days of personal computers, a lot of viruses were designed merely to damage your computer for the sake of pure mischief. The famous ILOVEYOU virus spread through email downloads and merely overwrote files on the hard drive with junk data, until the computer became unstable and had to be completely wiped.

Then there are viruses designed to take remote control of your computer, often without your realizing it, in order to create a secret network called a botnet. Botnets like MyDoom can be used to spread spam or scams, or to attack other computers with distributed traffic designed to shut down web services.

But the most insidious and personally dangerous type of virus, and the more common one in the modern world, is designed to steal from users themselves. This can be done several ways. A spyware or spybot program searches the files on your computer for your personal information like login passwords or bank accounts, while ransomware locks down your files and instructs you to send money to criminals to get them back. Often these will be sent as emails or websites pretending to be something they're not, like a crucial software update you need to click on, a process called phishing.

In these cases, the self-replicating viral factor might not even be present, so the software isn't even technically a virus. Other

terms, like worm, trojan (as in the Trojan Horse, fave.co/44ncYwF) or the more all-encompassing malware might be a more accurate description.

WHAT IS ANTIVIRUS SOFTWARE?

The types of threat are wide and varied, but antivirus software is designed to detect and stop them all. These security packages might be called simply antivirus software, but also could go by protection suite or just defender. Regardless, they all use a few straightforward methods to identify, contain, and neutralize viruses and other kinds of malware before it can infect your system. Antivirus software also continuously scans both your computer and your network traffic to identify threats. Currently, our top pick for an all-encompassing security package is Norton 360 Deluxe (fave.co/30Bk59o).

WHAT DOES ANTIVIRUS SOFTWARE DO?

The most straightforward way an antivirus program can protect against viruses is by scanning your files. The antivirus software taps into a huge database of known viruses, trojans, and other kinds of malware—thousands and thousands of different kinds, constantly being updated—and searches for them on the files in your computer. The antivirus program even scans new files that you download immediately, including

installable programs that might hide viruses behind other programs like games or tools.

When the antivirus program finds a file that it identifies as malware, it immediately isolates the file from the rest of your computer and prevents it from running any operations that might affect other files or programs. With the threat isolated, the antivirus program then thoroughly deletes the dangerous files. Usually it will display some kind of alert letting you know it's found and neutralized the danger.

This method of protection has proven to be extremely effective, but it's not perfect. A virus or a piece of malware has to be identified before it can be added to the detection database, which means that for at least some amount of time, it has to be active "in the wild" of the internet before the database gets updated. That's a good reason

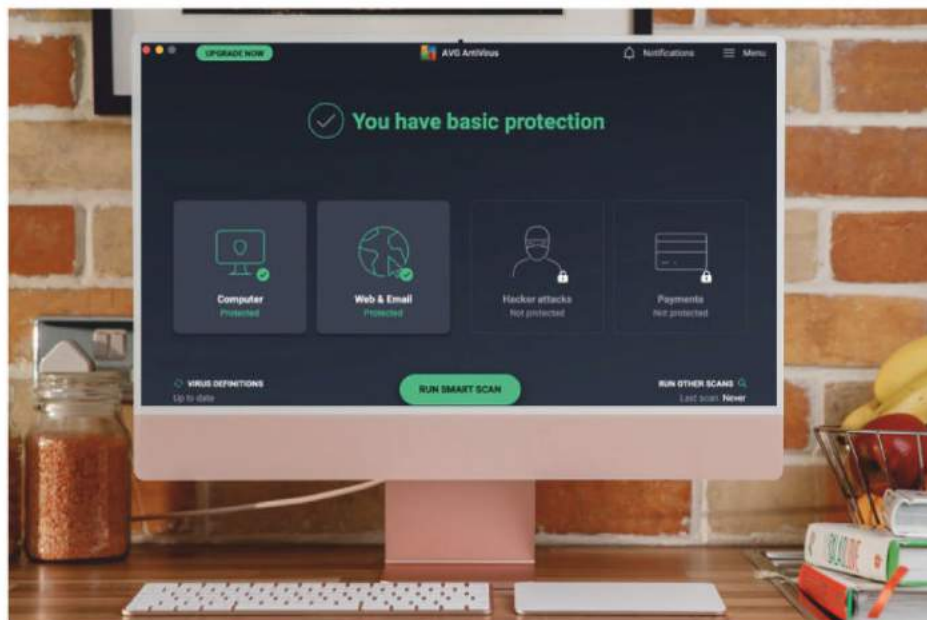
to practice basic computer security at all times—for example, not downloading unknown programs or opening email attachments from untrusted sources.

WHAT'S THE DIFFERENCE BETWEEN ANTIVIRUS AND A FIREWALL?

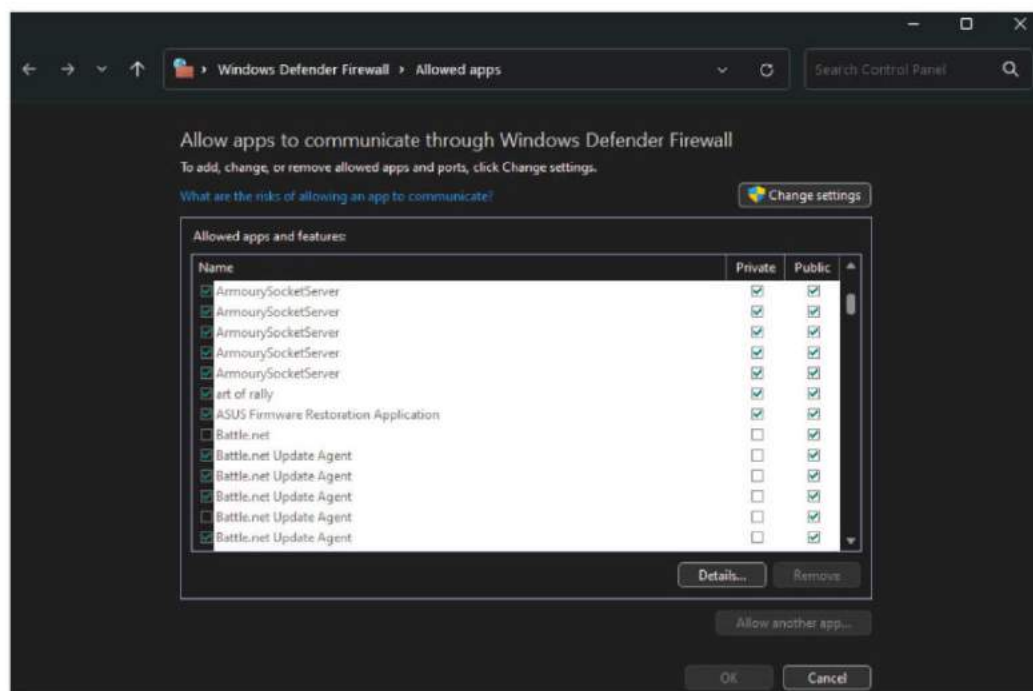
Antivirus software primarily scans your computer's files and programs. A firewall is a piece of software that directly scans traffic going in and out of your computer on both your local network and the internet. This is important for your security, because firewalls can be used to block malicious data from coming in or going out. This can be used to prevent a program from sending your personal information out, or prevent a program from outside your computer's

network from controlling it remotely.

Some antivirus software includes at least some kind of basic firewall functionality to supplement its file and program scanning tools. For example, Windows Defender, a standard antivirus checker, and Defender Firewall, are both part of the built-in Windows Security system. Bundled firewalls are



The most straightforward way an antivirus program can protect against viruses is by scanning your files.



A firewall directly scans traffic going in and out of your computer.

enough for basic security for most users, while dedicated firewall software (or even more advanced hardware-based firewalls) are generally for large corporations or organizations, requiring dedicated management by security professionals.

ARE THERE ANY COMPUTERS THAT DON'T NEED ANTIVIRUS SOFTWARE?

If you have a Windows desktop or laptop that's connected to the internet, you need an antivirus program. Personal computers have been connecting to the internet for over 50 years at this point, and viruses and other malware designed to infect them have been spreading for just as long. Browsing the web

without some kind of protection in place is kind of like swimming in sewage: Sooner or later, you're going to get an infection.

