



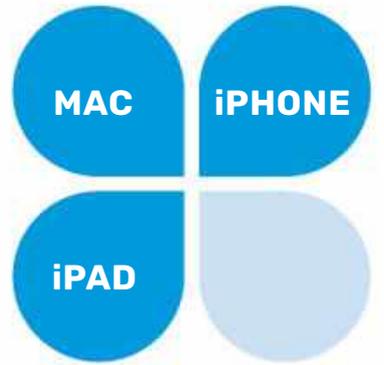
AMAZING NEW iPADS ON TEST

iPad Pro gets M2 power & upgraded Apple Pencil abilities **PLUS** All-new, all-screen 10.9-inch **iPad**



Wi-Fi worries no more! **Mesh router** roundup

Mac | Life



JANUARY 2023 NO.201

iPados 16

SUPERGUIDE

Make the most of your free iPad upgrade with our essential tech manual



HOW TO:

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- Customize your Lock Screen
- Use Mail Merge in Pages
- Organize your day effectively



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THE PENCIL “PROBLEM”



A WARM WELCOME this issue to our new Production Editor, Rachel, who joins us from sister titles *3D World* and *ImagineFX*. Rachel has been at Future for six years and, naturally, jumped at the opportunity to work on a prestigious title like *Mac/Life*! The chance to check out all the latest and greatest Apple gear might have also been a contributing factor.

As you've probably already seen from this month's cover, Apple recently launched two new iPads: the iPad Pro 12.9-inch which is now rocking an M2 chip — nice, but not a huge deal overall; and the eminently more interesting

“entry-level” iPad, which now sports a 10.9-inch screen, new colors and a bit more horsepower under the hood. Owners of the iPad Air (5th gen) would be forgiven for struggling to discern a difference between the two tablets; aside from the chip and price tag, they're basically identical. Oh, did we forget to mention the elephant in the room that is the Apple Pencil problem?

This is where things get interesting — whereas the iPad Air uses the latest Apple Pencil (2nd gen) as you would expect of a modern iPad, the new iPad (10th gen) does a strange about-face tech devolution and only works with the Apple Pencil (1st gen). What that means is you don't get the 2nd gen's ability to charge wirelessly, but what's worse is because the new iPad has moved to the USB-C standard to match with the rest of the iPad lineup (finally), and the original Apple Pencil uses a Lightning connector, you need to use an adapter, which is just, well, weird. Oh, and if you have the original Apple Pencil you'll need to buy said adapter just to charge the damn thing with the new iPad (another \$9, thank you). You can just imagine the outcry from fans on the internet. Suffice to say, the news didn't go down well.

That's the thing with Apple — sometimes there's the Apple of old, with brilliant innovation or just some cool new trick (like Dynamic Island), and then at other times it makes very odd design decisions which seemingly only serve to upset its loyal customers.

Nick

NICK ODANTZIS, Editor

Twitter: @maclife

»» THE TEAM



Matt Lochrie

Art Editor

Matt has made subtle design changes to the mag that, unlike Apple's, actually work really well...



Rachel Terzian

Production Editor

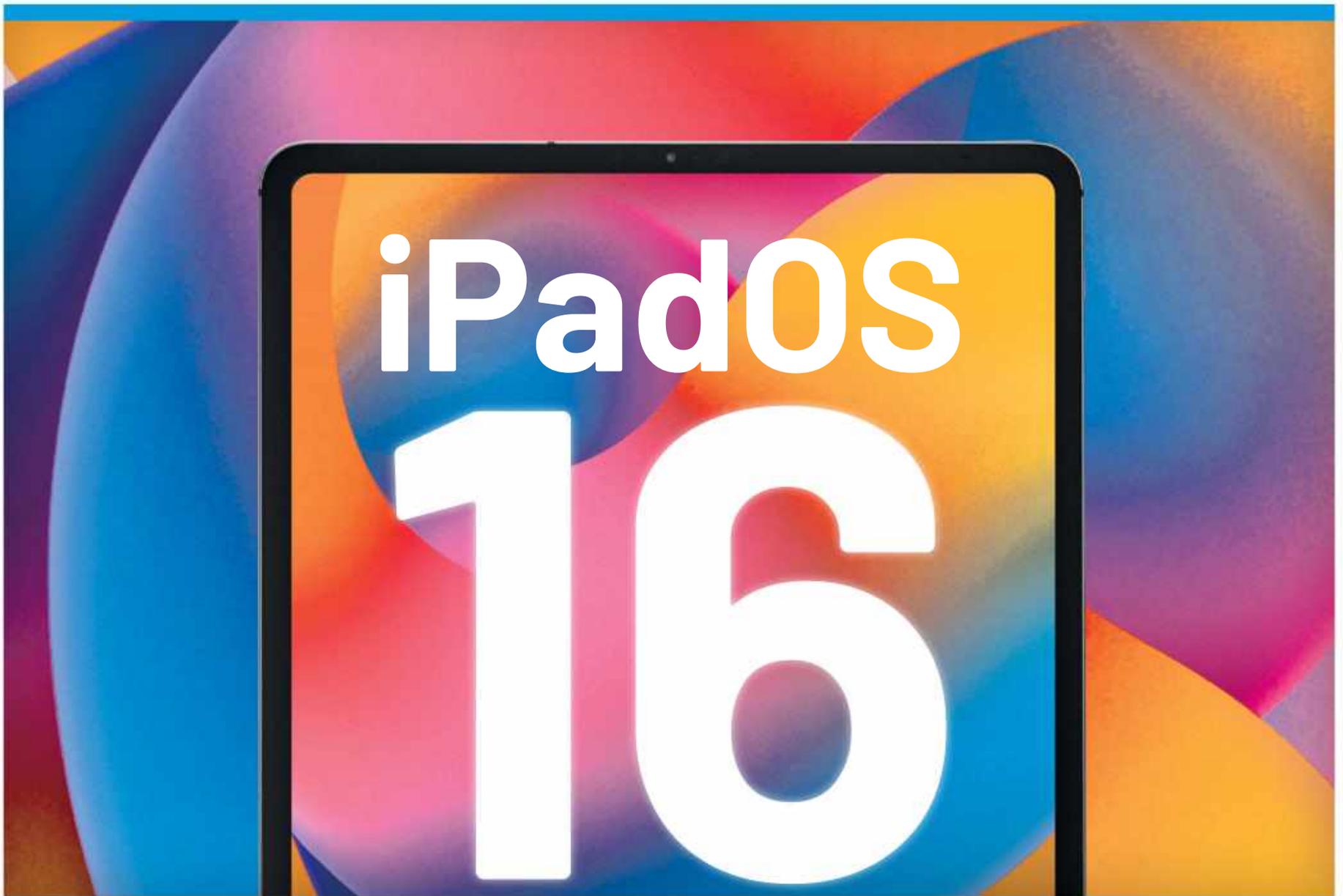
Rachel is very excited to join the team at *Mac/Life* and upgrade her Apple know-how even further.



George Cairns

Contributor

George shows how to put your photos on anything, from coffee cups to cell phone cases! (p26.)



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iPadOS 16: Tips, tricks & secrets

Get to grips with this huge upgrade and discover its advances in collaboration, security, multitasking, and much more.

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Print your photos

Learn how to produce high-quality prints and unique products from your digital photos, and restore your old analog prints to their former glory.

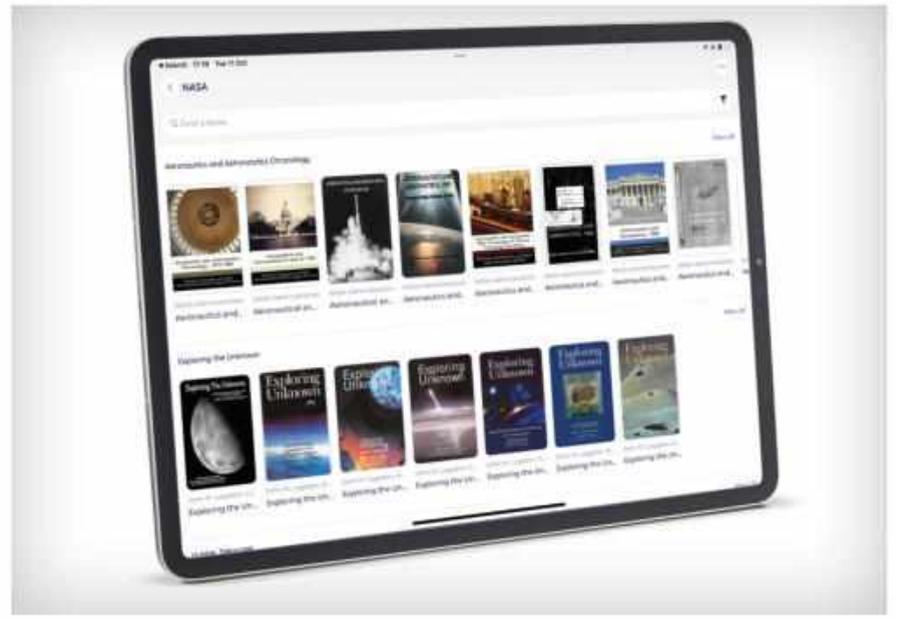
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Get started with: Purchases and subscriptions

We explore how to efficiently manage your entertainment subscriptions in this extensive, easy-to-follow guide.



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START

THE LATEST NEWS FROM THE WORLD OF APPLE

Apple TV 4K updated

Home entertainment hub – now with a bit more “oomph”

BY ALEX SUMMERSBY

APPLE HAS RELEASED a next-generation Apple TV 4K. There’s a \$129 Wi-Fi model with 64GB of storage, and a \$149 Wi-Fi+Ethernet model with 128GB storage, Gigabit Ethernet connectivity, and Thread mesh networking to connect to more smart home accessories. App and streaming service subscriptions are not included, although Apple is currently offering three months of Apple TV+ and Apple Arcade for free when you buy the hardware and have not previously taken up a free trial.

The A15 Bionic chip in both models delivers CPU performance up to 50% faster than the previous generation, promising greater responsiveness and faster navigation. GPU performance is up to 30% faster for even smoother gameplay.

Both models now support HDR10+ alongside Dolby Vision, although relatively few TVs currently have support for HDR10+ built in, and not much content is currently released incorporating the dynamic metadata required by the standard to optimize the picture scene by scene. With suitable hardware and content, you can also enjoy Dolby Atmos, Dolby



Digital 7.1, or Dolby Digital 5.1 surround sound for immersive audio.

The Siri Remote (which now plugs in over USB-C) has a touch-enabled clickpad for fast and fluid navigation through the simplified on-screen interface of Apple TV. It has a dedicated Siri button on the side for voice control, and a tvOS upgrade coming later this year will add Siri voice recognition for up to six family members, enabling it to switch profiles, play individuals’ playlists, and offer personalized viewing recommendations on request.

Apple TV 4K is designed to sit at the heart of your Apple device ecosystem. It enables you to color calibrate your TV using your iPhone camera, and Audio Sharing lets you connect up to two sets of AirPods with separate volume control for each. It supports SharePlay, so you can add Apple TV to FaceTime calls on iPhone or iPad to watch with

others on the big screen. Everyone’s playback remains coordinated, and shared playback controls mean anyone in the SharePlay session can play, pause, or jump ahead.

Apple TV 4K works seamlessly with HomeKit-enabled accessories as a smart home hub, so you can keep track of all your connected accessories in one place with Control Center. If you have a supported iCloud+ plan, HomeKit Secure Video uses the on-device intelligence of Apple TV 4K to privately analyze the video feed from a connected security camera to detect people, animals, cars, and package deliveries. You can connect more devices across more platforms than ever with Matter, the new Apple-backed smart home connectivity standard. And with remote access, you can also control your smart home from the Home app on your other Apple devices wherever you go.

> Twitter changes ahead

What's expected from new chief Elon Musk?

HOW MIGHT TWITTER change following its acquisition by the world's wealthiest individual, Elon Musk?

Several senior executives have left, including CEO Parag Agrawal, CFO Ned Segal, and chairman of the board Bret Taylor, among others, but culls of management are standard in such takeovers. It is unknown whether there will be wider layoffs, although sources close to Musk say he may axe "projects that aren't going anywhere."

The acquisition cost Musk \$44bn, \$13bn of which is a debt that Twitter will now need to service, so it needs to turn its finances around. The company currently reports "negative cashflow" of more than \$120m, and has only about 240m accounts active daily, compared with nearly two billion on Facebook. So Musk needs it to grow fast, increase revenues, cut costs, or all three.

Musk has spoken about expanding the platform in new directions, or even making Twitter "the app for everything" – possibly along the lines of Chinese app WeChat, which covers a whole raft of services including messaging, social media, mobile payments, and food orders. With over 1.2bn monthly active users, it is the world's most widely used single app.

It would require plenty of money and tech expertise to develop Twitter into

such an app. In the shorter term, Musk said he wants to cull fake accounts and make Twitter more open. Describing himself as a "free-speech absolutist," he has argued for less moderation, as well as the reinstatement of banned accounts, such as that of former US President Donald Trump.

However, advertisers have become uneasy about their ads appearing next to unregulated hate speech or misinformation, and more than 90% of Twitter's revenue currently comes from advertising. General Motors, the largest auto maker in the US, suspended its advertising on the platform while it assesses the direction of travel.

Musk moved quickly to reassure nervous advertisers, saying "Twitter obviously cannot become a free-for-all hellscape, where anything can be said with no consequences." He announced that Twitter is establishing a content moderation council including "widely diverse viewpoints," and "no major content decisions or account reinstatements will happen before that council convenes."

Finally, any reforms will face an array of regulatory hurdles. "The bird is free," Musk tweeted, announcing the acquisition. EU digital commissioner Thierry Breton pointedly responded: "In Europe, the bird will fly by our rules."

News in brief

A bite of the Apple

> iCloud.COM REVAMPED

The [iCloud.com](https://www.icloud.com) website has been redesigned with widget-like tiles. On the site, currently in beta, you can now choose which apps are on the home page, and some have a new, streamlined design.

> DUCKDUCKGO FOR MAC

The public beta of DuckDuckGo for Mac is available for download. Its core feature is private search that blocks hidden trackers, so you see what you're after and not endless ads for what you searched for yesterday. The app includes web and app tracking protection, Smarter Encryption, voice search and more, with platform-specific features for iOS, Android, Firefox, Chrome, Edge, and Safari. The Burn After Reading feature clears your tabs and browsing data with a very satisfying flame animation.

