61 FAST FIXES FOR MAC, iPHONE & iPAD

# Mac|Life

MAC iPHONE iPAD

JULY 2023 NO.208

# VISION PRO

## Apple's all-new spatial computer is here. We go hands-on

Your next Mac, iPhone and iPad all-in-one!

7 ways to upgrade Safari

macOS Sonoma, iPadOS 17, and iOS 17 preview

New! MacBook Air, Mac Studio and Mac Pro

FUTURE
ISSUE 208

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NO.208
JULY 2023

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# A VISION OF THE FUTURE

**THE VISION PRO** is one of the most exciting launches in Apple's history. There. I said it. Feel free to agree or disagree with me, but the coming era of spatial computing has got me rather worked up. I'd even argue that it's up there with the 2007 launch of the iPhone. In the same way that this took an existing game and changed it, I feel that the new Vision Pro headset could well do the same. For me, VR and AR has never really made its mark with the masses; it's either a thing for jumping round a room and blasting aliens, or a device for enabling professionals to work in a new way. Neither of those are bad things, of course, but they're not what most people want.

Vision Pro changes this by appealing to the average person — you might don the headset to watch movies, read web pages, work on a document, or browse your photo collection. That might not sound that exciting, but it's what people actually like to do day-to-day, and typical of Apple, it's being done better than anyone expected. I won't go into the details (you can get them by heading to page 4), but I truly believe Apple has nailed it.

But it's not even the Vision Pro that's the thing to be most excited about right now. I mean, it's going to cost $3,500 and won't be available until next year, so most of us will never get a look in. But it's where the technology is heading, and what it will mean for us all, that's important. What Apple devices do you own right now? A Mac, maybe two? An iPhone and iPad? Well what if the Vision Pro, or whatever version we get down the line, could be a replacement for all those products? The one device to rule them all, if you will. I appreciate that might be a hard sell when we've been entrenched in the Apple ecosystem for so long, but I'm sure there was a time when we couldn't imagine working on a screen instead of paper, or shopping online on a cell phone instead of a computer. Times change, and I believe that Vision Pro, the era of spatial computing, will be a major shakeup for us all.

What do you think about Vision Pro, or the idea of replacing all your devices with one? Let me know at the address below.

**NICK ODANTZIS,** Editor
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## THE TEAM

**Andrew Cottle**
**Art Editor**
Andy read about VR as a teenager in the 90s, and never thought it would happen, but now thinks it will be part of normal day-to-day life.

**Rachel Terzian**
**Production Editor**
Rachel thinks the ability to capture memories, and relive them later in an in-depth, highly immersive space, looks incredibly exciting!

**Ian Osborne**
**Contributor**
Ian reckons Vision Pro is too expensive, and hopes Apple will follow up with a cheaper SE version, to get the headset out there on the market.

# Apple AR headset arrives

## "Introducing a new era: spatial computing"

**BY ALEX SUMMERSBY**

**APPLE HAS INTRODUCED** its long-anticipated Augmented Reality headset. Apple Vision Pro, available next year, will transform the way you interact with apps, experience movies and TV shows, connect via FaceTime, and view photos and media content.

Like Meta's Quest Pro mixed-reality headset (but unlike other VR gear out there), Apple Vision Pro is designed to seamlessly blend digital content with the physical world around you. App windows float in front of you, casting shadows that dynamically match the actual light conditions in the room, creating scale and distance that make them feel physically there. You can reposition and resize them, and add as many more as you want, giving you infinite virtual screen space — and although the device has support for Magic Keyboard and Magic Trackpad, it can all be controlled using your eyes, hands, and voice.

Remember Tom Cruise in *Minority Report* manipulating virtual photos in the air? It's like that, but without the control gauntlets (or controllers like the Meta Quest Pro's) — using its built-in array of sensors, Vision Pro tracks your eye and hand movements, enabling you to browse through apps by looking at them, tap your fingers together to select, and flick your wrist to scroll, as well as speak to dictate. Apple calls this new way of working in a virtual space "spatial computing."

You can choose to mask the room you're in using immersive virtual Environments — and with a twist of the Digital Crown on top of the headset, you control how much or how little of your physical surroundings you can see. A feature called EyeSight helps you stay connected with people around you: If someone approaches you, even if you're immersed in an Environment, you can see them and the front of the headset displays (a rendering of) your eyes to them, so you can interact naturally.

When you're watching a movie, the screen can fill your field of view — and beyond: Apple Immersive Video will offer 180-degree high-resolution recordings with Spatial Audio that transport you to entirely new places.

Spatial computing makes new types of immersive games possible, and you'll be able to play more than 100 Apple Arcade games at launch on a screen as large as you want, with support for popular game controllers.

### BEING THERE

You can access your entire photo library on iCloud, and every Panorama shot on iPhone expands and wraps around you, creating the sensation that you are standing right where it was taken. Also, Vision Pro features Apple's first 3D camera, meaning you can capture occasions in photos and videos with Spatial Audio and later revisit them. Apple describes it as being transported back to a moment in time (although if you have to be wearing Vision Pro to record it, were you fully there in the first place?).

Users can do things together like watch a movie, browse photos, or collaborate on a presentation.



Image rights: Apple Inc.

Helping you stay connected to reality, when someone is near you, they will appear in your view.

Seamlessly multitasking on a variety of apps becomes even easier.

FaceTime gains a new dimension with everyone on a call represented in life-size tiles — and with Spatial Audio, each participant's voice comes from their own tile. Users wearing Vision Pro during a FaceTime call are presented as a Persona — a digital representation created using Apple's most advanced machine learning techniques — which reflects face and hand movements in real time.

Vision Pro has a new App Store with visionOS apps and content alongside "hundreds of thousands" of iPhone and iPad apps that automatically work with the new input system. Apple is encouraging developers to "go even further and design brand-new app experiences, and reimagine existing ones for spatial computing."

Apple says its first spatial computer is "the most advanced personal electronics device ever." But such advances don't come cheap: Vision Pro starts at a hefty $3,499, and (assuming it secures FCC approval) will be available early next year in the US, then more countries later. Customers will be able to experience and personalize their fit for Vision Pro at Apple Store locations.

## > The tech inside

**INSIDE VISION PRO** is an Apple M2 processor, plus a brand-new Apple R1 chip that processes the inputs from the device's 12 cameras, five sensors, and six microphones, and streams images to the displays within 12 milliseconds. That's eight times faster than the blink of an eye, delivering near-real-time pass-through with no perceptible lag.

The eye tracking system uses infrared cameras and a ring of LEDs that project invisible light patterns on your eyes. A LiDAR scanner and TrueDepth camera work together to create a fused 3D map of your surroundings, enabling Vision Pro to render digital content accurately in your space.

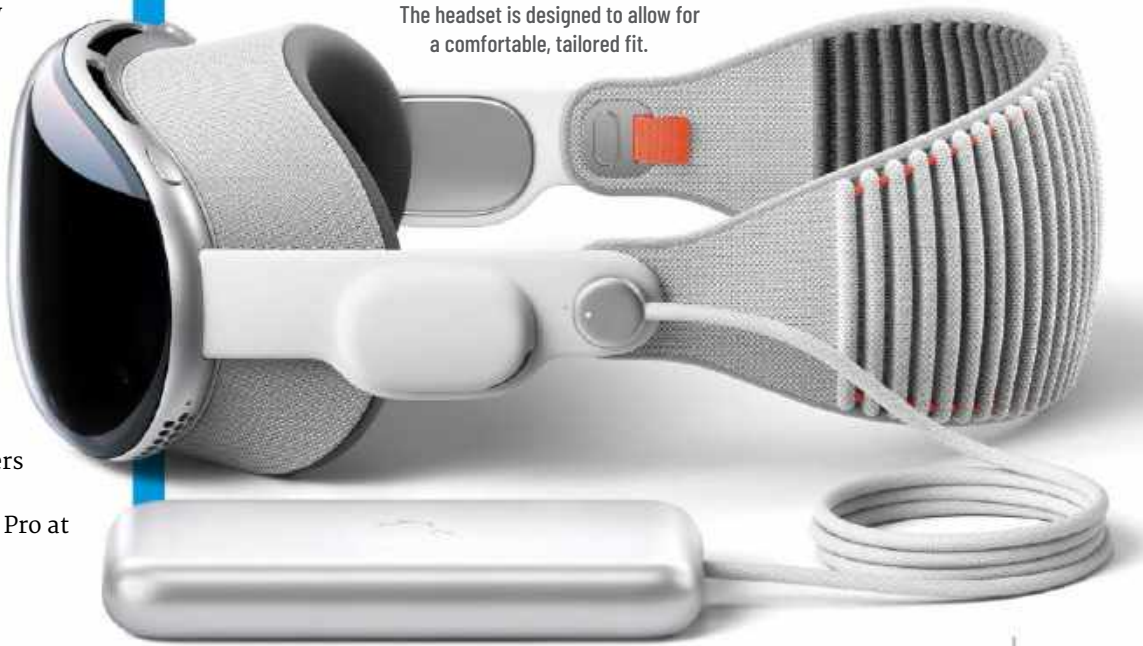
Vision Pro uses micro-LED technology in a postage-stamp-size display with more pixels than a 4K TV for each eye, with custom catadioptric lenses that Apple says enable incredible sharpness and clarity. However, you can't wear eyeglasses under the headset, so if you need them but don't use contacts, you'll need to buy the optional Zeiss Optical Inserts, sold separately, to ensure visual fidelity and eye tracking accuracy.

The dual-driver audio pods positioned next to each ear deliver personalized Spatial Audio based on your own head and ear geometry (an iPhone with a TrueDepth camera is required to create your personal profile). Audio raytracing analyzes the room's acoustic properties in order to adapt and match sound to the space.

For security, a new on-device Optic ID system uses iris recognition to verify users and unlock the headset. Eye tracking data is not shared with Apple, third-party apps, or websites, and data from the camera and other sensors is processed at the system level, so apps do not need to see your surroundings to enable spatial experiences.

The Vision Pro has a curved aluminum alloy frame with laminated glass at the front. The soft textile molded Light Seal flexes for a precise fit on your face and comes in a range of shapes and sizes. The cushioned headband, also available in multiple sizes, is breathable and stretchable, with a dial to adjust the fit. Power is provided via a cable from an external battery pack with around two hours' battery life, or use it while plugged in.

**A NEW OPTIC ID SYSTEM USES IRIS RECOGNITION TO VERIFY USERS AND UNLOCK THE HEADSET**



The headset is designed to allow for a comfortable, tailored fit.

Image rights: Apple Inc.

# Apple Vision Pro hands-on

**I WAS PRETTY** skeptical about the Vision Pro, but I came away very impressed with it and how immersive and intuitive it is.

First, my reading glasses were scanned so Apple could fit the headset with lenses. Next up was scanning my face to make sure I got the right size Light Seal. It was just like setting up Face ID, simply turning my head in a circle. And then I turned my head side to side to customize the spatial audio.

Navigating visionOS is delightfully simple. The interface works so well that it makes everything else — including the Meta Quest Pro — look downright dated.

I've never been a big fan of 3D movies, but I was blown away when I watched the 3D version of *Avatar: The Way of Water* on the Vision Pro. Engaging the Cinema Environment option made the experience feel even more movie-like, with everything else just melting away in the background. Things really get interesting with apps designed from the ground up for mixed reality, like Encounter Dinosaurs, which let me play with a butterfly on my finger before a large dino entered my virtual room, sensing me and following me as I moved around the room.

If there's one thing that diminishes the magic, it's the battery pack, which must remain tethered to the headset. It's the size of an iPhone and is not heavy; it's just something I wish I didn't need.

I've tried out a lot of promising version 1.0 headsets over the years, including the original Oculus Rift and Microsoft's HoloLens. And nothing is as intuitive and immersive as the Apple Vision Pro. The video pass-through experience is second to none, it's super easy to navigate the interface, and I like that you can decide how closed off (or not) you want the experience to be by turning the digital crown. That doesn't mean this wearable will be a hit. But it could be the start of something very big. **MARK SPOONAUER**

# New Mac models

## New Mac Pro, Mac Studio and 15-inch MacBook Air, all with Apple silicon

**COMPLETING THE TRANSITION** of its entire lineup to Apple silicon, the company has introduced a new Mac Pro, combining the versatility of PCIe expansion slots with its most powerful chip yet, M2 Ultra.

For demanding pro workflows such as video transcoding and 3D simulations, the new Mac Pro is up to three times faster than the previous-generation Intel-based model, and starts with twice the memory and SSD storage. It is available in a tower enclosure (starting at $6,999) or rack-mount ($7,499 and up).

M2 Ultra has Apple's most powerful 24-core CPU and a GPU with up to 76 cores, and supports up to a massive 192GB of unified memory, with 800GB/s of unified memory bandwidth. This is far more memory than the most advanced workstation graphics cards, Apple claims, adding that now "every Mac Pro has the performance of not just one but seven Afterburner cards built in."

With the M2 Ultra chip, Apple explains, the Mac Pro can play an unprecedented 22 streams of 8K ProRes video. If even this isn't enough, it features seven PCIe expansion slots, with six open expansion slots that support gen 4, which is twice as fast as before. This means audio pros can add digital signal processing (DSP) cards, for example, and video pros can add serial digital interface (SDI) I/O cards for connecting to professional cameras and monitors. Apple says you can ingest 24 4K camera feeds and encode them to ProRes in real time, all on a single machine, when using six video I/O cards.

Speaking of connectivity, the new Mac Pro has six Thunderbolt 4 ports on the back and two on the top, for a total of six — twice as many as before. It supports up to six Pro Display XDRs, and also has Wi-Fi 6E and Bluetooth 5.3, three USB-A ports, two higher bandwidth HDMI ports that support up to 8K resolution and up to 240Hz frame rates, two 10Gb Ethernet ports, and a headphone jack with support for high-impedance headphones.

### UPDATED MAC STUDIO

Apple has updated the small-footprint desktop Mac Studio, which now comes with M2 Max (starting at $1,999 with 512GB SSD storage and 32GB unified memory) or the new M2 Ultra processor

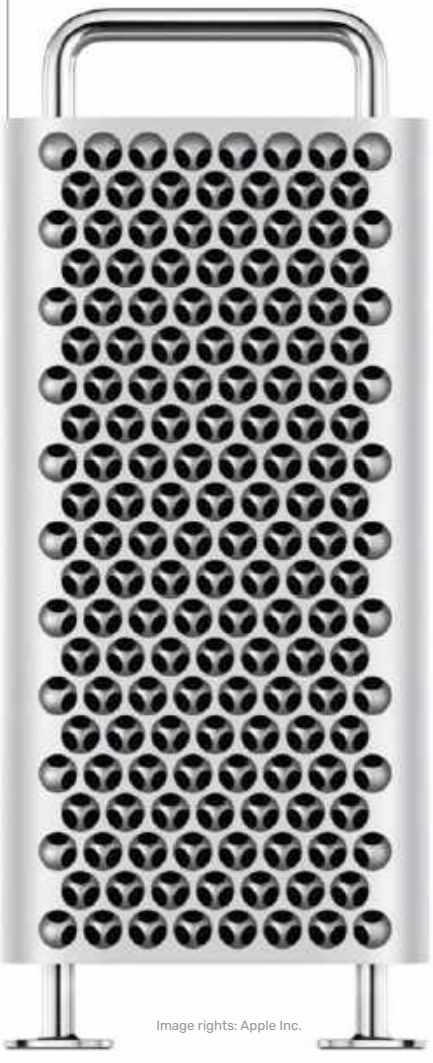


Image rights: Apple Inc.

The Mac Studio gets a faster M2 Max, or the M2 Ultra, which is 3x faster than M1 Ultra.

**EVERY MAC PRO HAS THE PERFORMANCE OF SEVEN AFTERBURNER CARDS BUILT IN**

(starting at $3,999 with 1TB SSD storage and 64GB unified memory).

M2 Max has a 12–core CPU, up to a 38–core GPU, and support for up to 96GB of unified memory with 400GB/s of memory bandwidth. With this chip, the new Mac Studio is up to 50% faster than the previous–generation Mac Studio and four times faster than the most powerful Intel–based 27–inch iMac. With M2 Ultra, Mac Studio is up to six times faster than the most powerful Intel–based 27–inch iMac, and up to three times faster than the previous–generation Mac Studio with M1 Ultra. With M2 Ultra, Mac Studio supports up to six Pro Display XDRs, driving over 100 million pixels.

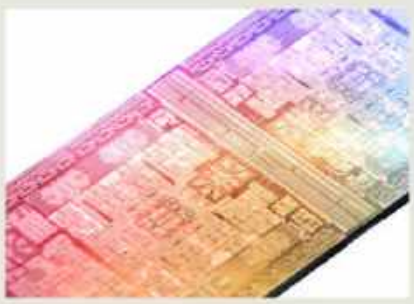
On the back, Mac Studio with M2 Max includes four Thunderbolt 4 ports, a 10Gb Ethernet port, and an enhanced, higher bandwidth HDMI port, enabling up to 8K resolution and 240Hz frame rates. It also has two USB–A ports, plus two USB–C ports and an SDXC card slot on the front to easily import photos. Mac Studio with M2 Ultra has all these, except an additional two Thunderbolt 4 ports on the front instead of just USB–C.

Both models now support the latest wireless technologies: Wi–Fi 6E, which delivers download speeds twice as fast as the previous generation, and Bluetooth 5.3.

The new Mac Pro gets an M2 Ultra chip, plus it now features a huge amount of expandability.

## > M2 Ultra

**APPLE'S LATEST PROCESSOR** uses the company's clever UltraFusion technology to connect the die of two M2 Max chips, doubling the performance. M2 Ultra is fabricated using a second–generation five–nanometer process and consists of 134 billion transistors — 20 billion more than M1 Ultra. Its unified memory architecture supports up to a breakthrough 192GB of memory, which is 50% more than M1 Ultra, and has 800GB/s of memory bandwidth — twice that of M2 Max. Its 24–core CPU is 20% faster than M1 Ultra, the GPU — which can be configured with 60 or 76 next–generation cores — up to 30% faster, and its 32–core Neural Engine, delivering 31.6 trillion operations per second, up to 40% faster.



## > 15–inch MacBook Air

**APPLE HAS ANNOUNCED** the first 15–inch MacBook Air. It has an Apple M2 chip, making it up to 12x faster than the fastest Intel–based MacBook Air, with up to 18 hours' battery life. It starts at $1,299 with 8GB of unified memory, configurable up to 24GB and up to 2TB of storage.

The silent, fanless design weighs just 3.3 pounds and is only 11.5mm (less than half an inch) thin, which Apple says makes it the world's thinnest 15–inch laptop. It comes in midnight, starlight, space gray, and silver.

The 15.3–inch Liquid Retina display has up to 500 nits of brightness and support for one billion colors. An all–new six–speaker sound system delivers immersive Spatial Audio, with a 1080p FaceTime HD camera built–in. There's a MagSafe 3 charging port, two Thunderbolt 3 / USB 4 ports for connecting accessories, and up to a 6K external display, plus a 3.5mm headphone jack.

The 13–inch MacBook Air with M2 chip has been cut by $100 and now starts at $1,099.

The "world's thinnest 15–inch laptop" has been built for both power and portability.

Image rights: Apple Inc.

# > iOS 17

## A roundup of the new updates coming soon

New features include customizable Contact Posters, sticker upgrades, and voicemail transcriptions.

**APPLE DESCRIBES iOS 17,** a free update coming this fall for compatible iPhones, as a major update, with enhancements to core apps and some all-new features.

The Phone app gains personalized Contact Posters, which enable users to customize how they appear using photos or Memoji, bringing a new look to incoming calls.

Live Voicemail generates a real-time transcription as someone leaves a voicemail, with the opportunity to pick up while the caller is leaving their message. With the power of the Neural Engine, Live Voicemail transcription is handled on-device and remains entirely private.

FaceTime now supports audio and video messages, so when users call someone who is not available, they can share a message that can be enjoyed later. FaceTime calls also get more expressive with Reactions such as hearts, balloons, fireworks, laser beams, rain, and more. These will also be available in third-party video apps.

In an exciting update to Apple TV 4K, FaceTime also now extends to the biggest screen in the home. Using Continuity Camera, users can initiate a video call directly from Apple TV, or start the call on iPhone and then hand it off to Apple TV, to see friends and family on their television.

Messages gets significant updates including an all-new stickers experience with new emoji stickers, the ability to create Live Stickers by lifting subjects from photos, and the option to add effects to Live Stickers that bring them to life. Messages also gets a new expandable menu to display iMessage apps, and Search becomes more powerful with search filters. A new catch-up arrow indicates where you last left off in the conversation, and replying inline is as simple as swiping on a text bubble. When you send an audio message, it's transcribed automatically so users can read it in the moment or listen later.

A new Check In feature can automatically notify a friend or family member that you have reached your destination safely, or share useful info if you are delayed such as location, battery level, and cell service status.

AirDrop gains new ways to share including NameDrop, which makes it easy to share contact information simply by bringing iPhones (or iPhone and Apple Watch) together. With the same gesture, users can also share content or start SharePlay to listen to music, watch a movie, or play a game while in close proximity between iPhone devices. AirDrop transfers now also complete over the internet if you move out of AirDrop range.

iOS 17 introduces StandBy, giving you full-screen glanceable information designed to be viewed from a distance when iPhone is on its side and charging. It's fully configurable and includes a range of clock styles, widgets, Live Activities, and Smart Stacks, which surface the right widgets at the right time.

Autocorrect is enhanced using on-device machine learning with inline predictions as you type, and Dictation leverages a new speech recognition model to make it even more accurate. Reminders introduces an intelligent grocery list experience, making shopping easier by automatically grouping related items into sections. There's a new Journal app, Safari adds enhanced Private Browsing protections, and the Health app offers new mental health features. AirTag can be shared with up to five other people, allowing friends and family to help you find a mislaid item, and Siri can now be activated by saying simply "Siri," without the "Hey".

Swapping contact details is as easy as holding two iPhones together.

**USING CONTINUITY CAMERA, USERS CAN INITIATE A VIDEO CALL DIRECTLY FROM APPLE TV**



Image rights: Apple Inc.

# > macOS Sonoma

## What's new in this upcoming release?

**IN THE NEXT** version of macOS, you can place widgets right on the desktop, interact with them with just a click and, through the magic of Continuity, access the extensive ecosystem of iPhone widgets. Widgets become interactive, enabling you to check off reminders, access home controls, play or pause media, and perform various tasks from a Mac, all directly from the desktop.

Video conferencing offers new features such as Presenter Overlay, which displays you on top of the content you are sharing, and Reactions, which enables fun gesture-triggered video effects such as balloons, confetti, and hearts, all in cinematic quality.

Safari gains a significant enhancement to Private Browsing, plus Profiles, which keep browsing separate between different topics or projects, with separate cookies, history, extensions, Tab Groups, and Favorites for each. You can generate Web Apps from sites and save them in the Dock.

The new Game Mode delivers an optimized gaming experience on the Mac by giving games the highest priority on both the CPU and GPU, meaning smoother and more consistent frame rates. Game Mode also makes gaming more immersive, significantly lowering input latency with popular game controllers by doubling the Bluetooth sampling rate.

Updates include many of those in iOS 17, including: enhanced PDF functionality with quick form-filling; inline PDFs in Notes; shared passwords; intelligent grocery lists in Reminders; all-new autocorrect; and next-level speech recognition in Dictation.

Add widgets to your desktop for easy access to many helpful functions.

# > Also coming this fall

### > WATCHOS 10

The Apple Watch is also receiving "a milestone update." Redesigned apps utilize more of the display for more glanceable information and simplified navigation, with Control Center now accessible using the side button. At a turn of the Digital Crown, a new Smart Stack highlights widgets relevant to the context. For cyclists, there are new metrics, Workout Views, and a new Cycling Speed view, plus automatic Bluetooth connectivity for power meters, speed sensors, and cadence sensors.

Especially for hikers, Compass automatically generates two useful new waypoints, and Maps has a new topographic map feature.

### > AIRPOD UPDATES

AirPods receive powerful new features, including Adaptive Audio, Personalized Volume, and Conversation Awareness. Plus, improvements to Automatic Switching and call controls make AirPods even easier to use.

Image rights: Apple Inc.

# > iPadOS 17

**IN ADDITION TO** the new features and enhancements in iOS 17, iPadOS 17 also brings a redesigned Lock Screen that you can personalize, now including Live Activities. Widgets are now interactive, and are available on both the Home Screen and the Lock Screen, where they use adaptive tinting to optimize legibility.

Working with PDFs is easier with AutoFill, which intelligently identifies and fills fields in forms, including in scanned PDFs; and in Notes you can even mark up and sketch in PDFs using Apple Pencil right in your note, as well as collaborate live with others in real time when you're sharing a note.

The Health app also comes to iPad, complete with interactive charts, and HealthKit enables developers to create innovative experiences designed for the iPad display.

Stage Manager adds even more flexibility to the position and size of the windows, and supports built-in cameras on an external display.

Freeform offers new drawing tools; support for hover, tilt, and snap to shape; the ability to add connection lines and new shapes to any object; and Follow Along to guide collaborators around the board.

**iPADOS 17 BRINGS A REDESIGNED LOCK SCREEN YOU CAN PERSONALIZE, NOW INCLUDING LIVE ACTIVITIES**

# > THE SHIFT

**MATT BOLTON** says Apple and Google's plans to avoid AirTag stalking are great (and overdue), but expose an artificial divide

**RECENTLY, APPLE AND** Google (with support from Samsung) announced a plan to create a new framework so that unwanted tracking devices, such as AirTags or Tile devices, can be detected by any phone, whether it's iOS or Android, and warn you that someone is following your movements. I find it strange that it's happening this slowly, long after AirTag stalking made it into the news, and with only a draft proposal submitted now that *may* turn into something final at the end of the year. Of course, I realize that it takes time to plan and negotiate changes between two tech giants, but the COVID exposure frameworks were integrated into phones much more quickly than this, and was a similar cross-platform system.

## THERE'S NOTHING STOPPING APPLE AND GOOGLE CREATING MORE COMPATIBILITY

Is it only stubbornness that's stopping Android phones from helping you find your lost stuff, as well as iPhones?

But more than that, it's just been incredibly obvious from the moment the first AirTag stalking news items appeared that a joint cross-platform approach like the COVID notifications was the only possible solution. So I don't know why it's only being discussed openly for the first time now, even if technical discussions were happening in the background. Apple has released multiple tweaks and tools since AirTags launched to help, but none was really satisfactory — being able to download an app on Android phones to scan for AirTags doesn't work if you don't know about AirTags or that the app exists. It always had to be a universal thing in operating systems.

And great, at least it's on the way now. But its existence does also raise a second point, which jumped out at me when I read a particular phrase from the draft: "a location-tracking accessory will be compatible with unwanted tracking detection and alerts on mobile platforms." Which drove home a reality to me — that there's nothing stopping the two companies from also creating compatibility for the good part of these trackers. You know, finding lost things using a network of GPS-connected devices. Apple and Google are creating a framework to detect these devices and warn you about one that's being used to track you, but not to detect these devices on your lost keys and then

In the future, you'll get an alert if any mainstream Bluetooth tracker has been secreted about you.

actually help you find your way back to them.

If you're thinking "Well, duh, why would they remove their lock-in bonus?" then you and I are thinking the same thing. But the artificiality of lock-in is rarely on such open display as this. I've written in these pages before that I think Apple should create some kind of compatibility for the Apple Watch on Android if it truly believes it's as much of a health benefit to people as it is — but we understand that it couldn't ever be quite the same as with an iPhone because of various Apple-specific sauces involved.

Trackers are simpler. They just identify themselves, so a phone can beam info to a server. There could be full cross-platform support — and now we know the two companies are working together! But only as far as they feel they *have* to, not as far as would be most helpful to all.

>>> Matt is Managing Editor at **www.TechRadar.com**, and previously worked on *T3*, *Mac|Life* and *MacFormat*. He's been charting Apple's ups and downs since his student days, but still hopes to hear "one more thing".



Image rights: Apple Inc.

# LETTER OF THE MONTH

**I found the DAC article in the April issue quite interesting, but one topic wasn't addressed. I play music from my MacBook Pro via an HDMI cable to one of the HDMI ports on my AV receiver. I do this either from my older MacBook Pro, which I keep around for video streaming, via a USB–C to HDMI adapter; or from my M1 MacBook Pro via its HDMI port.**

**Would a DAC device make the sound even better, or does my AV receiver take care of upgrading the sound quality? And are there DAC devices that take a signal from USB–C and output HDMI, or would I want to use an alternative input on the receiver? Thanks for any info on this.**
**STEVE JOHGART**

Cliff Joseph wrote this feature for *Mac|Life*, so we asked him for a response: "The issue with Macs is that the analog sound quality that comes out via the 3.5mm headphone socket isn't great — which is why you need a DAC to clean everything up. If your reader is using HDMI then he's getting a nice, clean digital audio signal from the MacBook to his AV receiver — so he shouldn't need a DAC at all."

Hopefully that clears up the question of whether you should lay down your money for a DAC.

## Older versions

In your February 2022 issue on page 28, Mac time saver #11, you suggest that to tidy a desktop with many different kinds of items, one has to just Ctrl+click on the desktop and choose the "Use Stacks" option. This is supposed to neatly organize everything into stacks of similar kinds.

I am on macOS Sierra 10.12.6 and this does not work. According to another article Stacks on the desktop only works in macOS Catalina 10.15. MacOS Mojave 10.14 and older only get stacks to work in the dock.