Fortunately, Windows PCs have built-in protection in the form of Windows Security, a basic antivirus and firewall suite that's

included free with the operating system. As long as you can keep that updated (which it does automatically through Windows Update), you're covered at the basic level. But what about other devices that connect to the internet, like your phone, tablet, your smart TV, or even connected devices like your security cameras or smart lights?

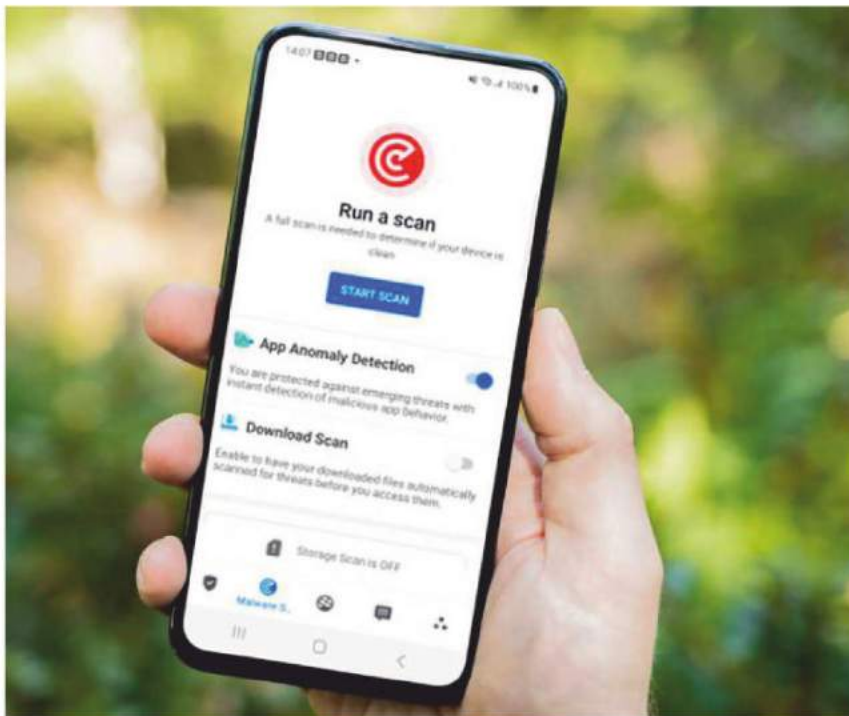
Smartphones have become so ubiquitous that, yes, there are viruses and malware out there designed to infect them. They're especially tempting for criminals because so much personal information is stored on them. But unlike desktops and laptops, iOS and (most) Android phones can't download just any program out there. They have to go to the official Apple App Store or Google Play Store to get apps and games.

Apple and Google control the security for these programs on the server end. It's not a perfect system—viruses, spyware, and malware have gotten through their detection filters before (fave.co/43w34aj). But for the vast majority of users, this basic level of protection is enough that they don't need to run extra antivirus software.

Android phones are a bit of a special case here. Unlike iPhones, most Android devices can install programs that haven't been pre-approved by Google in a process called side-loading. This is similar to installing a third-party program on Windows. And just as with Windows, you need to be careful that you trust the source of the download if you install this software. Even here, Google has implemented a system called Play Protect

(fave.co/3Ddh5zz) that performs basic antivirus and anti-malware scanning for all apps, even those that are side-loaded. If you want even more protection, it's available (fave.co/46Kj0Et).

The same general principle applies to any device that gets its content and apps from managed sources and doesn't include open-ended access to the web, like smart TVs, e-readers, smart watches, and so on. So long as the company managing the content keeps an eye on it, you really don't have to worry about viruses made specifically for those devices, especially since there's not much personal information at stake. That's not a universal rule—it's possible for almost any connected device (fave.co/3jXHLrR) to be compromised—but these gadgets are much lower priorities for malefactors.



Smartphones are not safe from viruses and malware.

IS WINDOWS DEFENDER A GOOD ANTIVIRUS SOLUTION?

The default security settings that came with Windows weren't always up to snuff. Twenty years ago, you'd be called reckless for running Windows without any kind of add-on security software. But Microsoft has made a dedicated and admirable effort to make Windows much safer

without needing any extras, paid or otherwise. So the simple answer is that yes, Windows Defender is pretty great.

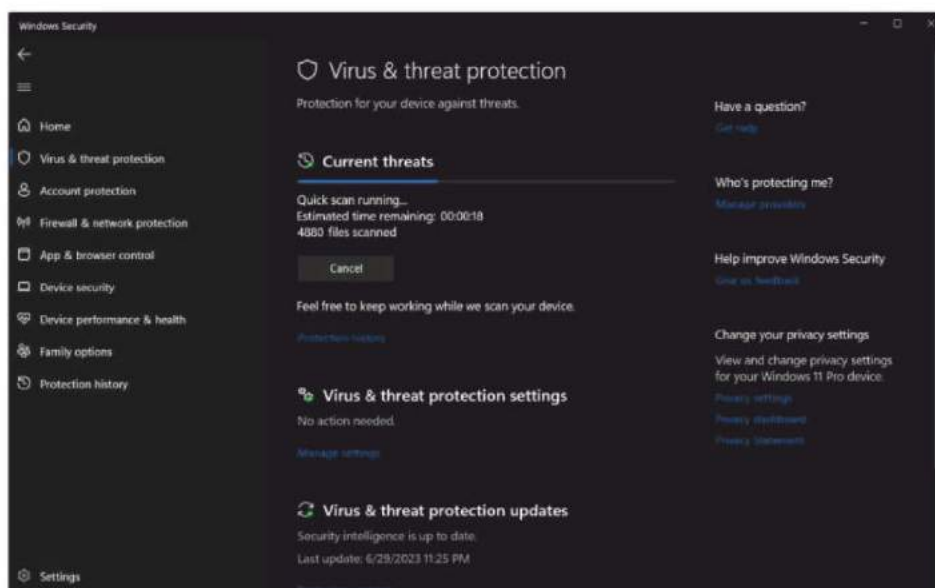
The antivirus scanner built into Windows is constantly updated with the latest threat detection, and said updates are baked right into Windows itself. Most of the time you won't even notice it running in the background, unless it

directly detects and neutralizes a threat. Ditto for the basic built-in firewall in Windows Security: Aside from the occasional tweak necessary to grant network access to third-party apps and games, you'll probably forget it's there.

If you're running Windows and you don't have any cash to spare for more robust security, relax. You'll still be fine as long as you keep your computer updated through Windows Update and don't go seeking out especially sketchy software.

IS NORTON 360 A GOOD ANTIVIRUS SOLUTION?

Norton is a great choice if you store important or sensitive data on your PC, or you share it with other users who may not have the best judgment. In addition to standard file



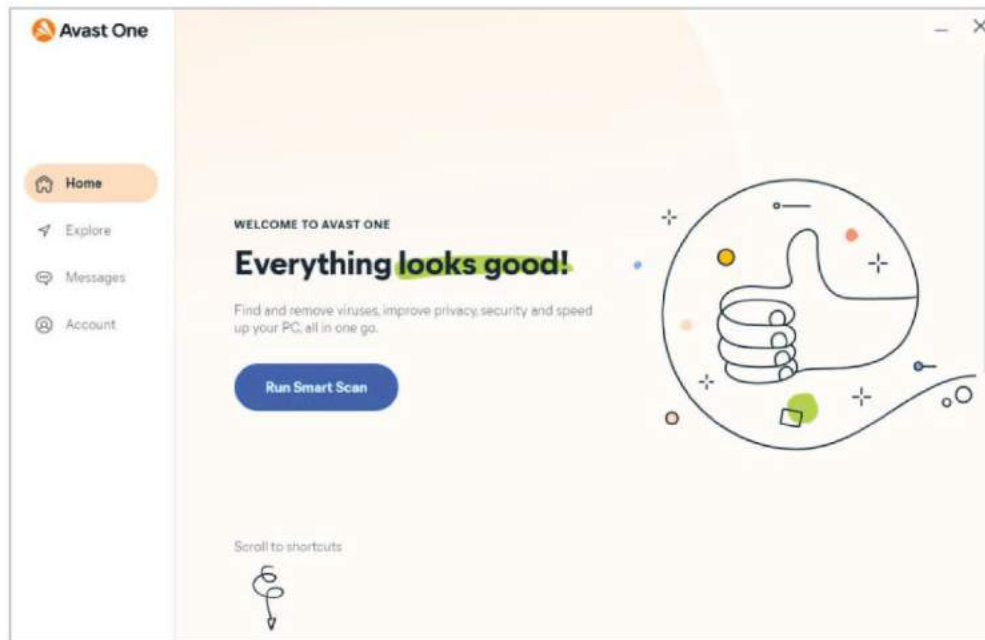
The antivirus scanner built into Windows is constantly updated with the latest threat detection.

scanning, the subscription includes access to a VPN, dark web monitoring to alert you when your accounts have been compromised, free cloud storage, and a password monitor. It's pricey, but a good choice for a total package security solution for up to five devices.