> FIRST METAL 3 GAME RELEASED

Resident Evil Village, the first title to use Apple's new Metal 3 graphics framework for games, is available now in the Mac App Store. The Metal API enables developers to take advantage of hardware-accelerated graphics, and Metal 3's new features help apps tap into the potential of Apple silicon with high-performance upscaling, faster resource loading, offline shader compilation, new ray tracing features, and other advances.



> THE SHIFT

MATT BOLTON loves the new Apple Watch SE so much that it makes him wonder if the pricier watches have become stagnant



OVER THE LAST few weeks, I have been testing out the new Apple Watch SE. My review can pretty much be summed up as: it feels like such a premium Apple Watch experience overall that I switched to it from the Apple Watch Series 7, and I didn't feel any major loss. I barely noticed it was a different device, other than the fact that it was even lighter and didn't have an always-on screen.

And then I switched to testing the Apple Watch Series 8, and it didn't really feel any different compared to using the cheaper Watch. I liked having the always-on screen back, yes, but overall it

IT SEEMS LIKE THE APPLE WATCH "SERIES" MODELS ARE STUCK IN A RUT

feels like a bit of an anticlimax. For \$150 more, you get changes you barely notice. Some people will make more use of the extra millimeter of screen and the QWERTY keyboard it permits, the ECG, the pulse-oxygen sensor, or the temperature sensor for

reproductive tracking. But those people are not me.

But also note how much time even those features have accumulated over... the ECG appeared on the Series 4, always-on on the Series 5, the pulse oximeter on the Series 6, the screen on the Series 7, temperature on the Series 8. Four years of features built up to separate the expensive Watch from the cheaper one, and I just... don't mind losing them all? I can't help but feel that the only reason the Apple Watch SE didn't get the always-on screen this time is that Apple knows that no one would pay for the expensive one if the cheap option had it.

It seems like the Apple Watch "Series" models are stuck in a rut. The SE delivers 95% of the experience for less; the Apple Watch Ultra pushes things in exciting new directions. But in the middle? It feels tough. And it's not like I have some genius plan where I point to an obvious upgrade and go "Why doesn't Apple just add that to make it interesting again?" We're already at a point where you have to ask what additions would benefit the Apple Watch. Should Apple go with a round face or get rid of the Digital Crown for the sake of change?

Not everyone loves the Hermès Apple Watches, but maybe they don't go far enough with customizing the look...



I think for a lot of people, the biggest selling point of the Series 8 will be that it comes in stainless steel. That's something people want from a Watch, and they can only get it there. So I wonder if Apple needs to lean further into that. The Series 8 not only needs more materials, but more options in those materials. Colors that rotate with the seasons like it does for bands; patterns designed by artists in limited runs; different textures and finishes.

But it could be functional design too: if the Series 9 was just like the Series 8 but notably thinner, that too would make it stand out from the Watch SE. Given the status of a watch as a kind of jewelry, I think the Apple Watch would do just fine if the Series watches leaned even more into aesthetics.

>>> Matt is Senior Editor at Future's flagship technology website TechRadar and has been charting changes at Apple since his student days. He's skeptical of tech industry hyperbole, but still gets warm and fuzzy on hearing "one more thing."

LETTER OF THE MONTH

A while ago my son was traveling on a bus and received unsolicited graphic images — someone had sent them to him via AirDrop. He was really upset and it's had a big impact on his well-being. How do I stop this from happening in future? I am surprised that his iPhone is able to receive content from anyone who's nearby on another iPhone. It's very irresponsible of Apple.

ANON

By default, AirDrop on an iPhone should be set to only receive content from contacts, so you would have to manually set it to receive from everyone. This is an easy thing to do — we've been guilty of changing this ourselves and later forgetting to

turn it back to a more secure setting, so it's understandable that this can happen.

Unfortunately, cases of “cyberflashing” or sharing explicit content via AirDrop has become more prolific in recent years (it's been documented for well over five years now, so it's not new) due to the increase in people who own an iPhone and use the service for sharing media.

AirDrop is very handy, provided it's used with some caution, so be sure to check your settings regularly, to make sure you're not at risk of being sent unsolicited content. In Settings > General > AirDrop, ensure Contacts Only is checked, or if you want to be really careful, set this to Receiving Off.

your requirement may well be just a little bit too niche for it to be something that can be easily adjusted in the settings. We're pretty sure that most people out there would be happy enough to just mirror their photos on a big screen without needing to see the iOS settings at the same time. All that being said, if anyone knows of an easy way of getting around this, then do get in touch.

GarageBand woes

Greetings gentlefolk, here is something for you to check out. I have an iPad Pro 9.7-inch that's running the latest version of iPadOS (15, that is). I tried to open GarageBand recently, only to discover that I could not do so. Further investigation led me to the App Store. There I was informed that the currently installed version of GarageBand requires iPadOS 16 in order to function! As I am sure you are aware, iPadOS 16 is not yet available (at the time of writing). I was given the choice to download the previous version of GarageBand. This strikes me as a rather peculiar situation. I suspect that some users of GarageBand, who have a more serious interest are just a wee bit upset over this situation. Thank you for your time and attention.

DAVID BLEUER

Thankfully, iPadOS 16 was released just a week after receiving David's email, but we still thought that this was an odd move by Apple in the approach to the release of the new OS.



Projecting photos

Okay, here's a tricky one for you. I regularly teach people how to use their iPhones and iPads with a big screen projection unit to mirror either my device or theirs. It works perfectly for things like Safari, Mail, and other apps. But where it frustrates me is Photos. In the Photos app, it always

assumes that you want to project the photo or video that's been selected, and not the entire screen so you can show the class the icons for the tools available to use with that photo. I hate this. If I want to see (and project) the entire photo or video, I can do that by tapping on it again. I don't want that to be the mode it automatically goes into when I do screen mirroring or connect an HDMI cable to it. Is there a way around this? Thanks.

FIONA O'MALLEY-DEVITO

Both the editor and our resident tech expert Howard were unable to find a workaround for this — unfortunately it seems that

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CRAVE

THE GEAR WE'RE LUSTING AFTER



Leica Cine 1

\$TBC From [leica-camera.com](https://www.leica-camera.com)

>>> Leica is known for its cameras, but the firm has now found a new area to explore: projectors. The Leica Cine 1 is the company's first ultra-short-throw laser projector and can beam out 4K images up to 100 inches across without needing a massive distance between itself and the projection surface.

It looks classy, incorporating Leica's renowned design sense into a sleek aluminum body with an automatic dust

cover to protect the lens. There's built-in Dolby Atmos sound too, so it's also easy on the ears.

Leica has been coy on any further details, but according to The Verge, the company is said to be working on two models: one producing about 2,500 lumens for a 100-inch 4K picture, and another with 2,100 lumens and an 80-inch picture. The latter can sit just six inches from its projection surface.



This laser projector is set to bring the cinema experience to your home.

DJI Avata

\$1,388 From [dji.com](https://www.dji.com)

>>> A regular drone is a great way to get a new perspective on the world, but nothing beats the immersion of a first-person-view (FPV) drone. These devices let you don a headset and see through the on-board camera, putting you in the middle of the action.

DJI's new Avata is just such a drone. It records in 4K resolution and 60fps for smooth, high-res footage, and its 155-degree field of view means you won't miss anything on your flight. It's small and rugged, letting it fit into the smallest gaps and survive bumps and bruises.

There's also a DJI Motion Controller that enables you to steer the drone with a twist of your wrist or squeeze on its trigger. That makes it easy to use and quick to master.



Brydge ProDock

\$399.99 From [brydge.com](https://www.brydge.com)

>>> Lacking space on your desk? The Brydge ProDock takes the traditional MacBook dock and turns it up to eleven. It comes with three Thunderbolt 4 ports, three USB-A slots, one USB-C port, a headphone jack, an SD card reader, and an Ethernet port, going way beyond what any MacBook offers. There's even a 15W MagSafe charger built right in. And it lets you connect up to two 4K monitors to the MacBook Air, something it can't do natively. So instead of trailing countless cables to your laptop, you just need one for the dock. How's that for desktop efficiency?



Bang & Olufsen Beosound Theatre

\$7,990 From [bang-olufsen.com](https://www.bang-olufsen.com)

>>> If you're serious about home cinema, you want to get a great soundbar, right? Bang & Olufsen's new Beosound Theatre takes things to another level. It boasts 12 speaker drivers, with two custom 6.5-inch woofers and 800 watts of amplification power. Every speaker works together to produce immersive, 360-degree sound.

As well as that, the Beosound Theatre is modular, so you can upgrade and replace parts over time. It can even be used as the centerpiece in a surround sound system with up to 16 external loudspeakers.



Bluesound Powernode Edge

\$649 From [bluesound.com](https://www.bluesound.com)

>>> The Powernode Edge aims to take the agony out of audio by combining amplification, control, and streaming sources into one handy device; all you need to do is add speakers.

Its flexibility is key. The Powernode Edge lets you add a set of passive speakers to create a hi-fi system. You could connect it to a wireless subwoofer for a 2.1 stereo system, or let it power a surround-sound setup.

The 2 x 40W amplifier supports hi-res tracks up to 24-bit 192kHz, as well as MQA audio, letting you enjoy original studio masters of your favorite songs.

iPadOS

16

TIPS, TRICKS & SECRETS

The best iPadOS yet is a massive
upgrade for any device

WRITTEN BY CARRIE MARSHALL



Swipe up to unlock

9:40

Friday, October 21

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er 21



WE'VE COME A long way since the first iPad in 2010. That one ran iPhone OS 3.2, and critics mocked it as a giant iPhone. They did have a point, but even then Apple was making the iPadOS different from the iPhone one — and with each new release, those differences have become much more significant. iPadOS 16 really blurs the lines between iPads and Macs, especially when it comes to multitasking.

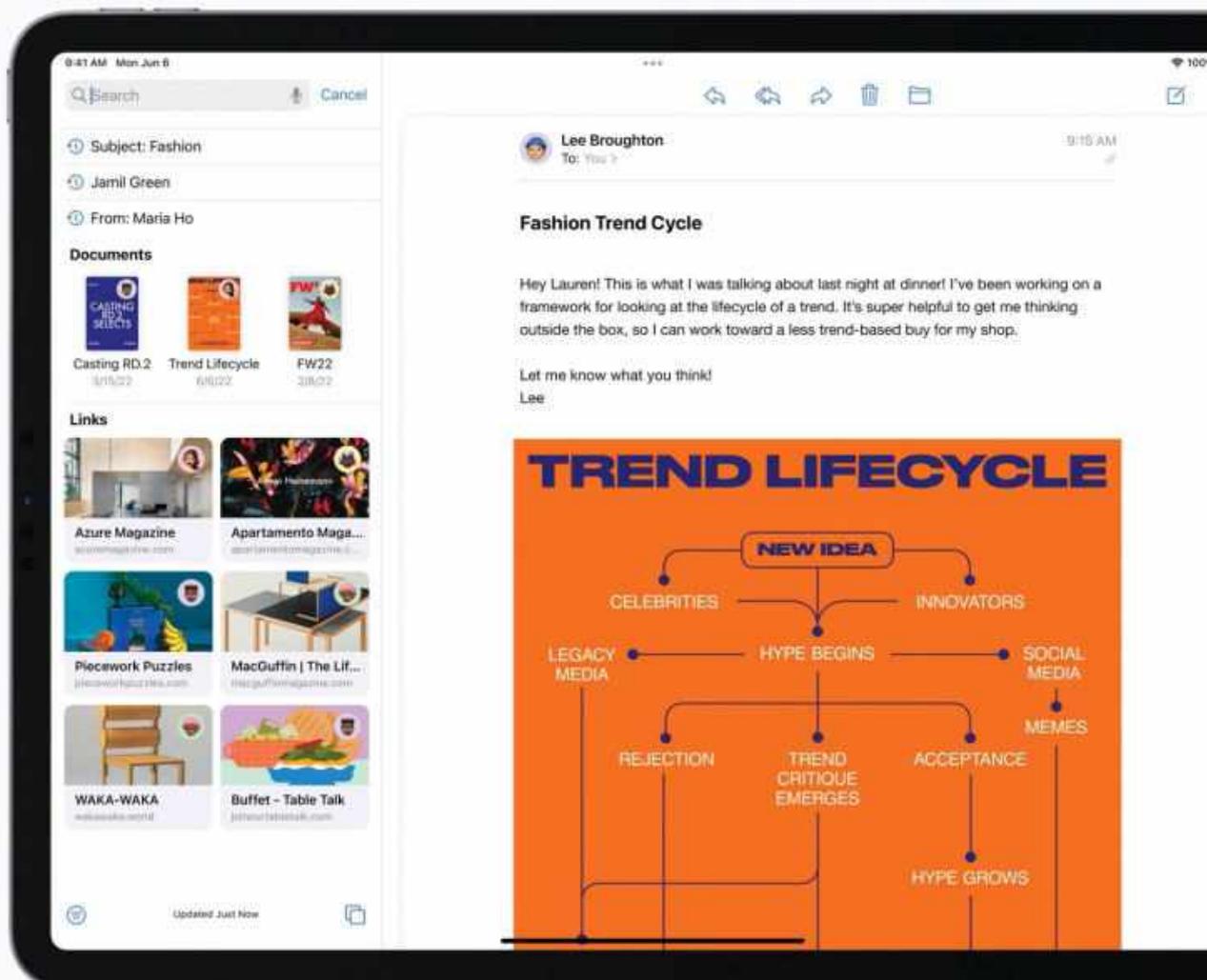
iPadOS 16 isn't trying to turn your iPad into a Mac, though. It's still very much a mobile operating system that plays to the iPad's strengths: its portability, its touchscreen and its ability to completely transform based on the app you're using.

This is a very big update. It introduces a brand new way of working with multiple apps: it provides Mail and Messages with some brilliant new features, it vastly improves your security when you go online, and it makes it easier to share the things you love with the people that matter to you. It can even turn back time to undo embarrassing mistakes in messages or emails.