Perhaps it needs to be mentioned exactly what macOS this item works in and whether there's an alternative option.
**ROBERT SPROULE**

**We always use the latest version of whatever operating system we are testing on, so in this instance it's Monterey for a Mac, for an iOS/iPadOS feature, it's 16, and for Apple Watch it's watchOS 8, and so on. That said, quite often the majority of tips included in these features will work on older versions, so they can still be really useful, even if you're unable to upgrade.**

## Now more timely

Because of the lead time to print, bind, and distribute, *Mac|Life* would often say things like "By the time this goes to press…" in reference to news that would be happening as an issue would hit the stands. How will being digital–only affect that? Or is it too early to tell?
**ED FOSKEY**

**That's a very interesting question that we haven't talked about. Now that the magazine is digital–only we don't need to worry about lead times anymore — a week after going to press, the magazine is on sale. Compare that with previously, where it would be around a month after going to press, means we can be much more up–to–date in terms of what we publish. Now *Mac|Life* is almost as relevant as a website, but with the benefit of being a much more enjoyable reading experience.**

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Mac|Life

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# 61

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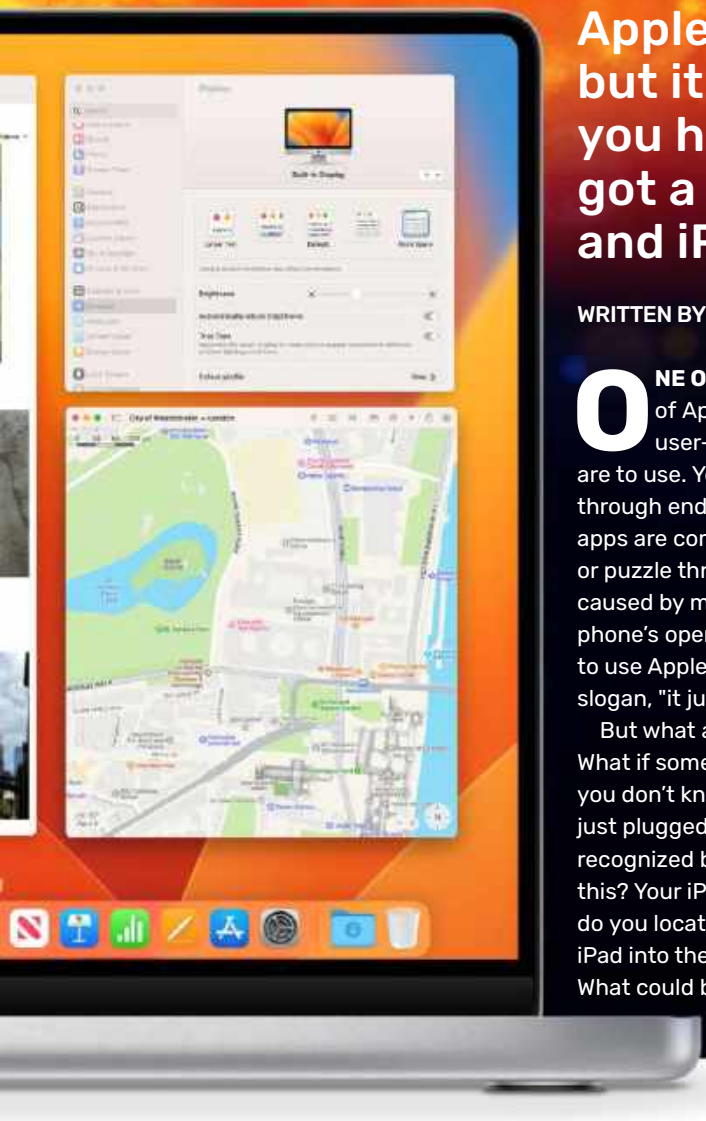
# FAST FIXES!



## Apple tech is reassuringly reliable, but it's easy to get bewildered when you hit an issue. Fortunately, we've got a round-up of easy Mac, iPhone and iPad remedies for you

WRITTEN BY IAN OSBORNE

**ONE OF THE** greatest advantages of Apple gear is simply how easy, user-friendly, and intuitive they are to use. You don't have to dig your way through endless patches before your apps are compatible with your hardware, or puzzle through quirks and hiccups caused by multiple versions of your phone's operating system. Instead, to use Apple's oft-quoted marketing slogan, "it just works".

But what about when it doesn't? What if something goes wrong, and you don't know what to do? You've just plugged in a flash drive, but it isn't recognized by macOS. How do you solve this? Your iPhone is lost or stolen. How do you locate it? You've plugged your iPad into the wall, but it isn't charging. What could be wrong?

In this article, we provide a range of fixes and problem-solving tips for your Mac, iPhone or iPad. Whether you've hit a snag that needs a workaround, or you simply want to know how to do something on your Apple device, we show you how.

### The golden rule

If your Apple device isn't behaving as it should, the first thing you should do is restart it. Turning it off and rebooting solves a great number of problems, and it works for all sorts of technology gear: your Mac, iPhone, iPad or Apple Watch, of course, but also your router, smart TV, internet-enabled radio, connected kettle and just about anything else. We'll tell you exactly how to reboot your individual Apple devices later.

Image rights: Apple Inc, Getty.

# Solutions for Mac

## Having problems with your notebook or desktop? We can help

### 1 Restart your Mac

Click on the Apple menu in the top-left corner of your Mac's screen, and from the menu that appears, select Restart. A window opens inviting you to Cancel or Restart. Click on Restart, and your Mac shuts down and reboots, hopefully solving the problem in the process. If you can't do this, maybe because your Mac has crashed or failed to boot up correctly when you switched it on, press and hold the Power button until it turns off. Count to ten to make sure everything has switched off completely, then press it again to restart the Mac.

### 2 Start in Safe Mode

Restarting in Safe Mode stops the Mac from loading certain elements, like login items or system extensions. It can be used to ascertain whether a problem has been caused by something you recently added. If your Mac has an Apple silicon chip, shut it down then press and hold the Power button until its startup options appear on the screen. Choose the drive you want to boot from, then hold Shift and click "Continue in Safe Mode"; log in. If you have a Mac with an Intel processor, restart your Mac while holding the Shift key. Release it when you see the login window, then log in as usual. You may be asked to do so a second time. When you see Safe Boot in the top-right corner of a login window, click it.

### 3 Reset PRAM/NVRAM

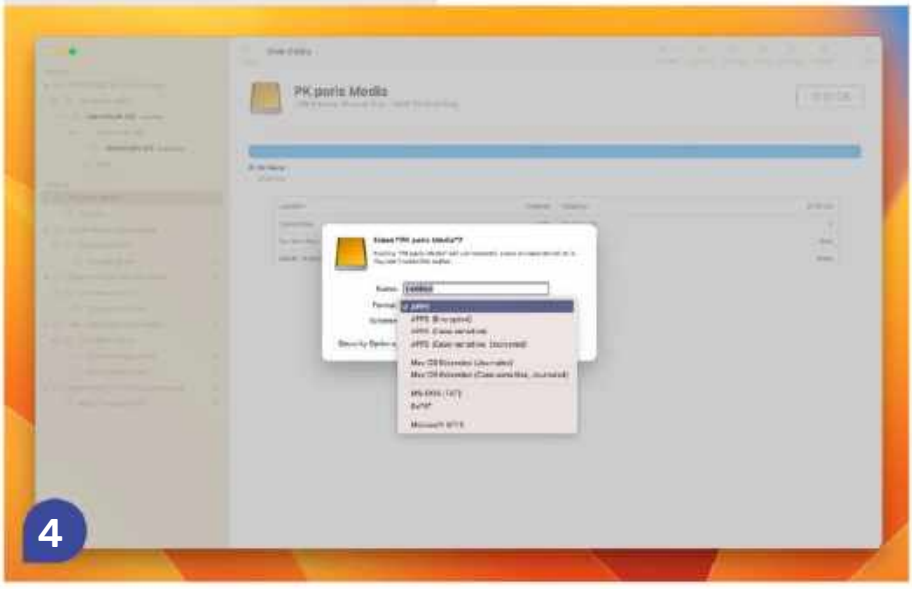
This tip only applies to Macs that use Intel or older PowerPC processors. Resetting PRAM/NVRAM isn't necessary on Apple silicon Macs; a simple restart is sufficient. PRAM (Parameter RAM, found in PowerPC Macs) and NVRAM (Non-volatile RAM, in Intel Macs) stores information such as boot volume, sound volume, screen resolution and more. If you have a problem in these areas, resetting PRAM/NVRAM as you boot up might fix it. Restart your Mac while holding down the P, R, Cmd and Opt keys. Let go when you hear the second tone or the Apple logo appears and disappears for the second time. When it reboots, you might need to reapply settings that have been reset.

### 4 Mac can't read external drive

If a USB flash drive or external storage drive cannot be read by your Mac, you should get a pop-up window inviting you to reformat it. If this doesn't happen, open Disk Utility manually. Either way, in Disk Utility, click on the drive in question in the sidebar, then click Erase in the toolbar. Type a name for the drive (anything you like), and choose a format from the options. If you're only going to use it with a modern Mac, choose APFS (encrypted or otherwise). Mac OS Extended (Journaled) is slower, but works with legacy versions of macOS/OS X as well as recent ones. If you want to use the drive with Windows and Linux PCs as well as your Mac, use exFAT.

### 5 Update macOS/apps

If you're having trouble with an individual app, check to see if there's an update available. Click the Apple menu, and if there's a numbered Update badge next to App Store, you have apps that need updating. Select the App Store option in the menu to open it, click Updates in the sidebar and update your apps. In the Apple menu, if there's a numbered Update badge next to System Settings, you have an operating system update to apply. Select this option to open your System Settings, and go to General > Software Update.



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## 6 Reinstall your OS

If your Mac has a serious software problem, is running very slowly or maybe won't boot at all, it's a good idea to reinstall macOS. You can do this without deleting your apps and data; the new install of macOS simply replaces the old one without erasing anything else. First, shut down your Mac. Now restart your Mac in macOS Recovery. If your Mac has an Apple silicon chip, press and hold the Power button until you see the startup options window. On an Intel Mac, press the power button and then immediately press and hold Cmd+R until you see the Apple logo. Either way, you get a window from which you should choose the "Reinstall macOS" option.

## 7 Disk First Aid

If you're having a problem with a connected or internal storage drive, you can use Disk Utility's First Aid option to fix it. Open Disk Utility; it's found in your Applications > Utilities folder, or simply type "Disk Utility" in Spotlight. Alternatively, if you need to repair your boot drive, or the Mac won't boot up at all, open Disk Utility from the macOS Recovery window (see tip #6 here on "Reinstall your OS").

In Disk Utility, highlight the disk you want to repair in the sidebar. Click the First Aid option in the toolbar, and choose Run in the window that appears. The drive is checked for errors, and you're invited to repair any errors that appear.

## 8 Your battery is draining too fast

There are several reasons why your MacBook's battery is draining too soon. If you've upgraded to a public beta version of macOS, this could be the problem — roll it back to the last official release.

Click on the battery icon in the top bar. The menu here shows if any apps are using a particularly significant amount of energy; quitting and relaunching a battery–hungry app could solve things.

Also from this menu, click Battery Settings. From this settings screen you can check your battery health, and turn on Low Power Mode to keep your notebook running for longer. If your battery health is poor, arrange to take it to your local Apple Store for a replacement.

## 9 Unresponsive app

If an app has become unresponsive, it may have crashed. Click the Apple menu and select the Force Quit option. A window appears, showing all your currently open apps. If the one that's unresponsive says "Not responding" in red next to it, it has indeed crashed. Click on it, then click the Force Quit button. If it's the Finder that's crashed, this button reads Relaunch. Either way, you're asked to confirm. Do so and the app quits (or Finder relaunches).

Image rights: Apple Inc.

## 10 Your Mac won't power off

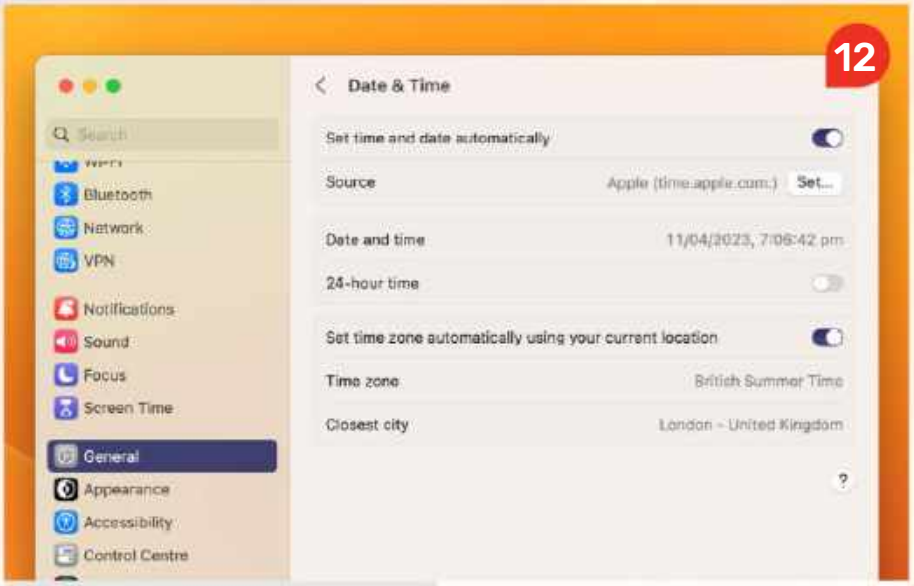
If your Mac won't shut down, it's usually due to one of two things. Either an app is still active and doing something, or you've multiple user accounts on your Mac and someone's still logged in on another account. If an app prevents your Mac from shutting down, click on that app and quit it manually. If there's something that needs to be done before it can shut down, you're told. If it's another user that's logged in on your Mac, you can shut down by inputting your admin password, though any unsaved changes made by the other user will be lost. If this is an issue, cancel the shutdown, switch to that user and have them log out before switching back to your account and shutting down.

## 11 Diagnose a problem

macOS has an in-built diagnostic that can check for problems. To use it, first turn your Mac off, and disconnect all peripherals and external drives except your display, keyboard and mouse. Disconnect Ethernet if necessary.

If your Mac has an Apple silicon chip, press and hold the Power button to turn your Mac on, and release it when you see the startup options window. Press Cmd+D on your keyboard. If you have an Intel processor, turn on your Mac and press and hold the D key. Release it when you see a progress bar, or are asked to choose a language.

Apple Diagnostics then runs. The results offer reference codes. Simply head over to **https://apple.co/40NtIvj** to see what they mean. When you're done, press Cmd+R to repeat the test, click Restart or press R to restart your Mac, or click Shut Down or press S to shut down.




## 12 Correct the system time

An incorrect system time can cause problems with apps that reference the system clock. To correct it, open System Settings, and click on General in the sidebar. Choose Date & Time, and if the "Set time and date automatically" switch is off, turn it on. If it's already on, turn it off and on again. Leave this switch off if you want to set the time manually, which you can also do in this window.

## 13 Add a new user

To add a new user to your Mac, in the Apple menu, open System Settings. Click Users & Groups in the sidebar, select the Add Account button and enter your administrator's password (the one you use to unlock your Mac). Fill in the window that pops up, using the pull-down menu to decide whether the new user has Standard, Administrator, or Sharing Only privileges.

## 14 Can't operate your scanner

If you're struggling to get your scanner to work, there's an easy alternative to its bundled software. Open the app Image Capture — it's bundled with macOS, and is found in your Applications folder. It should find your USB or network scanner immediately, and gives full controls over its functions. Use Overview to scan a "preview" of what's in the scanner, box out the part of the preview you want to scan, then click the Scan button.

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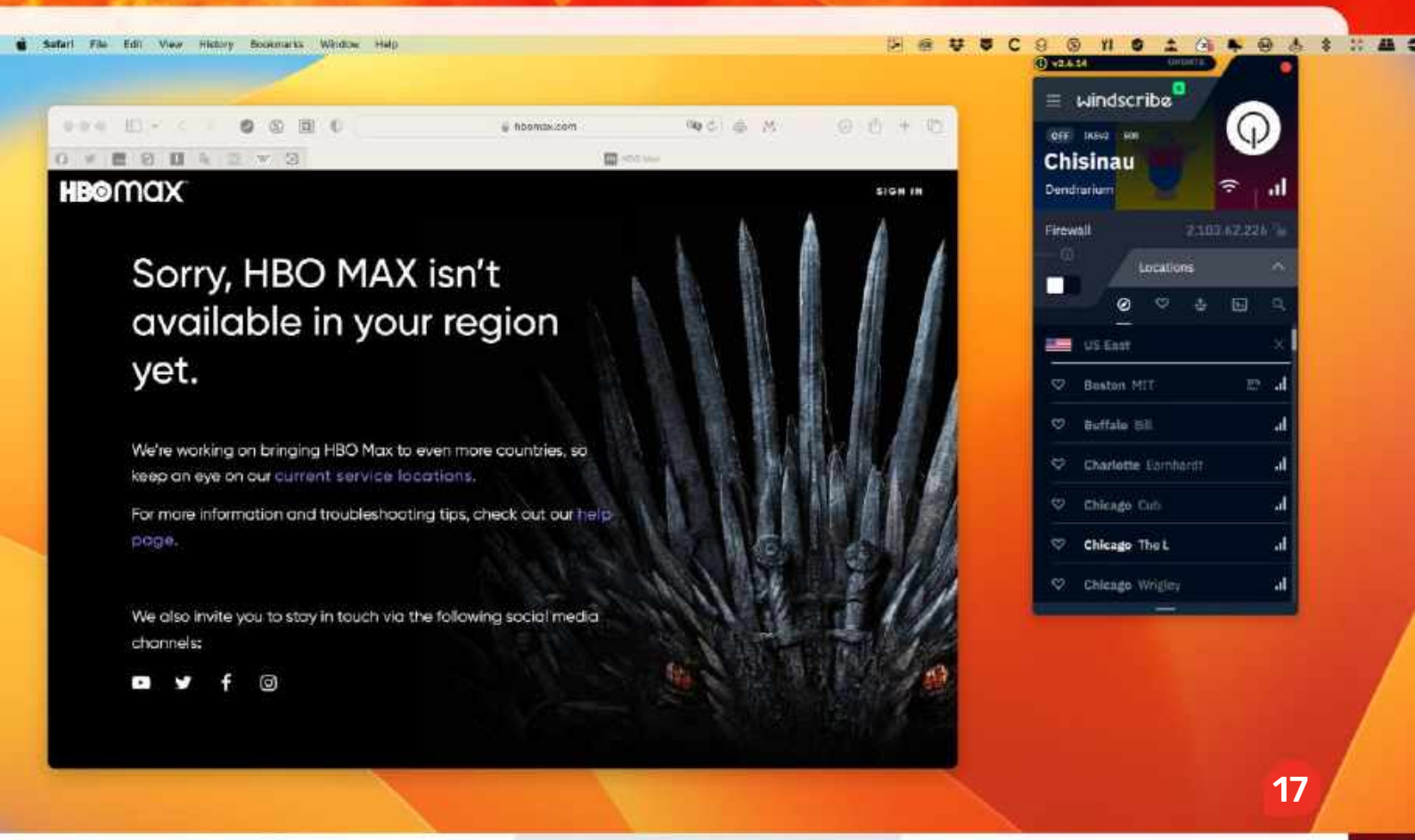


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## 15 SMC Reset

The System Management Controller (SMC) deals with hardware functions such as the fans, the keyboard, battery charging, external device ports and more. If your Mac is experiencing hardware issues and a simple restart doesn't solve them, try resetting the SMC. There are several different ways to do it, depending on what Mac you have. Check out **https://apple.co/3MHog8W** for information on resetting the SMC on your particular Mac.

## 16 Save an iWork file in MS Office format

The latest release of Apple's office apps, namely Pages, Numbers and Keynote, let you save and send documents in their equivalent MS Office formats directly from the Share menu. Just click on Share and choose Export and Send from the menu. Choose the format from the pop-up window and then choose Save to save out the document in the new format, or Send a Copy to send it to someone else using the options available in the menu.

## 17 You can't access a foreign website

Some websites are geolocked – that is, limits are placed on who can access them depending on whereabouts in the world they are. There's an easy way around this. Install a Virtual Private Network (VPN) app and make it look like you're located in the website's home country. It's great for when you're on vacation abroad, and you want to watch local television or sports broadcasts.

## 18 Can't see the printer

Firstly, make sure the printer is connected to your Mac using USB or to the local network over Wi-Fi. In the Apple menu, open System Settings and click Printers & Scanners. Click the "Add Printer, Scanner or Fax" button, and see if you can find it in the window that pops up. Click on it in the list and then click Add.

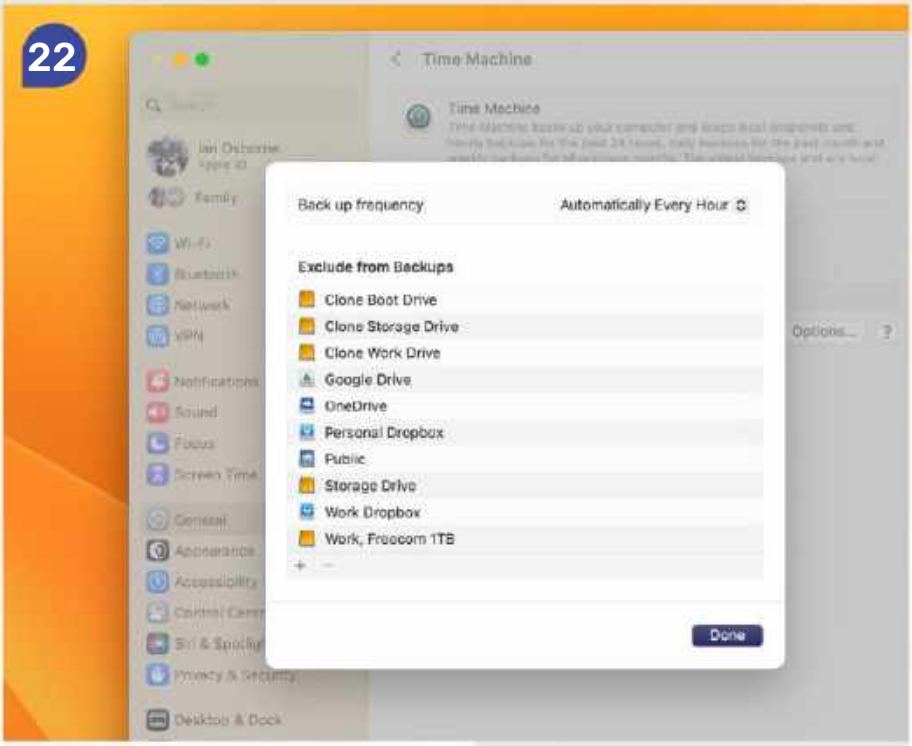
## 19 You need the internet, but no Wi-Fi network is available

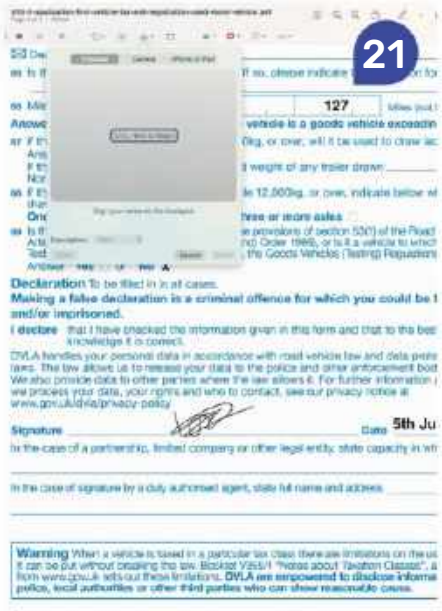
When away from home, you can use your iPhone as a personal hotspot for your Mac, taking your notebook online using your iPhone's cellular data. On your iPhone, go to Settings > Cellular > Personal Hotspot and turn on "Allow Others to Join". At the foot of this screen are instructions on joining the new hotspot using Wi-Fi, Bluetooth (not recommended) or USB. You can take an iPad or a non-Apple device online using this method too. Remember to keep aware of how much cellular data is being consumed.

## 20 A website won't load

If you can't load a certain website, first check if you have an active internet connection. If you have, head to **https://downforeveryoneorjustme.com** and enter the site's URL in the search field. Click the button and you're told whether that website is currently down, or if it's a problem at your end. If the latter, restart your browser or try a different one.

Image rights: Apple Inc.




## 21 Sign digital forms

Contracts and forms are often sent digitally these days, but you don't need to print them out to sign them. Open the form in Preview, and click the Markup icon (the pencil) in the toolbar. Use Markup to fill in the form. Click the signature icon as shown, and click Create Signature. You can do so by "signing" on your trackpad, iPhone or iPad, or by signing a piece of paper and using the Mac's camera to scan it. You then have a signature to add to digital forms.

## 22 Include and exclude drives from Time Machine

Open the Time Machine section in your System Settings, or using the Time Machine icon in the menu bar. Click the "+" icon and navigate to a drive to exclude it from a backup. Click on it in the excluded list and select the "–" icon to remove it from the list and back it up again. This is useful if you use cloud drives you don't want on Time Machine, or have cloned backups alongside your Time Machine backup.

## 23 Raise or lower the volume system–wide

Apps that have sound, such as Safari or Mac games, have their own volume control. But what if you want to change the volume system–wide? Click on the speaker icon in the menu bar and you can do it from there. Alternatively, there's the Control Center; click on its icon and you will see there's a sound volume slider. If your keyboard has function keys, F10, F11 and F12 control the volume, and if you open System Settings and go to Sound in the sidebar, you can configure it to your requirements.

## 24 Clean up your desktop

This is an easy one. If there are icons all over your desktop and you want to tidy them up, in the menu bar's View dropdown, choose Clean Up to position them according to a grid, or Clean Up By to arrange them by a chosen attribute. You could also use the Control Center to activate Stage Manager, another way of organizing your desktop.

## 25 Switch between US and other keyboards

If you want to use a different keyboard, open your Mac's System Settings and click Keyboard toward the foot of the sidebar. Click the Edit button next to Input Sources, and in the window that appears, click the "+" icon in the bottom–left corner. Add a new, foreign–language keyboard from the next screen.

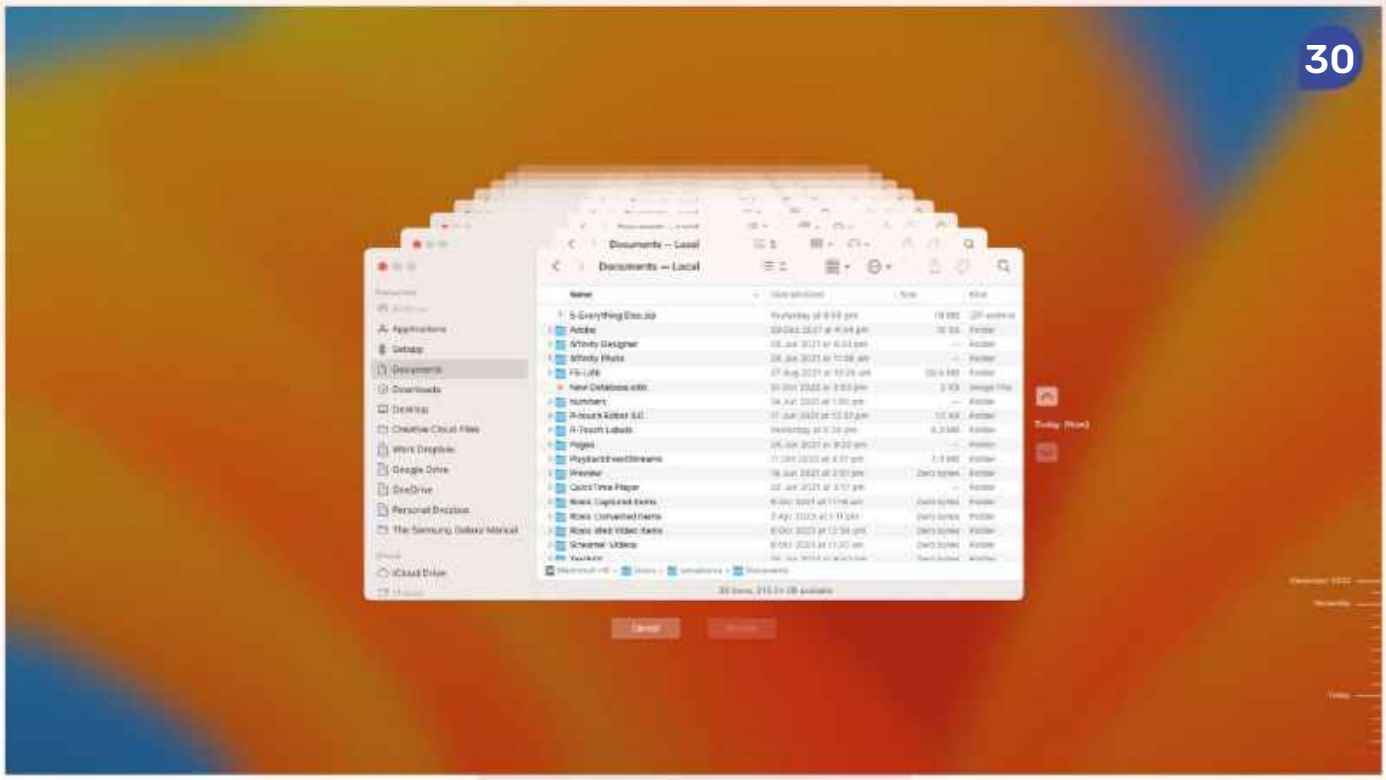
## 26 Modify your mouse or trackpad's behavior

In System Settings, click on Mouse or Trackpad, depending on which you're using. From here, you can make all sorts of tweaks and adjustments, such as changing the tracking speed, customizing the gestures and more.