Read our full Norton 360 Deluxe review here: fave.co/30Bk59o.

IS AVAST ANTIVIRUS ANY GOOD?

Avast has been in the game for a long time, and it remains a solid choice that's less expensive than Norton. It doesn't have all of the same features, but its resource hit is lighter, and it's cheaper if you need to secure a ton of devices (up to 30 at the highest tier) at once. It's a great choice if you need



Avast One offers excellent protection.

antivirus and other security features on a PC that has to run hot, like a gaming or media production desktop.

Read our full Avast One review here: fave.co/3PrZzvB.

IS AVG INTERNET SECURITY WORTH THE PRICE?

AVG used to be a go-to pick for antivirus, because the basic version was free. That's no longer the case—again, if you need a free solution, Windows Defender will suffice. But it remains a popular choice thanks to a much-improved interface and frequent virus scanner updates. It does offer notably fewer options than the choices above, at a price that isn't that competitive.

Read our full AVG Internet Security review here: fave.co/3PdHNfV.

IS TREND MICRO A GOOD ANTIVIRUS PROGRAM?

Frankly, it's not a great choice if you know what you're doing in terms of advanced PC maintenance. Trend Micro Maximum Security is functional and very user-friendly, making it a good choice for

those who are less than tech-savvy. But its more advanced features are both less robust and less reliable than the competition, and it doesn't offer much of a price advantage.

You can read our full Trend Micro Maximum Security review here: fave.co/44GNNFa.

IS MCAFEE ANTIVIRUS ANY GOOD?

McAfee is one of the oldest names in PC security...and boy, does the company know it. The software is among the most expensive on the market on a per-device basis. While it offers some unique features like the "file shredder" secure delete and home network analyzer, it's hard to recommend for anyone on a budget.

Read our full McAfee Total Protection review here: fave.co/3XTujBe. 



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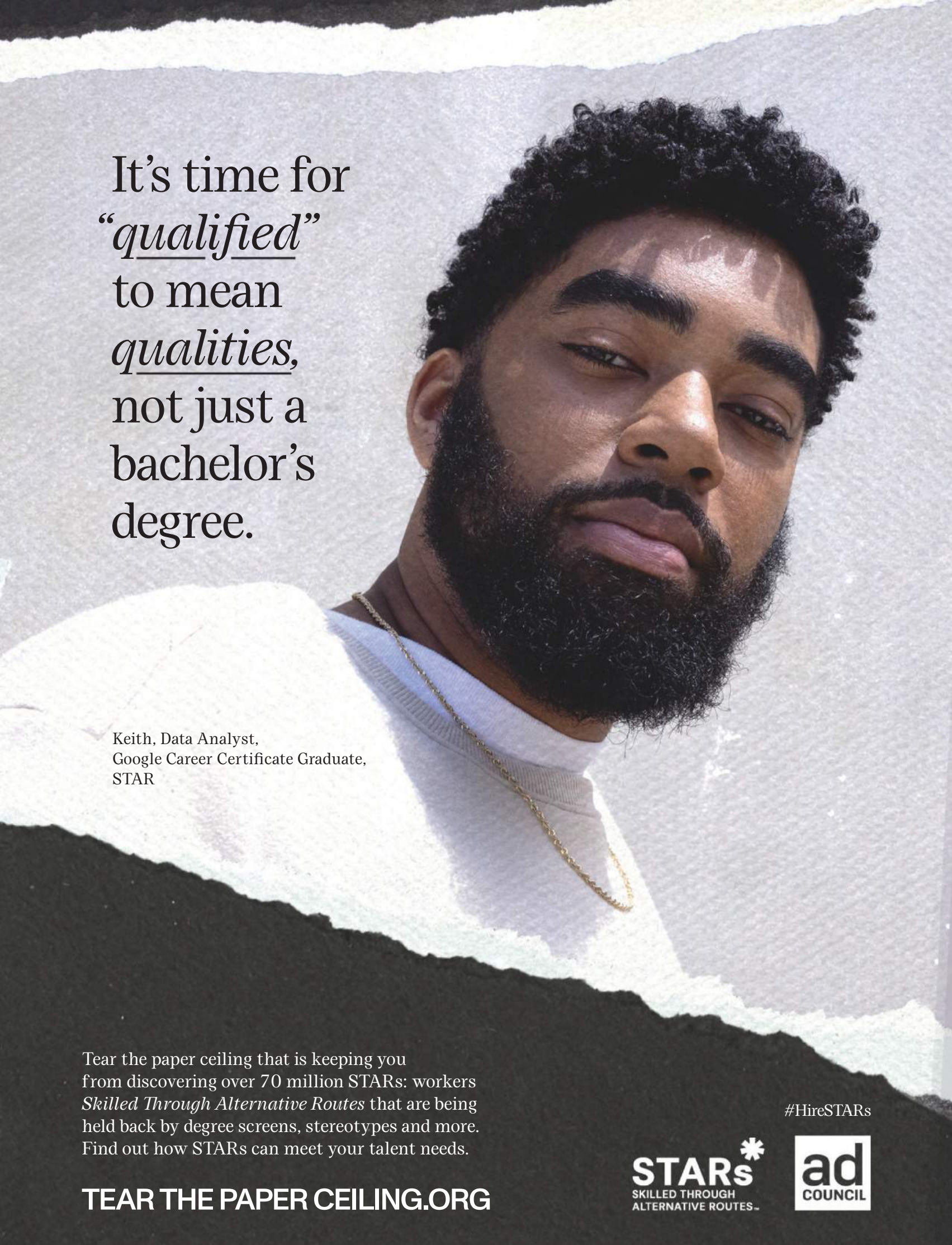
A family
communications plan

SIGN UP

For local weather
& emergency alerts

PREPARE

An emergency kit



It's time for
“qualified”
to mean
qualities,
not just a
bachelor's
degree.

Keith, Data Analyst,
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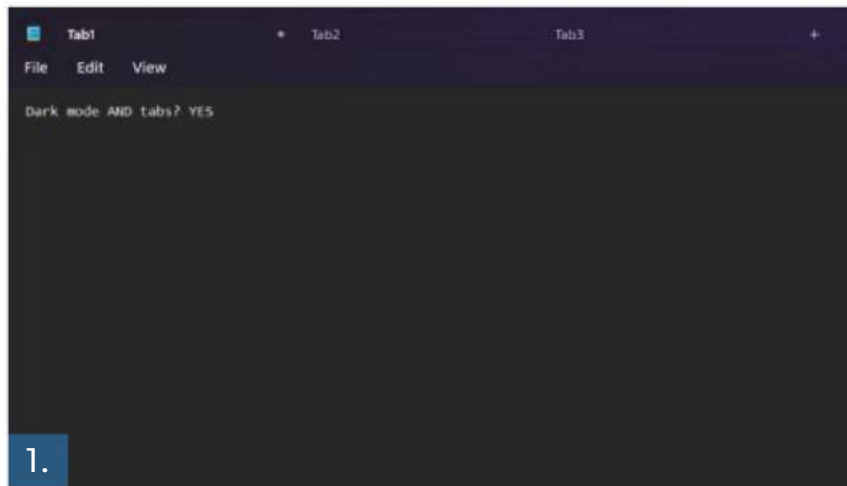
10 overlooked Windows 11 features you should start using

Incorporating these into your routine significantly improves the Windows experience.