Over the next few pages we'll discover all the killer features of iPadOS 16, and we'll show you how to make the most of them. Whether you have the standard iPad, an iPad Air or the biggest iPad Pro, this OS update will make your iPad more flexible, more fun and more you. ■

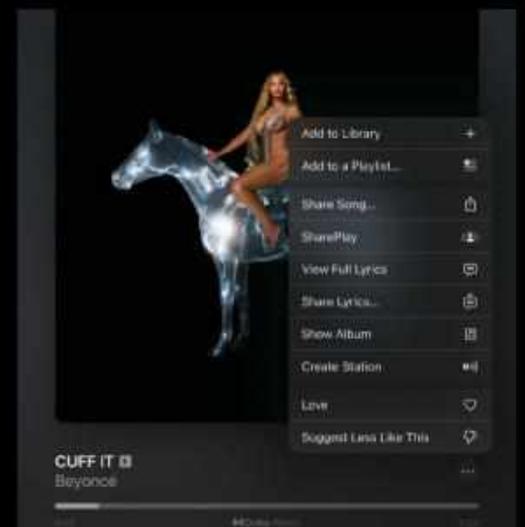
Which devices will work with iPadOS 16?

- iPad Pro** (all models)
- iPad Air** (3rd generation and later)
- iPad** (5th generation and later)
- iPad mini** (5th generation and later)



SharePlay

YOU CAN SHARE the current playlist in Apple Music or the TV shows you're watching in Apple TV+ via SharePlay in Messages, which gives everyone in the conversation shared playback controls so you can enjoy the same content at the same time. SharePlay also works with apps such as Shudder, Disney+ and more, although the person or people you're sharing with need to be subscribed to the same service(s).



Experiencing your favorite content with friends via Messages is now even easier.

Mail, messages & collaboration

Now it's easier than ever to share with others – and to change your mind

MANY FELT THAT Mail was overdue some attention from Apple, and if you agreed, then you'll like the changes in iPadOS 16. The new Undo Send can help you in those heart-in-mouth moments when you've accidentally sent the wrong thing or to the wrong person, and Mail will also warn you if your message says you've included a file or photo and forgotten to attach it.

You can now schedule emails to go at specific times rather than right now, put sent messages in your inbox for you to remember to chase the recipient, and you can also get Mail to remind you about emails that you've looked at but haven't responded to.

One of our favorite improvements is the least spectacular-looking but by far the

most useful, though. Search has been massively improved. What sometimes felt like pot luck, and often proved very reluctant to find messages we knew were there somewhere, is much faster and vastly more reliable, with Mail autocorrecting search criteria to help speed things up.

Messages gets an Undo feature too, although the recipient needs to be using the same app and the right version. You can mark messages as unread, recover accidentally deleted ones and send invitations to collaborate on Numbers, Pages, Notes, Keynote, Reminders and Safari, or to share Apple Music and other media via SharePlay. And it's easier for developers to use the Messages Collaboration API to add Messages

integration to their own apps, enabling you to share different types of content with more people.

SharePlay improves with each new release, and it now works with more things than ever before. Third party services such as Disney+ and many third party apps now have SharePlay synchronization so you can watch, listen or interact with them along with friends, family or colleagues, and you can even share Fitness+ workouts (provided that you're both subscribers).

Not all the new collaboration features were available from day one, however. Freeform, Apple's interactive whiteboard, was penciled in for release at the very end of the year, a couple of months after the rest of iPadOS 16 was made available. 📺

When to send... and when to unsend

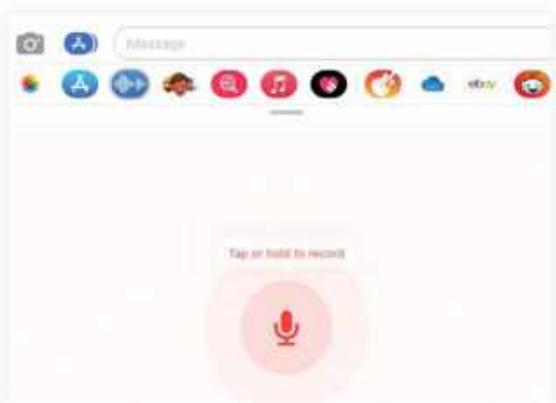
Collaborate with others

iPADOS 16 IS the most sociable iPad OS yet. There are multiple ways to share with others and for others to share with you, from SharePlay for music, TV, movies and apps, to the Shared With You tabs in Messages and Safari. Sharing and collaboration is built into all of Apple's key creative and productivity apps including Pages, Numbers, Safari and even Reminders, and it's increasingly available in many third party apps too. Whether you're communicating about a big work project or doing something fun with the family, it's easy to start a Messages conversation or FaceTime chat from the Share icon.

iPadOS 16's collaboration features are just as useful for sharing with family and friends as they are for work.

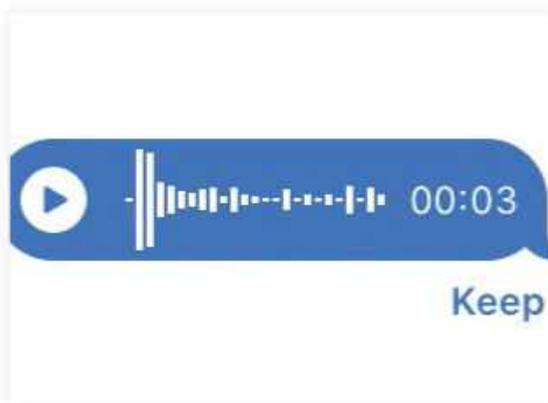


HOW TO Edit or Unsend in Messages



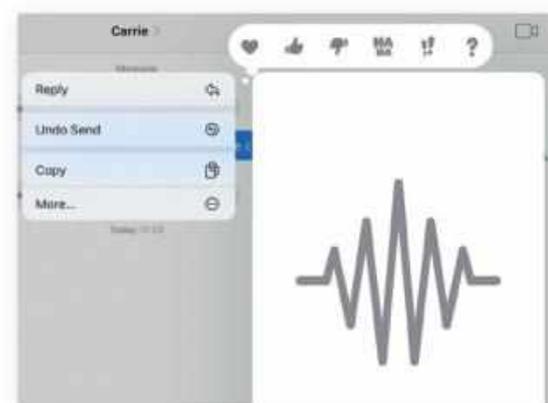
1 Make your message

In this example we'll send a hilarious audio message to someone and then realize that maybe it's not so hilarious after all. In Messages, create a new message and then tap the waveform icon to record your voice.



2 Send it

Our audio message has been sent – and it's blue. That's important, because the undo send feature only works with Messages, not SMS or other messaging apps. The recipient also needs iOS/iPadOS 16 or macOS 13.



3 Delete message

Tap and hold on your message and you should now see the reactions toolbar, along with a context menu to the side of your sent message. Tapping on Undo Send will make your message disappear in a little puff of smoke.

HOW TO Unsend a message in Mail



1 Send your message
You can't unsend a message until you've sent it, so in this screenshot we've crafted exactly the kind of mail message that'll we'll regret sending immediately: top secret plans should of course be encrypted.

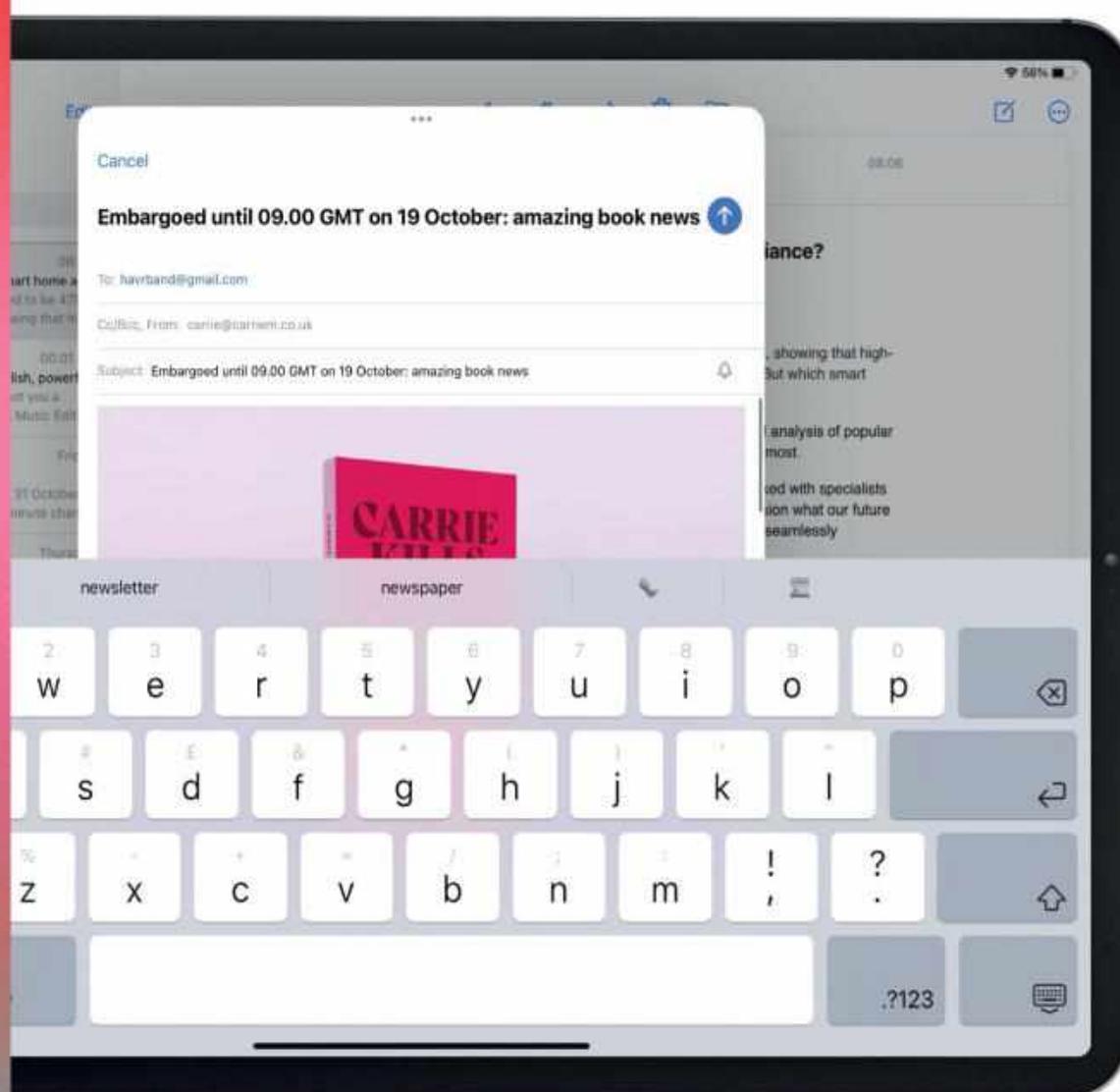


2 The unsend button
Unlike recalling Messages, it doesn't matter what mail app the recipient uses: the unsending happens in Mail before it's sent to the other person. That means there's a very short time to do it – just a few seconds.



3 Turn back time
Once you tap Undo Send, your email magically reappears in Mail exactly as it was before. You can now tap Cancel to delete the message altogether, or you can edit the message and then send it again.

HOW TO Schedule messages for sending later



1 Create your message
Sometimes you need to write a message that won't be sent until a specific time, such as a news announcement or anything else you don't want to send too soon. Create your message as normal in the Mail app.



2 Press for longer
Instead of just tapping the send icon, tap and hold it. You should now see the scheduling menu with four options to either send now, send tonight, send tomorrow morning or send later. Select that fourth option.



3 Pick your time
You should see a Calendar panel that enables you to set the date and time for your message to be sent. It's really important that your iPad is both switched on and online at the scheduled time or it won't be able to send the message.

Stage Manager & multitasking changes

One of iPadOS 16's biggest changes is also its most controversial

STAGE MANAGER, THE new multitasking interface in iPadOS 16, has had a bit of a bumpy ride: it's been widely criticized by many prominent developers for its bugs in the iPadOS betas, and it's been suggested that those bugs are at least part of the reason for the delay in getting iPadOS 16 released. As things stand at the moment Stage Manager is now officially a beta feature, and even one of its previously announced benefits — external monitor support — has been temporarily removed. Device compatibility has been changed too: what was originally reserved only for M1 and M2-powered iPads now works on iPad Pros with A12X and A12Z chips.

Stage Manager isn't on by default: you have to switch it on in the Control Center. Once you do, your iPad moves into a mode that looks more like the Mac desktop with thumbnails — Apple calls them App Stacks, and they work in a similar way to the tab groups in Safari but for apps instead of open tabs — at the left and the current app in a moveable, resizable window. You can have up to four apps overlapping at once and another four on an external display, and it's a bit like using macOS on a much smaller screen. We think there will be more significant changes before Stage Manager loses its beta label; it's one of the most controversial interface changes Apple has made in years.



Stage Manager delivers something much closer to the Mac's multitasking and window system.

Don't worry if you don't want to use Stage Manager: the familiar Split View and Slide Over options still work perfectly well, and at the moment those are the ones we're sticking with: as of the final public beta of iPadOS 16 we found Stage Manager was still very buggy and needed a lot more work: its tendency to crash means we're not planning to use it for serious work just yet. ■

External display & display scaling support

IF YOU HAVE an M1 or M2-powered iPad Air or iPad Pro, there's a new display scaling option in iPadOS 16 to make better use of your screen space: if you go into Settings > Display & Brightness > Display Zoom you can select More Space. This reduces the size of on-screen elements such as toolbars and icons so there's more room for content. It's

particularly good in Slide Over and Split View.

iPadOS 16 also enables M1 and M2-powered iPads to display a separate desktop in a 16:9 aspect ratio. That's primarily done through the Stage Manager, but you can also view apps on a second display in Split View or Full Screen. Or at least, you could until the very final

beta of iPadOS 16 when Apple pulled the external display support due to bugs. We don't know when it's coming back.



A **APP STACKS** Stage Manager's App Stacks work rather like Safari tab groups, but show your most recently used apps. Tapping on a stack opens it; tapping another switches to that stack instead.

QUICK LOOK Stage Manager on iPadOS 16



B EXTRA WINDOW CONTROLS

You'll recognize these three dots from iPad multitasking, but here you can choose between Zoom, Minimize, Add Another Window, or close the selected app window.

C FIRST APP WINDOW

You can have your open apps overlap each other or just stick them side by side. To move an app window just tap and hold the top of it, and slide your finger.

D SAFARI APP WINDOW

By default Safari will show just the current window, but if you tap the Safari icon in the dock you'll be presented with thumbnails of all your Safari tabs/groups.

E GRAB HANDLE

You can tap and hold this little curve to adjust the size of your window. You can only adjust the size so far: this is as narrow as Stage Manager will let us make our writing app, Ulysses.