## 27 System running slowly

If your Mac is not performing as it should, it might be running low on available memory. Close any running apps you don't need. Check your boot drive too — do you have any apps or files you no longer use? Delete them to clear some space. Remember the golden rule: restarting your Mac is always a good idea. Also, consider buying a maintenance app like MacPaw's CleanMyMac X (you can try it for free, **https://macpaw.com**) and do a scan. Cleaning out system junk using such an app can greatly speed up your Mac.

Image rights: Apple Inc, MacPaw Way Ltd.



## 28 Set up a new Mac from a Time Machine backup

If you wish to use a Time Machine backup of your old Mac to set up a new one, here's how. On your old Mac, use the Time Machine icon in the menu bar and select Back Up Now to make sure your backup is up to date. When done, plug the Time Machine drive into your new computer and go through the set-up procedure. When you reach the Migration Assistant screen, select the Time Machine option and click Continue.

## 29 Configure Spotlight searches

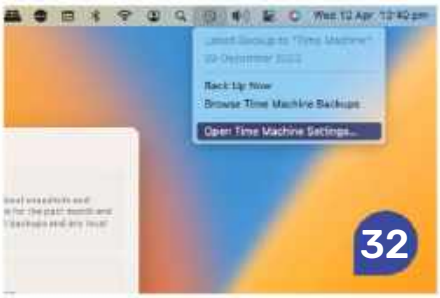
If there are drives or folders you'd rather not appear in Spotlight searches (cloned backups, for example), in System Settings, open Siri & Spotlight. Here you can untick categories you don't want to search for. Click the Spotlight Privacy button, and you can click the "+" sign to add a drive or folder. Click on an item in the Privacy window, then the "–" to remove it.

## 30 Rescue a single file from Time Machine

If you've edited or deleted a file and want an older version back, click the Time Machine icon in Finder's menu bar and select Browse Time Machine Backups. Navigate to the file you want back, click on it, and then click the Restore button.

## 31 Restore from Time Machine

Make sure your laptop Mac is plugged into the wall. Boot your Mac in Recovery Mode (see #6 "Reinstall your OS" earlier), and enter your password if necessary. On the next screen, choose the "Restore from Time Machine" option and then follow the on-screen instructions.




## 32 Back up to Time Machine

Get yourself a big external drive, and plug it into your Mac. If you don't get a message asking if you want to use it for Time Machine backups, click on the Time Machine icon in the menu bar and select Open Time Machine Settings. From here, click the "+" icon (or Select Backup Disk in earlier versions of macOS) and choose the external drive, following the on-screen instructions.

Image rights: Apple Inc.

# Quick fixes for iPhone

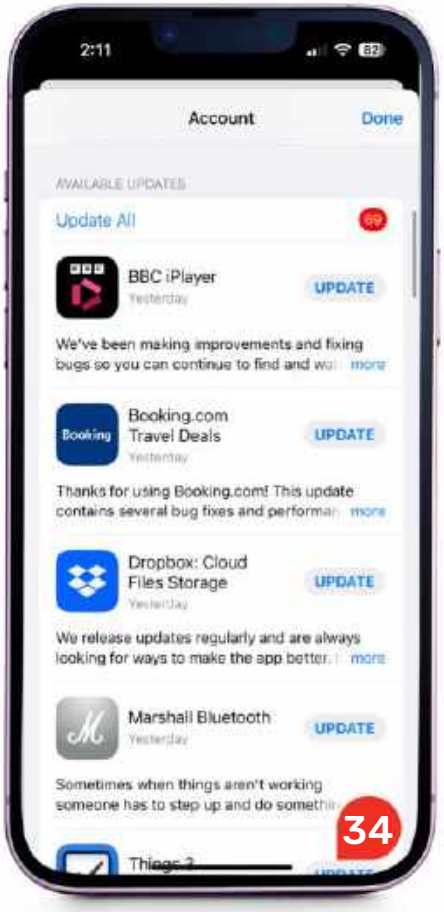
How to solve those painful iPhone predicaments

## 33 Restart your iPhone

If your iPhone isn't responding and it's running iOS 16, press and release Volume Up, then Volume Down, then press and hold the side button to force a restart. Release the side button when the Apple logo appears. For older iPhones, see the help page at **https://apple.co/3KTIr3t**.

## 34 Update your apps

If an individual app is misbehaving, you might be able to fix it by updating to a new version of that app. Open the App Store app, and in the top–right corner, tap the icon showing your photo or a silhouette. On the next screen, find and update the app in question (assuming there's an update available) or tap Update All.

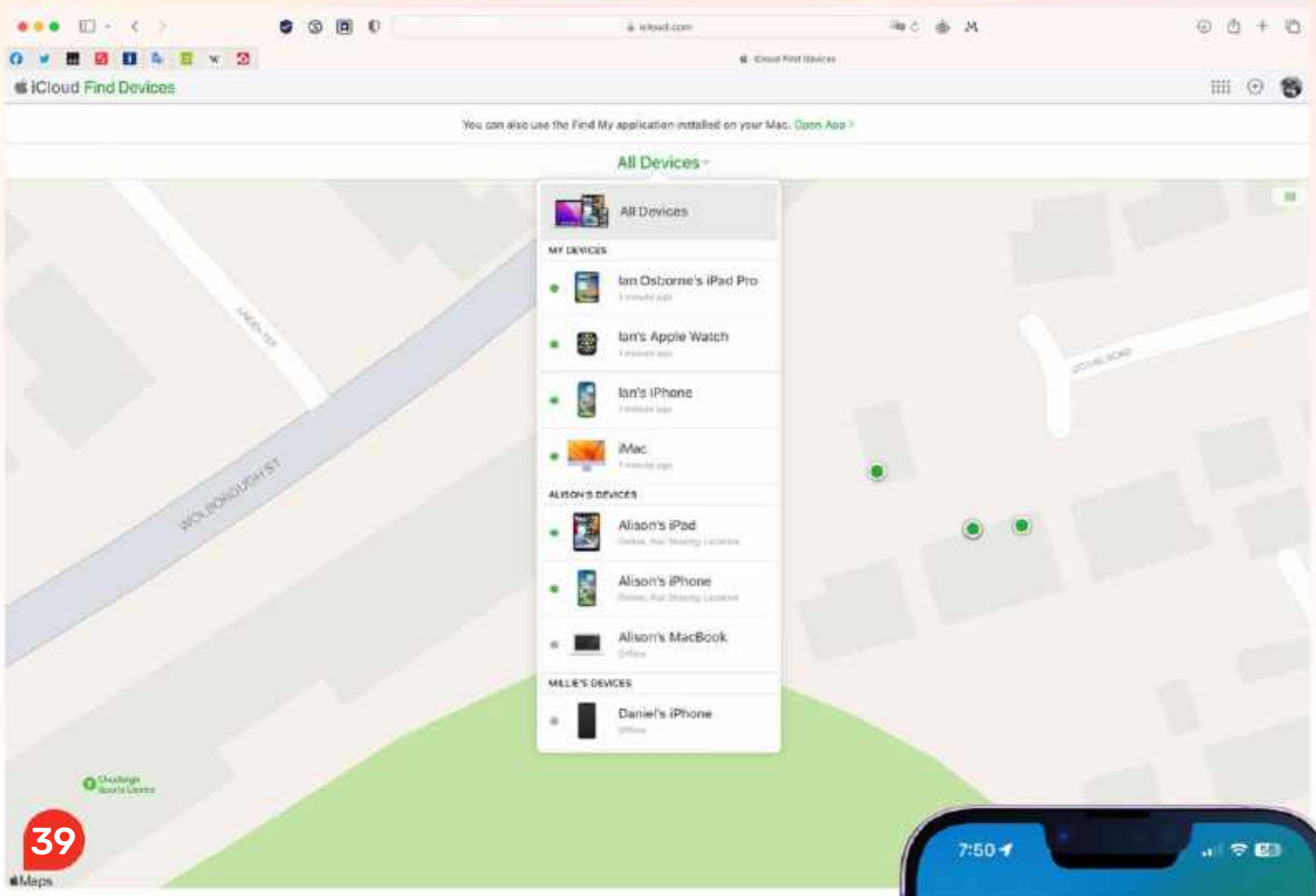



## 35 Fix an app that's unresponsive

If an individual app isn't working, open the App Switcher screen. To do this, on a phone with Face ID, swipe up from the bottom of the screen and let go in the center. On a phone with a Home button, double–click it.

On the App Switcher screen, swipe left and right to get to the app that's causing problems, then swipe it upwards off the top of the screen to close it. You can then reopen it from the Home screen.

Image rights: Apple Inc.




## 36 Cabled earbuds misbehaving

If you use cabled earbuds in an older iPhone with a headphone port, and one or both of the buds keep cutting out or simply won't play, try this. Get a plastic toothpick or other such implement and wiggle it gently inside the headphone jack. Chances are the headphone jack isn't sitting correctly due to pocket lint getting in it. Dislodge this lint and everything should work correctly again.

## 37 A dirty screen

The best thing to use to clean a dirty screen is a microfiber cloth. Squirt a little low– or zero–alcohol cleaner on it if you wish, or just use a little water (add this to the cloth, not the phone). You can buy disposable wipes especially made for screens, or simply use those made for spectacles instead.

## 38 Wi–Fi problems

If your iPhone won't connect to a Wi–Fi network, open the Settings app and on the Wi–Fi page, turn it off and then on again. If that fails, check your router (is everything else able to connect?), or restart your iPhone. If all else fails, go to Settings > General > Transfer or Reset iPhone > Reset > Reset Network Settings. After doing so, reconnect to your network.

## 39 Your iPhone is lost or stolen

This tip works for most Apple devices, not just the iPhone. To trace a device that's been lost or stolen, open the Find My app on another Apple device logged in to the same Apple ID or on iCloud.com using anything with a web browser. Under the Devices tab, you can see where your iPhone — or other Apple device — is located.

## 40 Siri is not responding

If Siri stops working on your iPhone, go to Settings > Siri & Search. Make sure "Listen for 'Hey Siri'" and "Allow Siri When Locked" are on. Also, tap Siri Responses and make sure Prefer Spoken Responses is selected. Now try using Siri again.

Image rights: Apple Inc.

## 41 Take photos in JPEG

If you want to take photographs in JPEG and videos in H.264 formats instead of the default HEIF/HEVC, go to Settings > Camera > Formats and under Camera Capture, tap Most Compatible. To go back to HEIF and HEVC, go back to this screen and tap High Efficiency.

## 42 iPhone dropped in water

If you drop your iPhone in a puddle, down the toilet or otherwise immerse it in water, turn it off completely — don't just lock the screen. When it's off, dry it with a clean towel, tissues or paper towels. Remove the case, if you have one. Eject the SIM card and dry this off too. When done, wrap it in a towel and leave it in a warm, dry place with some airflow for 24 hours. Don't try to turn your iPhone on or charge it until it's completely dry.

## 43 One-handed typing

If you need to type with one hand while you do something else with the other, tap and hold the globe or emoji icons in the bottom-left of the keyboard. In the bottom row of the menu that appears, choose between a smaller keyboard on the left or the right, or return to a full-sized keyboard. The smaller keyboards are easier to reach across with your thumb.

## 44 Delete and reinstall an app

If an app keeps crashing or locking and there's no update available, delete it and reinstall. On the Home screen, tap and hold the app in question, then tap Remove App in the menu that appears. Confirm, and it's deleted. Now go to the App Store, find the app in question using the search facility, and tap the cloud with the down-pointing arrow to install it again.

## 45 Battery draining too fast

There are several ways to slow down the speed at which your battery drains. Don't use beta versions of a new iOS release, as they can be more power-hungry than the final release. Cut down on your use of battery-hungry apps such as YouTube and Maps. If you must use Facebook and YouTube, do it through Safari rather than their dedicated apps. If your battery regularly depletes too quickly, try a factory reset. Also, go to Settings > Battery > Battery Health & Charging and check the maximum capacity. If it's 80% or less, take your iPhone to an Apple Store and ask about replacing the battery.

## 46 iPhone not charging

If you're using a wireless charger, reposition your iPhone until you get the charging tone. If this doesn't work, try removing your case. If you're charging using a cable, make sure it's connected to a



Image rights: Apple Inc.

powered USB port. Try a different one, or a different USB plug. Clean the connector. If that fails, try a different cable.

## 47 Touchscreen not working

If your screen isn't responding to your taps, restart your device. If this fails, charge it for an hour. If there's a crack in your screen and none of this works, take it to an authorized Apple reseller for a repair.

## 48 Stop your iPhone ringing at night

If you keep getting phone calls and notifications while you're asleep and would rather not, open the Control Center by swiping down from the top–right corner (iPhone X or later) or swiping up from the bottom of the screen (earlier iPhones). Tap Focus, then tap Sleep. While in Sleep Mode, calls are sent to voice mail, notifications silenced and the always–on screen (if you have one) is turned off.

## 49 Solve frustrating Bluetooth issues

The most straightforward way to address Bluetooth issues is to go to Settings > General > Transfer or Reset iPhone > Reset and tap Reset All Settings, but you'll have a lot of setting up to do afterwards. There are a few things you can try first. Go to Settings > Bluetooth and turn Bluetooth off and on again. If your Bluetooth connectivity is only proving problematic with one device, on the Bluetooth Settings screen tap the "i" icon next to that device, then tap Forget This Device. Follow the instructions that came with the Bluetooth gadget in question to pair it with your iPhone again.

## 50 Lock in Portrait Mode

When using apps such as Safari, the iPhone automatically switches between portrait (vertical) or landscape (horizontal) mode. But there are times when you might not want this to happen, such as using your phone while lying in bed. To temporarily lock your iPhone in Portrait Mode, open the Control Center and just tap the icon that shows a lock with a circular arrow around it. To unlock Portrait Mode so that it changes automatically again, repeat this step.

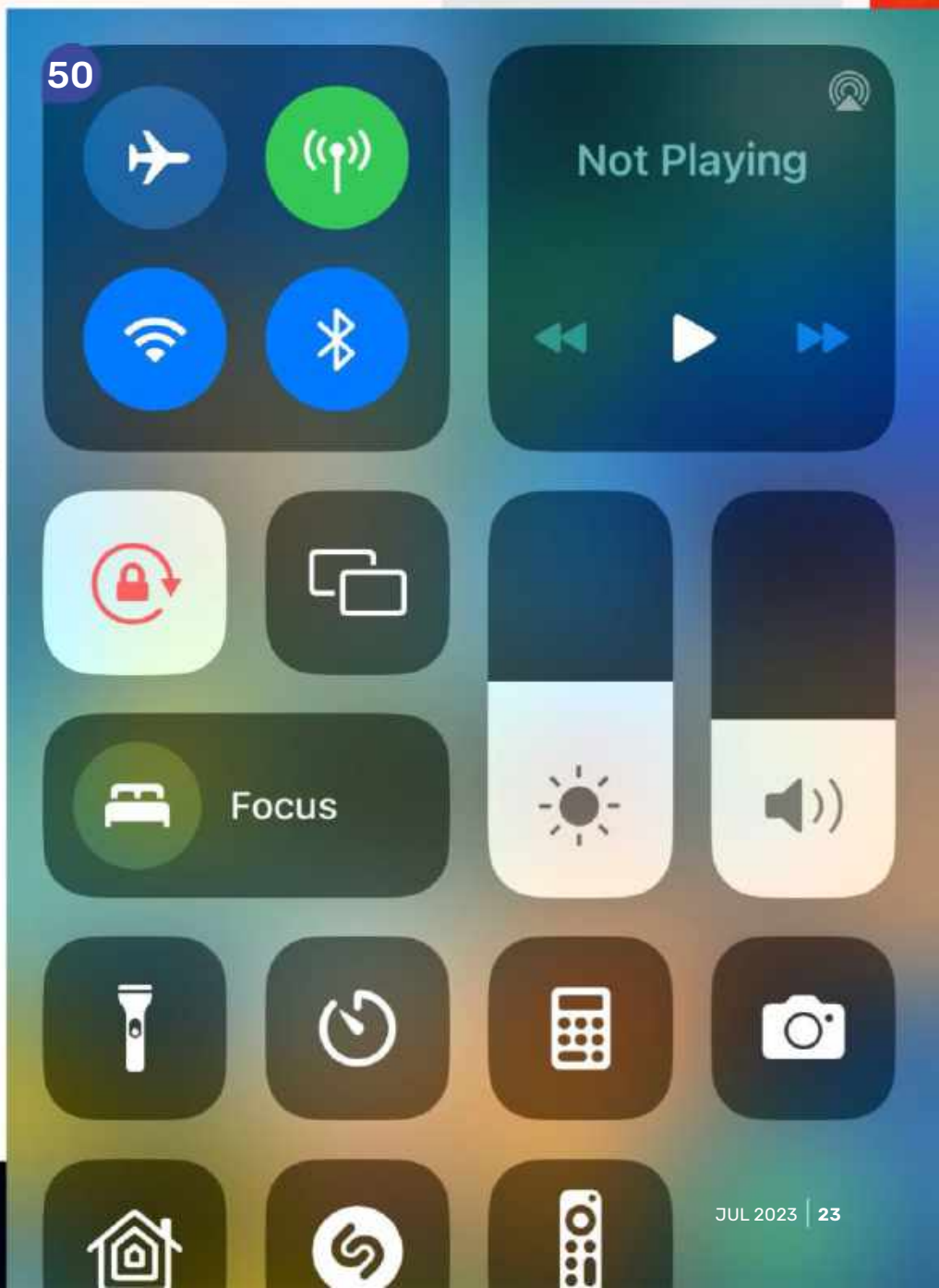



Image rights: Apple Inc.

# iPad remedies

If you're having problems with your Apple tablet, try these tips

## 51 Restart your iPad

To force restart an iPad that has Face ID, or Touch ID in its top button, press the upper and lower volume button in quick succession, then press and hold the top button; release it when you see the Apple logo. If your iPad has a Home button, press and hold the Home button and top button together, releasing when the Apple logo appears.

## 52 Charging problems

If your iPad isn't charging, or is charging extremely slowly, check the USB socket into which it's plugged. It must deliver at least 2.1A of power. If you've plugged it into a lower-powered socket, perhaps because you've used your iPhone's charging plug by mistake, try using a 2.1A charger instead.

## 53 Apple keyboard not working

If you're using a Magic Keyboard, make sure you have iPadOS 14.5 or later. If you use a Magic Keyboard or Smart Keyboard Folio, don't use another iPad case with it. Wipe the connectors with a microfiber cloth. Connect your keyboard, and if it doesn't work, restart your iPad and try again.

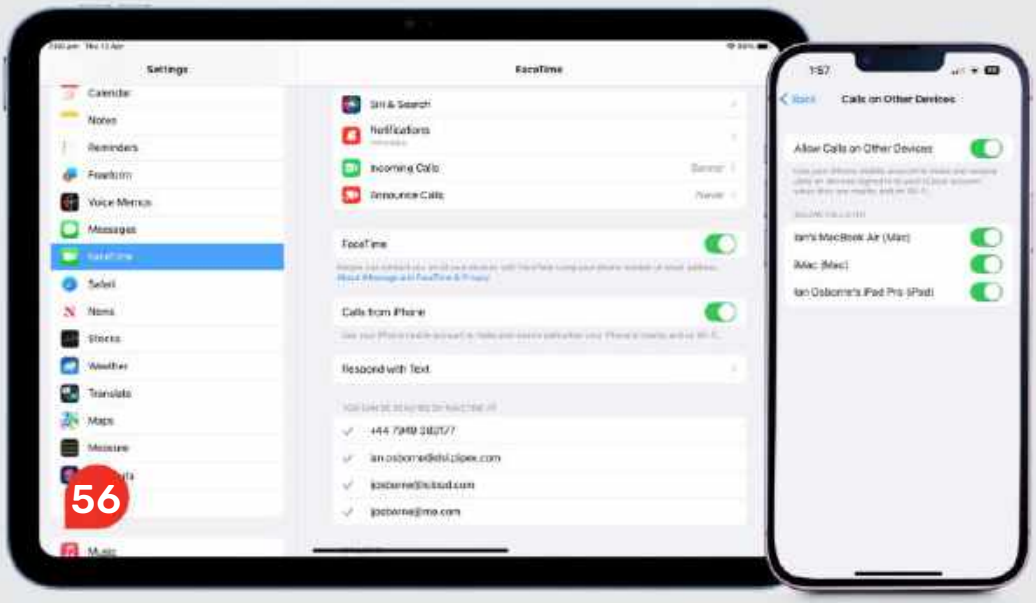
## 54 FaceTime with Android or Windows

It's possible to FaceTime with someone who uses an Android or Windows device, but you can't call them in the same way you do with an Apple user. Instead, open the FaceTime app and tap Create Link. You can then send a link to join a chat using one of the methods offered in the pop-up window. When the Windows or Android user receives the invitation to join, they can click on it to open a FaceTime chat in a web browser.

## 55 AirPrint failing

If you're trying to print out from your iPad and it isn't happening, first make sure your printer is AirPrint-compatible, and the printer and your iPad are on the same Wi-Fi network. There's a list of compatible printers at **https://apple.co/43rGdP1**.

Open the App Switcher (swipe up to the middle of the screen, or double-click the Home button). Tap Print Center, and cancel the queued print job. Turn the printer off, count to ten and turn it on, then try again.

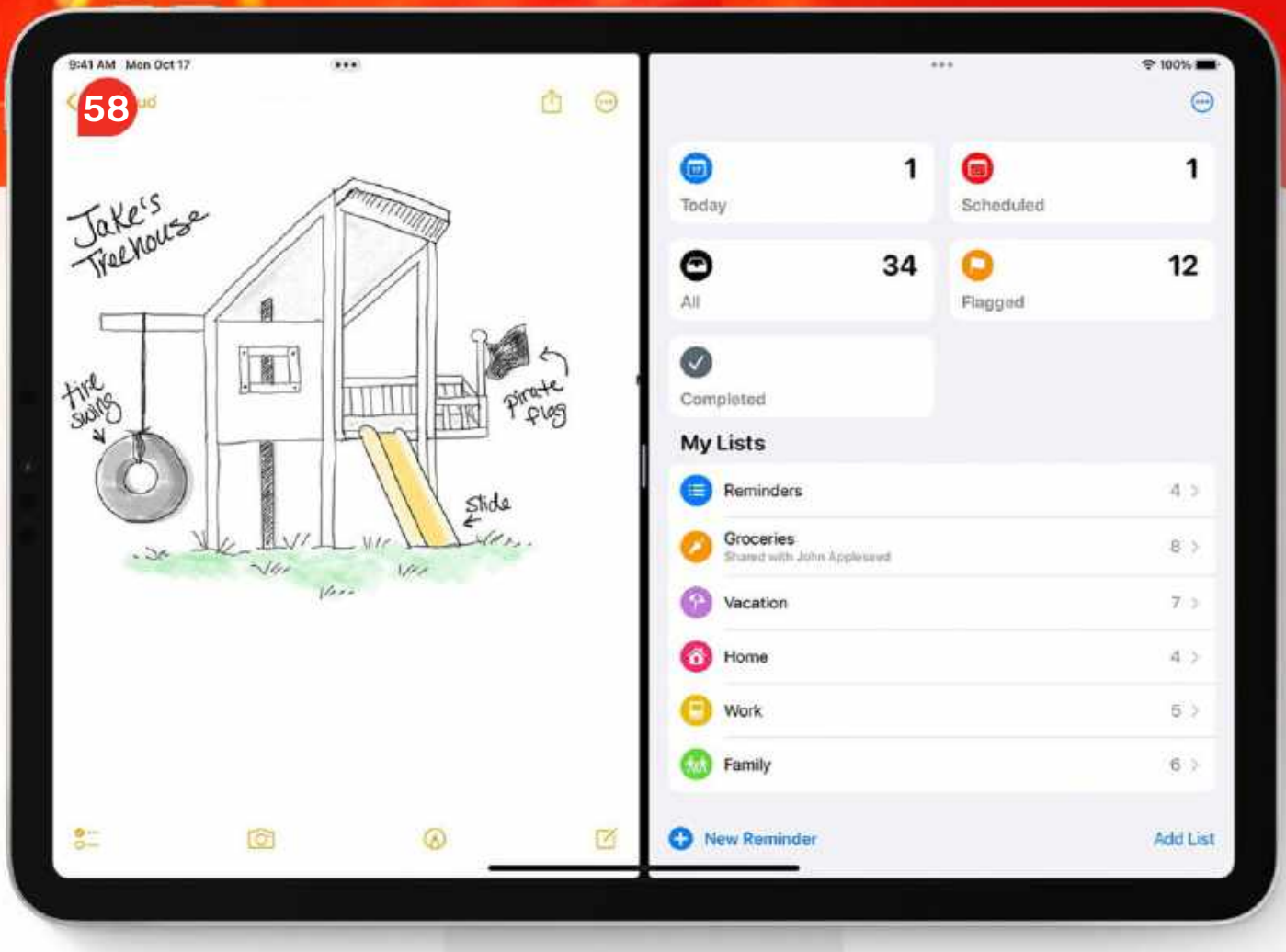



## 56 Take an iPhone call on your iPad

You can take iPhone calls on your iPad or Mac, as long as they're all on the same network and logged in to your Apple ID. It's called Handoff. On your iPhone, go to Settings > Cellular > Calls on Other Devices, activate "Allow Calls on Other Devices" and turn on each individual device you want to allow calls on. On your iPad, go to Settings > FaceTime and turn on the FaceTime and "Calls from iPhone" options. Now you can make and receive calls on your iPad.



Image rights: Apple Inc.

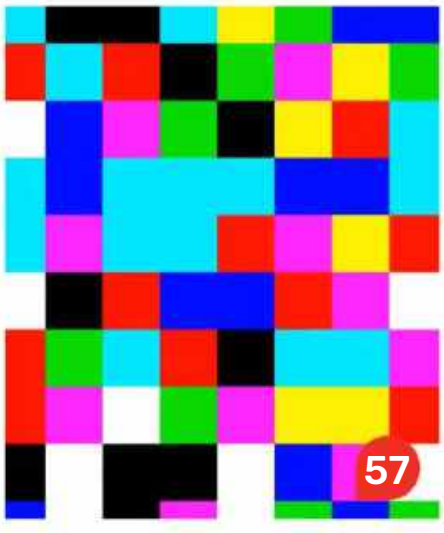



## 57 Stuck or dead pixels

If you have a pixel on your screen that won't change color or remains black, try these fixes. Place a finger or thumb on the faulty pixel and gently rub it. This might bring it back to life.

On YouTube, search for "pixel fixer". There are numerous videos that rapidly flash colors on your screen, which again might bring your dead pixel back to life.

If this fails, it seems your pixel is beyond repair. You can put up with it, or take the iPad to an Apple Store and talk about a replacement screen.




## 58 iPad multitasking

Multitasking enables you to use two apps open on the screen at once, or even the same app twice. There are several ways to multitask on your iPad. To use Slide Over, while using an app, swipe up from the foot of the screen to access the dock, then drag another app onto the side of the screen. It appears in a sidebar. To close the sidebar app, swipe it off the side of the screen.

For Picture–in–Picture, when watching a video in a supported app, look for a big square containing a little square in the bottom right corner. Tap it to watch your video in a window.

For Split View, open a Slide Over app and, using the gray line at the top, drag it to either side of the screen. The apps appear side by side. Resize by dragging the line between them, and close one of the apps by dragging this line all the way to the side of the screen.

To open the Multitasking Tools, tap the "..." at the top of an open app. Use the icons that appear to open Full Screen, Split View or Slide Over.

## 59 iPad won't turn on

Hold your iPad in portrait orientation, with the top button at the top. If it has a Home button, press and hold this Home button and the top button until you see the Apple logo. If it doesn't have a Home button, quickly press and release the upper volume button, then the lower volume button, then press and hold the top button until you see the Apple logo.

## 60 Cellular data issues

If you have an iPad with cellular connectivity and are having issues with it, open the Control Center and check that you're not in Airplane Mode. If you are, turn it off. If the status icon at the top of the screen shows No Service, then there's no mobile internet available in your current location. If you can't get a connection no matter where you are, go to Settings > Cellular and turn it off and on again.

## 61 Which iPad do I have?

Find the model number on the back of the device, in the small print. It's a letter followed by four numbers. Now go to **https://apple.co/416My0y** and look it up. Press Cmd+F and type the number on a Mac, or tap the Share icon and tap Find on Page on a mobile device.

Image rights: Apple Inc.

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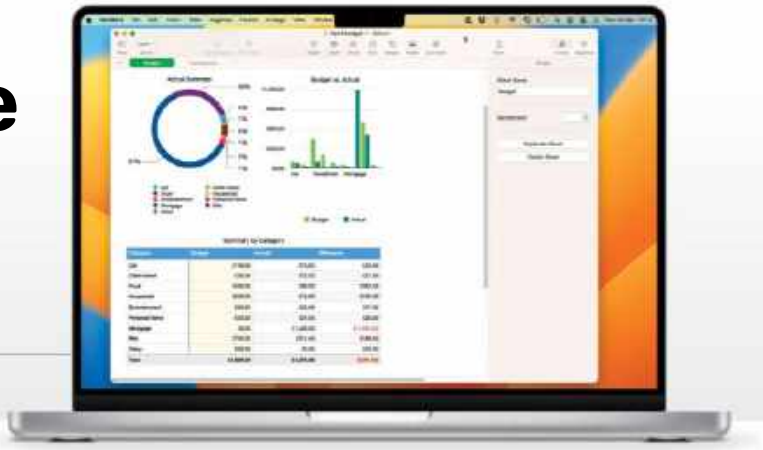
# Create and share a family budget

Keep family finances on track with this shared Numbers spreadsheet



**REQUIRES**
Numbers, macOS 12 or later/iOS 15 or later

**YOU WILL LEARN**
How to use Numbers to create a family budget

**IT WILL TAKE**
30 minutes

**BUDGETING IS ALWAYS** a good idea, but it's especially important with the ever–increasing cost of living. With soaring energy bills and prices rising for everyday essentials such as gas and food, managing our family's monthly expenditure has become more crucial than ever before.