BY ALAINA YEE

No operating system is without its positives, and that includes Windows 11, as much as I complain about Microsoft's latest operating system. Its handful of useful features continues to grow as time goes on, with more and more teased for future release (like native RGB lighting controls, fave.co/43nYRGf).

But with helpful utilities and settings having trickled out from Microsoft slowly, it's easy to miss a few here and there, especially when flashier tricks hog the news headlines. We've pulled out 10 features that we don't think get enough love—if you've heard of them and you haven't tried them yet, now's the time.



You no longer need to keep multiple Notepad windows open on the Taskbar.

1. NOTEPAD TABS

Notepad actually predates Windows, but it's still fully relevant (and useful!) today. The streamlined app lets you open a window to make quick notes. And in Windows 11, you

can now manage and navigate between open files in a single window, thanks to the addition of tabs. It's far tidier than opening a new instance of Notepad for each file—and, combined with the new dark mode, it makes the app look and feel modern.

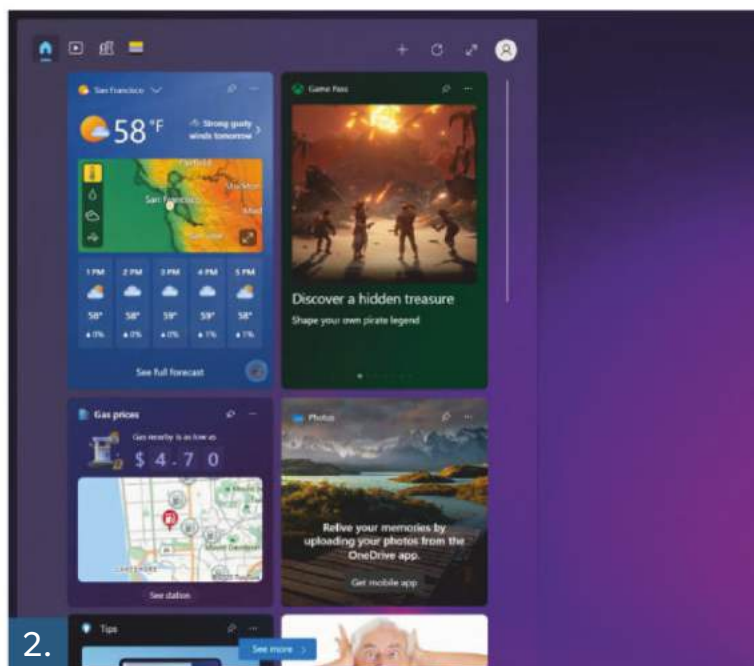
2. WIDGETS

Windows 11 makes a wealth of info available with just one

mouse click (or a quick tap of Win + W).

Right now you can get weather, stock prices, sports updates, and entertainment news, and those cards are slowly being joined by new additions, like one for Xbox Game Pass.

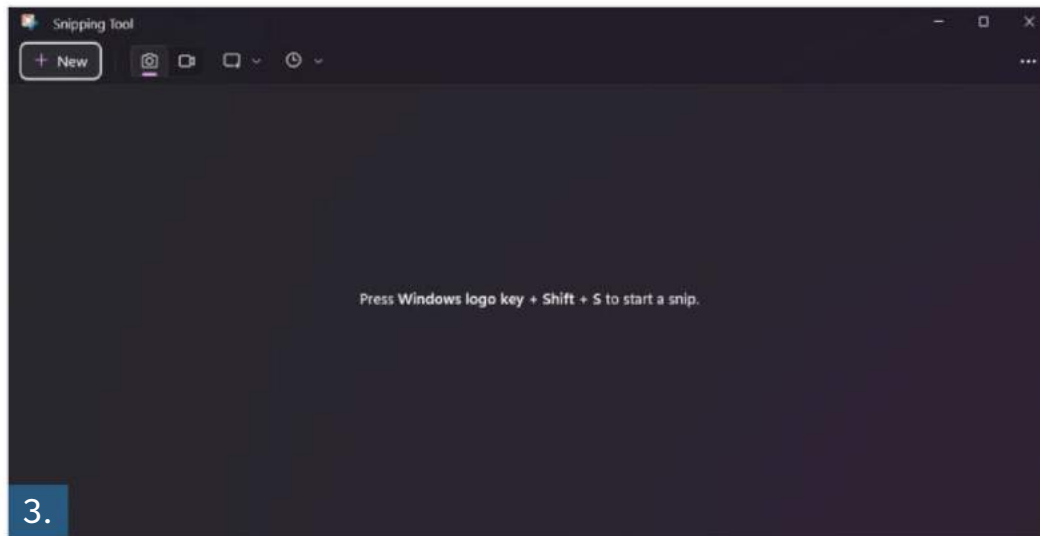
It's a much easier way to stay up to date than fully shifting to a browser and poking around in your tabs. And if we're lucky, cards available in preview builds of Windows 11—like Messenger (fave.co/44Ck8wl), Phone Link, and PC performance monitoring (fave.co/3rIKZih)—will make it to general release.



Widgets for Facebook, Spotify, and PC performance monitoring could be coming soon.

3. SCREEN RECORDING

Previous versions of Windows had a Snipping Tool app, but you could only take screenshots. In Windows 11, screen recording finally gets added—and unlike Windows' Xbox



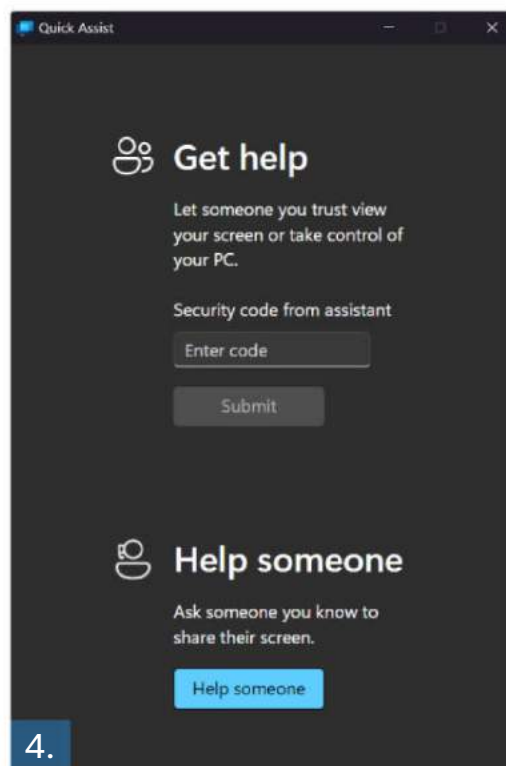
Click the video icon, then New to start recording a portion of your screen.

Game Bar's recording feature, you can use it to capture specific parts of your screen. If you serve as informal tech support for family and

doesn't appear in the **Win + Shift + S** keyboard shortcut overlay.)

4. QUICK ASSIST

If your loved ones can manage unfamiliar but basic interactions with a PC, a Windows Pro license isn't necessary to provide them remote support. You can have them fire up Quick Assist (fave.co/43q6Wu6) instead. (Remember this app from Windows 10? It's still around in Windows 11.) Once in the program, they'll log in to their Microsoft account, and then generate a six-digit code to send to you. You'll input that code into Quick Assist on your PC, at which point you can then see what's happening on their end, and even request full control of their PC.