F RESIZING

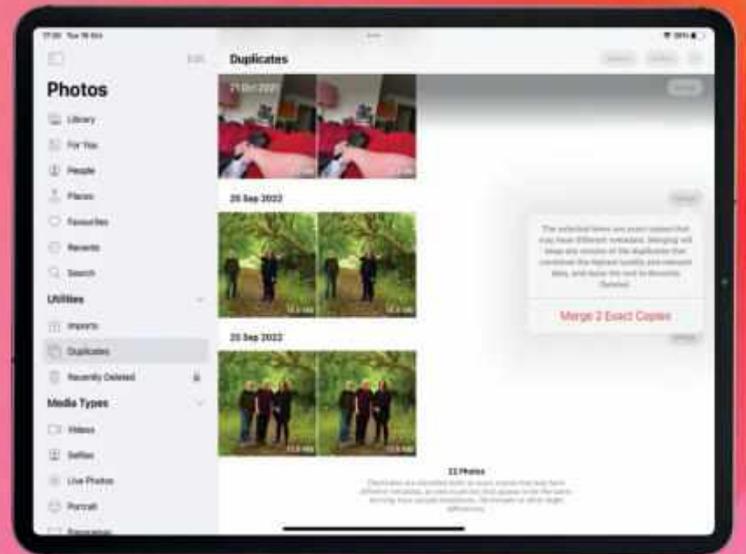
Windows affect the rest of the display when you resize them. Here we've made the Safari window as big as we can; any bigger and the App Stacks on the left disappear to make room.

G DOCK

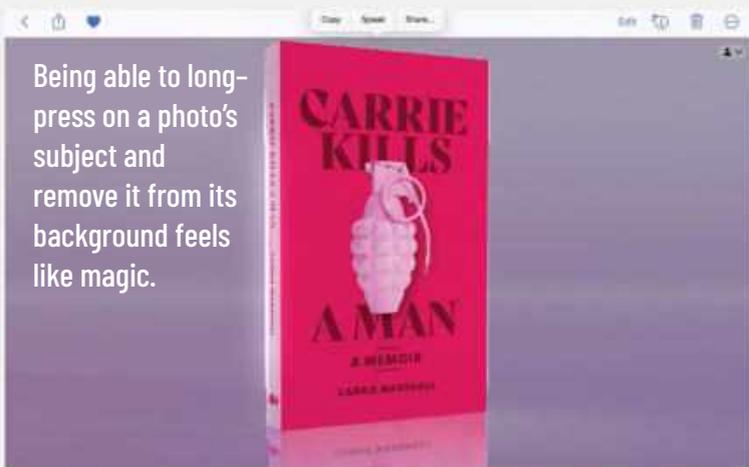
The Dock lives in its usual place, but you can drag apps from the Dock over the main Stage Manager area to open them as new windows, if you haven't hit the four-window limit.

What's new in photos & video

The Photos app is smarter, faster to use and more fun than ever before



The new Find Duplicates feature can free up lots of space.



Isolate from background

WE LOVED PHOTOS' cutout feature when it arrived in iOS 16 and we're just as addicted to it on our iPad: simply long-press on the subject of an image until you see it briefly shimmer and you can then copy it to another app or share it with others – so as you can see in our screenshot you can take a fairly busy photo and remove its background very effectively. You can then

use it as an image in Pages, send it in Messages or even use it as an iMovie background. The feature works best with images that have strong contrast between the subject and background, but we're frequently surprised by how well it copes with tougher images too.

The feature isn't just in Photos: you can use it in Screenshot, Quick Look, Safari and Files too, again simply by long-pressing the image. Annoyingly you can't save the cutout as a new image; you have to share it or open it in another app and save it from there. But that's a minor niggle for what's an enormously fun feature.



It's impressively easy to isolate a photo's main subject.

Photo editing improvements

PHOTO EDITING IS even better in iPadOS 16 thanks to the new ability to copy and paste edits from one image to another, which is a huge time saver. Plus, there are now simple undo and redo buttons; you can sort the People album by name; there's the option to turn off memories if you don't want to see them; and the ability to lock hidden albums and the Recently Deleted folder so other people can't take a peek at them.

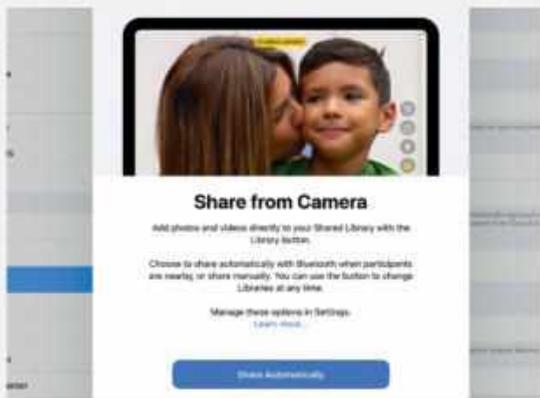
One of the best new features can save you money as well as time. Find Duplicates will go through your entire Library (including your iCloud Shared Library if you have one), find duplicate photos and videos, and enable you to merge them for the best image/video quality and metadata. It's very fast and saved us gigabytes of wasted iCloud storage – useful if you're on a limited storage plan and don't want to pay more.



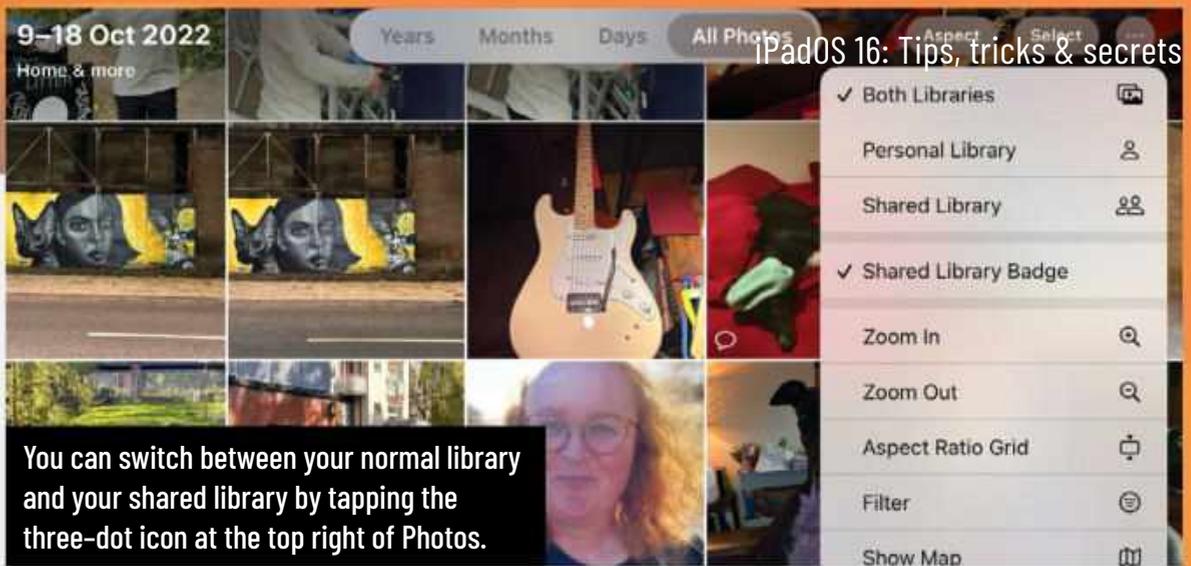
Sadly not all Memories are welcome. You can now disable Memories in Settings > Photos > Show Featured Content.

iCloud Shared Photo Library

iPADOS 16 INTRODUCES a much easier way to share images with your nearest and dearest, or indeed with anybody else you fancy inviting: the iCloud Shared Photo Library. This invitation-only library enables you to manually share specific photos or automatically share everything with up to five other people, and they can add their own images to the shared library or edit and even delete yours. The feature requires everybody to be using



You can choose whether all your new photos should be shared automatically or if you'd rather do it manually.



the most up-to-date OS for their device, which is currently iOS 16 for iPhone, iPadOS 16 and macOS 13. At the time of writing Apple had announced plans to bring iCloud shared libraries to Windows PCs too via its Photos app for Windows 11.

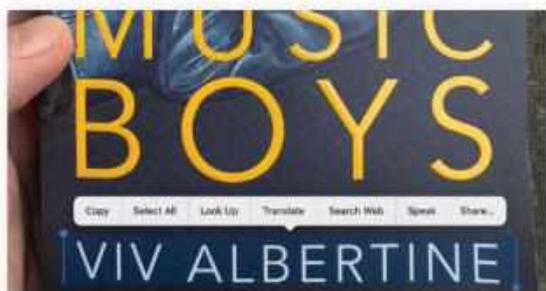
The previous Shared Albums feature hasn't gone anywhere, but iCloud Shared Photo Library is more trusting of the people you share it with. Everybody with access to this new library has the same level of permissions, so if you don't want the kids drawing elaborate mustaches on photos of you or deleting the shots they don't like, then you might want to think twice about using this option over the normal shared albums feature. For the same reasons, if you want to share albums publicly rather than with just your five trusted people, Shared Albums remains the safest way: it doesn't let others edit or delete the pictures and enables you to

share publicly rather than just to specific people.

Once you've set up the shared library you can decide whether you want to see its contents integrated with the rest of your Photos library, or you can view each library individually: pressing on the more icon – the three dots at the top right – gives you a choice of Personal Library, Shared Library or Both.

It's important to note that whoever set up the iCloud Shared Library is the one whose iCloud storage is being used for its images. And for other users, deleting an image doesn't necessarily mean permanent deletion: the Library creator, most likely you, is notified of deletions as they happen unless you disable that option in Settings > Photos > Shared Library. You'll then be given the option of moving the deleted image to your personal library instead. Deleted images also remain in the Recently Deleted album.

HOW TO Use Live Text in photos and videos



1 Acquire your image

You can use Live Text in three ways: using the live view in the Camera app; by opening an image in Photos; or by opening a video in the same Photos app. Let's start with an image first.



2 Find out more

Here we've highlighted the name of the author and then tapped on Look Up. This brings up key information: the writer's biography and key details from it, and their social media profiles too.



3 Grab from video

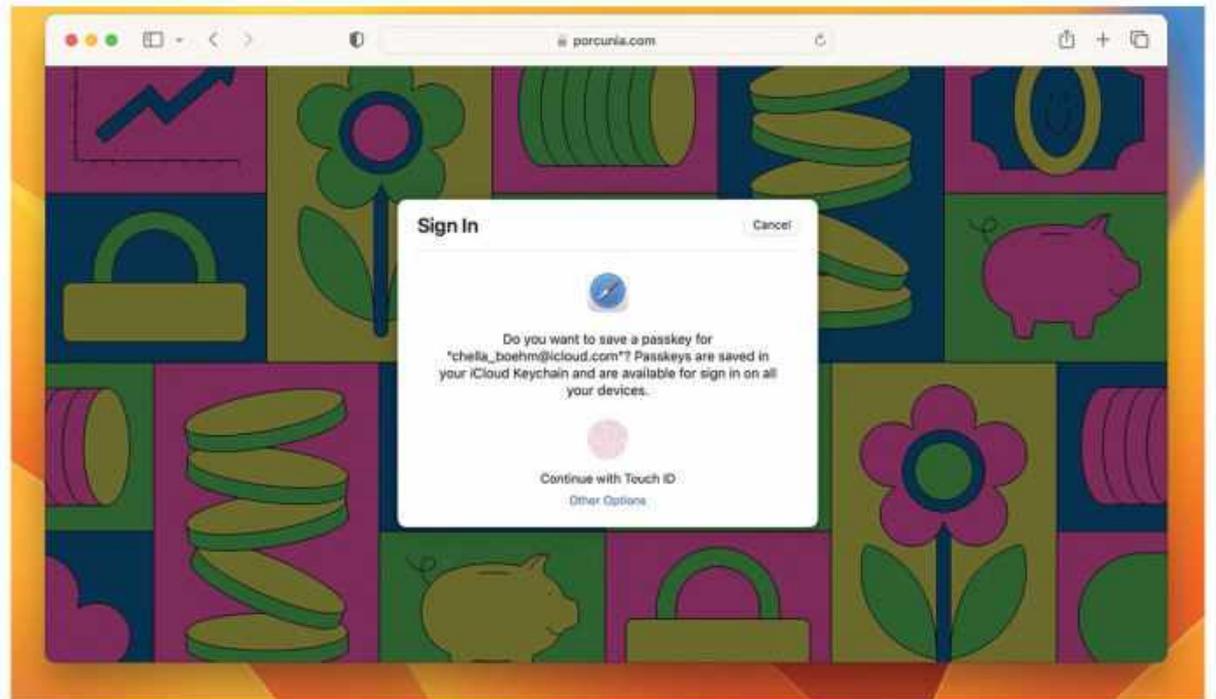
You can't use Live Text as you record video, but you can use it during playback. This time we'll use the Translation option to see what a particular phrase would be in Chinese.

Safari & passkeys

Passwords are rubbish, which is why this new option is both smarter and more secure

PASSWORDS HAVEN'T REALLY aged well: they've become so complex that we need iCloud Keychain to manage them, and even then websites keep leaking them to the baddies and undoing all our best efforts to make them completely incomprehensible. Enter the simple and secure passkeys, which are designed to change all that.

Passkeys are a new way of identifying yourself to online sites and services, and in Safari they are very simple to use: when you're creating a login for a site that supports passkeys, Safari will ask if you want to create one and then ask you to use Touch ID to confirm you're you. That



Your passkeys will be end-to-end encrypted in iCloud Keychain, keeping them extra secure.

then generates a unique, encrypted identifier that tells the site that you're not an impostor. It's much more secure than a password and pretty much useless to anyone who manages to intercept it.

The only real downside to passkeys is that they're tied to your devices. With passwords, you can log in to something with your user ID and password even if you don't have your iPhone handy; with passkeys, you'll need to have your iPhone,

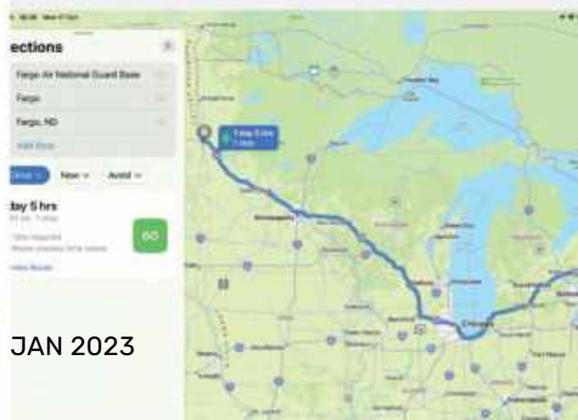
iPad or Mac with you to authenticate the new device. It works very much like the authentication you get when you try to log into iCloud on a new device, where Apple asks you to input the code it's sent to one of your trusted devices. No code, no entry.