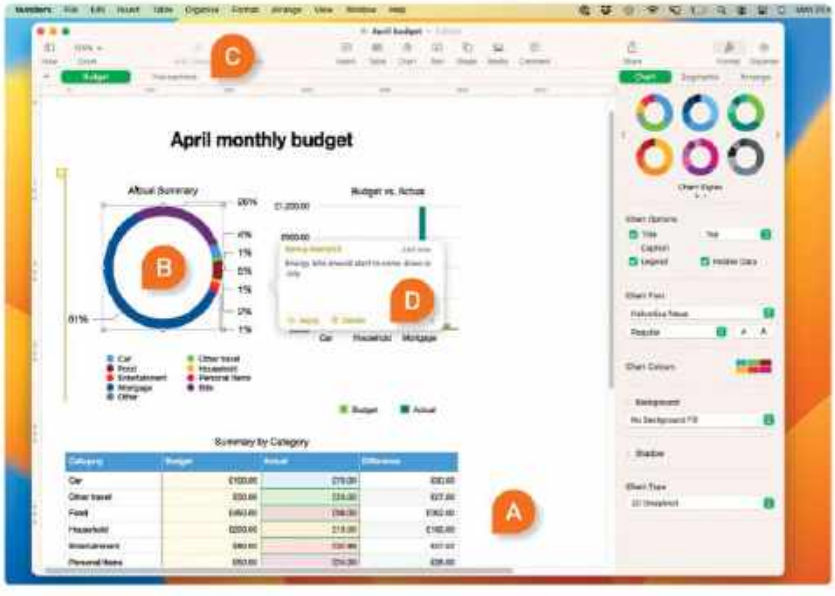
Creating a budget isn't just about managing expenditure, however. It also enables us to plan for exciting vacation trips and other large outgoings. And while there are lots of specialist apps that will help you create and manage a budget, there's also one that's completely free to download and use, works on all Apple devices, and syncs with iCloud. It also enables you to collaborate with others on your budget. Good old Numbers.

We'll show you how to create a budget in Numbers, share it, and update it on Mac or iPhone as you spend so that everyone in the family can contribute toward keeping those finances on track.

If you budget on a monthly basis, you will probably want to create a new document for each calendar month, using this method.

**KENNY HEMPHILL**

## QUICK LOOK A monthly budget in Numbers




**A DATA TABLE**
The table holds data for the budget in each category and pulls in money spent from the Transactions tab.

**B PIE CHART**
The pie chart displays the percentage of your income that is being spent in each category.

**C INPUT DATA**
Add purchase details to the Transactions tab to keep the budget up to date.

**D HANDY NOTES**
You can add notes to your spreadsheet to share information with other family members.



Image rights: Apple Inc.

# **HOW TO** Create and share a budget

## 1 Choose a template

Launch Numbers on your Mac and choose New Document to display the Template Chooser. We're going to use the Personal Budget template to create our budget. So, click on that and choose Create to open the template.

## 2 Format the template

Double–click on the Monthly Budget title and replace the text. With it selected, click Text in the Format panel and choose from the style options. You can delete the text below the title if you like.

## 3 Create categories

In the table, select the category names one at a time and replace them with your chosen categories. If you need more rows, hover the pointer over the row above Total, click the down arrow and choose Add Row Below.

## 4 Add budgets

Go through each category in the table and delete the figure in the budget column, then replace it with the amount you want to budget for that category each month. When you've finished, you'll have your budget for the month.

## 5 Set up transactions

The Actual column in the table shows how much has been spent to date. To add your own outgoings, you need to use the Transactions tab. Click on it and select all the transactions in the table, then press Delete.

## 6 Add your spending

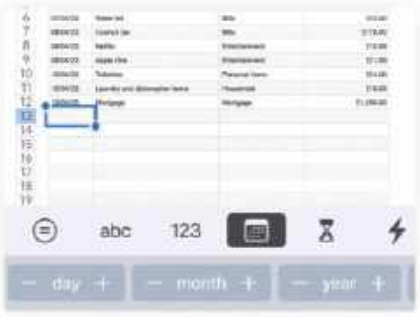
Each time you spend money or pay a bill, log it in the Transactions table. Type the Date and the item description. Type the category, using the categories you set up in step 3. Then add a value in the Amount column.

## 7 Modify chart style

To change the look of one of the charts, click on it and choose a Chart Style from the Chart tab on the right. Click on the labels and select "Edit Data References". Then select the label, click the Style tab and choose a color in Fill.

## 8 Share a budget

To share a budget document, click the Share menu in the toolbar and make sure Collaborate is chosen in the menu. Click "Only invited people can edit" to manage permissions, then choose a person or method to share.




## 9 Add spending on iPhone

Open Numbers on iPhone and select the doc. Tap Edit, then tap in the first empty row. Tap the keyboard icon and type the details of the expenditure, choosing from the menu in the Category column.

Image rights: Apple Inc.

# Get more from Raw

## How to master non-destructive Raw editing skills

PART 2 of 3

**REQUIRES**
Affinity Photo 2 ($69.99)

**YOU WILL LEARN**
How to jump back and forth between editing a Raw file and working with extra layer-based tools

**IT WILL TAKE**
15 minutes

**PROFESSIONAL PHOTOGRAPHERS TEND** to shoot in their camera's Raw format rather than capturing images as JPEGs. This is because a Raw file contains much more information about the subject's colors and tones than a compressed JPEG version. The extra information in a Raw file enables a photographer to develop their photo to achieve a better-looking shot that is free from visual artifacts such as noise or jagged bands of color.

Affinity Photo's Raw editing workspace is called the Develop Persona. You can use its powerful tools to overcome problems with exposure and noise and even counteract lens-induced distortions. You can then take the Raw file into the standard editing workspace (the Photo Persona) and enjoy using other tools such as masks and filters. If you then decide you need access to the full Raw version then you can pop back into the Develop Persona, tweak the Raw file, and the changes will be updated in the layered version in the Photo Persona. This round-tripping gives you the best of both worlds: Raw editing and compositing tools such as layer masks. **GEORGE CAIRNS**

## QUICK LOOK Discover key features in the Raw workspace

**A DEVELOP PERSONA**
When you choose File > Open and browse to select any Raw format file, it will open in the Develop Persona.

**B REVEAL CLIPPING**
Click here to turn on a highlight clipping warning. Overexposed highlights will appear as red patches.

**C SELECTIVE ADJUSTMENTS**
The Gradient overlay tool enables you to target specific areas, such as a face, and selectively lighten them.

**D POWERFUL PANELS**
Click these panel tabs to access a range of powerful Raw editing tools such as Lens Correction profiles.



Image rights: Apple Inc, Serif (Europe) Ltd.

## **HOW TO** Jump between editing workspaces

### 1 Open a Raw file

Different cameras capture a range of Raw formats. A Pro model iPhone saves a Raw file as a DNG. A Lumix camera captures an RW2. When you open a Raw format file in Affinity Photo 2, it appears in the Develop Persona.

### 2 Analyze problems

We can see from the Histogram graph that our unedited Raw file is underexposed. The graph is clumped toward the shadow end at the left. However, we still have some clipped (overexposed) highlights indicated in red.

### 3 Improve exposure

In the Basic panel, drag the Exposure slider right. The histogram graph slides right to indicate brighter pixels. To reduce the red clipping warnings, go to Shadows & Highlights and drag the Highlights slider left.

### 4 Selective tweaks

To brighten the subject's face without overexposing other areas, click on the Overlay Gradient Tool. Set Type to Radial. Draw a radial gradient over the subject's face. Drag the Exposure slider right, then drag Saturation right.

### 5 Counteract distortion

Click the Overlays panel, then select Master to target the Raw image (instead of the Gradient overlay). Click on the Lens panel. Check Lens Correction, then Lens Profile. Search for the lens used.

### 6 Develop the shot

Now you've improved exposure and counteracted lens distortion, you're ready to take the shot into the Photo Persona to access extra layer-based tools. Set the Output menu to RAW Layer (Embedded) and click Develop.

### 7 Get creative

In the Photo Persona, you can perform creative edits such as combining the Raw file with an image on another layer. Here we've painted white brush strokes on a layer mask to creatively mix two layers together.

### 8 Go back to Raw

To edit the original Raw file, simply double-click on its layer in the Layers panel. The layered image will appear in the Develop Persona. You can uncheck Show All Layers to concentrate on the original Raw file.

### 9 Reduce noise

If the face suffers from image noise, go to the Details panel. Check Noise Reduction; drag Luminance to 8% to smooth the noise, and drag Colors to 100% to remove color noise. Click Develop to go back to layer-based editing.

Image rights: Apple Inc, Serif (Europe) Ltd.

# Windows 11 on Apple silicon

## It's now possible to install Microsoft's latest OS on M1 and M2 Macs

**REQUIRES**
Mac (M1 chip or later), Windows 11, Parallels Desktop 18

**YOU WILL LEARN**
How to install Windows 11 on a silicon Mac

**IT WILL TAKE**
40 minutes

**IF YOU WANT** to run Windows applications on Apple silicon, then you don't need to find a workaround anymore. Although BootCamp remains off the table for M1 and M2 Macs, Microsoft is now officially supporting the ARM version of Windows 11 on these computers, and this enables you to easily run Microsoft Windows 11 Pro and Enterprise through virtualization software.

While you could use Windows 365 Cloud PC, we prefer Parallels Desktop 18. It has many handy features, such as enabling you to run Mac and Windows apps side by side and drag and drop files. It's also quick to install, letting you download Windows 11 as part of the process.

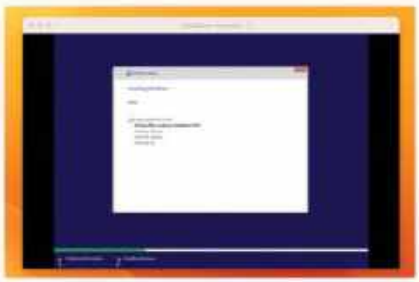
There are some frustrations about this process. You can't, for instance, import all your data from a Windows PC to Parallels Desktop on your Mac (you can with Intel-based Macs). But don't let that put you off. Indeed, there's a 14-day free trial available and you don't have to activate Windows 11 immediately. It's worth giving it a go.

**DAVID CROOKES**

## HOW TO Set up Windows 11

### 1 Download Parallels 18

At **www.parallels.com**, select whether you'd like to buy or try. Open the downloaded image and double-click the Install box. After following the prompts, give the app access to your Desktop, Documents and Downloads.



### 2 Install Windows 11

To make life easy, Parallels 18 can install Windows 11 for you. Click Install Windows and, after about 15 minutes of downloading, the app automatically validates and sets up the operating system. Windows then reboots.

### 3 Add some apps

Now set up a Parallels account, activate or buy Windows now or later, and you're good to go. Download PC apps as normal (online, via the Microsoft Store, etc) and, for updates, go to Start > Settings > Windows Update.

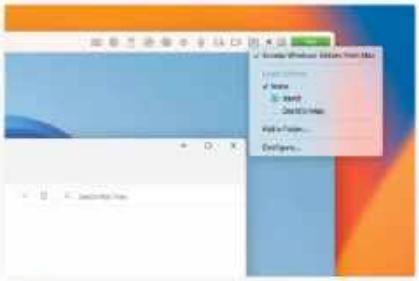


Image rights: Apple Inc, Parallels International GmbH, Microsoft.

## HOW TO Work with Parallels 18

### 1 Windows apps

To launch apps, click the Start button or a PC desktop icon. You can also search for apps via macOS' Spotlight, or select a file on Mac and choose to open it in Windows. Active apps can be pinned to your Mac's Dock.



### 2 Share your files

To view macOS-stored folders in Windows, you can select Mac Files on the Windows desktop or File Explorer via Windows' taskbar. To add and select a Mac-accessible folder, click the file icon at the top of the Parallels window.

### 3 Two systems

You can copy and paste text and images between your Windows and macOS apps. If it's not working, select the Parallels icon in the menu bar and click Configure. Then select Options > More Options > Share Mac clipboard.

## HOW TO Optimize your Windows experience

### 1 Use Coherence Mode

Parallels gives Windows its own space, but you can run Windows and Mac apps side by side — just select the Parallels icon (from the menu bar) > View > Enter Coherence. This same icon can launch the Windows Start menu.

### 2 Enjoy PC games

Playing a Windows game and fed up of seeing macOS elements appearing when the mouse cursor nears the edge of the screen? Go to the Parallels icon and select Configure > Full Screen > "Optimize full screen for games".

### 3 Fine-tune

To alter the number of virtual CPUs used for Windows and increase the available memory, click the Parallels menu icon and go to Actions > Shut Down. Then click Actions > Configure > Hardware > CPU & Memory > Manual.

## > TROUBLE AHEAD?

### Windows 11 doesn't always work perfectly

Windows 11 works well on Apple silicon, but there are limits. You can't play some of the latest games, like *Minecraft Legends*, because they render using Direct3D; Parallels 18 only supports 3D acceleration at the level of DirectX 11.1 and OpenGL 3.3. Silicon Macs can't run 32-bit Arm apps available on the Microsoft Store either, but 64-bit Arm and most x86 apps work fine. Since drivers need to be developed for Arm versions of Windows 11, you may find some printing software, peripherals, and antivirus packages stutter too.

Image rights: Apple Inc, Parallels International GmbH, Microsoft.

# Sync your music library

## Copy your favorite tunes to your iPhone — and back it up as well!

**REQUIRES**
macOS 10.15 or later

**YOU WILL LEARN**
How to back up and sync Music tracks to your iPhone

**IT WILL TAKE**
30 minutes

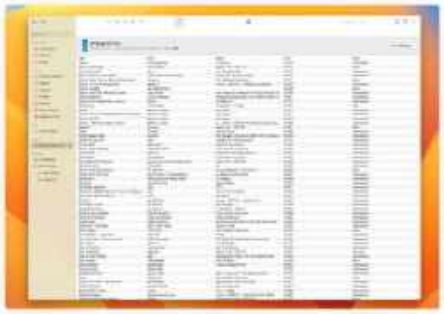
**IT'S NEVER BEEN** easier to enjoy all kinds of music on your Apple devices — whether you prefer to stream the latest chart-toppers on Apple Music, or just want to listen to an existing music library on the go.

Apple offers three main ways to do this: you can subscribe to the Apple Music streaming service (currently $10.99/month); subscribe to iTunes Match (currently $24.99/year) and put your existing song collection online; and you can connect your iPhone or iPad to your Mac and sync your music collection either via a physical cable or over Wi-Fi. It's that last option we're going to look at here.

Note, though, that since Apple split iTunes into distinct Music, Podcasts and TV apps with the arrival of macOS Catalina, Mac-to-iPhone/iPad syncing happens via the Finder. Luckily, the core functionality largely remains the same — and you can even use that option to copy movies, TV shows and podcasts, as well as back up your iPhone or iPad to your Mac.

**ROB MEAD-GREEN**

## HOW TO Transfer and back up your music collection



### 1 Make the connection

On your Mac, open the Music app and connect your iPhone or iPad via a spare USB-A or USB-C port and a suitable cable. The connected device will appear in the Music app. Click Sync Settings at the top right of the window.

### 2 Choose your options

The Music app will now send you over to the Finder, where you'll be presented with your synchronization options — users of the old iTunes app should be familiar with how these work; the core features are largely unchanged.

### 3 Automatic or manual

You can either choose to sync your iPhone automatically every time you connect it to your Mac, or you can choose to do so manually. Manual syncing works best since it gives you more granular control over its options.



Image rights: Apple Inc.

## 4 Wired or wireless

Another consideration is whether you want your iPhone to sync only when connected to your Mac via a cable, or whenever it's connected to Wi–Fi. The latter is convenient, but can take ages!

## 5 Pick your file size

You may wish to change the file size of the songs synced: 256 kbps AAC delivers the best balance between file size and sound quality; 128 kbps AAC files are smaller but lower quality.

## 6 Choose what to sync

Select the Music tab and make sure the "Sync music onto [your device]" option is checked. Next, choose whether to synchronize your entire music library or just a selection.

## 7 Make a selection

Choose the artists, albums, genres or playlists you want to sync by selecting the appropriate tab, then click the checkbox to the left of the items in the list below. You will need to scroll up or down through the list to see all those available.

## 8 Choose everything!

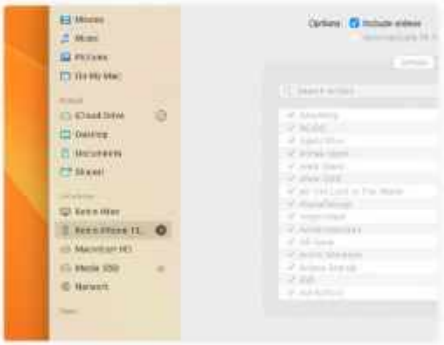
Once you've made your choices, click Apply for your Mac to start copying tracks to your device. Check "Automatically fill free space with songs" to have Music fill the rest of your device's storage, though you may want to keep some free.

## 9 Movies and more

Finder sync doesn't just enable you to copy the contents of your music library. You can also use it to copy other iTunes Store purchases, such as movies and TV shows, as well as home–made videos, podcasts and even app files.

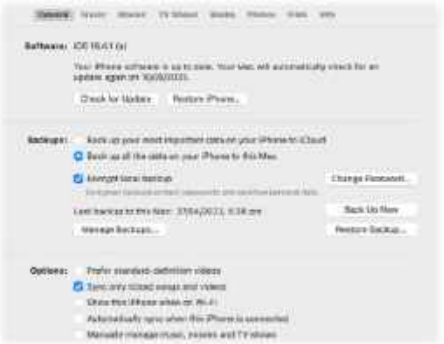
## 10 That syncing feeling

Whatever you've chosen to sync and whether you're doing so via a cable or wirelessly, now's the time to grab yourself a coffee — syncing your media collections can take a while, especially if it's the first time that you have done so.



## 11 Interrupting a sync

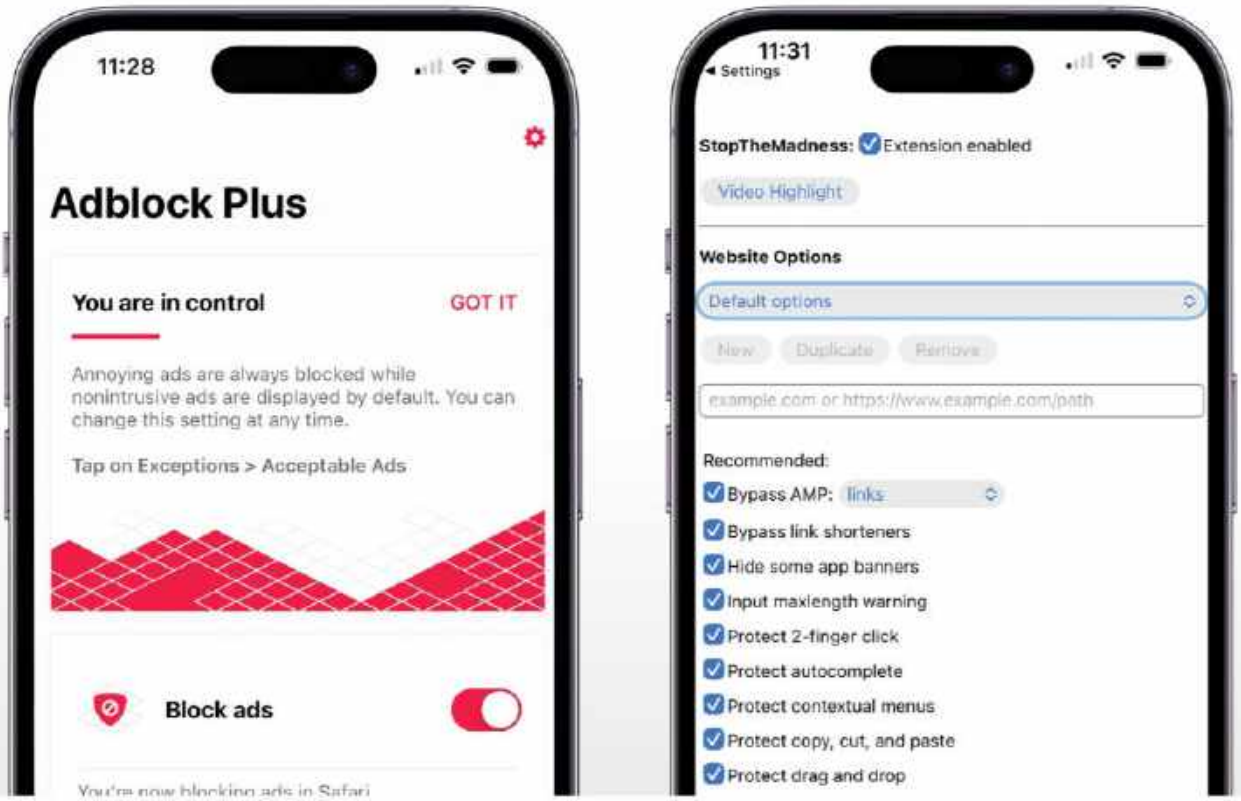
If you make a mistake while syncing or syncing is taking too long, select your iPhone or iPad in the Finder's sidebar then click the "X" that appears. This will stop the current sync. You can also "eject" your iPhone or iPad here to disconnect it.



## 12 Backup plans

While your iPhone or iPad normally backs up to iCloud, you can also back it up to your Mac via the Finder. If you encrypt the backup (securing it with a password), you can also back up more of your private data than iCloud itself allows.

Image rights: Apple Inc.




# Master Safari extensions

## Personalize your browsing experience with these excellent iOS extensions

**REQUIRES**
Safari on iOS/iPadOS 15 or later

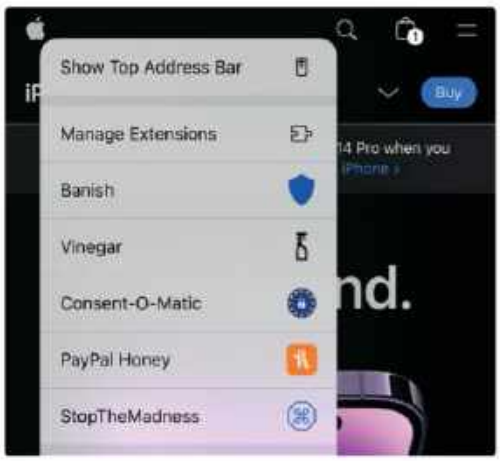
**YOU WILL LEARN**
How to use Safari extensions for a better online experience

**IT WILL TAKE**
5 minutes

**GENIUS TIP**

Sometimes ad blockers stop pages from working properly. To fix that, tap the jigsaw icon in Safari's address bar and tap Turn off Content Blockers.

**THERE'S A PRETTY** bad-tempered battle raging on the web, and it's been raging for a long time. On one side there's us, ordinary Apple users who just want to get to content, services or stores with the minimum of fuss. And on the other there are the ad trackers, the bad website designers, and the people who do their very best to hide what you're looking for beneath 437 pop-ups, auto-playing videos and "allow cookies?" banners. In some cases, websites have become so full of clutter that they're actually painful to spend any time on.




There's a Quick Menu for extensions in your Safari address bar. As you can see here, tapping the jigsaw icon gives you fast access to active extensions' settings.

With extensions, you can get rid of all that nonsense and create a Safari browsing experience that's much calmer and a whole lot less annoying. You can make YouTube behave better. You can stop websites from demanding you use their app, from turning off standard web browser features, and from installing trackers you don't want. And the list of available extensions grows longer by the day.

### PROTECT AND IMPROVE

Extensions began life on Safari for macOS, but since iOS 15 they've been available for iPhone and iPad too. They're brilliant, and as you'll discover in this guide there are all kinds available — so while we'll look at content blockers, nag removers and other web improvers, you'll also discover extensions that can customize entire websites or save you some cash when you shop. **CARRIE MARSHALL**

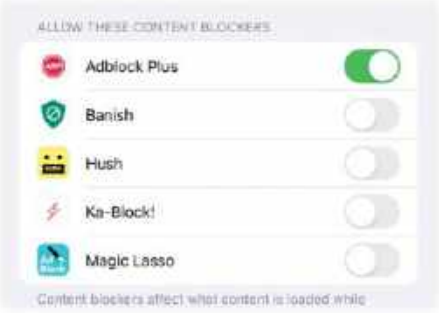


Image rights: Apple Inc, Eyeo GmbH, Honey Science LLC, And a Dinosaur.

## **HOW TO** Do everything with extensions

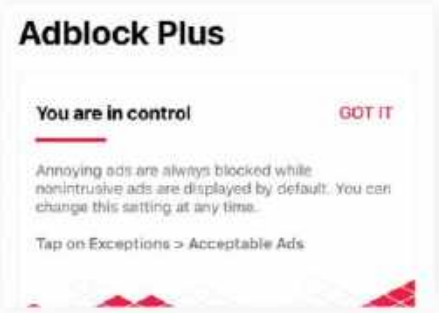
### 1 Find your extension

The fastest way to find extensions is in Settings > Safari > Extensions > More Extensions, and you'll be taken straight to that part of the App Store. Installing or removing a Safari extension is the same as with any other app.



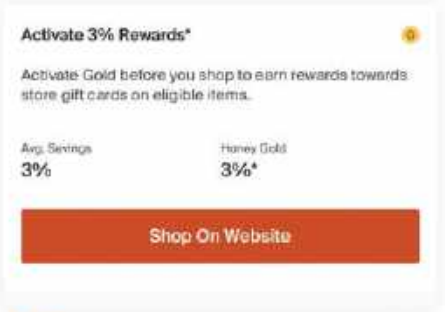

### 2 Turn it on

Once you've installed an extension, you'll need to enable it; they remain off by default. Return to Settings > Safari > Extensions and toggle the app(s) on or off. As you can see, content blockers are listed separately from other extensions.




### 3 Block some ads

There are lots of ad-blocking extensions for Safari, like Adblock Plus. To configure most extensions, find the app on your Home Screen and open it. Here we can add exceptions for sites where we don't want to block ads.




### 4 Save some money

The PayPal-owned Honey extension checks whether it knows of a voucher code when you're shopping in Safari. The app also alerts you to special offers, and enables you to earn Honey Gold points, redeemable at various retailers.

### 5 Make YouTube better

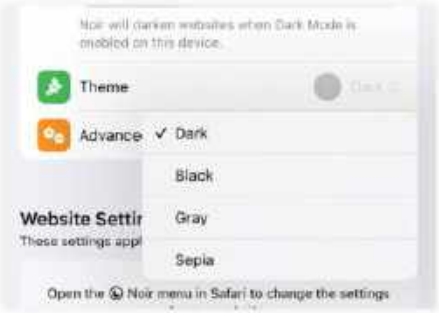
This minimalist extension, Vinegar, changes the way videos play on your device. It replaces the YouTube player with a stripped-back HTML video player, removes the pre-roll ads, and enables you to keep videos playing in the background.

### 6 Banish annoyances

Fed up with endless unwanted "Open in app?" pop-ups, cookie banners, and other invasive irritants? Well, Banish will banish them! It works across many big-name websites including Reddit, LinkedIn, TikTok, Medium, and some Google ones.

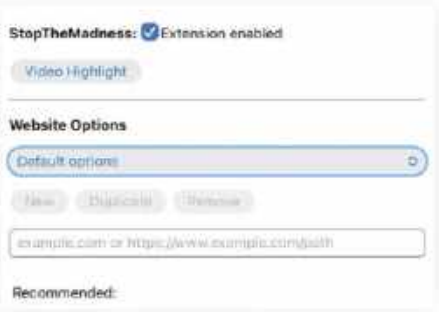
### 7 Cut the cookies

Super Agent makes it easy to control the cookies your web browser accepts or rejects. You can enable cookies for things like remembering website preferences, while blocking ad cookies or those that don't benefit your browsing, for example.




### 8 Paint it black

If you're a Dark Mode fan, you'll know that many websites simply don't respect your preferences. Noir can override them; if you're in Dark Mode it re-renders uncooperative pages in whichever color scheme you choose.




### 9 Take control

If you spend a lot of time online, Stop The Madness is a kind of Swiss Army knife for making websites behave themselves. From bypassing link tracking to disabling Google's AMP page format, it's one for web browser power users.

Image rights: Joel Arvidsson, Big Pineapple LLC, Super Agent Inc, Jeffrey Kuiken, Jeffrey Johnson.

# Play like a DJ on your iPad

## Start making music with "Launchpad – Beat Music Maker"

**REQUIRES**
Launchpad (free, with IAPs), iOS/iPadOS 15 or later

**YOU WILL LEARN**
How to make great music, even if you can't play an instrument

**IT WILL TAKE**
15 minutes

**WE LOVE MAKING** music, but learning instruments isn't quick or easy. That's why we're so fond of GarageBand's magic instruments, and of Launchpad. Both apps enable you to experience and share the sheer joy of music without the sore-fingers frustration of traditional music making.

That's not to say serious musicians can't make great use of these apps — they can and many of them do. But as we'll discover in this tutorial, when you have an app like Launchpad, you can create music in any genre pretty much immediately, and that opens up the world of music making to many more people, including complete beginners. If you can hear a tune in your head, or just stumble across a bit of a melody by happy accident, Launchpad can make it sound like you're a musical pro.