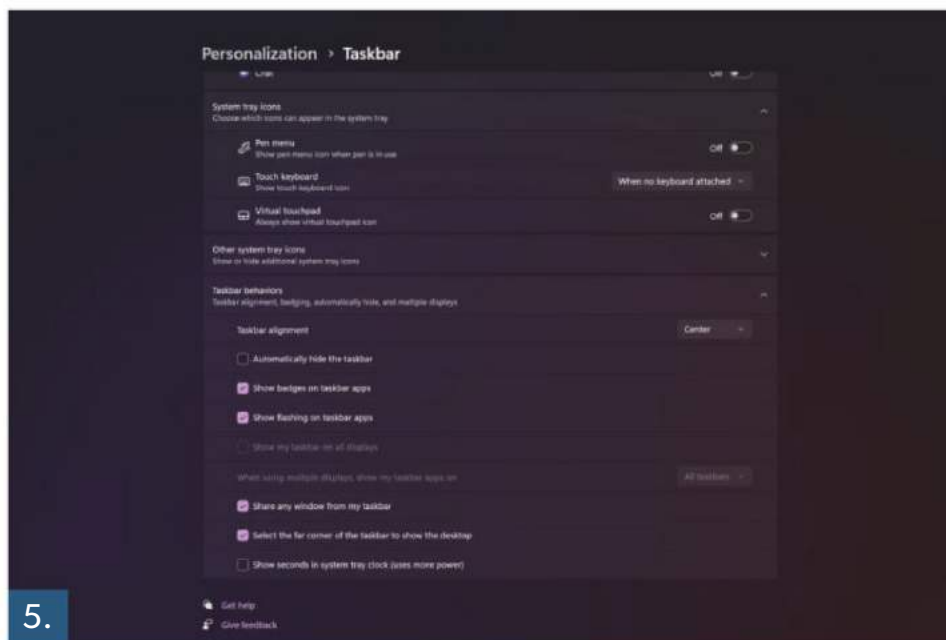


When you need help, you'll first generate a code to share with the person doing the troubleshooting.

5. CLOCK INFO

If you've needed more precision in your clock readout on the Windows 11 taskbar, you're in

friends, this feature can make your life a lot easier when explaining how to tinker with an app or use Windows. (Note: You'll have to open the full Snipping Tool app for screen recording—it

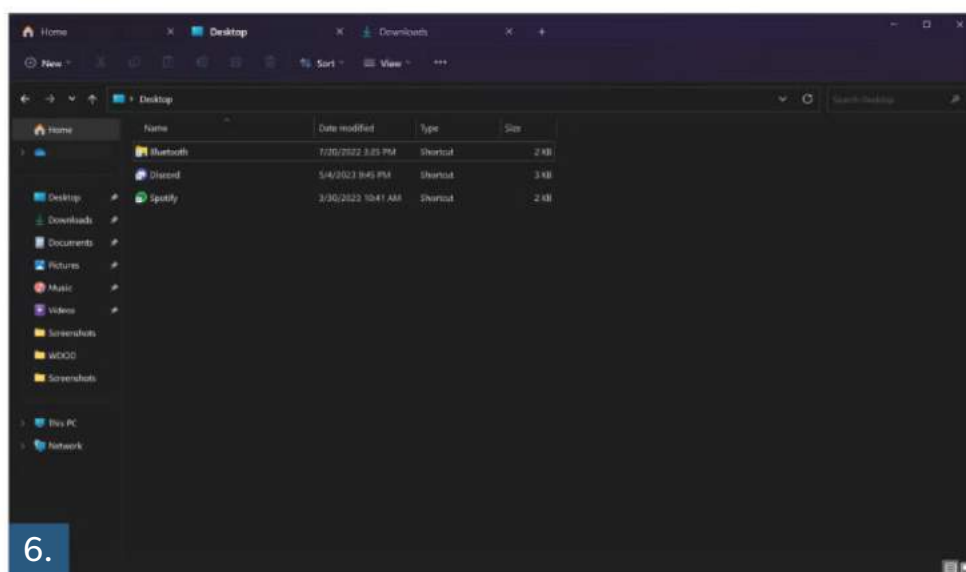


This tiny tweak adds more precision to your clock readout.

luck. You can now add seconds to the display—but you’ll have to head to taskbar settings, rather than your date and time settings, to flip it on. Under Taskbar behaviors, scroll to the bottom of the list and check the box for “Show seconds in system tray clock.”

6. FILE EXPLORER TABS

Microsoft didn’t just add tabs to Notepad. File Explorer got the upgrade as well (fave.co/408d9d5). You no longer need third-party software to enable the feature (like Stardock’s excellent Groupy, [fave.](https://fave.co/3Z13eVu)



Now we only wish Microsoft would add a **Ctrl + Shift + T** keyboard shortcut to quickly bring back closed tabs.

[co/3Z13eVu](https://fave.co/3Z13eVu)). All your numerous Explorer windows can now be grouped as tabs in a single container. Just click the plus-sign (+) button in the topmost menu bar (or press **Ctrl + T** on your keyboard), and each new tab will appear along the top of the window, just like a web browser.

7. FAST SNAP BAR ACCESS

Snap (fave.co/44jBwzE) is one of our favorite features in Windows—being able to automatically resize and align windows saves time and makes working a lot easier. And not

only do you get more layouts to choose from in Windows 11, but you can access them faster, too. Just hover your cursor over the maximize button in the upper right corner of any window. A small pop-up menu will appear, showing six different template options. Roll your cursor over any of the grids, and your current window will get sent to that position. Keyboard users can instead tap **Win + Z**, then enter the number of the layout they want.

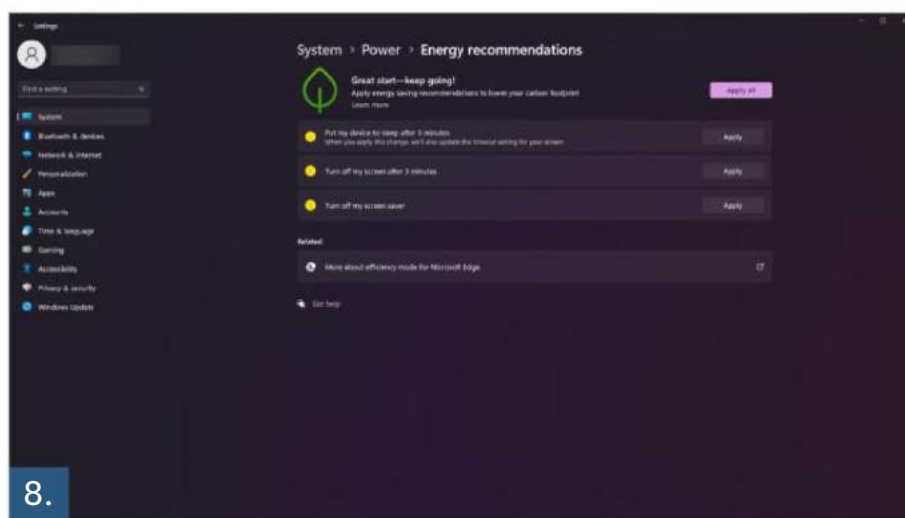
8. POWER SAVINGS

Energy costs keep climbing—and in some parts of the world, they're still at record prices. While you can of course switch your power plan in Windows to something lighter, Windows 11 has a few specific settings you can turn on to reduce idle power consumption. (After all, why pay for the higher electricity use when you're not active on the

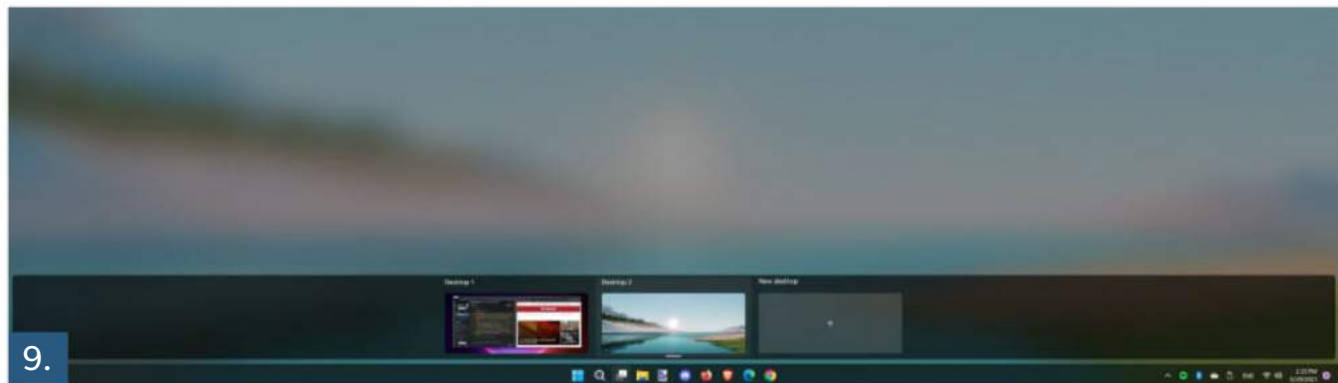


We love Snap, and having fast access to the default layouts makes it even easier to get the right arrangement for your open windows.