This is still a relatively new technology but it's been embraced not just by Apple but by Google and Microsoft too. We should see a lot more passkey-supporting sites and apps in the coming months. ■

Maps

MAPS DIDN'T GET a massive update, but it does get the same multi-stop routing options as on iPhone. Create a multi-point route and then sync it with your phone.

Depending on where you are, there is also support for various transit cards – which you can store in the Wallet on iPhone – and details of the public transport fares on your route, but that feature is rolling out slowly: so far it's only in a handful of cities worldwide.

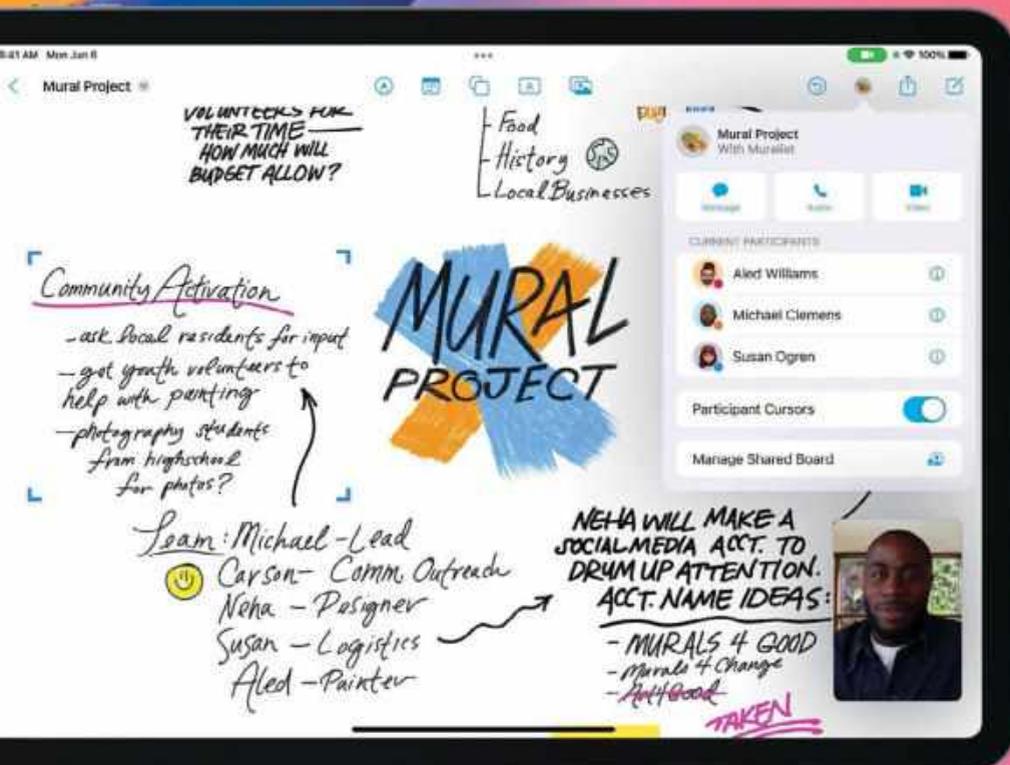


Weather

IF YOU'VE BEEN pinning for an iPad version of the wonderful Weather app on iPhone, pine no more: the iPad Weather app is here and it's even more wonderful now it's got more room to play with. Apple has taken full advantage of the iPad's big screen, packing the app with fun animations, detailed maps, and lots and lots of weather data ranging from predicted rainfall with hourly and ten-day forecasts, to air quality and UV levels. We think the iPad Weather app is a beautiful thing, and we particularly love the animated backgrounds that show you what's



going on outside or in your chosen location before you've even read any of the on-screen data. The weather maps are useful too, and there's a good selection of Home Screen widgets that make it easy to get a quick summary.



Desktop-class apps and Freeform

APPLE'S UMBRELLA TERM "desktop-class apps" refers to a lot of Mac-like features including context-sensitive menus for multiple selections, toolbar customization, much better printing features and vastly improved find, search and replace in both Apple and third party apps.

The Freeform app wasn't in the initial iPadOS 16 update;

Apple promised it for later in 2022. It's a collaborative whiteboard for friends, family or work that you can all see and contribute to, and you can chat via iMessage or FaceTime by tapping the canvas. The app will work on iPad and iPhone, but Apple Pencil support means the iPad will be the best canvas for getting the most out of Freeform.

The Home app gets a revamp

THE HOME APP has a vastly improved interface with new categories for climate, security, lights and speakers, and if you have multiple cameras you'll like the new multi-camera view. It's much more logical than before, especially if you have lots of smart devices.

One of Home's most important new features isn't visible. iPadOS 16 introduces support for Matter, a new industry standard for smart home tech that should make it much easier for devices to work together. If like us you have a mix of HomeKit and other devices at home, that's really exciting.



Family sharing improvements



Family Checklist

THE FAMILY SHARING and parental control features of iPadOS were already very good, but they're much easier to view and change thanks to the new Family Checklist in Settings. Family Checklist makes it much easier to review the parental controls and content restriction settings, as well as enabling or disabling location sharing and iCloud sharing. You can also create a "recovery contact", a family member who can get you back into your iCloud account if you forget or lose your password.



Device setup

APPLE HAS ALSO made some big improvements to the Quick Start process to make it easier and faster to set up new devices for your family members. If you already have accounts set up for them in Family Sharing, you'll now see an option to set up the new device for that person – and if you use it, it'll automatically set up the device with all the sharing and parental control options you've already set for that account. It's not something you'll use very often, but it's a very welcome improvement for anyone buying or passing on an iPad for a family member.



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PRINT YOUR PHOTOS

Give your digital photos a new lease of life
by turning them into physical prints

WRITTEN BY GEORGE CAIRNS



Being able to take hundreds of photos on your iPhone or iPad is a wonderful thing, as is the ability to edit them in Photos or a third-party app such as Photoshop CC. You can even share pictures with friends and family via iCloud – but what if you want to share your photos in physical form, printing them out to keep in a frame or photo album?

And what can you do about those irreplaceable old analog slides and negatives – how do you digitize and print them? In this feature we'll look at how to do this and more.

We'll explain how you can prepare your digital photos for printing so that they look their absolute best in terms of color, tone and detail. We'll explain what the best options are for printing your pictures and make suggestions for products you might want to buy or use, such as home printers, scanners, photo-printing services and even professionally produced photo books.

We'll also show you where to go if you fancy creating more unusual physical prints, such as putting your mugshot on a mug or your cat on a mouse mat. Plus, find out how you can resurrect old, faded and damaged photos for sharing online as well as offline. ■

Prep your pics for printing

Editing tips on creating a print with more punch

Printing photos can often lead to disappointing results. The vibrant colors and rich contrast of a photo viewed on your iPhone or Mac's display can often look dull and flat when the image is printed out physically. This is due to a variety of factors. For starters,

your Mac or iPhone's screen displays millions of colors by mixing reds, greens and blues. In general, printers create color by mixing cyan, magenta, yellow and key (black) inks (CMYK), which results in thousands rather than millions of colors (though some printers use

extra inks for more faithful results – see opposite). As a result a printer's dots of color may not match the rich color palette of the original digital photo's pixels.

Sometimes colors such as blue in a digital photo will print with a slightly different hue, as the printer is

incapable of printing the photo's full range of colors. Unprintable colors are called "out of gamut" colors. In high-end apps such as Photoshop CC, you can turn on a gamut warning (View > Gamut Warning). This reveals unprintable colors with a gray overlay. You can

HOW TO Print your pictures from Photos



1 Full quality

If you use iCloud to sync photos between your devices, then you'll need to download the full version of a photo before editing it. Click Edit. A circular icon at the bottom right will appear while the photo is downloaded.



2 Color and tone

For perfect prints of people, go to Light. Tick Auto. This boosts overall contrast to help the subject stand out. In the Color panel click Auto. Drag the preview thumbnail's slider right for more saturated colors.



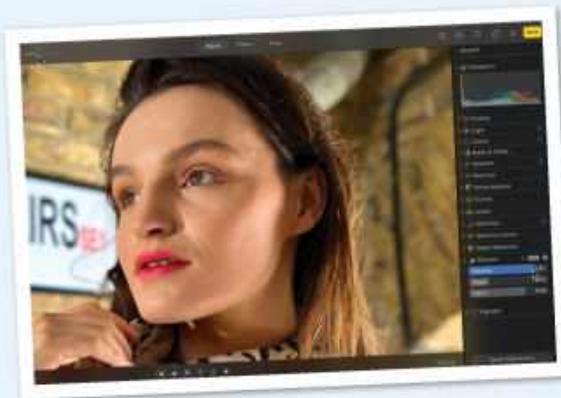
3 Vibrancy slider

You run the risk of making some skin tones look too orange if you boost Saturation. By using the Vibrancy slider you can selectively boost the strength of blues and greens without oversaturating skin tones.



4 Perfect complexion

To make your print's subject look their best, click on the Retouch panel's brush icon. Set tip size to around 18 (to cover spots and pimples). Click on each spot and it will automatically be replaced by clear skin.



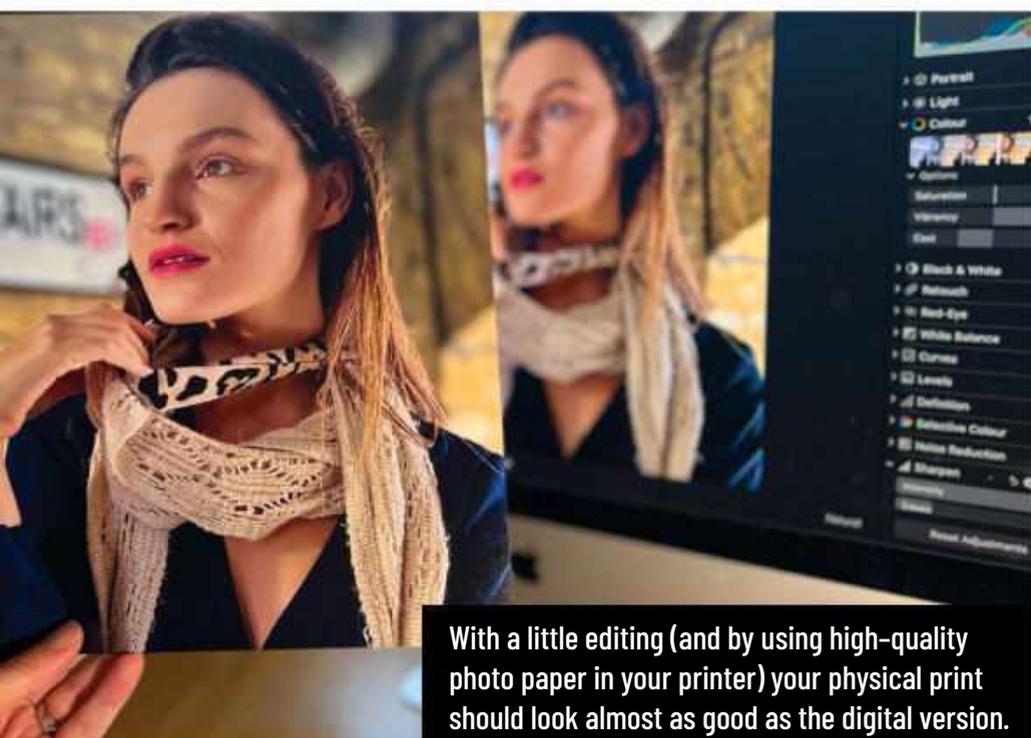
5 Stay sharp

In Sharpen, increase intensity to 0.80. This increases edge contrast and makes details such as the specular white highlights in eyes stand out more. Keep Edges low to avoid halos (unsightly dark or white edges).



6 Print it

For best results place high-quality photo paper in your printer; cheap paper will create drab and muddy colors. Go to File > Print. Select a preset size if you plan to frame your shot. Custom enables you to choose a specific size.



then apply a Hue/Saturation adjustment layer and tweak the hue or saturation until the gray patches disappear.

Photoshop users can also choose a CMYK color space to work in, which displays a more printable range of colors (rather than using the default RGB color space used to create images for sharing via web or social media).

PRINT READY

The rich contrast in a digital image may look a little flat in print. This is because your on-screen digital image has a higher dynamic range of tones than its printed version (especially when viewed on an iPhone 13's super-bright OLED HDR display). Despite

the differences between how an image is displayed on a screen or in print, the good news is there are things you can do to get a better print, even if you're using Apple's Photos app.

On the next page, we share some ways to help bring out more color, texture and detail in your images, so your photos look their best after being printed by a third-party company, such as Photobox or Saal Digital.

We'll give you tips on getting the best results from your own desktop printer, and you can also follow our walkthrough for the iOS version of Photos, and send images wirelessly to printers such as the Kodak Mini 2 Retro (see right).



To help you identify and adjust unprintable colors, Photoshop CC has a handy gamut (out-of-range) warning.

Top5 Photo printers

You might want to print a snap straight from your iPhone as a souvenir of a family gathering, or to showcase your photos as a professional A3 print, for example. Here's a range of recommended photo printers to suit a range of needs (and budgets too).



Expression Photo XP-8700

\$299.99 epson.com/usa

Send images to this printer from your iPhone or via Wi-Fi from your Mac and produce great-looking photos thanks to its six Claria HD Photo inks. A touchscreen enables you to access photos from an inserted memory card.



Polaroid Go

\$99.99 polaroid.com

If you're of a certain vintage you'll remember the thrill of snapping and printing a photo straight from a Polaroid camera. This modern version gives you the retro experience of watching an analog print develop.



Canon PIXMA PRO-200

\$599.99 usa.canon.com

This high-end printer is for professional photographers to produce prints with more accurate color reproduction, thanks to its eight-color, dye-based ink system. It prints up to A3 in size.



Kodak Mini 2 Retro

\$119.99 shop.kodakphotoprinter.com

This mini printer won't take up much desk space at all, and enables you to print 2.1 x 3.4in shots on the go via Bluetooth. Each print is laminated for longer lasting quality.



Canon imagePROGRAF PRO-300

\$899.99 usa.canon.com

This printer creates A3 prints so professional photographers can showcase their work. Ten-ink technology ensures a wider color range so your prints will match the digital version more closely.