The Launchpad app is free and includes a few sample "soundpacks" containing drums and other instruments, and that's what we'll use here. Once the musical bug has bitten, you can subscribe to get hundreds more. **CARRIE MARSHALL**

## **HOW TO** Make music with Launchpad

### 1 Get ready to play

The main Launchpad screen is color-coded for easy identification. Green pads are drums; blue is bass; pink pads are melodic instruments such as synthesizers and guitars; purple means percussion; and the others are for voices and effects.

### 2 Change your tune

In this tutorial, we'll use the Retro Funk soundpack that comes with the app, but subscribers can access over 200 different soundpacks in all kinds of musical genres, ranging from electronic dance music (EDM) to hip-hop and indie.

### 3 Drop the beat

The best way to learn is via a "what does this button do?" approach. Each pad will trigger a sound, so here we're getting a basic beat. The pad will keep repeating until you tap the stop button (top right) or a different pad in the same column.



Image rights: Apple Inc, Focusrite Audio Engineering Ltd.

## 4 Add more music

Now, tap on other pads. Here we're supplementing bass drum with a hi-hat for that all-important funk groove, some chilled-out guitars and some fun synthesizer noises. Once again, you can switch between pads whenever you want.

## 5 Change the key

If the key your tune is playing in is too high or low, or if you want to mix it up, tap on the tuning fork icon (top right) to change the key. If music is playing, it'll change immediately; if not, it'll take effect the next time you tap a pad.

## 6 Tweak tempo

If your tune isn't quite the floor filler you hoped for, adjust the tempo by tapping the metronome icon (top right). You can either use the "+" and "–" icons to change the tempo up/down; tap the center at the speed you want.

## 7 Mix it up

Each pad plays to the same time signature (e.g. four beats to a bar). Tap a pad in another column; Launchpad will switch, but will wait until the end of the bar for a smooth transition. The circles in each pad show how far through you are.

## 8 Adjust the levels

While playing, tap the Volumes icon (right of screen) for an orange slider beneath each instrument column. Tap and drag the slider to increase/decrease the volume of that instrument. Use this to bring instruments in and out of your mix.

## 9 Have fun with filters

Now tap on Filters. Once again you'll see sliders, but these adjust the level of filters on each track. You can choose different filters by tapping the FX icon and then tapping on the filters to hear what each one does to your instrument.

## 10 Record your music

To record as you play, tap on the circular record button (top right). You can now tap the pads to make your tune, using filters and volumes to add variety. Tap again to stop and then on the "…" toward the top left of the screen.

## 11 Share your song

From the menu, tap on Recordings to see a list of recordings you've made. Tap the one you'd like to share, then select the format. WAV is the highest quality, but AAC is much smaller and better for sending via Messages or Mail.

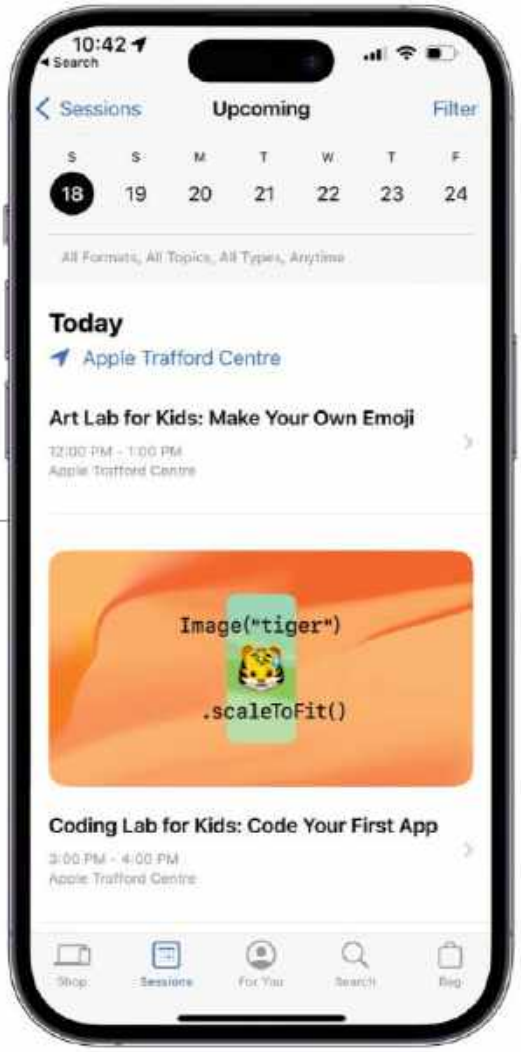
## 12 Play with others

Tap the "…" icon, then Settings, and you'll see two options for more music making: Ableton Link and MIDI Sync Output. The former enables you to connect with other Ableton music apps; the latter to control MIDI music hardware.

Image rights: Apple Inc, Focusrite Audio Engineering Ltd.

# Delve into the Apple Store app for iPhone and iPad

## There are lots of handy features to discover




**REQUIRES**
Apple Store app, iOS 15 or later

**YOU WILL LEARN**
How to do more than simply purchase items on the Apple Store

**IT WILL TAKE**
10 minutes

**YOU MIGHT NOT** need to open the Apple Store app each day, but there's an argument for launching it more often. As well as letting you buy new Apple gear and keep track of your purchases, you can use it to create personalized items, organize returns and, by searching for "refurbished", save money too.

But it goes beyond that. Explore the app, and you can learn more about the devices linked to your Apple ID, discover new things to do with your gear, and enjoy lots of free stuff — whether in-app or in a physical Apple Store. If you tap your profile image, you can also use the app to manage any Apple services you've signed up to and see what else is available.

Don't want to keep checking in? Then tap your profile image again, select Notifications and receive details of orders, reservations and sessions as well as announcements and offers. We're still just scratching the surface of what's available, so let's take a closer look at what you can do. **DAVID CROOKES**

**GENIUS TIP**

To book a Genius Bar appointment, select Apple Support on a device page, tap an item, select an issue and look for the "Bring in for Repair" option.

## HOW TO Do more on the Apple Store

### 1 View your device

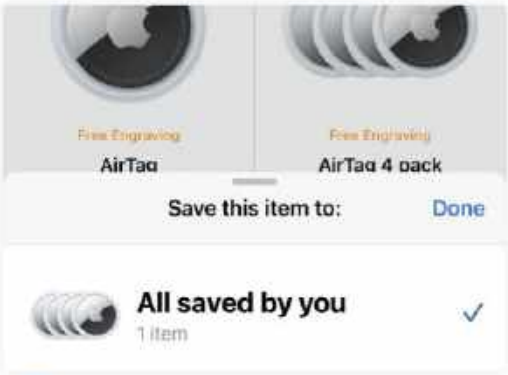
The Apple Store app grabs info about devices linked to your Apple ID. To view them, tap your profile image and select Devices, or tap For You and look under Your Devices. Alternatively, tap Shop and find Shop By Your Device.

### 2 Get suggestions

In each case, you can tap on a device (or select Shop Accessories And More). This will show you a range of recommended add-ons you can buy for each device. Tap See All or scroll down and choose a specific category.

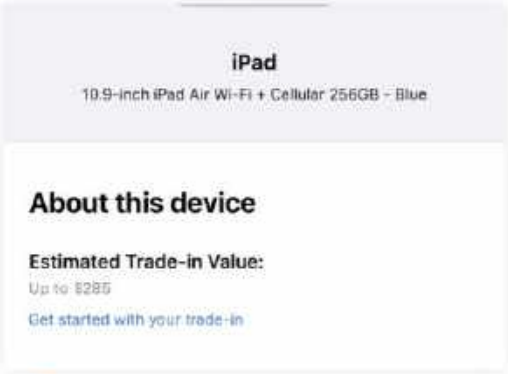


Image rights: Apple Inc.




## 3 Make a gift list

A bookmark appears in a product's preview and the top right of a product page. Tap it to save an item to a list (it won't add to your basket). You can create different lists, with all saves stored in the For You tab.




## 4 Check trade-in prices

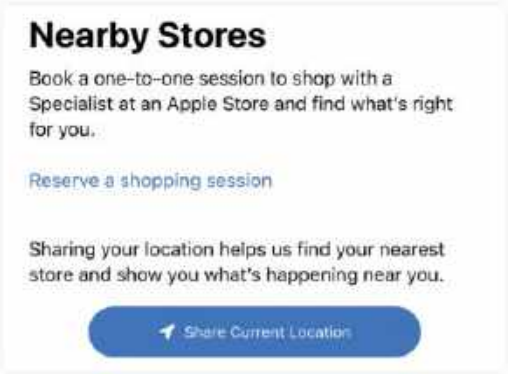
When viewing your device, tap Device Details and get more information about it. As well as showing existing warranties, you can view an Estimated Trade-in Value — the amount of credit for a device in good condition.

## 5 Find special offers

Apple often has deals on its products and services. Tap the Shop tab and scroll down to see them (they often appear within For You, as well). Typical offers include a few months' free Apple Music, Apple TV+ or Fitness+.

## 6 Book creative sessions

Apple hosts in-store learning events. To discover what's on, tap the Sessions tab, select Find Sessions and find a store (search or share your location). Tap See All or scroll through a category, pick a session and sign up.




## 7 Reserve a one-to-one

Not sure if an Apple product is right for you? Scroll down the Shop tab and book a one-to-one session with a specialist who'll go through your options. Tap Find A Store to learn more about what a shop has to offer too.

## 8 Discover tips

Keep your eyes peeled for articles that help you get more out of your Apple products, for example by explaining how to create a smart home. Device pages also link to Apple Support for additional help and advice.

### GENIUS TIP

Lists can be opened and shared with others — just tap the Share icon. You can also tap Show Code to share a list with Apple Store Specialists.

### JARGON BUSTER

Live specialists are retail team members able to help customers via video. They're currently US-only via www.apple.com but, if successful, the service will extend.

Image rights: Apple Inc.

# Practice mindfulness

## Let your cares float by as your Apple Watch encourages you to relax

**REQUIRES**
watchOS 8 or later

**YOU WILL LEARN**
How to try to switch off a little and meditate

**IT WILL TAKE**
10 minutes

**WHEN WAS THE** last time you took a time-out from the stresses and strains of everyday life?

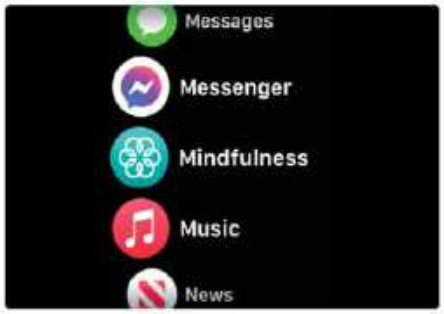
The Mindfulness app on your Apple Watch would like to help you do just that. It encourages you to take a moment to pause and meditate, to focus on your breathing, or just to think deeply about a single thing for as long as it takes to help you feel relaxed.

The Mindfulness app has been around for a long time — it debuted as the Breathe app in watchOS 3 — but the current version has more options, especially if you're an Apple Fitness+ subscriber. That gives you access to guided meditations that you can listen to on your AirPods, HomePod, or on Bluetooth headphones or speakers.

In this tutorial, we'll focus on the Mindfulness app itself. If you'd like to have regular reminders to meditate, receive a weekly summary of your activity, or would like new Audio Meditations to be downloaded automatically, you can easily set all that up in Settings > Mindfulness.

**CARRIE MARSHALL**

## **HOW TO** Relax with your Apple Watch

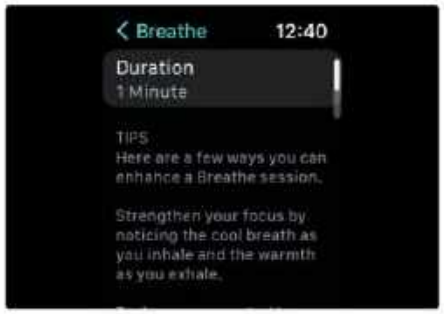



### 1 Open the app

The Mindfulness app is installed by default on every Apple Watch; if you've removed it from yours, you can bring it back via the Watch app on your iPhone. The screenshot here shows where to find it if you use the alphabetical list view.

### 2 Find your preference

There are three options: Breathe, Reflect, and Audio Meditations. Breathe is about controlling breathing and letting your mind wander; Reflect is for focusing on a theme; and Audio Meditations are guided mindfulness exercises.

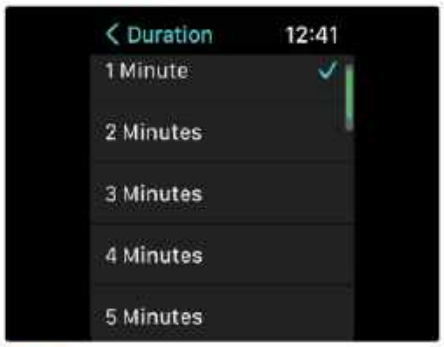



### 3 Choose Breathe

Let's tap on Breathe. As you can see, the app tells you some of the ways in which you can use your breathing during this exercise, and there's a Duration section at the top of the screen that tells you this exercise will take one minute.



Image rights: Apple Inc.




## 4 Change the duration

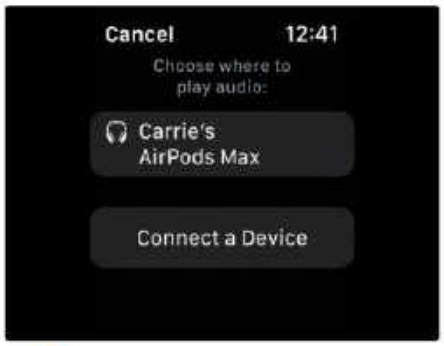
If one minute isn't enough, change the duration by tapping it, then tapping on the amount of time you'd like to do your breathing exercise for. You can also schedule regular reminders to breathe in Settings > Mindfulness.

## 5 Let yourself reflect

Reflect asks you to consider a single theme — in this example, something you appreciate about somebody close to you. As with the Breathe exercise, you can choose a different duration than the default one–minute reflection.

## 6 Get some guidance

If you have an Apple Fitness+ sub or an Apple One bundle that includes it, you can get streamed guided meditations on your Watch. Tap the "i" icon on the meditation image to see what the topic is and what audio it uses as its soundtrack.




## 7 Engage your AirPods

You can't listen to these meditations on Apple Watch, even though it has its own speaker. You'll need to grab your AirPods or connect to a Bluetooth speaker, headphones, or other audio device. To do that, tap "Connect a Device".

## 8 Add complication

You can easily add a Mindfulness complication to many Apple Watch faces. Press and hold the face you want to edit, tap Edit, then swipe left until you see the Complications screen. Tap a complication you want to change. Choose Mindfulness.

## 9 Save your face

Here we've added a Mindfulness complication to the middle of this Infograph face. The available options for Mindfulness complications will vary from face to face; for example, some faces only allow small corner complications.

## 10 Add your own

If you really want to embrace the Mindfulness app, why not use its own dedicated watch face? Press and hold your existing watch face, but don't tap Edit. Swipe left until you see the big "+" icon and the label New.

## 11 Pick your style

Install the Breathe face if it isn't already on your Watch. Now, let's edit it; tap and hold the face, tap Edit, then swipe left to the Style screen (shown here). Turn the Digital Crown to move between the different visual styles.

## 12 Make it yours

The Breathe face has room for two corner complications and a longer one along the bottom, so you can add one–tap links to other favorite features. When this watch face is active it gently pulses in and out in a nice 3D effect.

Image rights: Apple Inc.

# Wi-Fi 7

## The new wireless standard looks forward to the future of the internet

HOW IT WORKS

**YOU WILL LEARN**

How Wi-Fi 7 works, and how it differs from previous versions of Wi-Fi

**YOU CAN BUY A WI-FI 7 ROUTER RIGHT NOW, BUT THEY PROBABLY WON'T BE WIDELY AVAILABLE UNTIL LATER THIS YEAR**

**JARGON BUSTER**

The term "Wi-Fi" is really just a marketing label, but all versions of Wi-Fi are based on an international technology standard known as 802.11, which is continually under development. Wi-Fi 5 was based on 802.11ac, while Wi-Fi 6 and 6E use the newer 802.11ax. However, Wi-Fi 7 is such a big step forward that the 802.11 tech adopts a new "b" suffix, with the full title of 802.11be.

**LIKE MANY PEOPLE,** you may still be using home broadband with an old router provided by your ISP that runs Wi-Fi 5 — originally known as IEEE 802.11ac until the tech industry marketing people decided that Wi-Fi 5 looked better on the box. Your Apple gear may be similar — the last generation of Intel Macs, many older iPads, and even iPhones made before the introduction of the iPhone 11 in 2018 also use Wi-Fi 5.

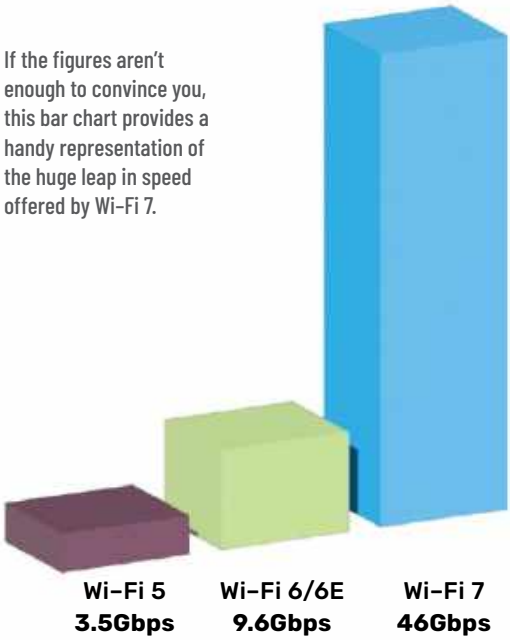
Luckily, more recent Macs, iPhones and iPads have had the newer Wi-Fi 6 for a couple of years now. So if you have a device that supports Wi-Fi 6, then it's worth buying a new router that also supports it, as it provides higher performance and greater reliability for homes and businesses that have a lot of devices connected to the network all at the same time.

The current state of the art for Wi-Fi technology is Wi-Fi 6E, however, Apple only introduced it into a handful of the latest Mac and iPad models at the start of 2023, so there's no real need for most people to buy a new router to upgrade to Wi-Fi 6E just yet.

But now we're already being told to prepare for — yes, you guessed it — Wi-Fi 7. Router manufacturer TP-Link claims to be the first company to launch new routers that support Wi-Fi 7, but if you look at the official website of the Wi-Fi Alliance (www.wi-fi.org) — the organization that oversees the development of Wi-Fi technology — you'll see that Wi-Fi 7 is actually still listed as "in development"...

Wi-Fi 7 routers are already available, but the technology won't be finalized until later this year.

If the figures aren't enough to convince you, this bar chart provides a handy representation of the huge leap in speed offered by Wi-Fi 7.




This has happened before, though, as the technical specifications for each new generation of Wi-Fi are generally released months before the new standard is officially approved, in order to give router manufacturers time to prepare for the new technology. So while you can buy a new Wi-Fi 7 router right now, they probably won't be widely available until later in 2023. And we know that Apple tends to release big new product updates once a year, so it probably won't introduce Wi-Fi 7 into any new Macs or iPads until this time next year.

Even so, this is a good time to take stock of the development of Wi-Fi technology and to have a look at what improvements we can expect when Wi-Fi 7 officially arrives later this year.



Image rights: Apple Inc, TP-Link Corp, HP Development Co LP.

## > UNLOCK FULL-SPEED POTENTIAL

There's a lot of technobabble involved with Wi-Fi 7 — we're still trying to figure out what "preamble puncturing" means — but perhaps the most important new feature is called MLO, or "multi-link operation".

Conventional Wi-Fi routers can transmit data on different frequency bands, with Wi-Fi 5 and Wi-Fi 6 routers using 2.4GHz and 5GHz bands, while Wi-Fi 6E also added the new 6GHz band. However, when your Mac, iPhone or iPad connects to your router it can only send and receive data on one of those frequency bands at a time, so you're not getting the full speed that the router is capable of.

Wi-Fi 7 doesn't add any new frequency bands — it still uses the same 2.4GHz/5GHz/6GHz bands as Wi-Fi 6E. However, multi-link operation allows a Wi-Fi 7 router to send and receive data using two or three bands at the same time — effectively combining the separate frequency bands into a single, superfast band.

The blistering speed of Wi-Fi 7 will be essential for new technologies, such as AR and VR.

### WI-FI GENERATIONS

The version of Wi-Fi we're most familiar with is Wi-Fi 5, which was introduced in 2013. This offered a maximum theoretical speed of 3.5 gigabits per second (Gbps) — although actual real-world speeds tend to be quite a bit lower — and was able to transmit "dual-band" Wi-Fi using data on the 2.4GHz and 5GHz frequency bands.

Wi-Fi 6 came along in 2019, which used the same frequency bands as Wi-Fi 5, but offered higher performance with a maximum speed of 9.6Gbps. Many people were also starting to use new smart devices such as lights, speakers, and security cameras in their homes — so, as well as providing higher speeds, Wi-Fi 6 introduced new features such as OFDMA (orthogonal frequency-division multiple access), which improved the ability of routers to transmit data to lots of devices at the same time.

Barely a year later, Wi-Fi 6E arrived — with the "E" standing for "extended" as it added the ability to also transmit on the entirely new 6GHz frequency band. That seems to have been a bit premature, though, and while router manufacturers were eagerly launching expensive new Wi-Fi 6E routers, companies like Apple were happy to stick with straightforward Wi-Fi 6. And, as mentioned, Apple has only recently introduced Wi-Fi 6E into a limited number of new Mac and iPad models.

It's certainly worth considering a Wi-Fi 6E router if you want to upgrade from an old Wi-Fi 6 router, but many people may well now prefer to simply skip Wi-Fi 6E altogether, as the forthcoming Wi-Fi 7 looks set to be one of the biggest upgrades to Wi-Fi technology so far. Also known as 802.11be, Wi-Fi 7 sticks with the same frequency bands, 2.4GHz, 5GHz and 6GHz, but rockets into the future with a maximum theoretical speed of 46Gbps. Those of us that still only have home broadband running at 100Mbps will probably wonder what all the fuss is about, but those speeds are designed to cope with new technologies and applications, such as augmented reality (AR) and virtual reality (VR), streaming 8K video, and large-scale video conferencing. So while some Wi-Fi upgrades might seem unnecessary for many of us, Wi-Fi 7 will be an important step forward in creating the high-speed Wi-Fi that will be essential for the future of networking and the internet.

**CLIFF JOSEPH**

Apple has only recently introduced Wi-Fi 6E with M2 Macs, such as the Mac mini and MacBook Pro.

### KEY FACT

The frequency bands used by Wi-Fi routers — 2.4GHz, 5GHz and 6GHz — are also divided into a series of "channels", and the speed of these channels has a big effect on the overall speed of the router. All previous versions of Wi-Fi had a maximum speed of 160MHz per channel, but Wi-Fi 7 doubles that to 320MHz, which provides a huge boost in performance.

Image rights: Apple Inc, TP-Link Corp, HP Development Co LP.

# ASK

TECH SUPPORT & TECHSPLANATIONS

**EXPERT ADVICE**
Our resident genius **Howard Oakley** solves your Mac and iOS problems

## Fix a First Aid flaw

**SINCE APPLE RELEASED** its new file system APFS, running First Aid on its volumes and containers has been a gamble. More often than not, checks fail with status 65, and we're advised to back that volume up as if its failure was imminent. This is most worrying when that volume contains dozens of Time Machine backups.

It turns out the problem lies not in the volume being checked, but in macOS. Disk Utility relies on the command tool fsck_apfs to run these checks and perform any repairs needed, and that requires the volume and its container to be unmounted first. Although regular volumes may unmount fine, snapshots often prove impossible, so fsck_apfs can't run any checks, and returns error 65.

Manually unmount an external disk before running First Aid and success becomes far more likely.

## > Is a password dialog genuine?

**How can I tell whether an app is genuine when it asks me to authenticate so that it can unlock my keychain?**

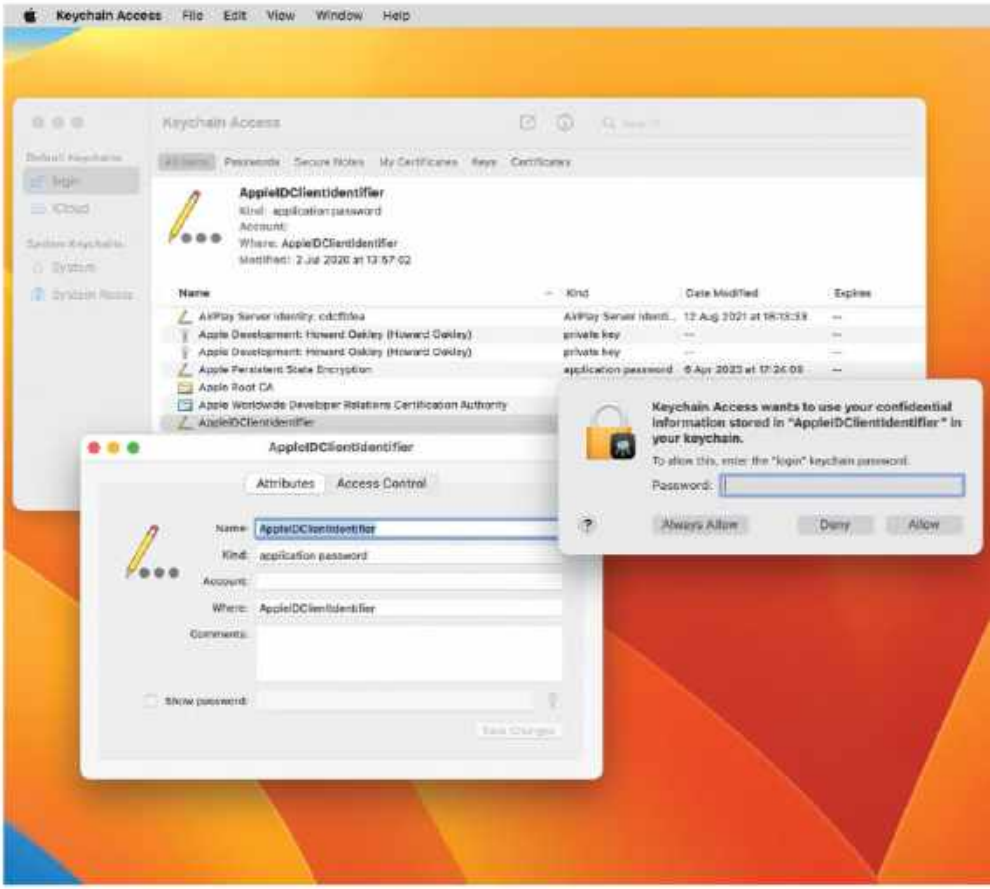
Legitimate requests made through macOS are presented in a standard dialog, with details that you should check carefully. The icon shown consists of a locked padlock, with a superimposed miniature icon for the app or component asking for access.

The bold text correctly names the requesting app or component, and states which particular item in the keychain it wants to access. Smaller lettering specifies that it's asking for the password used to unlock the named keychain, not that for your Apple ID or any other password.

Although there are minor differences between recent versions of macOS, all genuine dialogs contain the same essential features, and don't differ significantly.

If you're still in doubt, click on the Deny button to refuse access. Then open the Keychain Access app in Applications > Utilities, lock the keychain in there, and repeat the action while watching the keychain to ensure it's unlocked and handled by the app or component correctly.

Other dialogs requesting a password are distinct and should make their purpose clear. If you're ever in doubt, don't enter your password until you're happy you know what it's for.




Requests for your password to unlock a keychain follow a strict format set by macOS.



Image rights: Apple Inc.

**SHARE WITH US!**

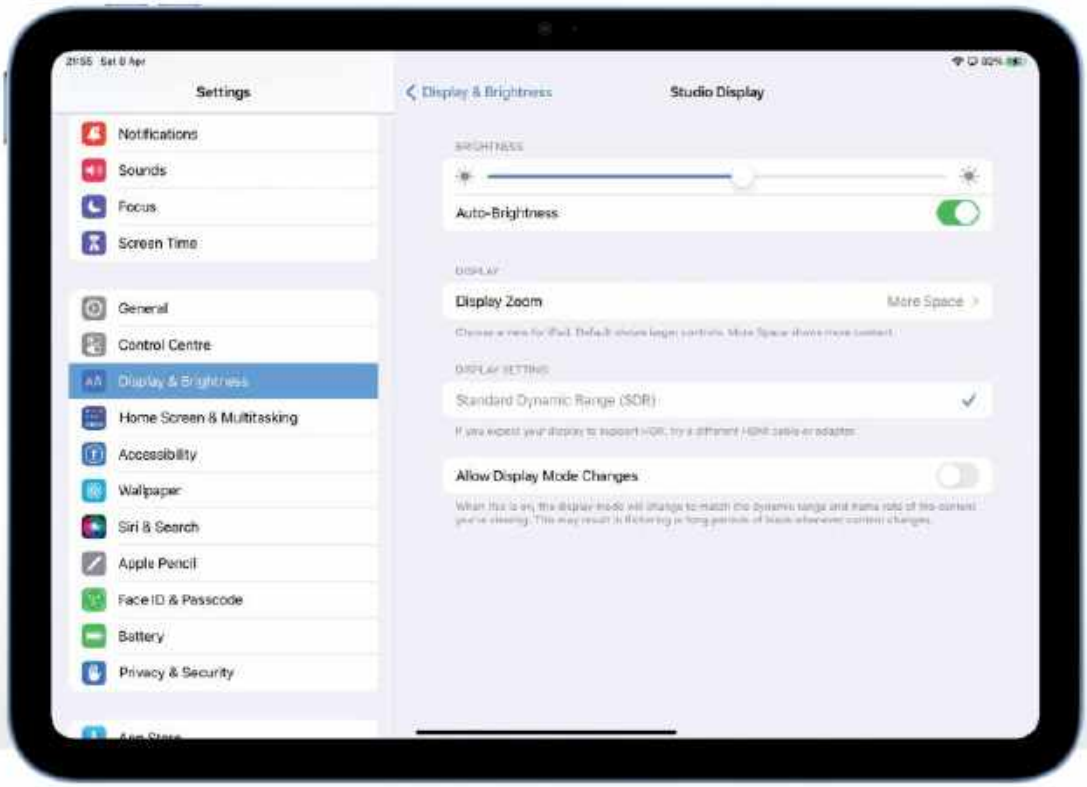
**EMAIL:** ask@maclife.com
**FACEBOOK:** facebook.com/maclife **TWITTER:** twitter.com/maclife

Mac|Life

Get official documentation at **support.apple.com** | Get help with hardware at **support.apple.com/repair**

# > Connect a display and SSD to an iPad

**What is the most effective way of connecting my M2 iPad Pro to a display and storage?**




Apple's Studio Display has support built into Settings in iPadOS, including zoom and display modes as well as brightness controls.