PC?) You'll find these under Settings > System > Power & battery > Energy recommendations. You can then turn on one or more of the suggestions. These more stringent settings will help extend battery life on laptops, too.



Microsoft's Energy Recommendations can help reduce your power bill.




You can set different backgrounds for each of your virtual desktops to tell them apart.

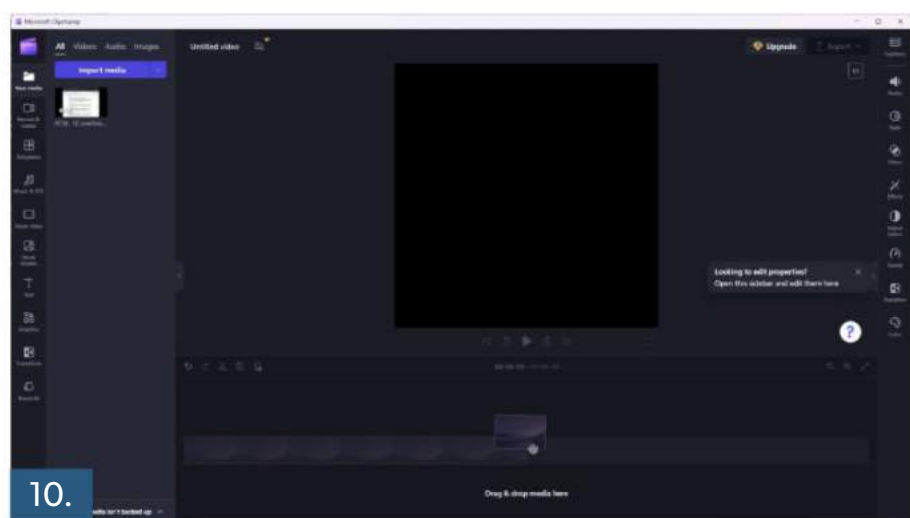
9. VIRTUAL DESKTOPS

This feature might be one of the most underrated in Windows. Virtual desktops (fave.co/3pOJEAo), which first launched in Windows 10, let you spread your active apps and windows among different home screens—it reduces clutter and makes your primary desktop less overwhelming. Some people use their virtual desktops to separate out work from play (or research from daily tasks), while others separate programs by category or function. To navigate between your desktops, you just click on the Virtual Desktop taskbar icon or tap **Win + Ctrl + Left Arrow** or **Right Arrow**.

10. CLIPCHAMP

Davinci Resolve (fave.co/46PsBim) is great if you need deep video-editing capabilities, but Microsoft

has an alternative free option that's easier to jump into. Clipchamp (fave.co/3Qe7Dkl) can handle quick cuts, fades, and media insertions with ease, and the interface is far less intimidating. It also handles direct uploads to services like YouTube and TikTok, as well as cloud saves for OneDrive, Google Drive, and Dropbox. Combine this program with the built-in recording features in Windows (such as Xbox Game Bar or Snipping Tool), and you can be on your way to internet fame quickly. 



Clipchamp's video-editing capabilities amply cover the basics.

Speed up your Google searches with this hidden trick

It's easy: highlight, right-click, and search. **BY JARED NEWMAN**

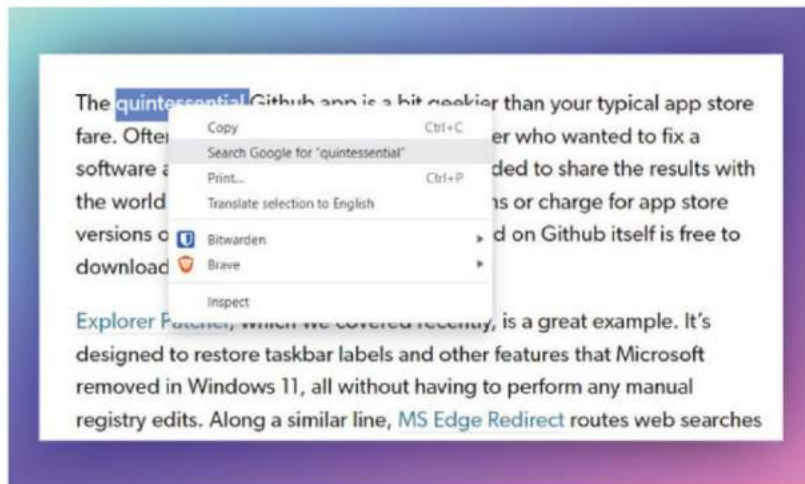


Almost everyone uses Google, and for most of us that means pasting text into our browser's address bar or typing text into same. But next time you're reading an article online and come across a name, word, or phrase you want to research further, try this:

- Highlight the text.
- Right-click on it.
- Select Search in the pop-up context menu that appears.

Highlight, right-click, search. These three steps will instantly look up the selected text in a new browser tab using your default search engine. It might sound a little clunky, but in practice it's more efficient than copying, opening a new browser tab, and pasting.

This also works for links, for those times when you see a link that doesn't have an actual hyperlink. Just click "Go to" instead of Search in the context menu, and you'll be on your way.



This trick is a great timesaver.

While I've admittedly known about this trick for years, it never clicked for me until recently, when I made a point of turning it into a habit. That's often how things go in tech, with some of the best tools hiding in plain sight.

A version of this trick also exists on most mobile web browsers:

In Android: Highlight the snippet of text, and then select "Web search."

In iOS: Highlight the text, tap the little right arrow in the pop-up menu, and then click "Search web."

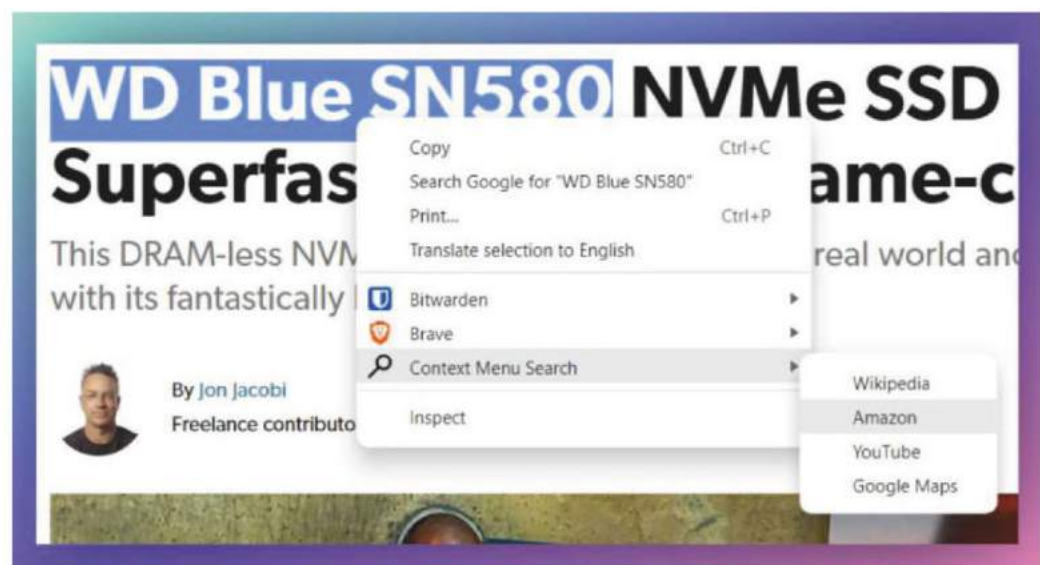
Want to take it a step further? Check out the Context Menu

Search (fave.co/3NPA6gu) browser extension, which lets you add other sites and search engines to the pop-up menu. Through the use of site search shortcuts (fave.co/404sAmK), you can instantly look up the highlighted text on sites like YouTube, Wikipedia, and Amazon.

If you happen to use Vivaldi (fave.co/3QrFw1B), no extension is necessary. Just head to Settings

> Search to customize your sources, then look for the Search With option in the pop-up menu.

Now all you have to do is develop the muscle memory you need to use this handy search trick in the first place. I can attest that it's well worth the effort. Just remember the steps: Highlight, right-click, and search. 🔌



The Context Menu Search extension lets you quickly search on other sites.