Turn your photos into a book (or mug or jigsaw...)

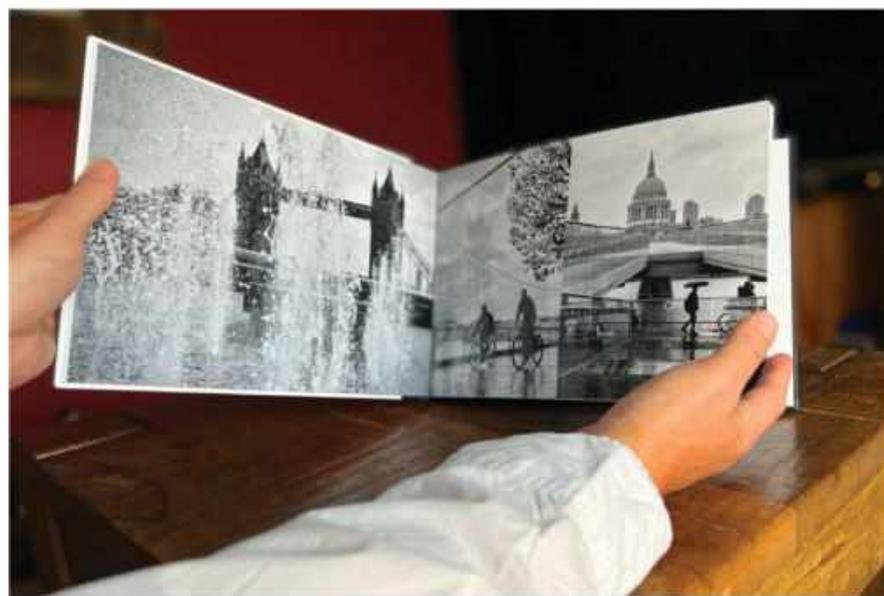
Bring your digital photos to life on a range of products

The problem with shooting digitally on your iPhone is that great shots can often get lost as your photo library increases in size day by day. You may take the time to create themed albums in Apple's Photos app and even share these albums with other iCloud users, but many digital images will barely be glanced at for more than a few seconds. A more effective way to give a particular picture more prominence is to print it in a professionally bound photo book, which you can showcase on a coffee table for visitors to flick through. By viewing prints as physical items they are more tangible than pixels on a screen and are therefore deemed to be more valuable and important. However, as physical photo books can still

end up gathering dust on a shelf, why not try printing a favorite photo on everyday objects (such as on a coffee cup) so that you can enjoy viewing a favorite picture on a daily basis.

IMAGES ON OBJECTS

Your desktop printer might do a great job but it's not geared up to produce professional-quality printed photo books (or perform more complex jobs, such as a printing a shot on a mug or a jigsaw). Fortunately there are plenty of online third-party print providers who can print your shots on a variety of products. Companies such as Mimeo Photos, Saal Digital and Motif all provide similar print services. You can browse through their range of products (bags, canvas prints, mugs, photo books



Bring your favorite iPhone shots together as physical prints in a glossy hardback photo book. These also make great presents for friends and family.

etc) via Safari and upload your shots to their sites.

If creating a photo book you can choose custom layouts and drag your uploaded shots into templates to design the look of your book (see opposite). Before uploading shots to an

online print service it's worth tweaking colors, tones and sharpness in Photos to make them look their best. You can also place the images for your photo book in a dedicated folder on your Mac so you can find and upload them to the print provider with ease. ■

PHOTO COLLAGE

You could use your Mac to manually lay out images in a Photoshop CC document and then scale and transform them to create a collage, but the iOS Photoshop Express app can do the same job in seconds. Tap the Collage icon then select up to nine shots from your Library. Choose a layout. Tap and drag shots to fine-tune their composition, then tap Share.



Creative ways to share your captures

To give certain shots more prominence you can print them on a range of objects – and they also make perfect gifts for friends and family members. Here are some examples of creative ways to share your photos on a range of products.



Marvelous mugshots!

\$21.30 saal-digital.com
A picture of a pet on an everyday object such as a mug is easy to produce using Saal Digital's online template. We created this design with the High-Key Light Mono option in the Photos app's Portrait Mode.

HOW TO Turn your pictures into a glossy photo book



1 Choose product
We'll demonstrate how to use Saal Digital's web-based service to design a photo book. In Photo Books, click to choose '30 x 21 Professional Line Photo Book XT'. This comes with a protective acrylic cover. Click Design.



2 Select layout
To take full creative control of the book's look, choose Auto Layout. Choose a design theme for the book. We went for the neutral and non-distracting Positive Lines theme. Select a page count (we chose 22 pages).



3 Upload images
Click on the Add Images button. Browse to a folder on your Mac to select the images you want to include in the book. Click Upload. The images will appear in the Project panel. Choose a layout for the cover.



4 Add images
Drag images from the Project panel into the layout template's space holders. If images are cropped, click 'Edit image' and drag to recompose the shot. Here we had to slide the workman up to include him in the frame.



5 Finish designing
On each page you can choose a new layout to add variety to your photo book. Try to keep pages themed (such as people and pets or street photography, for instance). When you're happy click 'Add to cart'.



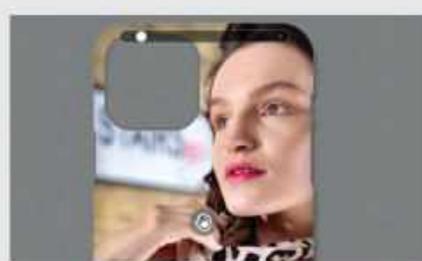
6 Print and pay
The Saal Digital Professional Line Photo Book that we received showcased our iPhone's photos as vibrant and richly toned prints on thick glossy paper. The book's acrylic cover helped give it a premium product feel.



Personalized postcards
\$1.70 saal-digital.com
A postcard personalized with your own photo is an effective way to send greetings to friends and family while on holiday. A social media post will soon disappear, but a postcard will be cherished for longer.



Create a calendar
\$22.99 Motif, App Store
Motif was the company used by Apple to print photo books from Photos. Download Motif as a plug-in for Photos and use File > Create to print straight to products such as calendars from within Photos.



Get on the case
From \$39.99 snapfish.com
We're used to using photos as iPhone wallpaper. Now we can print pictures on a protective case and personalize our device thanks to Snapfish's browser-based service. Select your iPhone model and upload your shot.



Mouse mat
\$10.99 snapfish.com
Modern mice don't need a dedicated mat to function, but it can help stop dust and fluff from clogging your Apple mouse's sensor! Personalized mouse mats also help keep family members in mind as you work.

Restore older photos

Turn analog prints into digital images and turn back time on faded photos

In your attic, cupboards or basement, you may have boxes full of old photos that haven't been seen for years (or even decades). You may also have envelopes full of negatives. Some of your prints might be easier to access in physical photo albums, but, over the decades, time and chemical reactions often cause colors

to shift in hue and tones to fade. Other well-loved (and well-handled) prints may suffer from tears, scratches and even coffee stains. You may also have photos stored on long-lost memory card formats that you can no longer access.

Fortunately it has never been easier to digitize these precious assets and

share them as prints or post them on social media sites to delight friends, family members and followers.

Signs of wear and tear can be digitally retouched to make photos look as good as new, and you can also use scanners with slide adaptors to digitize your assets and turn negatives into digital images (or send your

negatives to be digitized by third-party providers). You can even use iPhone apps to scan and restore old photos, turn an analog negative into a digital positive or colorize an ancient monochrome print!

Here we explore a range of ways to recover photos from a variety of formats and restore them to their former glory. ■

RESTORATION SERVICES



Remini
\$9.99 per month
 (free 3-day trial)
[App.remini.ai](https://www.appremini.ai)
 Artificial Intelligence (AI) or Machine Learning (ML) is a common component of many image-editing apps including Photoshop CC (see steps 5-9 on the page opposite). One of the most effective AI services is Remini. This browser-based service uses AI to improve, sharpen and unblur old photos to reveal more detail. Browse to a photo via Safari and upload it to Remini. The online app then analyzes the shot and adds detail to blurred areas. It is especially good at adding detail to eyes and hair. You can then download the enhanced result.

Top 5 Photo accessories

Photography has its fair share of left-behind formats – negatives and slides, film cartridges and old card formats. But fear not, the following devices can help you rescue images from older formats and turn them into shareable pixels...



Wolverine F2D Titan
\$149.99 [wolverinedata.com](https://www.wolverinedata.com)
 This standalone scanner digitizes up to eight different film types including 35mm film, APS slides and negatives. A built-in screen enables you to tweak colors and tones or you can export photos to Mac via USB.



SanDisk ImageMate PRO Multi-Card Reader
\$29.99 [westerndigital.com](https://www.westerndigital.com)
 Transfer photos from SD, MicroSD cards and older CompactFlash cards from digital SLR cameras of the 1990s. It works with USB 3.0 ports for faster data transfer.



Photomyne Light Pad
\$39.99 [amazon.com](https://www.amazon.com)
 This backlit light pad is the perfect accessory to use with the Photomyne SlideScan app. Simply place your slides or negatives on the pad's flat surface and use the app to digitize and edit them.



Plustek OpticFilm 8100
\$349 [plustek.com](https://www.plustek.com)
 This slide/negative scanner lets you capture digital versions of your original slides with a higher resolution (7,200dpi) than you'd get with an iPhone and a scanning app. This leads to better-looking prints.



Epson Perfection V600
\$299.99 [epson.com/usa](https://www.epson.com/usa)
 This scanner ships with adaptors for 35mm film, slides and 120/220 medium-format film. A dedicated film/negative scanner, it enables you to digitize at a higher resolution than scanning via an iPhone.

HOW TO Scan and restore faded and/or damaged photos



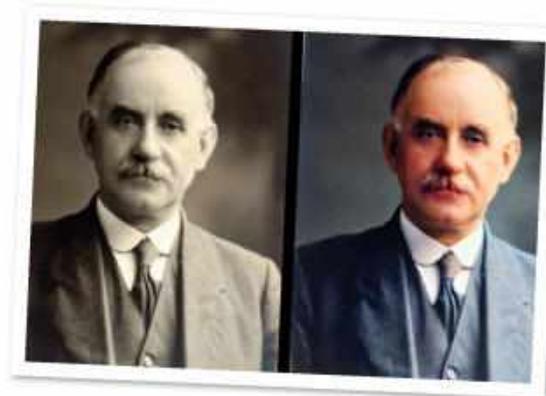
1 Scan photos

Photomyne's Photo Scan app scans and restores old prints straight from your iPhone. You can try it for three days for free. Place up to four prints on a flat surface. Tap and hold Scan for three seconds to scan them.



2 Restore

Photo Scan crops and rotates each scanned shot and then restores it by sharpening detail, increasing contrast and cooling down warm colors for natural skin tones. You can fine-tune the results using presets.



3 Colorize photos

Photo Scan can bring people back from the past and into the present by colorizing old black-and-white shots. Simply scan the shot via the app (see step 1), then tap on the 'Colorize this photo' button.



4 Repair damage

iOS apps such as Photo Scan do a great job of sprucing up the colors and tones of digitized prints, but to repair dust specks and scratches you need to manually retouch using desktop apps such as Photoshop CC.



5 Work in Photoshop

Choose Filter > Noise > Dust & Scratches. Increase Radius. A larger value hides bigger scratches but can lose facial detail. Drag Threshold to the right to compromise between hiding scratches while preserving detail.



6 Heal scratches

Grab the Spot Healing Brush tool. Spray over remaining spots or scratches. The tool fills the sprayed areas with adjacent patches of clear texture. Finish off by choosing Image > Auto Contrast for healthier tones.



7 Get smart

Photoshop can assist your restoration using Machine Learning (ML). Choose Filter > Neural Filters. Turn on 'JPEG Artefacts Removal'. This analyzes the shot and smooths out some of the portrait's rough texture.



8 Skin smoothing

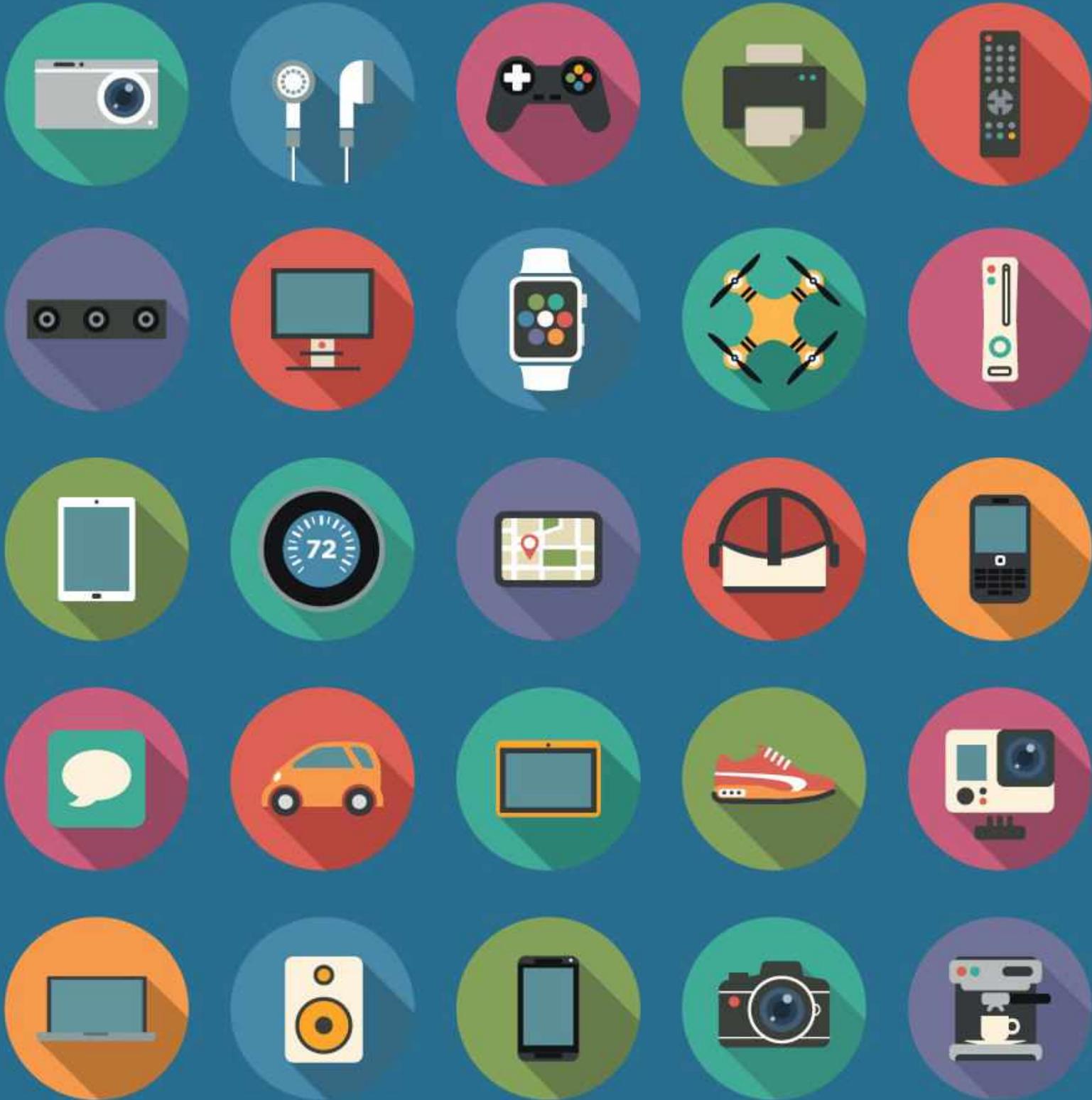
To give the face a smoother complexion and reduce the presence of grain, turn on the Skin Smoothing filter. Experiment with the Blur and Smoothness sliders to help preserve important detail.