With its single Thunderbolt 3 port, there are a couple of layouts for connecting two or more peripherals to your iPad: connect it to a Thunderbolt dock or hub and attach both display and storage to that; or connect it to a display with its own built-in hub.

Although Apple's Studio Display has three USB-C ports, they're USB 3.2 not Thunderbolt, so capable of no more than 1GB/sec to an SSD, instead of 3GB/sec with Thunderbolt 3.

Connecting your iPad to a Thunderbolt 4 dock or hub offers greater flexibility. Docks are more expensive but offer an HDMI port for a wider range of displays, and a single Thunderbolt port for an SSD. However, a hub would be ideal for a Studio Display and up to two SSDs.

You should also consider bandwidth use in your iPad's Thunderbolt port. That used by the display will eat into the outgoing allowance for writing to connected drives. In practice, even with a large high-resolution display like an Apple Studio, this leads to a small reduction in write speed; because there's no return data from the display, it shouldn't affect read speeds from storage at all.

Not all Thunderbolt SSDs write at full speed through a hub or dock, though, and it's worth checking write speed before committing to a particular combination, if you can.

## Quick-fire questions & answers

### HOW TO REMOVE A SCRATCH FROM MY iPAD'S SCREEN?

You'll find lots of ingenious ideas ranging from brushing with toothpaste to applying mild abrasives. Most will leave the scratch more visible than before, or do nothing at all. If you think it justifies the cost, the best solution is to get the screen replaced, or just live with it for the time being.

### HOW TO REFRESH MY iPHONE BATTERY TO LAST LONGER?

When battery maximum capacity in Settings > Battery > Battery Health & Charging falls with age and use, the only effective way to restore its endurance is to replace the battery. Apple normally charges less than $100 for this – get a quote online from Apple Support.

Image rights: Apple Inc.

# Peripherals

Solving your tech conundrums for a fully functional workspace

## Quick-fire questions & answers

### ARE 2M THUNDERBOLT 4 CABLES AS GOOD AS 1M ONES?

In the past, 2m Thunderbolt 3 cables often didn't provide as good USB 3.x support, and some couldn't sustain Thunderbolt's full 40Mbps, dropping to half speed. While reputable manufacturers like CalDigit claim its 2m active Thunderbolt 4 cables overcome those issues, they're also a much higher price.

### HOW TO CONNECT MY THUNDERBOLT 2 DISK TO A NEW MAC?

Apple's Thunderbolt 3 to 2 adaptor can't provide power to the disk. The StarTech Thunderbolt 3 to Thunderbolt 2 Adapter (www.startech.com) offers 12 watts to the peripheral. However, it's pricey and may not be fully compatible with Apple silicon Macs.

Apple's Thunderbolt 3 to 2 adaptor is effective but limited.

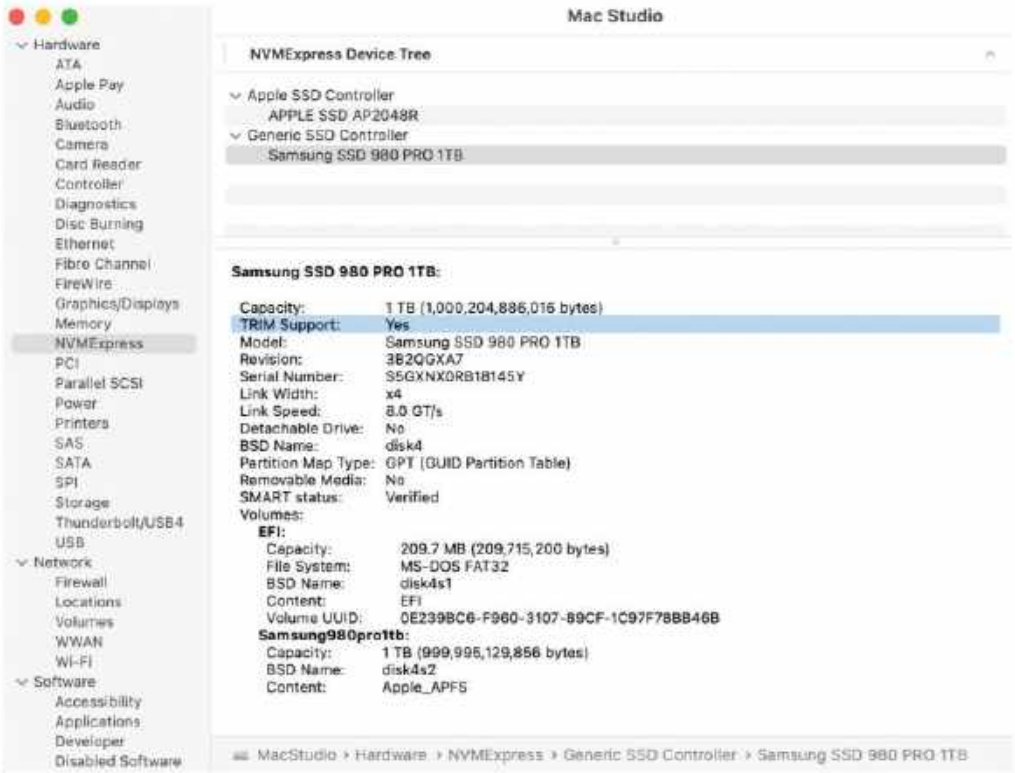
## > Slow writing to an SSD

**My USB 3 SSD was fast when I first bought it, with read and write speeds of more than 500MB/sec. But now, although it has plenty of free space, its write speed has actually fallen to around 150MB/sec, which is little faster than the hard drive it replaced. Is it failing after just a couple of months' use?**

Although it could be, this is typical of an SSD that needs trimming. Before memory in an SSD can be reused to write more data it must be erased, which takes longer than writing does. To save time, SSDs try to erase memory in bulk and, to help that, your Mac may send a command to the SSD to trim its storage.

Not all SSDs support the trim command, and trimming can take many seconds. But if an SSD has run low on memory it has already erased ready to rewrite, and your Mac sends more data to write, it will have to erase storage before writing to it, reducing its effective write speed to a quarter or less.

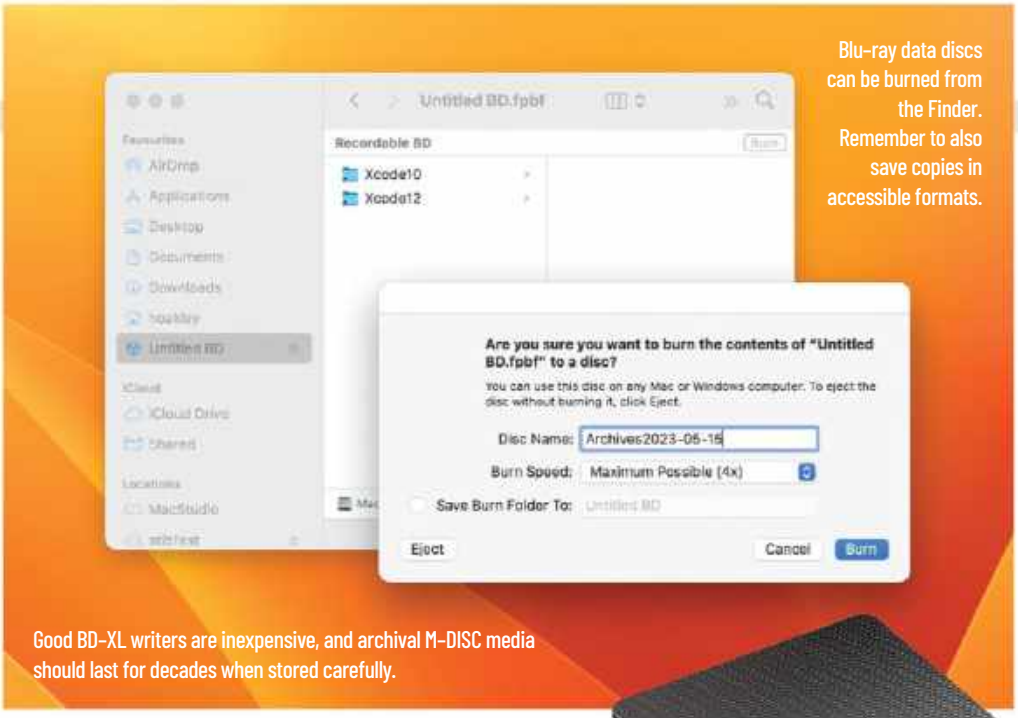
For some uses, such as storing Time Machine backups, this has little effect, as they're already throttled by macOS so they don't reduce the performance of your apps — but this will affect using the SSD for most other purposes. The command trimforce can be used to enable trimming, but only works if the SSD supports it. Contact its manufacturer and check whether that might help. Otherwise it's best to use that SSD mainly for backups.




macOS reveals which SSDs support trimming when you inspect them in System Information, although that can be hard to locate.



Image rights: Apple Inc.




Blu-ray data discs can be burned from the Finder. Remember to also save copies in accessible formats.

Good BD-XL writers are inexpensive, and archival M-DISC media should last for decades when stored carefully.

# > How to store archives

**What's the best way to archive copies of important documents on my Apple silicon Mac?**

Dedicated systems designed for long-term storage are expensive and intended for specialist archives. Affordable storage media are generally most unsuitable: hard drives suffer bit rot and electro-mechanical failure, and SSDs must be refreshed every year.

The most suitable archival storage media that are widely available and affordable are Blu-ray discs, particularly M-DISC, offering capacities of up to 100GB with a BD-XL writer. These cost around $0.25 per GB of storage, and so long as they're stored carefully could be good for several decades. As they're widely used for this purpose, data retrieval in the future should be well preserved as long as you also save copies of documents in accessible formats such as text and PDF.

# Quick-fire questions & answers

### HOW TO USE "PRO DISPLAY CALIBRATOR"?

This is for Apple's Pro Display XDR and Studio Display, and requires a spectroradiometer costing over $10,000, and which must be used in a darkened room (https://bit.ly/3JgMXXF).

### WHY AM I ASKED TO ALLOW AN SDXC CARD IN MY M1 MAC?

This is Accessory Security available in Apple silicon notebooks. It's controlled in Privacy & Security settings — if you don't want to be asked when cards are connected, disable it.

# > Studio Display update failure

**When I tried to install the software update for my Studio Display, it failed. Is there anything I can try, short of taking it to an Apple store?**

Studio Display firmware updates are nerve-racking because of periods during the process when the display is turned off altogether. If that's your only display, and something goes wrong, you may not see the standard error icon showing a padlock on a display symbol. Wait at least another 15 minutes with your display connected to your Mac, with it connected to the internet, and don't disconnect them or restart the Mac.

If that doesn't resolve the problem, it gets harder to deal with if your Mac only has that single display — you won't be able to restart the host Mac if you can't log in to it without a display. If the display has remained black for more than 15 minutes, then unplug its Thunderbolt cable and plug it in again.

If the update doesn't complete after that, use a Mac with another display, starting or restarting that Mac and leaving it at least 15 minutes with a good internet connection to allow the Studio Display to update. If it still won't update, contact Apple Support.

Image rights: Apple Inc. Satechi, LG Electronics.

# macOS

Shine a spotlight on the solutions to your most irritating Mac problems

## > Restart into Recovery mode

**Is it possible to restart my M1 MacBook Pro going straight into Recovery mode, or will I have to shut it down first?**

The normal and recommended way to enter Recovery mode for any Apple silicon Mac is to shut it down first. You should then wait a few seconds, before starting it up and holding down the Power button until it displays that it's loading startup options. That should always be your preferred method whenever possible.

If you do want to restart more quickly, then immediately after the screen goes black after restarting, press and hold the Power button, releasing it when you see that it's loading options. That doesn't actually load the same Recovery system, but a fallback that may only exist after your Mac has installed its first macOS update; it works best on notebooks, and isn't as reliable on desktop Macs.

Its only significant snag is that Startup Security Utility can't change boot security, to let the Mac load third-party kernel extensions, for example. For that, shut down and use normal "paired" Recovery mode instead.

If you need to change an Apple silicon Mac's security policy using Startup Security Utility, use "paired" Recovery mode.

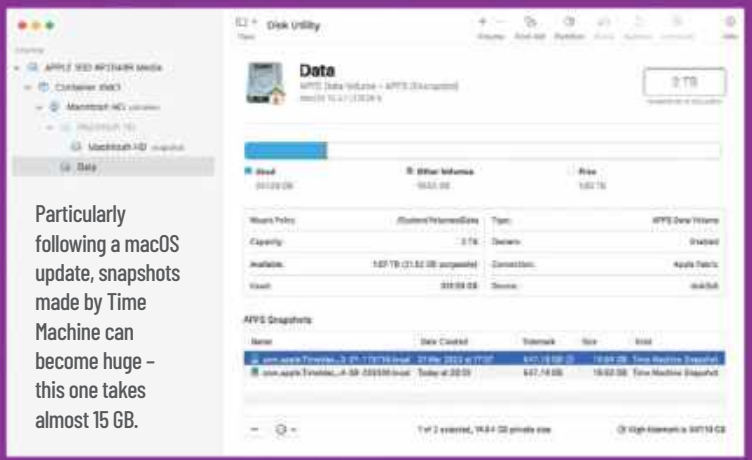
## > Deleting files doesn't free space

**When I put large files in the Trash and empty it, why doesn't the Finder show the same increase in free drive space straightaway?**

Unlike the Mac OS Extended file system HFS+, APFS has sophisticated features that can make it difficult to know how much free space there is in a volume, and whether it should change after removing files. Among other things, APFS features clone and sparse files, which can appear very large but take far smaller amounts of space on disk. Although you might expect that removing a 10GB clone file should free that amount of space, it may not free any, and sparse files can squeeze many GB into just a few MB.

The most common reason, though, is that the data in a file can't be deleted immediately because it's committed to a Time Machine snapshot, so you can restore the file instantly at any time in the next day, when that snapshot will be routinely deleted in Time Machine's housekeeping. Only then should you see that space freed up and ready to use.

If that's a problem, then store large files on a separate volume and exclude that from backups; the disadvantage is you then won't be able to restore the file from a backup should it get damaged or go missing.




Particularly following a macOS update, snapshots made by Time Machine can become huge – this one takes almost 15 GB.



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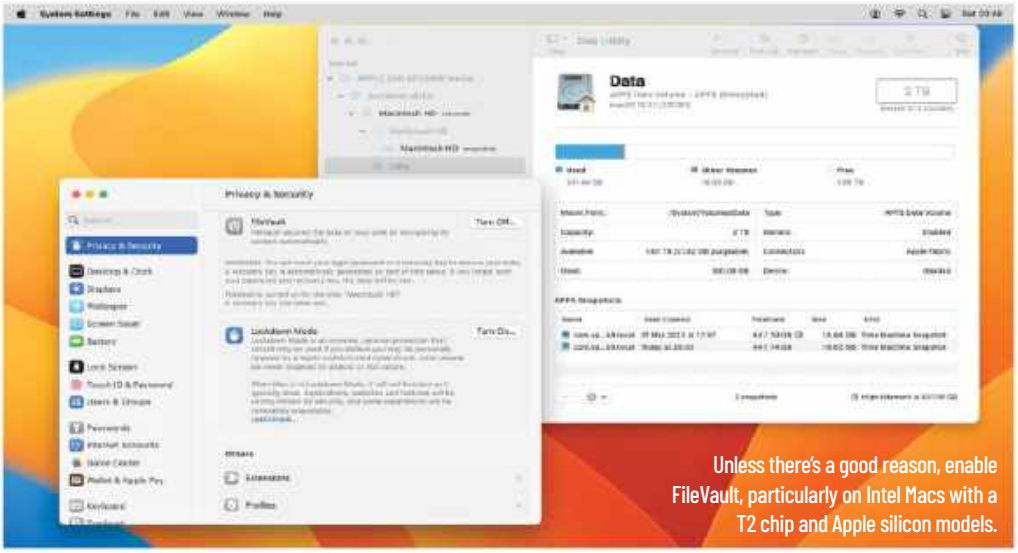



Unless there's a good reason, enable FileVault, particularly on Intel Macs with a T2 chip and Apple silicon models.

# > Should I enable FileVault?

**As the internal SSD of an Apple silicon Mac is already fully encrypted, what does FileVault do, and what benefit does it have?**

On Intel Macs with T2 chips and all Apple silicon models, the Data volume on the internal SSD is encrypted, although since Big Sur the System and other volumes are unencrypted. What's important is who controls the keys used for encryption.

With FileVault turned off and only default encryption, the Mac protects the key used to encrypt and decrypt the Data volume, its Volume Encryption Key or VEK, using two keys generated internally. Anyone who gains access to that Mac can therefore access all its Data volume, as it will obligingly use its own keys to let them do that.

Enable FileVault and nothing changes in the encryption, apart from the way those keys are protected. In order to make the internal keys available to access the VEK itself, the FileVault password must be provided. Without that, the encryption key can't be unlocked, and the Data volume stays encrypted and safe from all intruders. FileVault thus gives you control over access to your data without imposing any overhead, and without having to decrypt and re-encrypt the Data volume using a new key.

The only Macs it isn't recommended for are those used as servers, and without a display ("running headless"), where having to enter a password to access the Data volume may not be practical. Even Intel Macs without a T2 chip should have it enabled, although they can take a long time encrypting data the first time.

## Quick-fire questions & answers

### WILL ENCRYPTED TIME MACHINE BACKUPS BE SLOWER?

You shouldn't notice any difference. Even older Intel Macs feature hardware support for encryption, so it isn't much of a burden. All models throttle the writing of backups to storage, and that has greater impact than the small overhead of encryption.

### HOW TO STOP FLICKERING LIGHTS IN A VIDEO?

If you have an Apple silicon Mac running Ventura 13.3 or later, there's a new switch to dim flashing lights in System Settings > Accessibility > Display. That tries to dim any video containing strobe lighting and other flashing effects.

### WHY DOESN'T LOGGING OUT FIX PROBLEMS WITH WINDOWSERVER?

Logging a user out and back in used to restart WindowServer, and could even fix it when it was in deep trouble. In more recent versions of macOS, it now runs in its own login session, so that trick doesn't work anymore. Instead, you'll need to restart your Mac to reset it.

### WHY IS LOGINWINDOW STILL RUNNING AFTER LOGGING IN?

Although loginwindow does much more even before you log in, it's responsible for handling the Force Quit dialog, and for logout, restart and shut down actions. It therefore has to continue running once you have logged in, to listen for and manage those events, although that shouldn't take much memory or CPU.

Image rights: Apple Inc.

# iPHONE VACATION PHOTO SUPERGUIDE

WRITTEN BY GEORGE CAIRNS

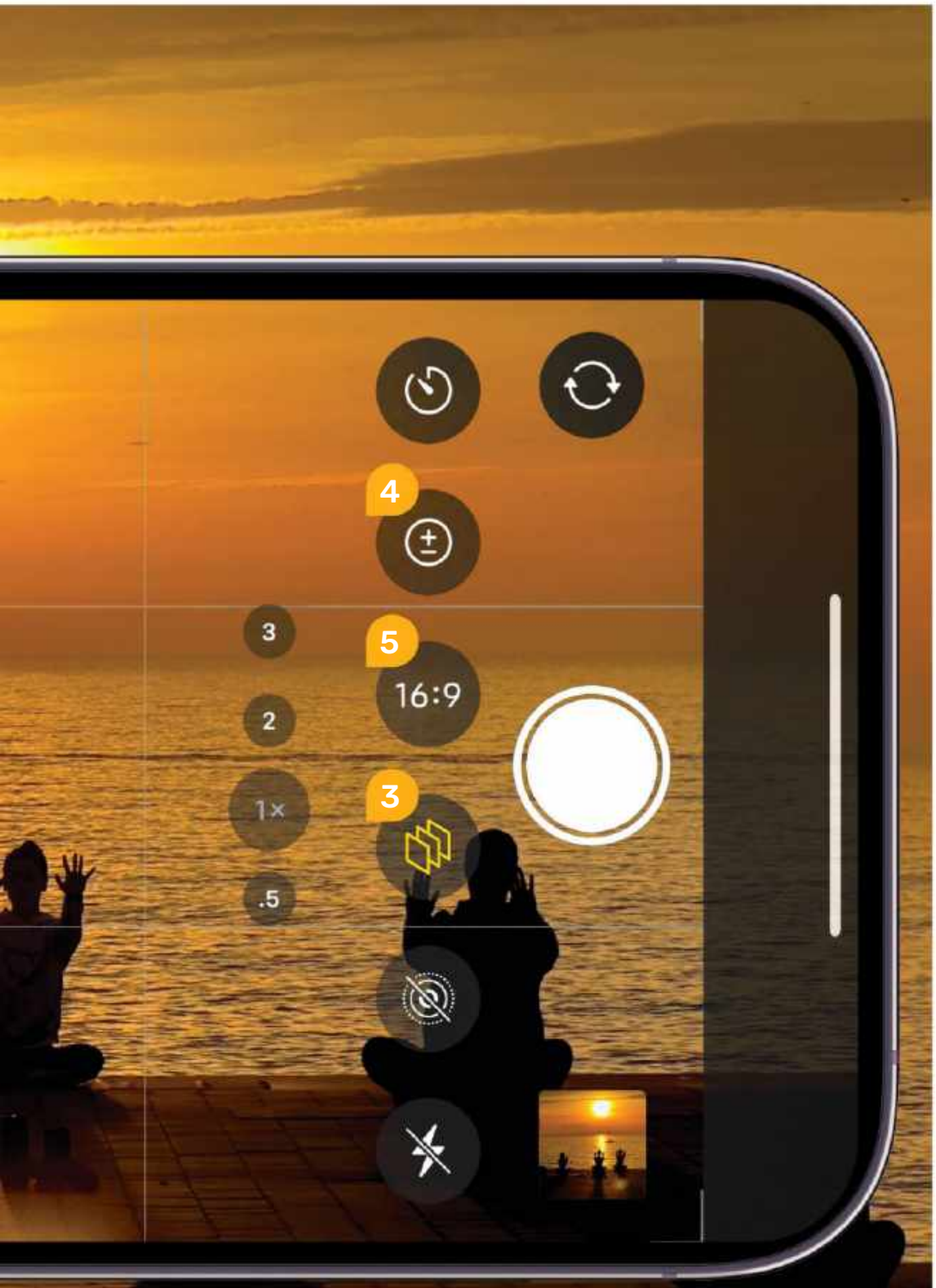
## Capture amazing memories on iPhone – we show you how

**WITH SUMMER VACATION** season fast approaching, we'll all hopefully have a bit more leisure time to take some photos. Vacations provide fantastic photo opportunities that should inspire you to swipe to your iPhone's Camera app and capture pictures of your family and friends enjoying amazing architecture, beautiful beaches, and exotic food. In this in-depth photography feature, we'll show you how to set up and use your iPhone camera to make the most of both a little jaunt to somewhere local or a more far-flung destination, so that you can populate your WhatsApp groups or social media feeds with stunning snaps.

We will also give you tips and techniques on making your photographs look their best when it comes to quality and composition, so that your shots stand out from the crowd. Plus, we'll demonstrate how to capture perfect panoramic landscapes and explain how to produce more creative selfies that capture more of you and your vacation location than the usual arm's length self-portrait (without the need for a tripod or selfie stick).



Image rights: Apple Inc.




We'll show you how to edit your shots on the go in the iOS Photos app to make the most of your destination's eye-catching hotspots. Editing images also helps you counteract problems with composition (such as a tilted horizon). You can then share your processed pictures while you're still on vacation so that other people can join in your fun.

The annotated iPhone screen (above) shows the extra Camera app tools you can access when you swipe left (when the iPhone is held in landscape orientation); they can also be accessed by tapping the chevron icon. Tools such as Filters and Photographic Styles also enable you to give your photos a specific look, adjusting the image's color and tone, without having to edit them — making it easier for you to shoot and share more quickly. We used an iPhone 13 and 14 Pro Max for most of this feature's shots, but you'll find that many of our tips and techniques can be used on other iPhone models.

Image rights: Apple Inc.

## GET MORE FROM THE CAMERA APP

1

### CHEVRON

By default, the Camera app displays shooting modes such as Video, Photo, Pano and Portrait. Tap here to access extra tools that control the way the Camera app behaves (such as the Timer, Filters and Photographic Styles).

2

### OUTSIDE FRAME

In Settings, go to Camera > Composition. Toggle on the "View Outside the Frame" option. You'll now see semi-transparent image areas at either side of the frame. This helps you recompose the shot to capture important details.

3

### STYLES

Tap here to choose a Photographic Style to apply to each image as soon as it is snapped. Styles such as Vibrant or Rich Contrast let you capture a specific look without the need to edit each shot's colors and tones later.

4

### EXPOSURE

Tap here to access an Exposure slider. You can swipe the slider to fine-tune the Camera app's exposure. This enabled us to avoid overexposing the bright sunrise while turning the foreground figures into striking silhouettes.

5

### SHAPE

The aspect ratio icon allows you to set the shape of each snapped shot to suit a variety of destinations, such as a print-friendly 4:3. Here we've gone for a 16:9 shape that will fill a widescreen TV.

# PEOPLE AND PLACES

## Discover how to shoot stunning selfies and perfect panoramas

**Your iPhone is designed to automatically get the best-looking shot in a range of scenarios.** It analyzes different areas in a scene and processes them separately to reveal color and detail throughout the image. There are plenty of ways for you to manually capture even better looking snaps…

### 1 iPhone versus DSLR

Your iPhone is the perfect accessory when it comes to capturing a wide variety of stunning vacation shots. Models such as the iPhone 14 Pro Max let you change lenses in a tap (without the need to rummage around in a travel bag to find and attach different lenses to a traditional DSLR camera). Your iPhone won't trouble your baggage allowance either, so you can ditch the heavy DSLR and bring back more souvenirs. If you have a Pro model iPhone then you can shoot in Apple ProRAW format, which provides you even more control when editing color and tonal detail while also reducing the presence of artifacts such as image noise.

The iPhone 14 Pro Max's 3x optical zoom lens enables you to capture documentary-style street photos without distracting your subjects.

### 2 Multiple lenses

Tapping on the Camera app's Ultra Wide 0.5x icon gives you the equivalent of a 13mm lens. This is perfect for capturing wide-angle shots in a city street, with a building's vertical lines

## HOW TO Improve composition

### 1 Wider selfie

Simply place the iPhone on a ledge and set the Timer to ten seconds, allowing you to step back and capture a selfie that includes more of your surrounding environment. The iPhone's flash will serve as a helpful countdown.

### 2 Rule of Thirds

In Settings go to Camera > Composition. Turn on Grid. By placing a subject where horizontal and vertical lines intersect, you can create a more classically composed image that obeys the Rule of Thirds used by artists.

### 3 Picturesque panoramas

The Camera app's Pano mode enables you to pan to capture a wider landscape shot. However, the horizon can become warped. Set the Aspect Ratio to 16:9 to capture a distortion-free, panoramic-style shot in a tap.



Image rights: Apple Inc, Adobe, Cogitap Software, Lightricks Ltd.

Shoot using the 16:9 aspect ratio for a panoramic shot that doesn't suffer from a warped horizon.

converging dramatically inwards toward the top of the frame. While the Ultra Wide lens is great for capturing architectural images, it can distort the human form. If you shoot an Ultra Wide angle picture with the iPhone held in vertical (portrait) orientation, it can elongate your subject to give them tall "supermodel" proportions. However, if you shoot an Ultra Wide shot in horizontal (landscape) orientation then people can look squat and wide, especially if they are at the far edge of the frame.

At the other end of the scale is the ability to optically zoom in to capture distant details (or snap street photography "people pictures" without distracting the subject). The iPhone 14 Pro Max also has an extra 3x optical zoom that is the equivalent of a powerful 77mm telephoto lens. Using optical lenses avoids the fuzzy look you get when pinching the screen to zoom in digitally. Stick to optical zooms for best results.

Use the Maps app to discover a fresh perspective on often photographed landmarks.

## 3 Get the look

If you want to give all of your getaway snaps a specific look (such as a welcoming warm hue with attractively vibrant colors), then you can apply a particular Photographic Style to every shot as it is snapped. Go to Settings > Camera > Photo Capture > Photographic Style. Swipe through the previews to choose a style that you like, such as Vibrant or Warm, and then tap the Use button.