7 Microsoft Outlook tips everyone should know

Become an Outlook master with these tips on perfectly organizing emails, finding information faster, optimizing settings, and more. **BY THOMAS JOOS**

If you have to work in Microsoft Outlook, you might as well do it smart. Here are several tips to help you work more efficiently in all available versions of Outlook. All of our tips were tested using Outlook 2021, but some tips also work in a similar form with Outlook 2019 and 2016.

1. BACKUP AND RESTORE PROFILE SETTINGS, SIGNATURES, AND EMAIL ACCOUNTS

Outlook 2016 and 2019 and Outlook 2021 save their profile settings—including email accounts, favorite folders, settings, and

information about the required servers—in the Windows registry. If you export the corresponding keys, you can transfer a large part of Outlook's settings to a new computer or restore them in the case of new installations.

To restore, you only need to double-click on the exported registry file and all email settings will be integrated into Windows again. The steps are as follows:

1. Open the registry editor with regedit.
2. Navigate to **HKEY_CURRENT_USER\Software\Microsoft\Office16.0\Outlook\Profiles**.

3. You will see each profile as a separate key below the Profiles key. Right-click on the profile you want to export and select Export from the context menu. There's your backup!

To restore your backup, double-click on the exported registry file and have it imported into Windows.

Want to back up your Outlook signatures too? Outlook saves signatures in the directory **C:\Users\<username>\AppData\Roaming\Microsoft\Signatures**. You can also easily save these by copying them and restoring them at any time.

2. ADDRESS PEOPLE DIRECTLY IN EMAILS

If you send an email to several recipients, you can address the individual recipients directly within the email text using the @ sign. If you press the @ sign in the text, you can select a

person from the address book and write text to that specific person. This person is then automatically entered as a recipient of the email if he or she is not already one.

3. MOVE APPOINTMENTS ACROSS MONTHS AND WEEKS IN CALENDAR VIEW USING DRAG AND DROP

If you click and hold an appointment in Outlook's calendar, you can drag it from the current view to the calendar on the left and release it. Outlook moves the appointment to then and shows the new day on the right side of the calendar view. This lets you fine-tune appointment details. This is useful for quickly moving an appointment over several months or weeks, but also for shuffling an appointment between days in the same week.

4. CHANGE THE SUBJECT LINES OF EMAILS FOR MORE EFFECTIVE SEARCHING

In the reading area of Outlook as well as the window of an open email, the subject is visible at the very top. If you click in the subject area, you can edit it. This has several advantages. For example, you can adjust the subject directly in the mail window when replying or forwarding, or integrate important information such as customer numbers or order numbers. Since Outlook also indexes this area, you can find e-mails with effective subject lines more easily via search.

5. USE TEXT MODULES IN OUTLOOK

If you use certain text passages frequently, you can save them as text modules in Outlook. To do this, select the text in an email and choose “Insert -> Quick parts -> Save selection in quick parts catalog” in the editor window. This allows you to easily recall the text at any time. (If “Quick parts” doesn’t appear, you’ll find the command on the far right of the toolbar by the ellipsis [...].)

Inserting text modules into e-mails is done via the same menu by clicking on the saved text module or by writing the name of the text module in the e-mail. Outlook then recognizes the saved text modules, and you can insert them quickly and easily.

6. AUTOMATE YOUR INBOX WITH QUICKSTEPS


Outlook’s Quick steps lets you assign several actions to emails to sort them, such as categorizing an e-mail, marking it as read, and moving it to a specific folder. Better yet, all

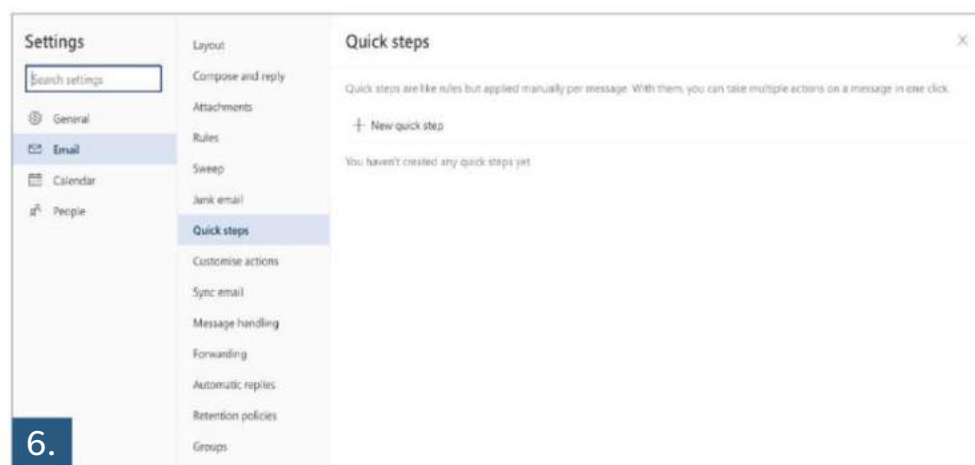
this can be done with a mouse click once you’ve set up Quick steps.

If you open an email and right-click within it to open the context menu, you’ll find “Quick steps -> Manage Quick steps.” That’s where the magic lies. Select New to create a new Quick step, then select Edit and enter a name at the top of the window to save it for quick and easy future use in the Quick steps menu. The “Add action” option lets you fine-tune the exact steps to be performed when you select this Quick step in an email, such as assigning it a category or moving it to a specific folder. You can delete Quick steps by clicking on the trash icon.

7. CREATE CONTACTS MORE QUICKLY FROM E-MAILS

If you drag an e-mail onto the contacts icon at the bottom left while holding down the right mouse button, you can create contacts from e-mails. Outlook reads out relevant contact information and fills in the corresponding fields automatically. You can, of course, edit

the fields later if needed. To help with future contact info editing, Outlook displays the content of the email as text within the contact. Any information you don’t need, you can simply delete. 



5 ways to get a better Wi-Fi signal outside

Get a strong internet connection anywhere in your yard! **BY JIM MARTIN**



Modern routers are pretty good at filling your home with a wireless internet connection. Most people know how to fix dead zones by upgrading their router or—better still—by choosing a mesh Wi-Fi system instead.

But what about outdoors? Plenty of devices still need a connection outside, such

as security cameras, smart lights, doorbells and simply your phone or tablet when you want to use it in your backyard. Even BBQs and other outdoor gadgets are starting to come with Wi-Fi, meaning there's an even greater need for good alfresco Wi-Fi.

Since you're reading this, you already know that your home's walls are a fairly effective Wi-Fi barrier, which is why you can't

get an online signal in your garden. And although the signals can penetrate glass without too much of an issue, there's still the problem that signal strength gets weaker the further away you are from your router.

It can be annoying if web pages load slowly or Netflix is constantly buffering, but it becomes a major issue if you want to work in an outbuilding such as a garage or a backyard office.

Here, we'll explain the options available and what it might cost you. If you're lucky and you can reposition your router, it might cost nothing at all, but in most cases you'll need to invest in some hardware to get the job done.

FREEBIE: REPOSITION YOUR ROUTER

In most homes, a single broadband router provides your Wi-Fi signal. But it's a box that is often tucked away out of sight, which can seriously hamper its Wi-Fi.

In an ideal world, a single router would be positioned in the center of your home. If you have two floors, that means as close to the ceiling of the lower floor as possible to improve reception upstairs.

Since we're talking about better signal outdoors, you should place your router as



Positioning a router so that it faces your garden can boost the signal.

close as you can to where you need internet in the garden.

Many routers have internal antennae, such as the one shown above, which means there's nothing to adjust: It should produce a 360° signal, but you can try placing the device so it's facing the wall or window and see if that helps boost the signal outside.

Other routers have external aerials that you can angle in various directions. Again, making them face your garden can improve things dramatically if they are directional.

1. POWERLINE ADAPTERS

This is the quickest, simplest, and likely most cost-effective option for most people, but it relies on there being mains power where you want to get a Wi-Fi connection.

Any socket will need to be in a position where the powerline adapter can't get wet,

which means this option is best for those who want reliable internet in a garage or shed.