9 Final touch

As a finishing touch you can add a wash of color to the restored photo. Toggle on the Colorize neural filter. You can experiment with different looks by exploring the presets in the Profile drop-down menu.

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REVIEWS

TOUGH TESTING, TRUSTED RATINGS



HERE AT MAC|LIFE we believe you should only buy the things that you really need, which is why our Reviews section is so important to us, and you. We don't want you to waste time and

money on inferior products, and while we aim to include only the best hardware and apps, occasionally we like to include products that look promising, even if they don't always deliver.

We only use carefully selected experts, with specialist knowledge in their respective field, so no matter which review you're reading, you can be confident the person who's tested it knows their stuff, allowing you to make an informed purchase.

Each review is rated using a five-star system, with half stars, which is easy to understand because we give an explanation next to each one. The products that really stand out, those with a five-star rating, get a *Mac|Life* Editor's Choice award.

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Only the best...

The products that really stand out in the mag – those that receive a five-star rating – get the *Mac|Life* Editor's Choice award. It doesn't get any better than this, so you'd be mad not to buy anything bearing this mighty accolade.





The new iPad offers a choice of four stylish colors.

iPad (10th gen)

Base model gets a big upgrade, but that Apple Pencil...

From \$449 (Wi-Fi), \$599 (Wi-Fi + cellular) From apple.com

Features 10.9-inch Liquid Retina display with True Tone (2,360 x 1,640 pixels), A14 Bionic chip, 64 or 256GB of storage, Wi-Fi 6, Bluetooth 5.2, USB-C, 12MP Wide camera (rear), 12MP Landscape Ultra Wide camera (front), works with Apple Pencil (1st gen), 1.05 pounds

THE NEW IPAD finally takes Apple's base model tablet into the future. Or at least the present. The large bezels, ancient Home button and Lightning port are gone, replaced with a larger 10.9-inch display that nearly goes edge-to-edge, a power button with Touch ID built in and USB-C charging.

Measuring 9.79 x 7.07 x 0.28 inches and weighing 1.05 pounds (1.06 pounds for cellular), the iPad (10th gen) is thinner and lighter than the iPad (9th gen), with a pretty funky color palette to choose from.

Standard storage on the entry price model is just 64GB, as with the previous iPad, which is a bit low these days. For \$599 (Wi-Fi model) you can upgrade to 256GB — pricey.

The 10.9-inch display on the new iPad won't blow you away, but it's good for the price. Its 500-nit brightness level is decent enough, but you may have a little difficulty in direct sunlight. By comparison, the new iPad Pro (p40) hits a much higher 1,600 nits, but it's much more expensive. In terms of colors, the iPad's display covered 101.2% of the sRGB color gamut and 71.7% of the more demanding DCI-P3 color space. The iPad Air's hit a higher 111.8% and 79.2%, respectively.

IT'S A KIND OF MAGIC

The Magic Keyboard Folio for the iPad is an excellent additional accessory to buy if you

want your iPad to double as a pseudo MacBook. While expensive at \$249, the keys offer a good 1mm of travel and snappy feedback. However, some of the keys are shrunken on this layout given the overall small size of the tablet, including the Return and Delete keys. Another plus is that there's a 14-key function row at the top of the keyboard, so you can easily see all your open apps at once as well as adjust the brightness and volume.

The Magic Keyboard Folio comes with a kickstand that's easy to adjust, and typing is fairly stable even with the iPad in your lap, though it does bounce about a bit. The protective back panel attaches magnetically to the iPad. You can also remove the keyboard if you simply want to use the back panel as a stand for, say, watching a movie.

PENCIL PROBLEMO

For a company that prides itself on smart design, the Apple Pencil support (or lack thereof) is a real head scratcher. OK, so if you buy the iPad (10th gen), the Apple Pencil (2nd gen) won't work. If you want to be able to draw, take notes and more on this iPad you'll have to get the \$99 Apple Pencil (1st gen). Odd? You betcha. And the weirdness doesn't end there. First, there's nowhere to house the Apple Pencil when it's not in use. The iPad 



▣ Air and iPad Pro let you magnetically attach the Apple Pencil (2nd gen) to the top flat edge of their chassis for easy storage, and they both charge the Apple Pencil while connected. In addition, the removable cap on the Apple Pencil (1st gen) is easy to lose.

It gets worse. In order to pair and charge the Apple Pencil (1st gen), you need to use a separate USB-C to Apple Pencil adapter. And that's because the old Apple Pencil still uses the outdated Lightning connector instead of USB-C. The good news is that Apple will include this mini dongle if you buy the Apple Pencil (1st gen). The bad news is that this awkward solution is needed at all. It would have been much easier if Apple simply would

If you plan to draw or write with the new iPad, be aware that it, oddly, only supports the Apple Pencil (1st gen).

have added Apple Pencil (2nd gen) support to the iPad (10th gen).

ENTRY-LEVEL UPGRADE

No surprise here. The A14 Bionic chip that powers the iPad (10th gen) is plenty fast – and it should be given that this is the same processor inside the iPhone 12. When playing a game like *Genshin Impact*, the animations were fluid and the iPad held up well even in demanding scenes.

On Geekbench 5, which measures overall performance, the iPad scored 1,580 on single-core and 4,400 on multi-core, which is a marked improvement over the 1,384 and 3,387 turned in by the iPad (9th gen). However, the iPad Air with its M1 chip scored a much higher 1,707/7,151.

Turning to graphics, the iPad (10th gen) scored 8,579 and 51.4 frames per second on the 3DMark Wild Life test. Compare that to 8,000 and 47.9 fps for the iPad (9th gen). So you're getting a slight graphics bump here. The iPad Air, not surprisingly, earned a higher 17,966 and 107 fps.

Our review unit came with a 5G cellular connection for Verizon, so we tried it out on the Ookla Speedtest app. Near central New Jersey, we saw only 38 Mbps downloads and 4.09 Mbps uploads, but downloads exceeded 100 Mbps in midtown Manhattan. 5G performance really depends on your location and signal strength.

SHARPER SNAPPER

The iPad (10th gen) packs an upgraded rear camera, going from 8MP on the previous model to 12MP on the new version. And the 12MP front camera gets a welcome shift from the top edge to the long edge, which makes for more natural video calls in landscape mode, especially when your iPad is docked in the Magic Keyboard Folio.

The rear main 12MP camera is a mixed bag. Outdoors, it captures images that look bright and colorful. Indoors, it fares well when there's a decent amount of ambient light, but there's some graininess in lower light photos. You can forget about Night mode, because there isn't one. And there's no flash either.

Up front the iPad features a 12MP camera with a new landscape location above the





TO PAIR AND CHARGE THE APPLE PENCIL, YOU NEED A SEPARATE USB-C ADAPTER

long edge of the display. This makes the iPad better for video calling. Even in a dimly lit room the iPad delivered a fairly sharp image, albeit with some noise. The iPad is smart enough to light up the display, too, which doubles as a pseudo flash.

The iPad (10th gen) should last you most of the day on a charge, so you can probably leave the included 20W charger behind. In testing we easily saw ten hours from the battery with a combination of web surfing and watching video, which is what Apple claims. The iPad (9th gen) also boasts the same amount of battery life. We're glad that the new iPad offers USB-C charging, as it did result in faster recharge times in our testing versus the previous model. The new iPad got to 26% in 30 minutes, compared to 19% for the Lightning-equipped iPad (9th gen).

Let's rip off the Band-Aid here and remind shoppers that the new iPad (10th gen) does not support the flagship feature of iPadOS

16: Stage Manager, which makes it easier to multitask by putting your recently used app on the left of the display. It does, however, work on the latest iPad Air or iPad Pro.

The iPad (10th gen) is a tablet that looks and feels new, and that's a welcome change over the last few iterations. However, \$449 is a lot of money to spend on what is effectively the "entry-level" model. Yes, Apple is keeping the \$329 iPad (9th gen) around, but it still stings to see a \$120 jump from one generation to the next. The bigger issue is with the Apple Pencil situation; the difficulty in charging is a bit of a dealbreaker, and there's nowhere to store it when not in use. If that matters to you, then may we suggest you spring for the pricier \$599 iPad Air. It supports the newer Apple Pencil (2nd gen) that attaches to the tablet for storage and charging. You also get the faster M1 chip, and it supports the new Stage Manager multitasking feature. **MARK SPOONAUER**

Apple has finally moved the FaceTime camera along the edge of the iPad.

THE BOTTOM LINE

Almost everything you want in an entry-level iPad, but with a couple of downsides.

- Sleek new design
- Great performance
- Modern features
- Apple Pencil calamity

GREAT ■■■■

iPad Pro 12.9in (6th gen)

The world's fastest tablet just got faster

From \$1,099 (Wi-Fi), \$1,299 (Wi-Fi + cellular) From apple.com

Features 12.9-inch Liquid Retina XDR display (2,732 x 2,048 pixels), Apple M2 chip (8-core CPU, 10-core GPU), 8GB of memory (128/256/512GB)/16GB of memory (1/2TB), up to 2TB of storage, Pro camera system with 12MP Wide and 10MP Ultra Wide lenses, 12MP TrueDepth camera, Wi-Fi 6, Bluetooth 5.3, Face ID, Thunderbolt/USB 4 port, 11.04in x 8.46in x 0.25in, 1.5 pounds or 1.51 pounds (Wi-Fi + cellular)



IN ISOLATION, THE new iPad Pro is one of the best tablets thanks to its elegant design and powerful new M2 chip. New iPadOS 16 features such as Stage Manager and Apple Pencil hover also elevate Apple's flagship.

That said, the M2 chip is the only substantial hardware upgrade over the previous iPad Pro. Apple Pencil hover is exclusive to this year's iPad Pro, but it's not exactly a "must-have" feature for most users. Unless you absolutely need the nominal performance boost, it's hard to justify upgrading from a recent iPad Pro.

The new iPad Pro starts at \$1,099 (Wi-Fi), and \$1,299 (Wi-Fi + cellular). In terms of storage, you get a paltry 128GB with the basic version, rising to 2TB for the priciest. It's worth noting that the M2 chip comes in two configurations depending on the storage you opt for: the 128/256/512GB models get 8GB of RAM, while the 1/2TB models get double at 16GB RAM. Clearly, your choice should be dictated by how much storage you need, rather than memory. It's unlikely you'll see much of a performance difference anyway, at least right now.

Note that the Apple Pencil 2nd gen (\$129) and Magic Keyboard (\$349) are sold separately and add significantly to the cost.

Design-wise, the new iPad Pro is indistinguishable from the two previous models. This isn't a negative since its thin bezels and sleek aluminum chassis remain as striking as ever. Space Gray and Silver are the only available colors.

The Liquid Retina XDR display is also unchanged, though again the 12.9-inch mini-LED 2,732 x 2,048 display is already pretty much perfect.

Naturally, the pièce de résistance is the new M2 chip, a solid upgrade over the previous model's M1. In Geekbench 5.4, which measures overall performance, the iPad (6th gen) scored 1,862 on the single-core portion and 8,500 on the multi-core test. In contrast, the old iPad Pro scored 1,722 and 7,298, respectively. When it comes to graphics, the new model scored 25,259 and hit 151 frames per second on the 3DMark Wild Life Unlimited test. Last year's iPad Pro scored 18,263 and 109 fps on the same test, which is a big deal for gamers.

The new iPad Pro's cameras are exactly the same as last year's model. That's both a positive and a negative, depending on your expectations. Since both the front and rear cameras take solid pictures, it's not an issue.

In our battery test, the iPad Pro lasted well over ten hours over Wi-Fi (a mix of web surfing and video), which is about on par with the previous model.

Hardware aside, there are two new big features: Stage Manager in iPadOS 16 which helps to focus on the current task (more on p12), and Apple Pencil hover. This detects the Pencil up to 12mm above the display, revealing a preview of your mark before you make it. This is useful for creatives aiming for greater control, but it's not a killer feature for everyone else. **TONY POLANCO**

The new iPad Pro is identical to its predecessor in terms of design.

THE BOTTOM LINE

A nominal upgrade over its predecessor, but the new Pro is the best there is.

- ➕ Speedy M2 upgrade
- ➕ Fantastic display
- ➕ Stage Manager
- ➖ Not much of an upgrade

EXCELLENT ■■■■■



1MORE SonoFlow headphones

Hi-res wireless streaming you can afford

\$99.99 From usa.1more.com

Features LDAC codec support, 70 hours battery life, hybrid noise canceling, wired option, Bluetooth (plus multipoint for pairing with two devices), 3.5mm audio output

THE SONOFLOW IS 1MORE's first over-ear headphone. Lightweight at just 250g, they're comfortable for extended listening sessions or wearing during a commute but also feel well-built. In the box there's a USB-C to USB-A charging cable and a full charge of 80 minutes will get you 70 hours of playback with ANC off or 50 with it on. A five-minute quick charge provides up to five hours of playback and though using full volume will reduce these numbers a little, we found them to be broadly accurate.