You can fine-tune the look of the default Photographic Styles in the Camera app by tapping on Tone and Warmth and then dragging their sliders. Photographic Styles can only be applied to JPEG (Most Compatible) and HEIF (High Efficiency) format files (go to Settings > Camera > Formats > Camera Capture). If you shoot in ProRAW format then you won't be able to assign a Photographic Style (though you can process the Raw file's colors and tones in the Photos app to get the look that you want).

## 4 Fresh approach

When shooting landmarks, try to avoid the clichéd tourist spots and camera angles used by thousands of other vacationers. To make your shots really stand out from the crowd, you could use the Maps app to help track down alternative and less well-known shooting locations. This can help you capture a fresh and distinctive-looking landmark scene.

## BEST THIRD-PARTY APPS

### Photoshop Camera

> Free
> www.adobe.com

If the weather at your travel destination is a bit disappointing, you can use this app to automatically replace a dull gray sky with a blue one at the same time as you snap the shot. It also comes with a collection of creative filters.

### Slow Shutter Cam

> $1.99
> https://cogitap.com

This amazing app gives your iPhone the ability to use manual slow shutter speeds – just like a DSLR user can. This enables you to add motion blur to people or light trails to vehicles during a night shoot.

### Photoleap

> Free (IAPs)
> www.photoleapapp.com

This powerful AI-enhanced app lets you retouch your vacation photos in ways the iOS Photos app can't, such as removing unwanted people in the background with a swipe. You can also perform sky replacements for a picture-postcard look.

Image rights: Apple Inc, Adobe, Cogitap Software, Lightricks Ltd.

# SHOOTING TIPS AND TRICKS

## Learn various techniques for making your pics really pop

**There are so many interesting sights to snap when you visit a new destination that it's hard to resist the "rapid-fire" approach to photography.** Before you tap that shutter button, take time to consider your creative options while you compose a shot. Here we'll look at ways to capture photos that show off both the highlights of your vacation and your skills as a photographer.

### 1 Shoot in Raw

JPEG and HEIF files are compressed, so they lack information about a scene's colors and tones. Compressed files are also more prone to artefacts such as banding, where a gradient in a sky appears as jagged bands rather than a smooth blend of light to dark blues. On a Pro model iPhone, Raw files are stored as DNG (Digital Negative) files, and they are packed full of extra information that you can use in an editing app such as Photos to recover more detail in blown-out highlights or underexposed shadows for example. To shoot in Raw, go to Settings > Camera > Photo Capture and toggle on the Apple ProRAW option. On an iPhone 14 Pro Max you also have the option to shoot

Portrait mode adds a DSLR style bokeh to a landmark while making people stand out.

12MP (megapixel) files or enormous 48MP files, though the latter will take up a massive 75MB of storage space per photo compared to the 25MB of a 12MP Raw file. If you shoot in Raw then

## **HOW TO** Snap more striking shots >

### 1 Reflections

Wet weather presents you with the chance to create a more interesting composition using puddles as mirrors. Crouch down low and frame the shot to create a symmetrical balance between your subject and their reflection.

### 2 Selective focus

On newer iPhones, Portrait mode will also recognize objects as well as people. This lets you tap to focus on foreground objects while blurring background ones (or vice versa). This helps you direct the viewer's eye.

### 3 Motion blur

To capture the hustle and bustle of your travel destinations, use Cogitap's amazing Slow Shutter app to add motion blur to moving objects. It's a lot more effective than using a Live Photo's Long Exposure option.



Image rights: Apple Inc, Videndum Media Solutions Spa, ShiftCam Global Official.

When shooting in the Camera app's Pano mode, use the 1x main camera to capture a straight horizon. The 0.5x Ultra Wide camera will cause the horizon to become curved as you pan.

you can't use Portrait mode or apply Photographic Styles to each shot, but most Raw users will prefer to adjust a shot's colors and tones when they develop their digital negative in the Photos app (see p58).

## 2 Portrait mode

If you shoot in either JPEG or HEIF format, you can swipe to the Camera app's Portrait mode to capture more professional-looking people pictures. Portrait mode enables you to blur a background in a way that mimics the soft blur (bokeh) captured when a DSLR photographer uses a wide aperture lens setting such as f1.5. Using Portrait mode you can dial in a stronger or weaker blur before you take the picture. You can also edit Portrait mode shots in the Photos app to change the level of blur as we'll demonstrate on the next page. If you shoot in Raw, you can still capture a blurred background if you place the iPhone in close proximity to your subject, but you can't alter the blur strength later.

## 3 AE/AF Lock

The iPhone does a great job of breaking the scene into sections and exposing each area differently so that you have color and detail in both the shadows and highlights. Occasionally, you may want to lock the exposure manually, especially in high-contrast scenarios such as sunsets. Tap and hold your finger on the sun icon until AE/AF Lock appears, indicating that Auto Exposure and Auto Focus have been locked. Tweak locked exposure by dragging the sun icon up or down.

# AMAZING iPHONE PHOTO ACCESSORIES

### Manfrotto PIXI Mini Tripod

> $32.99

> www.manfrotto.com

This little tripod won't take up much valuable space in your travel luggage and it will enable you to snap a vacation selfie with ease, especially as it has an adjustable ball head to get the shooting angle just right.

### ShiftCam LensUltra Series

> £TBC

> https://shiftcam.com

The LensUltra Series consists of seven lenses that will expand your iPhone camera's capabilities, such as a 200° fisheye lens that will include more of a location. There's also a 60mm telephoto lens to help you capture closer shots of distant landmarks.

## 4 Framing

By shooting a notable landmark through an archway or window, you can add a natural border that frames the subject in a more creative way. Tree leaves and branches also provide unique opportunities for framing a subject.

## 5 Go wide

When shooting examples of your getaway location's exotic architecture, switch to the 0.5x camera in the Camera app. This 13mm Ultra Wide lens exaggerates the vanishing point in the shot, drawing the eye into the frame.

## 6 Night mode

In low light, the Night mode icon will turn yellow and a number will indicate the duration of the exposure needed to capture the shot. Tap the shutter and hold the iPhone steady while a slider counts down the exposure.

Image rights: Apple Inc, Videndum Media Solutions Spa, ShiftCam Global Official.

A quick tap on the Noir filter removes distracting color information so you can emphasize contrasting shapes and tones.

# MASTER EDITING AND SHARING ON THE GO

## Get your photos and videos looking their best

**After shooting a photo, you may need to tweak color, tone and even composition to improve it.** Fortunately, iOS 16's Photos app boasts a powerful suite of digital darkroom tools to help you fix and flatter your subject. You can also share your perfected picture with friends and family while you're still on vacation.

### 1 Tonal tweaks

When shooting at a sunny location, your iPhone may struggle to capture detail in both the shadows and the highlights. In the iOS Photos app, the Adjust panel's Shadows slider enables you to lighten underexposed shadows without overexposing brighter highlights. The Highlights slider helps claw back missing sky detail without underexposing a darker landscape, especially if you've snapped the shot in Apple ProRAW format.

### 2 Tints and casts

Capturing true colors can be a challenge due to the different color temperatures of light. Daylight can

## HOW TO Edit your captures in the Photos app

### 1 Burst mode

It can be tricky to shoot fast-moving subjects. By tapping the shutter button then sliding down or left, you can capture a rapid burst of stills. In Photos, tap Select then swipe to choose the best frame. Finally, tap Done.

### 2 Add atmosphere

Filters can enhance the mood of a shot in just a tap. Tap Edit, then tap the Filters icon. Choose a filter. Here Vivid Warm bathes the shot in a romantic wash of warm color. You can then dial down the strength of the filter.

### 3 Tackle tilts

When shooting on beaches, it's easy to end up with an uneven horizon. In Photos, tap Edit, then tap the Crop icon. Swipe the Straighten slider to counteract the tilt. A grid will help you make the horizon look straight.



Image rights: Apple Inc, Adobe.

Straighten architecture's converging lines by using the Crop tool's Vertical perspective correction slider.

cause a shot to look too cold and blue. Artificial light (such as a city's street lamps) can make some skin tones look too warm and orange (or even green in fluorescent light). Your Camera app performs an Auto White Balance (AWB) operation to capture cast-free colors. If it can get white objects to be free of blue or orange casts, the rest of the image will have cast-free colors too.

If your shots still suffer from color casts, tap Edit, then tap the Adjust icon and swipe to the Warmth slider. Drag it left to warm up a cold, blue shot, or right to cool down a warm, orange cast. You can also remove green or magenta color tints by dragging the Tint slider left or right.

## 3 Prints with punch

To make your snaps more eye catching in a social media feed, use the Photos app's Definition slider to tease out more textural detail from weathered architecture. You can also increase the value of the Sharpness slider. This boosts the contrast around edges in the shot, which helps delicate details stand out more.

## 4 Distortion

If you shoot a tall building from a low angle, its vertical walls appear to converge inwards toward the top of the frame. This is called perspectival distortion. If you use the 0.5x Ultra Wide camera, you'll want to embrace this perspectival distortion as a feature of wide-angle photography. However, when using other lenses, you can process the picture to make the walls of a building run parallel with the side edges of the frame. Tap Edit, then the Crop icon. Tap the Vertical correction icon. Drag the slider right to reduce the distortion.

## SHARING IMAGES ON SOCIAL MEDIA

One way to create attention-grabbing images on your social media feed is to combine a collection of photos as a creative collage. The Photos app can't do this, but the free Photoshop Express app can. In Photoshop Express, tap Collage, then choose Albums and browse to an album in Photos. Tap multiple thumbnails to select up to eight shots. Tap Next. You can then select various grid templates and experiment with a range of layouts for your collage. You can pinch and swipe within a grid to fine-tune the composition of the inserted photo.

## 4 Portraits

After snapping a shot in Portrait mode, you can change the strength of the background blur. Tap the f-stop icon then swipe the Depth slider to choose a low value such as f1.8. This creates a blurrier looking background.

## 5 Video to still

Pause on a frame of video that you want to share as a still. Tap to hide everything but the image. Press the side and volume up buttons simultaneously to capture a grab that you can crop, save and share as a photo.

## 6 Motion blur

To turn waves by the beach into ephemeral streaks of paint-like foam, shoot a Live Photo. In Photos, tap the Live drop-down menu and choose Long Exposure. This mimics the effect of using a slow shutter speed on a DSLR.

Image rights: Apple Inc, Adobe.

The source for tech buying advice

**techradar.com**

HOW TO BUILD A

# website in a weekend

## Creating a website is easier than it's ever been, and you can do it in a couple of days

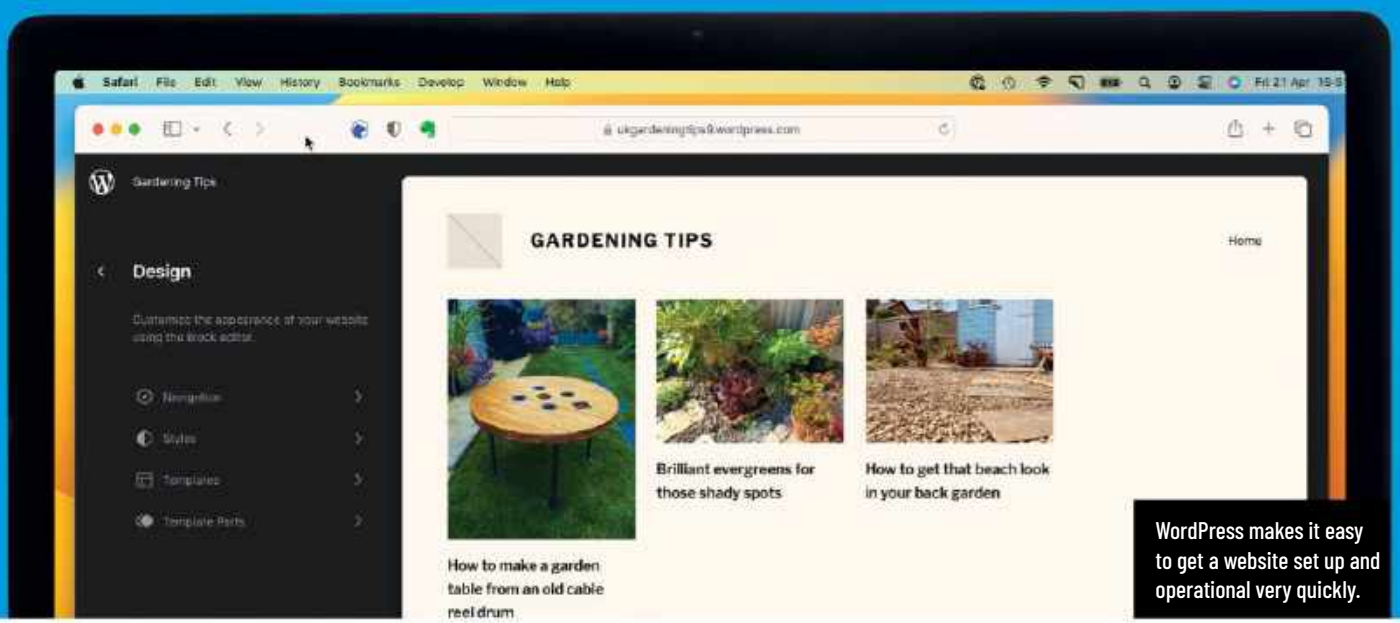
WRITTEN BY KENNY HEMPHILL

**A GREAT DEAL** has changed in the 30 or so years since the creation of HTML and the World Wide Web brought the power of the internet into people's lives. One aspect that hasn't changed is that websites are still the focus of most of our online activity. You can use an app or stream movies directly your TV, but if you want to book a vacation, research potential destinations, or renew your passport, chances are you go to a website.

And if you want to promote a new business, a band, or just share photos of your trip of a lifetime with the world, there's no better way to do it. Thankfully, building a website is much easier than it was even a decade ago. You can have an all-singing, all-dancing, responsive site with links to social media and e-commerce features fully functional in a very short space of time.

There are a few things to think about before you jump in, and we'll walk you through all of those over the next few pages. One of those things is which tool to use. We've chosen WordPress (https://wordpress.com); you can get started for free and be up and running and adding content in just a few hours.

Image rights: Automattic Inc.




WordPress makes it easy to get a website set up and operational very quickly.

# Start building your website

WordPress isn't just for blogs, it's a great tool for building any website

**WORDPRESS HAS BEEN** the platform of choice for bloggers for over a decade. But you can do much more than just start and maintain a blog with it, as it is now a fully featured website creation tool.

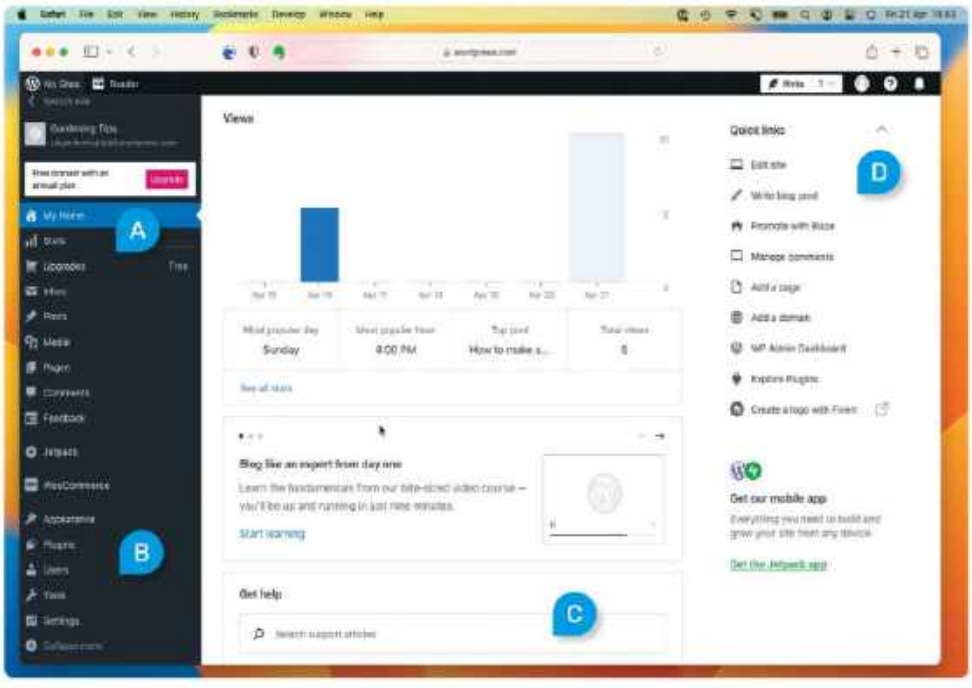
Before you start building, it's worth thinking about the content you want to host and whether you do want to run a blog, which is updated regularly and typically features the most recent post at the top of a stream of posts, or a website that has mostly static pages that are updated infrequently and laid out however you choose. You could also have a static site with a blog section, which is a good way of adding new content (so beloved of search engines) to an otherwise static site.

We're using WordPress here to show you how to get up and running. It has some limitations, and you will need to pay for certain additional features like plug-ins. However, it's a great way to get your very first website off the ground.

## QUICK LOOK The WordPress interface

**A CONTROL PANEL**
The left sidebar allows you to access different site areas such as posts and pages, and add or edit content.

**B QUICK LINKS**
The most frequently accessed sections are linked here, making it easy to add a page or customize your theme.



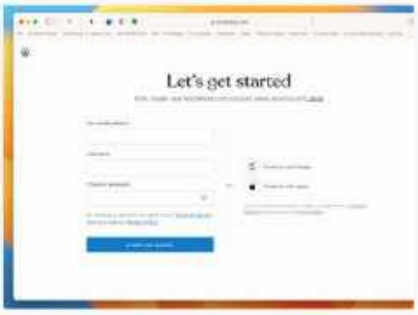

**C HELP**
There's a ton of help available, with links to the most commonly asked questions and the ability to search help articles.

**D APPEARANCE**
This is where you'll find themes. Don't get bogged down trying to decide which to use, you can always change it later.



Image rights: Apple Inc, Automattic Inc.

## **HOW TO** Get started with WordPress

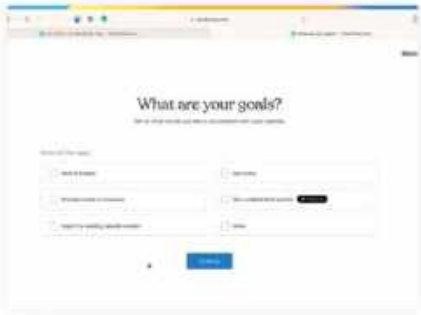



### 1 Create an account

Go to **https://wordpress.com** and click Get Started. Fill in the details in the sign–up form or click Continue with Apple/Google to log in using your Apple or Google accounts. Click "Create your first site" to get started.

### 2 Choose a domain

Type the words you want in your domain name into the box. You'll see suggestions. Only the wordpress.com domain is free on the free WordPress plan. If you don't like the suggestion, try different words. Otherwise, click Select.




### 3 Set up the site

On the next page, click "Start with Free", unless you want a paid–for plan. Choose your goals on the next screen, then a category. You'll need to give your website a name and come up with a tagline, then click Continue.

### 4 Choose a theme

You could write your first post now, but we're going to continue setting up. Select View Designs. Click on a theme to choose it. We've chosen Masu. Click Continue. Then click "Launch my Site" to start adding content.

### 5 Manage posts

On the Control Panel, click Posts in the sidebar. You'll see the dummy posts for the theme in the main window. Click on the "…" next to a post and choose Trash to delete it. Repeat that for the other dummy posts.

### 6 Create a post

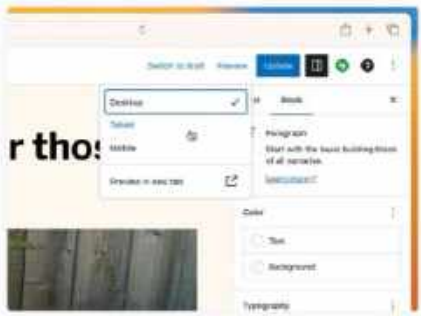
Click Add New Post. When the window opens, type a headline, then click in the body of the post and start typing the content. Use the toolbar above the cursor to format the text or to add hyperlinks.

### 7 Add an image

Images are added using an image block. Click in the body of a post, then click the "+" and choose Image. Click Upload to select an image from your Mac, then navigate to it and click Upload to add it to the post.

### 8 Edit an image

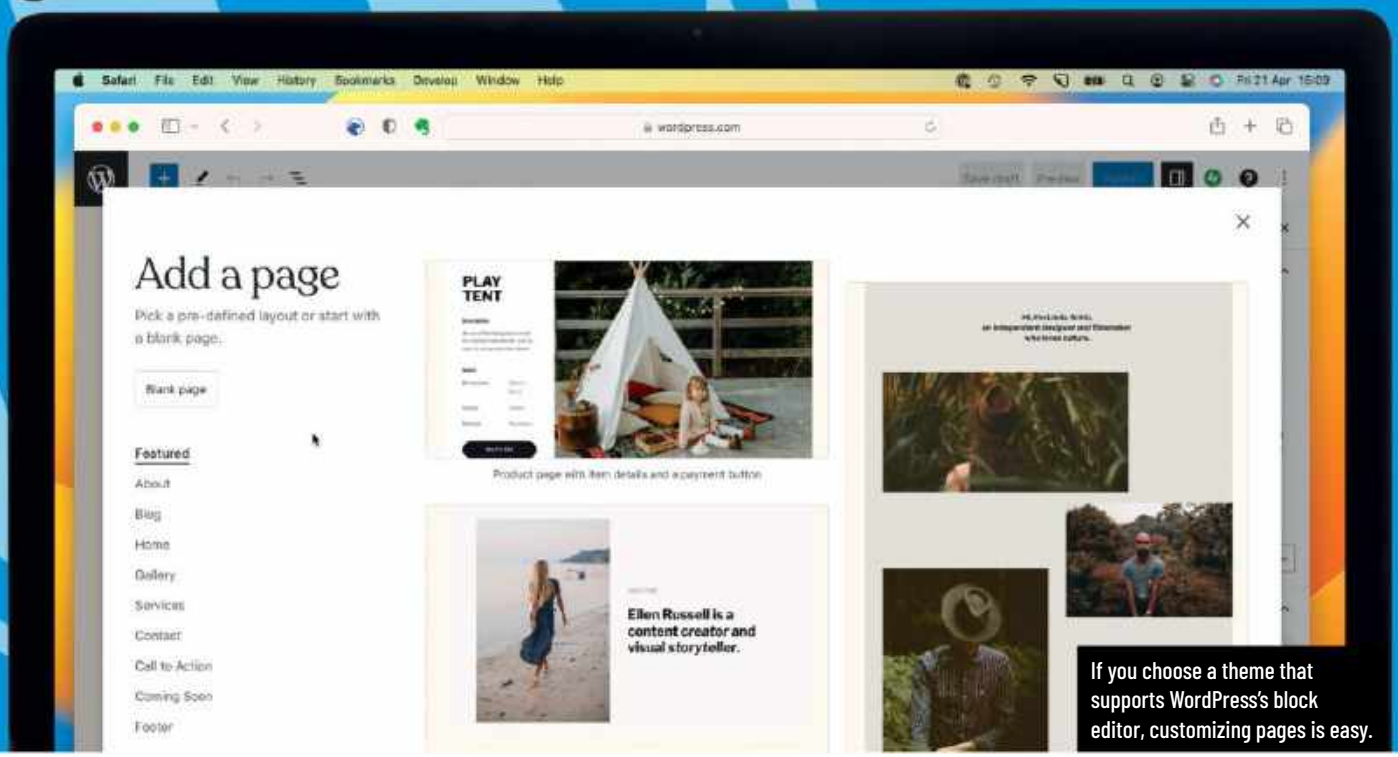
Click on the image and use the toolbar above it to crop, align, hyperlink, or caption it. You can also add a filter or add text over it. Use the options on the right to add alt text, change its size, or add a border to the image.



### 9 Preview and publish

When you're happy with your post, click Preview at the top right and choose Desktop, Mobile, or Tablet to see a preview. If you're satisfied with it, click Publish. If not, click Save Draft to save it and carry on editing.

Image rights: Apple Inc, Automattic Inc.



If you choose a theme that supports WordPress's block editor, customizing pages is easy.

# Do more with WordPress

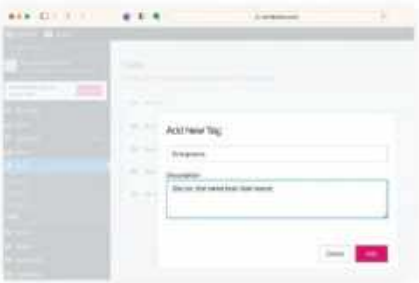
## Creating and publishing your first blog post is just the start

**NOW THAT YOU'VE** set up your website and published your very first post, it's time to add a bit more polish. Categories and tags will make posts easier to navigate and allow visitors to find older posts more easily. You can also add some static pages and customize them.

Once you've completed the steps here, if you want to take things even further, you could use plug-ins to add more features, like e-commerce. On wordpress.com, plug-ins are only available with the paid-for Business plan. However, if you install WordPress on your own hosted domain, many plug-ins are free to use. Using your own domain to host WordPress is something you should consider seriously if you want your website to be more than a bit of fun to share with friends and family.

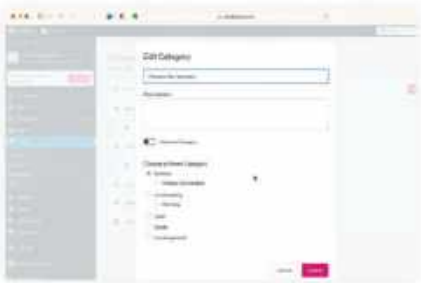
Most web hosts make installing WordPress easy, and if you want more than the basic features, it will be cheaper in the long run.

## **HOW TO** Include tags and categories



### 1 Create tags

On your Control Panel, click Posts, then choose Tags from the drop-down menu. Type the name of a tag you want to add in the box, then type a description for it. Click Add. Click Add New Tag to add another one.



### 2 Build categories

Categories are also added from the Posts menu. The difference is that categories can be nested, with some categories parents of others. When you add a category, disable "Top level Category" to choose a parent.

### 3 Add to posts

To add a category or tag to a post in the post editor, click Post in the sidebar on the right, then click the Category arrow and choose a category. To add tags, click the Tags menu and type the name of a tag, then Return.



Image rights: Apple Inc, Automattic Inc, Realmac Software Ltd.

## HOW TO Create and use templates

### 1 Add a table

Click anywhere in a post, click the "+" then choose Browse All. Select Table from the Text section of the Blocks sidebar. Choose how many rows and columns you want and click Create Table. Now start typing in the table cells.

### 2 Embed a video

Click on the post, then "+" and Browse All. Then choose YouTube, Vimeo, Dailymotion or whichever video site you want from the Embeds section. Paste the URL of the video into the box to display it on your website.

### 3 Use a pull quote

Pull quotes are a good way to break up long posts. Add a block in the same way as for tables and videos, but choose Pullquote. Type or paste the quote, then type the citation below. Use the toolbar to style the text.

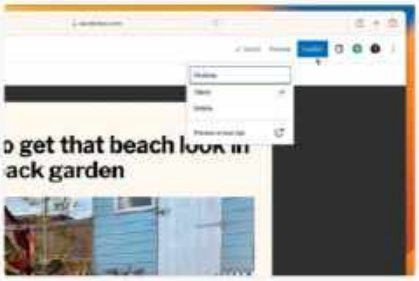
## HOW TO Add pages and finish your website

### 1 Edit your home page

Click on Pages in the sidebar and then select Homepage. Click the "About the blog" block and type some text. Use the toolbar to style it. You can also delete blocks and add URLs to social media buttons.

### 2 Add an about page

Click "Add new page" on the Pages screen in Control Panel. Choose About. Click on one of the templates. Click in any text block on the page to edit and style the page. When you're done, click Save Draft or Publish.



### 3 Publish

If you've been saving pages and posts as drafts, now is the time to publish them. Click on Posts in the sidebar to see your posts, then click on one to review it and Publish. Do the same with Pages. You have a website.

RapidWeaver is a great desktop tool for designing websites on your Mac.

## > OTHER WEBSITE BUILDERS

### There are lots of options to choose from

Wix (**www.wix.com**) is an easy way to get a business site up and running. If you'd rather use software on your Mac to build and upload a website, RapidWeaver Classic (**www.realmacsoftware.com**) has a deserved reputation for being easy to use. Sparkle Pro (**https://sparkleapp.com**) is another excellent Mac app and is a particularly good option if you want to include membership or subscription features. Finally, Mobirise (**https://mobirise.com**) has thousands of templates to help build small sites, web stores and landing pages.

Image rights: Apple Inc, Automattic Inc, Realmac Software Ltd.

The headphones come in two versions: analog with XLR plug, and USB-A/C.

# Audio-Technica ATH-M50x STS-USB Streaming Headset

## High-quality streaming and listening

**$229** **From** www.audio-technica.com

**Features** USB or analog connection, integrated boom mic, swappable ear pads, sidetone voice monitoring on USB model, 15 to 28,000 Hz frequency response, 45mm large-aperture drivers

**STREAMING HEADSETS HAVE** grown in popularity as a result of the explosion in gaming, conferencing, and other online broadcasting pursuits that have taken off in recent years. While entry-level models can be very inexpensive, those who are serious about streaming will often want to look at a higher quality solution. Audio-Technica's ATH-M50xSTS comes in two versions, an analog model with XLR and 3.5mm audio plugs, and the USB version, as reviewed here.

Costing around $30 more, the USB model plugs directly into your computer using its hard-wired USB-A cable, or via the bundled USB-C adapter. The bonus here is that you don't need any kind of audio interface and can take advantage of the headphones' onboard DAC (digital to analog converter) to achieve up to 24-bit, 96kHz audio quality. They are self-powered, drawing a small amount of current from your USB port.