Powerline adapters (fave.co/44BBOZK) turn electric cables into network cables, so you plug one in next to your router and the other in a socket where you need Wi-Fi. It's crucial to note that standard powerline adapters (such as the Netgear ones shown below) don't have Wi-Fi, so you need to buy a kit in which one of the plugs has built-in Wi-Fi, such as TP-Link's TL-WPA8631P KIT (\$107.99, fave.co/3ObFax2).

The drawback of powerline is that it can be relatively slow. Theoretically, the TP-Link kit offers 1500Mbps, but in reality, you could get 40Mbps or even less. That's because powerline doesn't seem to like long-distance runs of mains cable, such as one running from your house to a garden room.



Powerline adapters turn electric cables into network cables.

You may get better performance, but it's very much dependent on the age, quality and length of the mains wiring—as well as the ability of the powerline kit.

That sort of speed might be OK, though, as it's fast enough for general work. You need around 5Mbps for a basic-quality video call, but if you want a higher speed for downloading or uploading large files, you might need to go for an alternative method.

2. BUY AN OUTDOOR WI-FI ANTENNA

If you don't have power outside, an alternative option is to buy an outdoor Wi-Fi antenna. These come in two varieties. The first type screws directly to your router in place of one of its normal antenna, but you need to check your router to see if it has removable ones. Most

don't, and for those this tip won't be any use.

There is another way, though: an external USB Wi-Fi antenna. This isn't quite the same thing. It's designed to be connected to a remote device such as a laptop. You could mount it on the wall of your garden room—or garage—facing your house, and it should be able to pick up the weak signal coming from your router. They're more expensive, starting at \$40/£30.



An external Wi-Fi router such as the TP-Link Deco X50 Outdoor (pictured) can be mounted on a pole or attached to a wall.

A third option here is an external Wi-Fi router such as the TP-Link Deco X50 Outdoor (fave.co/3DcZmrX; shown above). It costs \$149.99/£109.99 and can be mounted on a pole or a wall. Although it's part of TP-Link's X50 mesh Wi-Fi range, you don't have to use it with the X50 system. You could connect it to your usual router with an Ethernet cable and get the same effect. It should provide strong Wi-Fi at distances of 200 to 300 feet (60 to 90 metres)—possibly more if there are few obstacles.

3. BUY A WI-FI EXTENDER OR MESH WI-FI KIT

If you can't move your router nearer to where you want an outdoor signal, a Wi-Fi extender (fave.co/2Ze5akw) is another option.

They don't cost much—less than a pair of

powerline adapters—and they can give your Wi-Fi a boost so you can get online in your garden.

There's a drawback, though: The way extenders work is to take the signal from your router and re-broadcast it, which means they must use half their speed to receive the signal and the other half to broadcast it, so they're not the fastest choice here.

However, as with powerline, the speed you get might be enough. The main

problem is that it isn't possible to say exactly how much outdoor coverage you'll get from an extender: It should be fine if you only need a Wi-Fi signal close to your house (say, within 20 or 30 feet), but it may not give you an internet connection inside an outbuilding further away. If your outbuilding has power and it isn't too far from your house, you could try plugging in an extender in that outbuilding and see if you can get a strong enough signal from your router. If the building is more than around 30 feet from your house, though, chances are the signal won't be good enough for an extender.

It's a similar situation with mesh Wi-Fi kits. You can read more about mesh Wi-Fi in our roundup of the best systems, but suffice it to say that these multi-router systems tend to



A Wi-Fi extender is an affordable option if you want to work outside.

need to be placed fairly close together—we're talking similar distances to Wi-Fi extenders—so you're unlikely to get a good enough signal for them to work properly if your garage, shed, or garden room is over 30 feet from your home.

4. RUN OLD-SCHOOL ETHERNET

The way this writer has overcome the relatively short reach of home Wi-Fi routers in the past is to use Ethernet cables, running them from the main router in the house to a garden room over 200 feet away. It's reasonably cheap to do, too, especially if you can install them yourself.

The cable itself comes on a reel and is available in lengths of up to 100m (300ft). You want to buy cable rated for outdoor use and look specifically for cable designed for direct burial, such as this listing available in various lengths (fave.co/3NTjowr). Whatever you, don't try to save money by purchasing an indoor Ethernet cable. Without a hardy PVC coating, it will quickly deteriorate in the sunshine, and it doesn't have the solid copper wires required to terminate it to a face plate.

You can buy ready-made outdoor cables with Ethernet jacks on either end, but you'll need to drill a much larger hole in



Ethernet cables come on a reel.

the wall than if you're feeding thin Ethernet cable through. Plus, the special tool required to fit the RJ-45 connectors can be bought cheaply and isn't difficult to use. For a more professional finish, though, you should install Ethernet wall plates instead of fitting RJ45 connectors. They're cheap, easy to fit, and only a little more difficult to wire up (fave.co/3rsi0tg).

Whatever you choose, go for Cat 6 or better so it's future-proof.

Once your cable is installed, you'll have a superfast internet connection in your outbuilding. To get Wi-Fi, you'll need a second router (in access point or bridge mode) or, better still, a mesh Wi-Fi system that supports wired backhaul. That simply means you can connect the routers using an Ethernet cable instead of Wi-Fi.

The beauty of this method is that you'll have one seamless Wi-Fi network that your devices can use whether you're in your house or in your outbuilding.

5. BUY AN ACCESS POINT

An access point is really just a different name for a Wi-Fi router. The main difference is that



For a more professional finish, though, you should install Ethernet wall plates instead of fitting RJ45 connectors.

an access point is designed to connect to your existing router and provide Wi-Fi in another area.

They're mainly for offices and aren't really aimed at consumers. They're the sorts of devices you can have professionally installed when consumer networking gear just isn't up to the job.

While mesh Wi-Fi often does a great job indoors, it's not so great if you need a fast connection in your garden office or garage, and an access point can be the solution.

Depending on the distances involved, you may need just one mounted in your remote location facing the house. In this setup—called client mode—it becomes a receiver, taking the signal from your existing router or mesh system and providing the internet connection you need in your backyard.

You'll want to choose a model that can still deliver a Wi-Fi signal to your devices while in client mode, such as the \$40 TP-Link AC750 (fave.co/3PVEDjS).

If your outbuilding is a *really* long way from your house, you might need to buy a point-to-point (PtP) Wi-Fi system. This is essentially two access points that create a wireless bridge. They can be indoor or outdoor models, with outdoor ones working over kilometers rather than meters. It's probably overkill for home use, but it can provide the reliability you need.

The cost varies a lot depending on the speed you want, whether you need a pair or just one, and whether they can be mounted indoors. Outdoor models are more expensive, of course.

You can pick up a single access point for as little as \$50, although that's for a basic 802.11n model (fave.co/3PWvS9d) which


won't offer very quick speeds. Many brands sell access points, including TP-Link (fave.co/3XNzDjr), D-Link (fave.co/3NRKhkv), and Ubiquiti (fave.co/43oO0vQ).

A faster, more powerful, and more rugged model could cost from \$250 to \$1,000 (£200 to £800), so the price can really mount up for a pair, and it's worth considering that you'd get a faster and potentially more reliable connection by running Ethernet cables through your garden.

Generally, these access points work using Power-over-Ethernet (PoE), which isn't something many homes are set up for, so they usually require extra hardware. This is another reason they're the sort of device you'd want to have installed by a pro.

Some PtP units come with PoE mains adapters that make the job a lot simpler for the DIYer. If you're not going to call in the pros, make sure you do your research and

understand exactly which kit you need to make it all work.

Hopefully by now you fully understand all the options available to get a better internet connection in your garden or shed, most of which don't cost too much and are easy to install yourself. 



Access points are designed to connect to your existing router and provide Wi-Fi in another area.

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Tech Spotlight

A video showcase of the latest trends



Zoom AI Battle: Ryzen AI vs Nvidia Broadcast AI

→ AMD's Ryzen 7040 laptop CPUs offer a dedicated AI acceleration chip, dubbed Ryzen AI, meant to accelerate certain tasks like those built into Microsoft's Studio Effects. But how does it compare to the Nvidia Broadcast versions of AI eye contact and background blur, and even what's built into Zoom itself? In this video Gordon looks not only at the quality but the impact to battery life when using these tools.