### PERFECT FOR STREAMERS

At 12oz the headphones are lightweight but sturdy and grip your head comfortably. There are two pairs of earpads included, one more closed to achieve better sound isolation and another more open and breathable, for better comfort during sessions of extended usage. Everything is class compliant so there's no setup, simply connect the headphones to your computer and they appear as an audio output option as well as the microphone appearing as an input. The headset also works with USB-C-equipped iPad models, which is a nice bonus.

Speaking of the mic, Audio-Technica has integrated a back electret cardioid condenser mic based on its 20 series, in this case a unidirectional model with a frequency response of 50Hz to 20kHz at 1.2in from your mouth. The mic is on an adjustable arm and in use you almost forget it's there. One nice touch is that the mic can be muted by simply lifting the boom arm into its "up" position, so there's no need to hunt for buttons or software switches to temporarily mute yourself.

The USB model has what the developer calls "sidetone" technology which seems to be a form of direct monitoring, letting you hear your voice in the headphones as you speak for a more natural experience. This works well and avoids the strange dissociative effect that can sometimes result from speaking while your ears are covered with headphones. A small monitor dial on one cup can be used to change the volume of your voice in the headphones, and pressed on or off to toggle live monitoring.

The headphones deliver a detailed and very solid soundstage, pleasingly balanced across rich low end, clear mid range and energetic top end. While this could possibly be argued to be overkill for listening to audio that's streaming over the web, it pays dividends on your own side of the conversation. The microphone performs very well indeed, rejecting extraneous noise and picking up your voice clearly and consistently. Any audio content you're listening to while speaking comes across beautifully.

### HIGH-QUALITY COMFORT

In fact, thanks to Audio-Technica's pedigree in the pro audio domain, these are actually pretty serious headphones for listening to music more generally. Given that the mic isn't removable you may not buy them solely for listening, they could be a little unwieldy for that. But if you already use them for streaming as intended, then also being a great pair of cans for general listening is an added bonus.

If you are serious about streaming or conferencing, it's well worth investing in a quality and comfortable headset and these certainly fit the bill. There's no setup, audio fidelity is excellent, and crucially they are very easy to wear for long periods. **HOLLIN JONES**

### THE BOTTOM LINE

Solid pickup and playback for those serious about streaming and broadcasting.

- Excellent audio quality
- USB model is convenient
- Flip to mute mic
- Comfortable to wear

**EXCELLENT**



Image rights: Audio-Technica U.S, Inc.

Lightweight but sturdy, the headphones come with two types of ear pads.

Image rights: Audio-Technica U.S, Inc.

Cherry's "SX" scissor keys offer a great typing experience.

# Cherry KW 9100 Slim for Mac

## Affordable alternative to Apple's Magic 'board

**$59.99** **From** www.cherry-world.com

**Features** Switchable Bluetooth/2.4GHz RF wireless, magnetic support bar, 13 extra function keys, Nano-USB receiver, 5.12 x 17.32 x 0.59in, 24oz **Needs** macOS 10.13 or later, Bluetooth 4.0, USB-A

**APPLE'S FULL-SIZE** Magic Keyboard is a brilliant wireless option for typists wanting the best feel possible, but at $129, it's far from affordable. Cherry's KW 9100 Slim for Mac offers a similar package, for $69 less.

On paper, it doesn't feel like anything obvious has been sacrificed, either. If anything, you get more bang for your buck. A full-size 'board, the KW 9100 Slim for Mac features 13 extra function keys along the top, and there's a magnetic support bar included, which allows you to raise the back of the keyboard. And, unlike the Magic Keyboard, Cherry's offering can be connected wirelessly to a Mac either using Bluetooth or 2.4GHz RF wireless, thanks to the included Nano USB-A receiver. That means you can easily switch between different Macs on the fly. A USB-A to USB-C cable is included for recharging.

As with the Magic Keyboard, the KW 9100 Slim for Mac doesn't offer backlighting, which might explain the meritorious battery life. We used it for months at a time, and the battery never dipped below the half mark. By comparison, you get 1-2 months from the Magic Keyboard — slightly less, then.

Our favorite aspect of this keyboard and, crucially, the most important is the typing experience. Here, Cherry's experience in key technology shines through. The "SX" keys sit atop a scissor mechanism, which translates to a relatively quiet key action, with just the right amount of travel. It's comfortable for hours on end, making it a great option for serial typists.

The only real negative we can level at the KW 9100 Slim for Mac is that it doesn't exude the same kind of premium look or feel of Apple's Magic Keyboard. Although the silver surround is a good match for your Apple devices, the chassis is pure plastic, unlike the aluminum of Apple's own. It's also not quite as slim or lightweight. None of this is a huge deal, and it's totally justified in the much lower price tag of Cherry's 'board.

Overall, the KW 9100 Slim for Mac is a great full-size wireless keyboard. **NICK ODANTZIS**

### THE BOTTOM LINE

Over half the price of Apple's full-size Magic Keyboard, and nearly every bit as good.

- Great typing feel
- Switchable wireless
- Fantastic battery life
- A bit of a steal

**AWESOME**



Image rights: Cherry.

# Pixelmator Pro 3

## All your graphic needs handled with ease

**$49.99** **From** www.pixelmator.com

**Needs** macOS 11 or later

Layer and work with video as easily as still images.

**PIXELMATOR HAS ALWAYS** positioned itself as a more user-friendly alternative to Photoshop, and since the release of version 3 that's a more apt description than ever. In fact, while it lacks some of the Adobe app's very advanced features that are of interest mainly to professional designers, it has some tools that Photoshop does not. Priced at $49.99 as a one-off purchase — something Adobe no longer offers — it's remarkable value too.

The app is slick and well-designed, making use of your Mac's GPU to keep things nice and snappy. As you'd expect there's full support for layers, text, painting and retouching, with effective AI features that can detect subjects, remove backgrounds and the like. Version 3 introduced some major new features including over 200 design templates, covering everything from posters and flyers to movie titles and social media stories. All these are easy to edit, with tools for replacing elements from your own library or using downloadable content. There's also video support that lets you treat video like you do stills, using layers, templates and even editing GIFs. Videos can have their colors and other parameters tweaked just like photos.

The 3.3 update brings focus back to still images, adding tools to selectively remove colors, enhance texture and clarity, recover shadows and highlights, and control clarity across different tones. New stroke styles are supported as are sidecar files, so you can work with images in their original format while preserving layers and edits nondestructively.

Elsewhere, vector creation and editing are supported, letting you create your own resolution-independent graphics, and there's an excellent collection of dual-texture brushes plus graphics tablet support. Machine learning also powers a series of quick tools including auto enhance, super resolution, match colors, quick select, select subject, and more.

Pixelmator Pro is a superb application that provides a selection of the kinds of tools you get across several of Adobe's apps in one easy-to-use package. ML-powered image editing, graphics, text and painting are all here, and the interface works well. The templates and support for working with video, as well as outputting content in a range of web-friendly formats with just a few clicks, make it an excellent all-rounder with all the tools most users will realistically need for creating graphics. That's not to say it isn't capable of more in-depth work as well, because it most certainly is. A great suite for all your graphics needs.

**HOLLIN JONES**

### THE BOTTOM LINE

Slick and highly capable, Pixelmator Pro is a user-friendly graphics powerhouse for the Mac.

- Solid ML-powered tools
- Slick, friendly interface
- Easy export to many formats
- Templates genuinely useful

**AWESOME**

Image rights: Pixelmator.

The Logitech Brio 300 is a pocket-sized camera with performance that belies its low price.

# Logitech Brio 300

## Bargain basement, or a great-value webcam?

**$69.99** **From** www.logitech.com

**Features** 1080p resolution at 30Hz, 70-degree field of view, privacy shutter, mono microphone, 5ft non-removable USB-C cable, 2.58 x 2.09 x 1.78in, 2.63 oz

**LOGITECH'S BRIO 300** webcam is the little sibling to the company's Brio 500, and it cuts a few corners to slash the price down from $130 to $70. Yet the sacrifices have a surprisingly modest effect on picture quality, making this an impressively good-value offering.

From the outside, the Brio 300 is a lightweight, compact camera that looks attractive in each of its three colorways. There's a built-in privacy cover that slides over the lens, and its 5ft cable is non-removable. You can tilt the webcam up and down, but there's no side-to-side movement.

On the inside, there are some notable differences compared to the Brio 500. The Brio 300 offers only two megapixels to the Brio 500's four, there's no autofocus, and the microphones are mono instead of stereo. The field of view is also noticeably narrow, down to 70 degrees from the Brio 500's 90 degrees.

The real-world effects of these disparities aren't as obvious as you'd imagine, though. The Brio 300 performed admirably in our audio tests, with our voice sounding perfectly clear throughout our recordings.

In terms of video, it offers the same 1080p resolution and 30Hz frame rates as the Brio 500. When well-lit from the front, the two cameras traded blows: the Brio 300 was a touch warmer and lighter, but with a slight tendency towards oversaturation. Things were again very close with a light placed behind the subject, where the cheaper camera kept the subject's face better lit at the expense of more washed-out background matter. In low lighting, though, the Brio 500 pulled ahead, with less grain and more accurate white balance in our video tests.

The main disappointment is the Brio 300's field of view, which feels very constricted and tightly cropped. But if you can put up with that, it does very well for a webcam under $100. It outperforms more expensive cameras like the Kensington W2050 Pro (though this is currently on sale at Amazon for the same price), and is a great choice if you're after an affordable camera for your Mac. **ALEX BLAKE**

### THE BOTTOM LINE

A great performer for the price, the Brio 300 shows you don't always need to spend big.

- ✚ Surprisingly good performance
- ✚ Decent audio
- ✚ Compact and lightweight
- ✖ Narrow field of view

**GREAT**



Image rights: Logitech.

The wireless mic system is stored inside a USB-C charging case.

# AnkerWork M650 Wireless Microphone

## Record great wireless sound for video

**$249.99** **From** https://us.ankerwork.com

**Features** Wireless recording of lossless audio, touchscreen operation, mono or stereo, Lightning, USB-C or analog connection **Needs** macOS 10.14 or later, iOS 11 or later (AnkerWork software)

**WHILE THE VIDEO** capabilities of iPhones and digital cameras have improved dramatically in recent years, their audio performance remains a distant second. With so many people creating and broadcasting video content, a dedicated wireless microphone is an essential tool. AnkerWork's M650 is designed to take the hassle out of recording sound.

It bears a passing resemblance to a beefed-up pair of earbuds, with a USB-C charging case that houses two transmitters and a receiver. Settings are made on the receiver unit, which has a small but useful touchscreen and an easy-to-use interface.

It can fit directly to the hotshoe mount of a camera if you're using one, with a 3.5mm cable to plug into the mic input, or via the included Lightning or USB-C adapter directly to your iPhone or iPad. Plug the USB-C cable between the receiver and your Mac and it becomes an audio interface, with the transmitters able to be recorded directly into the computer. You'd also use this method to connect to the AnkerWork software from where you can make settings, update firmware and download audio. Each transmitter actually has onboard storage for up to seven hours of uncompressed audio, which is well worth using as a safety backup.

The transmitters use an omnidirectional microphone and have onboard DSP that intelligently cuts out background noise — they call this VoiceShield — and you get two optional windshields to help in poor conditions. The transmitters have a mute button as well as a TRS input for a separate lavalier mic, and can be clipped onto clothing or held on via a magnet.

The system uses the LC3plus codec to transmit lossless audio up to 656ft at very low latency and this works supremely well in practice. Voice pickup and isolation from the mics is excellent, as is signal strength. The M650 is a well-built solution for high-quality audio recording, and easy enough for practically anyone to use. **HOLLIN JONES**

### THE BOTTOM LINE

An elegant and user-friendly way to capture high-quality sound for video, podcasts, and more.

- Simple setup
- Superb results
- Versatile compatibility
- Useful accessories

**AWESOME**

Image rights: Fantasia Trading LLC.

# Camo Studio 2

## Time to ditch Continuity Camera

**Free; $39.99 yearly; $79.99 lifetime** **From** www.reincubate.com

**Needs** macOS 10.13 or later, iOS 12.0 or later

**WHEN CAMO STUDIO** first launched, it showed you could get top-notch video output from your iPhone without the help of a webcam. Now that Apple has followed suit with Continuity Camera, is there any need to use Camo? Well, the app's developer Reincubate believes there is, and it's just launched Camo Studio 2 with a slate of new features to prove it.

Let's not beat around the bush: Camo Studio 2 is a superb webcam app that offers far more than Apple bundles into Continuity Camera. For one thing, Camo Studio 2 now works with any camera you can connect to your Mac, not just iPhones. That includes DSLRs, action cams, monitors with built-in webcams, and even Continuity Camera itself.

The app's strongest feature is undoubtedly its focus on customization. Not only does it place a ton of tools and presets at your fingertips, but almost all of them can be tweaked in minute detail. You can pick and choose resolution and frame rate combinations, select which lens is used, and then increase or decrease the strength of nearly every effect.

You get fine-grained control over exposure and ISO, hue, brightness, vibrance, and much more. You can even turn on your iPhone's flash light and change its strength, giving you an impromptu ring light of sorts.

### WHO NEEDS CONTINUITY CAMERA?

Reincubate has attempted to match (and then exceed) Continuity Camera's features. You can now add a subtle Portrait mode effect, blur your background entirely, or replace it with your own custom backdrop.

Camo Studio 2 is bursting with customizable options.

Unlike in Continuity Camera, Camo's Portrait mode also lets you adjust its strength. Unfortunately, Camo's full-on background blur feature is clunky and a tad inaccurate, and sometimes leaves messy edges around your subject.

There's also Reincubate's take on Center Stage, and it's much more customizable than Apple's offering. You can manually tell the app where to crop, set it to pan automatically but not zoom, or have it both pan and zoom just like Center Stage. It's a bit jerkier than Continuity Camera, but you can adjust it much more freely.

Finally, there is a Studio Light equivalent with a strength slider, but Camo lacks its own version of Desk View.

### PRESETS AND OVERLAYS

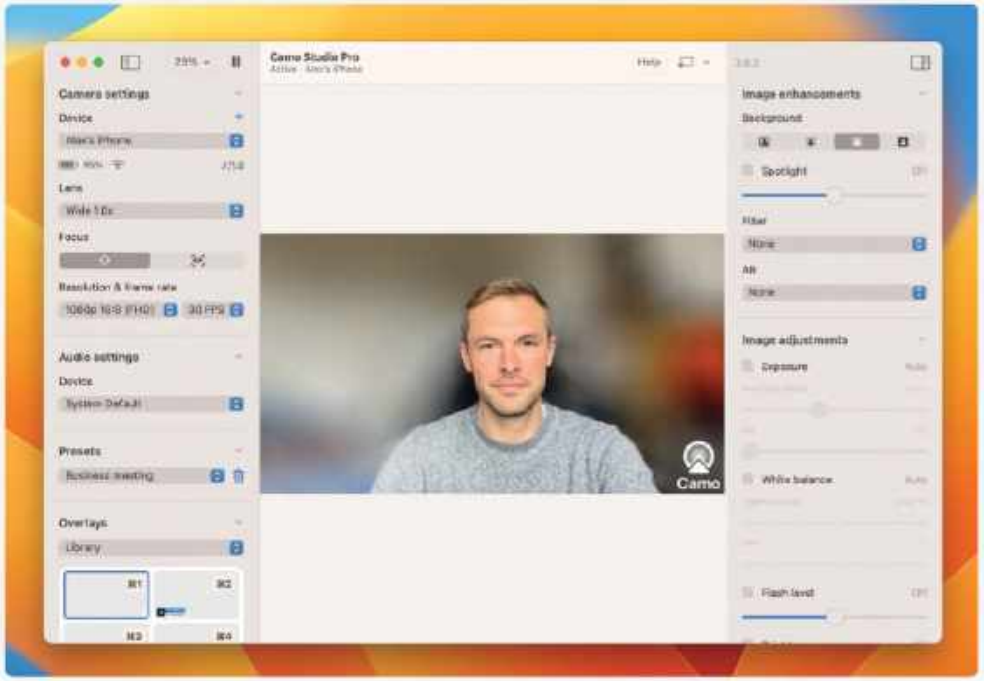
Reincubate has also baked in a bunch of pre-made presets, but they're disappointing and range from the basic (saturation tweaks) to the downright ugly (bright color washes).

Happily, its filters are much better. Some are fairly standard and create various filmic looks or mute background colors, but the real fun begins with the augmented reality (AR) filters, which let you replace your hands with emoji symbols or put a virtual cat on your head.

We also liked Camo Studio 2's overlays, which superimpose text and images onto your

There are some fun AR effects, such as emoji hands.

Image rights: Apple Inc, Reincubate Ltd.




webcam feed. These can include a virtual name tag or your YouTube handle. They're easy to edit with your own details and are useful in all sorts of contexts, from business pitches to video game streaming.

Considering all the features it stuffs in, Camo's $39.99 annual subscription is reasonable. And if you're not a fan of recurring payments, you can purchase a lifetime license for $79.99. Quite a lot is locked behind the paywall, including all the Continuity Camera equivalent effects and image adjustments, which makes paying worth it if you want everything Reincubate has to offer.

The privacy background blur feature can be a little messy.

You can use your iPhone's Ultra Wide camera for a broad shot.

Camo Studio has graduated beyond simply transforming your iPhone into a webcam, and is now a fully fledged webcam hub chock–full of tweaks and handy customizations. The fact that it gives Apple's own effort a run for its money speaks to its quality. **ALEX BLAKE**

### THE BOTTOM LINE

An outstanding app that runs rings around Continuity Camera in almost every way.

- Highly customizable
- Full of filters and presets
- Handy overlays
- No Desk View

**EXCELLENT**

APP TIPS

## Create an overlay

Overlays are a good way to add handy info to your video feed. To start, choose a template in the left–hand menu. Alternatively, click the "+" button to create a new overlay, or click the four squares to view the overlay gallery.

## Tweak the text

Double–click your chosen overlay and give it a name. You'll now be able to edit all the elements by clicking the corresponding item in the left–hand sidebar. You can tweak positioning, fonts and more on the right.

## Add some images

Click an overlay image to add your own picture, change its position and aspect ratio, add a border and tweak its corner radius, and more. When you're finished, your overlay will be automatically saved to the gallery.

Image rights: Apple Inc, Reincubate Ltd.

# Rocketbook Pro

## Is it time to do away with paper altogether?

**$55–$60** **From** https://getrocketbook.co.uk

**Features** Embedded NFC hotspot, erase notes with water, scratch-resistant & vegan leather cover, OCR

When you've finished making notes, scan and save them with the Rocketbook app.

**THE PAPERLESS OFFICE** hasn't arrived. Sure, more and more documents and information have gone digital. We can fill in and even sign PDF forms, keep digital diaries, calendars and address books, access instruction manuals online instead of getting printed versions, and more. But we all need to make handwritten notes every now and then.

That's where Rocketbook Pro comes in. Available in Executive and Letter sizes and Sage Green, Black and Coast Blue colors, this refillable vegan leather, scratch-resistant hardcover volume uses paper that can be reused, over and again. Write on the supplied paper (20 sheets) with the bundled Pilot FriXion pen (black supplied, red and blue available from the online store), and when you've finished dampen the included microfiber cloth and wipe it clean. You can use the reverse of the pen to erase minor errors too. The paper is waterproof and tear-resistant so it should last a long time, but unlike previous Rocketbooks, refills and other styles of paper such as a daily/monthly planner and to-do lists are available for the Pro version from the Rocketbook website.

The Rocketbook Pro isn't all about reusing the paper. Given the price, and the fact you can get a similarly sized regular notebook for about a buck, it would take years for the savings made by not buying paper to cover the initial outlay. Download the Rocketbook iOS app and you can scan your completed pages and send them to the cloud. Seven icons at the foot of each page represent seven folders in your cloud space; put a cross on one and it's sent to that particular folder. Your handwriting can be turned into editable text using OCR too, but not on the app. Instead, it's emailed to your Mac along with a PDF of the scan.

The Rocketbook Pro works well enough, but is it a solution looking for a problem? Ordinary notebooks are extremely cheap, can be used with regular pens, and are easily recycled. The OCR does a decent job, but you could do this with a regular notepad and Live Text too. So does the Rocketbook Pro justify its asking price? If you think it does, you probably won't be disappointed, but we suspect most people will be just as happy with a notepad and pen.

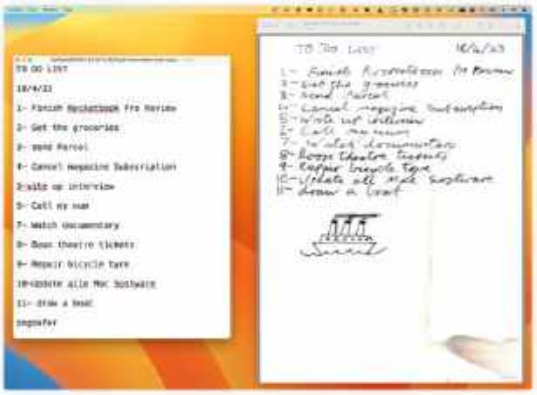
**IAN OSBORNE**

### THE BOTTOM LINE

The Rocketbook does everything it claims to do, but for many it might not justify the asking price.

- ✚ Reusable paper
- ✚ Scan notes to cloud
- ➖ You can do most of this with pen and paper
- ➖ Notepads are far cheaper

**GOOD**



After scanning a list made on the Rocketbook Pro, it was sent to our email address as text and as a PDF.



Image rights: Rocketbook.

Gliding through the air is a serene and satisfying experience.

# Laya's Horizon

## Traverse a new open world

**Free (requires Netflix subscription)**

**From** www.layashorizon.com

**Needs** iOS 15.0 or later, A12 Bionic chip or later

**IT'S EASY TO** see that *Laya's Horizon* comes from the same developer as *Alto's Adventure*, and the effervescent momentum that made that title such a hit courses through the veins of its latest effort. It's swift, fun, and beautiful to behold, and a welcome antidote if you're sick of high-pressure, high-intensity mobile games.

You play as the titular Laya, a member of the Windfolk who traverse their island home by flying through the air with the help of wingsuit-like capes. Along the way you meet friendly island inhabitants, unlock new capes and charms to boost your abilities, and explore the skies on the gusts and thermals.

Flying controls are intuitive and easy to learn. You use your thumbs as if you are physically manipulating your character: push up with your left thumb and down with your right and Laya swings to the right. Drag your thumbs apart to slow down or pinch them together to use your boost, which is replenished by the golden sparks found across the landscape. Even when you're moving rapidly, Laya feels nimble and maneuverable.

### MUCH TO DISCOVER

The Windfolk's island looks beautiful and is full of varied districts. There are mountain passes and sweeping valleys, thundering waterfalls and icy crags. Whenever you end a run, you return to a high peak to fly off in another direction at your own pace.

The map is littered with challenges to complete, races to win, and collectibles to find. All the while, you are set objectives to level up your cape and unlock new abilities that improve your skills. There's so much to do that each bite-sized run leaves you hungry for another go at soaring through the skies and exploring the island, and a brief session can quickly expand as you lose track of time.

Yet despite everything on offer, there's no pressure to do any of it if you don't want to. There are no timers, so you are free to sightsee and discover as much or as little as you like. The game is also very forgiving; hitting an obstacle will send you bouncing backwards, but you won't die or permanently lose your progress.

If you want to glide from top to bottom and enjoy the flowing freedom that flight affords, *Laya's Horizon* is open for business. Its potent blend of relaxing gameplay and rewarding exploration is nigh irresistible, making it easy to while away the time among the passing clouds. **ALEX BLAKE**

Aim to complete goals and quests to unlock new abilities, or just fly freely!

### THE BOTTOM LINE

*Laya's Horizon* is a gorgeous, soothing game that's quick to learn and easy to love.

- Fast, fluid gameplay
- So much to explore
- Easy-to-learn controls
- Relaxing and easygoing

**AWESOME** ■■■■■

Image rights: Snowman and Netflix.

# Best of the best

Can't find the hardware or app you're looking for in our reviews section? Then check in here — we've highlighted the best in every major category, as voted for by us

## > HARDWARE

| CATEGORY | PRODUCT | WEB | PRICE | ISSUE |
|---|---|---|---|---|
| MESH ROUTER | ASUS ZenWiFi XT9 | asus.com | $449.99 | #201 |
| 4K USB-C MONITOR | BenQ EW3280U | benq.com | $799.99 | #169 |
| THUNDERBOLT DOCK | CalDigit Thunderbolt Station 4 | caldigit.com | $379.99 | #199 |
| NEW! KEYBOARD | Cherry KW 9100 Slim for Mac | cherry-world.com | $59.99 | #208 |
| PORTABLE PRINTER | Epson WorkForce WF-110W | epson.com | $299.99 | #185 |
| PORTABLE HDD | Toshiba Canvio Flex 2TB | storage.toshiba.com | $79.99 | #197 |
| NAS DEVICE | Asustor Lockerstor 2 Gen 2 AS6702T | asustor.com | $459 | #205 |
| WIRELESS CHARGER | Belkin BoostCharge Pro Portable | belkin.com | $59.99 | #197 |
| DESKTOP SPEAKERS | Creative Pebble Pro | us.creative.com | $59.99 | #204 |
| IN-EAR HEADPHONES | Beats Fit Pro | beatsbydre.com | $199.99 | #190 |
| SECURITY CAMERA | EufyCam 2C (two-pack kit) | eufylife.com | $239.99 | #171 |
| SMART SPEAKER | HomePod mini | apple.com | $99 | #176 |
| OVER-EAR HEADPHONES | Sony WH-1000XM5 | sony.com | $399.99 | #197 |
| AIRPLAY SOUNDBAR | Sonos Beam | sonos.com | $449 | #187 |
| WEBCAM | AnkerWork B600 Video Bar | ankerwork.com | $219.99 | #191 |
| PHOTO PRINTER | Liene 4x6 photo printer | amazon.com | $136.99 | #190 |
| PORTABLE BATTERY PACK | Anker 533 | us.anker.com | $49.99 | #198 |
| MOBILE DOCK | Kensington 8-in-1 USB-C Mobile Hub | kensington.com | $77.55 | #190 |
| OFFICE CHAIR | Branch Verve | branchfurniture.com | $549 | #201 |
| MOUSE | Logitech MX Master 3S | logitech.com | $99.99 | #198 |
| ACTION CAMERA | GoPro Hero 11 Black | gopro.com | $500 | #202 |
| SMART TV PLAYER | Roku Streaming Stick 4K | roku.com | $49.99 | #190 |
| PORTABLE DAC | iFi Go Blu | ifi-audio.com | $199 | #189 |
| PORTABLE SSD | Crucial X8 | crucial.com | $219.99 | #203 |
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| TRAVEL CHARGER | Mophie 3-in-1 travel charger | zagg.com | $149.95 | #202 |
| iPHONE GAME CONTROLLER | Razer Kishi v2 | razer.com | $99.99 | #203 |

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| TO DO (PRODUCTIVITY) | Things 3 | culturedcode.com | $9.99 | #194 |
| WRITING | Scrivener | literatureandlatte.com | $19.99 | #138 |
| EMAIL | Spark | sparkmailapp.com | Free | #190 |
| PHOTO EDITOR | Pixelmator Photo 2 | pixelmator.com | $4.99 | #193 |
| VIDEO EDITOR | LumaFusion 3.0 | luma-touch.com | $29.99 (IAPs) | #186 |
| CAMERA | Obscura 3 | obscura.camera | $9.99 | #196 |
| RSS READER | Reeder 5 | reeder.app | $4.99 | #176 |
| DESKTOP PUBLISHING | Affinity Publisher 2 | affinity.serif.com | $19.99 | #206 |
| NOTE-TAKING | Notability 10 | gingerlabs.com | $8.99 | #174 |
| MIND-MAPPING | MindNode 7 | mindnode.com | $14.99 | #184 |
| DOCUMENT SCANNER | Genius Scan 6.0 | thegrizzlylabs.com | Free (IAPs) | #182 |
| CALENDAR | Fantastical 3 | flexibits.com | $4.99/month | #198 |
| FITNESS | Gentler Streak | gentler.app | Free (IAPs) | #199 |
| SHOPPING | Grocery 3 | smartgrocery.app | Free | #198 |
| GRAPHICS | Procreate for iPad | procreate.art | $9.99 | #196 |

## > macOS APPS

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| TO DO (PRODUCTIVITY) | Things 3 | culturedcode.com | $49.99 | #194 |
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| EMAIL | Spark | sparkmailapp.com | Free | #190 |
| NEW! IMAGE EDITOR | Pixelmator Pro 3 | pixelmator.com | $49.99 | #208 |
| VIDEO EDITOR | Wondershare Filmora | wondershare.com | $109.99 | #202 |
| SCREEN CAPTURE | ScreenFlow 9 | telestream.net | $129.00 | #164 |
| MUSIC CREATION | Logic Pro | apple.com | $199.99 | #141 |
| PASSWORD MANAGER | Secrets | outercorner.com | $19.99 | #188 |
| DESKTOP PUBLISHING | Adobe InDesign | adobe.com | $20.99/month | #162 |
| BACKUP | Carbon Copy Cloner | bombich.com | $39.99 | #136 |
| VIRTUALIZATION | Parallels Desktop 18 | parallels.com | From $99.99 | #201 |
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| NOTE-TAKING | Agenda | agenda.com | Free | #204 |
| AUDIO AND VIDEO CONVERTER | Wondershare UniConverter | wondershare.com | $49.99/year | #203 |
| VIRTUAL PRIVATE NETWORK | NordVPN | nordvpn.com | $11.95/month | #186 |

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