You do get a wired option which is always nice to have, and a 2.5mm to 3.5mm cable is supplied. Bluetooth 5.0 is also available and here supports the high-quality LDAC codec for streaming at up to 990kbps, not far off the 1,411kbps of CD and much greater than AAC's standard 264kbps. You can hear the difference too — where normally switching to a wired connection boosts both clarity and max

volume, with these headphones wired and wireless are equally impressive.

The 40mm drivers produce a sound that's more detailed than you might expect in this price range, with excellent stereo separation and reproduction that's faithful to your recordings. Overall the soundstage is balanced, with mids only occasionally straying into excessive brightness with some material. Low end is punchy and highs crisp, and you're able to use preset or custom EQs from the companion iOS app if you wish. From the app or the on-body buttons you can also toggle listening modes, choosing transparency or QuietMax hybrid noise canceling. Unlike in pricier models the canceling is on or off, there's no variable amount, but it's very effective at blocking sound. The five microphones that power it are also used for making calls or using voice assistants. An impressive feature set at an affordable price. **HOLLIN JONES**

As well as hi-res Bluetooth streaming, the SonoFlow has a wired option and a cable is supplied.



THE BOTTOM LINE

Solid sound and great features on a budget.

- ⊕ High-quality LDAC streaming
- ⊕ Noise canceling is effective
- ⊕ Long battery life
- ⊖ Noise canceling is not variable

EXCELLENT ■■■■■



Audio-Technica AT2020USB-X

Perfect for podcasters

\$149 From audio-technica.com

Features 20Hz–20kHz frequency response, 24-bit/96kHz audio resolution, cardioid polar pattern, microphone/computer mix dial, 3.5mm jack, touch-sensitive mute button, mute indicator light, USB-A to USB-C adapter, two-meter USB-A to USB-C cable

AUDIO-TECHNICA IS WELL-KNOWN for its selection of high-end microphones, most of which use the XLR connector. That's fine if you have the right equipment to plug it into, but it's not so useful if you just want to make some quick-and-dirty recordings on your Mac.

The company's AT2020USB-X microphone changes that. It's not actually Audio-Technica's first USB mic offering (it's a "reimagining" of the AT2020USB+), but it is a serious contender for your cash if you're looking for the perfect partner for your Mac when it comes to streaming, podcasting, and video calls.

The AT2020USB-X comes with a sturdy metal stand that lets you adjust the mic angle. On the bottom is a rubber layer to cushion the mic and add grip, and there's a small cut-out on the underside to pass the two-meter USB-C to USB-A cable through. The AT2020USB-X also comes with a USB-A to USB-C adapter, which is ideal if you have a USB-C MacBook. It's not a common inclusion with USB microphones, despite most using USB-A cables.

Around the back is a 3.5mm headphone jack offering latency-free monitoring, which is helpful for podcasters. On the front there are two dials: one to control headphone volume, and another to adjust the balance between microphone input and computer audio. The latter is a really nice touch, allowing you to tweak the mix on the fly rather than having to delve into software.

This is a rare find on microphones in this price range.

AUDIO EXCELLENCE

Sound quality is first-rate, with voices coming through clean, clear, and true-to-life. Compared to our Blue Yeti, the AT2020USB-X handily wins, which is impressive given the Yeti's cachet. If you're after audio that sounds great with minimal tweaks required, Audio-Technica's mic is a good place to start.

If you ever need to quickly silence the mic, there's a mute button front and center. This quickly flips the light emitting from the grille from blue to red, making for an unambiguous signal when the sound is off. We're not so keen on its touch surface though – there's no physical click when you press it, so it's easy to accidentally mute yourself.

There are other areas where there is room for improvement. There's no gain control dial – while not essential, it would certainly be welcome. The AT2020USB-X only offers the cardioid polar pattern, which isn't ideal if you're trying to record multiple people at once. And you'll also need a separate pop filter to protect against plosives, as there isn't one built in (although that's not uncommon).

All of these drawbacks are "nice to haves", though, rather than dealbreakers. There's a whole lot to love here, from the clear mute status indicator to the audio mix dial and, of course, the superb audio quality. If podcasts or streaming are your thing, this will be right up your street. **ALEX BLAKE**

THE BOTTOM LINE

A great mic with crisp, clear audio and some nifty extras.

- True-to-life sound
- Clear mute light
- Audio mix dial
- Only one polar pattern

EXCELLENT ■■■■■



There are two dials on the front to adjust headphone volume and the audio mix.



The MacTigr keyboard features a full-size layout with a numpad on the right-hand side.

Das Keyboard MacTigr

Is this the new Tigr king?

\$219 From daskeyboard.com

Features Aluminum unibody, stainless steel top, two-port USB-C hub, Cherry MX switches



A dedicated volume control is also included on the top right.

THE BOTTOM LINE

A good upgrade that falls short in a few areas.

- Great for typists
- Solid construction
- Very expensive
- Lacks adjustment options

GOOD ■ ■ ■ ■ ■

MECHANICAL KEYBOARDS MADE for Mac are few and far between. If you want a solid mechanical typing experience with a macOS layout and keycaps, you're limited to one or two choices among a sea of Windows boards.

Now, there's another option. Das Keyboard has just launched the MacTigr, a set of keys designed specifically for Mac users. They use high-quality Cherry MX Red switches, giving a comfortable, lightweight typing feel that's a step above the vast majority of traditional Mac keyboards. Unlike some other switches, there's no tactile bump or audible click, meaning they're still (just about) quiet enough for an office environment.

Right from the off, the MacTigr impresses. Its chassis is all-metal and feels incredibly robust, which is perfect if you intend to travel with it. That's complemented by the low-profile keys, which reduce the overall bulk noticeably. And those keycaps are doubleshot, meaning they're made from two

differently colored pieces of plastic, so they won't chip or fade over time.

In the top-right corner is a set of media keys, a sleep button to snooze your Mac, and a volume knob. The latter is a nice touch, although we noticed it occasionally failed to register turns. On the back are two USB-C ports running at 5Gbps.

Still, there's room for improvement. There's no adjustable stand, no alternative switch choices, no backlighting, and no wireless option. It's also extremely expensive, even for a mechanical keyboard. Rival Keychron's boards can switch between Mac and Windows layouts, which we'd love to see here, but it's an unusual feature.

If you're serious about typing, a mechanical keyboard is the way to go. Das Keyboard's MacTigr is a premium board that impresses in many ways. It's far from perfect, but still a good option if you're tired of mushy, lackluster keys. **ALEX BLAKE**



The Creative app includes customizable EQ settings, with the ability to create your own presets.

Creative Sound Blaster X1

Enhance your Mac audio experience

\$99 From [creative.com](https://www.creative.com)

Features USB-C DAC and amplifier, up to 115 dB SNR at 24-bit/96kHz playback resolution, plug-and-play USB-C interface. Dimensions: 175 x 67 x 9.7mm, 15g

The X1 is highly portable — but is primarily designed for use with Macs and PCs.

FOR ALL ITS boasts of innovation, Apple still has a tin ear when it comes to audio technology. Its own AirPods can't play high-quality "lossless" audio, so music fans who want the best sound quality still need to use ye olde wired headphones and a DAC — digital/analogue converter — that can boost the sound quality.

There are several portable DACs available for iPhone/iPad, and Creative's new Sound Blaster X1 is one of the most affordable DACs we've seen recently. But, somewhat oddly, it's primarily designed for use with Macs, PCs and gaming consoles rather than mobile devices.

The X1 has a USB-C interface for connecting to your Mac and a 3.5mm connector for headphones, and there are handy buttons for controlling volume and voice calls as well. I noticed the difference in sound quality from my MacBook Air as soon as I started playing the *Hounds Of*

Love album by Kate Bush. The hypnotic drum loop on Running Up That Hill has much greater impact, and the enhanced clarity of the sound reveals a rather weird left/right panning effect that I'd not noticed before. The didgeridoo on The Big Sky has a really rich, woody texture to it, and the excellent slap-bass really lands with a sharp snap.

There's also a Creative app available for macOS 10.15 or later — although this is where things get a bit messy. The app includes some useful EQ controls, but its Super X-Fi feature for surround-sound effects requires you to download two additional apps — for both Mac and iOS — and the whole process turns into a bit of a struggle. Thankfully that's non-essential, and the X1 works fine on its own as a compact and affordable option for boosting the sound quality on your Mac and other devices. **CLIFF JOSEPH**

THE BOTTOM LINE

The software is a bit messy, but the Sound Blaster X1 provides strong sound quality at a competitive price.

- Improves Mac sound quality
- Compact and portable
- Competitive price
- Poor Mac software

GREAT ■ ■ ■ ■ ■



Slim enough to fit in a pocket, the Envoy Pro FX external drive connects to almost any Mac.

OWC Envoy Pro FX

High-performance and versatile storage

\$899 (4TB, range starting from \$219 for 240GB) From eshop.macsales.com

Features High-performance SSD, Thunderbolt 3/4 and USB 3 compatible, water, dust and drop resistant **Needs** Thunderbolt 3/4 preferred for best performance



THE BOTTOM LINE

Thunderbolt 4, rugged, and very flexible compatibility.

- 👍 Superb performance
- 👍 Versatile connection
- 👍 Rugged but compact
- 👎 Fairly pricey

AWESOME ■■■■■

THERE ARE FAST SSDs and versatile SSDs, but only OWC's Envoy Pro tries to be both, and more. How can it be rugged yet fit into a pocket, and push nearly 3GB/sec over Thunderbolt 3 while still connecting to Macs with only USB 3 support?

The Envoy Pro FX is the same size as most SATA SSDs and significantly heavier at 90g in its heat-dissipating aluminum case. OWC claims IP67 rating for resistance to dirt, dust and water, and military standards for robustness to dropping. These were good enough to take it into space in one of Jeff Bezos' Blue Origin New Shepard rockets. Its deeply recessed USB-C port and 27.5in combo cable enable it to connect to any Thunderbolt 3 or 4, or USB 3 port, the latter via USB-C or the supplied USB-A adaptor.

To do this SSD justice, you really want to drive it through Thunderbolt 4. Benchmarks are then impressive: Amorphous returns a

read speed of 3GB/sec and write of 1.8GB/sec, although in use you're more likely to see towards 2.2GB/sec when writing to it, as reported by Stibium. While 3GB/sec might seem a long way from the 40Gbps promised by Thunderbolt, it's the practical limit reached by surprisingly few external SSDs.

Most importantly, the Envoy Pro FX performs excellently when it counts. Throw 100GB or more of video at it, and it won't run out of high-speed write cache or suffer thermal throttling. You can install macOS on it to use as an external boot disk with an Apple silicon Mac, when it will start up almost as quickly as from the internal SSD.

It comes with essentials, such as full TRIM support to ensure its performance is sustained, and a year's free subscription to the Acronis back-up and protection service.

OWC has great ambitions in the Envoy Pro FX, and it achieves them. **HOWARD OAKLEY**



Kensington W1050 webcam

Customize your conference video on a budget

\$49.99 From [kensington.com](https://www.kensington.com)

Features 1080p resolution, fixed focus lens, Kensington Konnect software, privacy cover
Needs macOS 10.15 or later

The 1080p camera has a fixed focus and a 95-degree field of view.

KENSINGTON'S WEBCAM IS designed for those who want more control over the video feed than Apple allows with its own FaceTime cameras. The W1050 has a relatively lightweight build but feels solid enough, and a hinged foot that can rest on the top edge of a laptop or monitor or be mounted on a separate stand via its screw thread. The body can be moved through 360-degrees horizontally and 37-degrees vertically, covering any angle you'd realistically want to use. A privacy cover can be slid across the lens when required.

The wide lens has a 95-degree field of view which is quite large if you're sitting a little way away from the camera, but the Kensington Konnect software can be used to zoom in up to 2x to tighten things up, to pan or tilt, and the webcam's fixed focus works well. The 1080p image is a little dark out of the box but does benefit

from some tweaking using the app, correcting for ambient light with brightness, contrast and saturation sliders that can be saved as presets. There are also effects presets to tweak the look of the video, which are mostly useful.

The webcam has two microphones for stereo audio and the noise canceling does a good job of isolating your voice, even if the overall audio is a little thin. The USB cable is fixed to the back of the body and at the other end is USB-A, so you may need an adaptor. It's possible to use the camera right away with all popular conferencing apps, but it's worth downloading the free software to customize the look of the video. For everyday conferencing this is a definite upgrade for older Macs, though power users should look at pricier alternatives.

HOLLIN JONES

THE BOTTOM LINE

An affordable webcam with handy software controls.

➤ Affordably priced

➤ Make tweaks in software

➤ USB-A native

➤ Sound is a little thin

GOOD ■■■■■



As well as looking great in any music setup the speaker has an ARC input for use with a smart TV or in a home cinema setup.

Marshall Woburn III

A home speaker with some serious heft

\$579.99 From marshallheadphones.com

Features Five separate amplifiers, Bluetooth, aux and HDMI, playback and EQ controls, Dynamic Loudness – adjusts the tonal balance depending on the volume



THE BOTTOM LINE

Powerful and detailed sound in a great-looking package.

- Rich, detailed sound
- Excellent build
- ARC for use with TV
- Expensive for a non-smart speaker

EXCELLENT ■ ■ ■ ■ ■

THE LARGEST OF Marshall's new Home series speakers, the Woburn III is relatively heavy at around 16lb and very clearly styled after the company's legendary family of guitar amplifiers. Its finish is of high quality and though you wouldn't guess, is PVC-free and also 70% recycled plastic, with beautifully machined brass on the top panel. It leans more towards a conventional notion of a speaker so there's no Wi-Fi or smart features like voice commands, though it does have Bluetooth 5.2 both for streaming from devices and for managing settings. The companion iOS app allows firmware updates as well as control of a five-band software EQ that's user-configurable and also comes with some presets.

In addition to Bluetooth with its 30-foot range you'll find a 3.5mm aux input on the top panel and RCA phono plugs on the back, as well as an HDMI ARC input for use with a

smart TV or as part of a home cinema system. Switching between inputs is as simple as using the panel button, and you also get a track play/skip control here as well as guitar amp-style volume, bass and treble dials. Internally, the woofer has a dedicated 90W amplifier, the two mid drivers have 15W amps and the two tweeters do as well for a total of five amplifiers.

This use of multiple drivers and amps and some clever acoustic design makes the Woburn III an amazing-sounding speaker. Bass is rich yet controlled and far weightier than you might expect from a relatively compact model such as this. Mids are crisp and direct, while the top end sparkles without ever sounding thin. It's also capable of some quite astonishing volume, maintaining focus well into the upper reaches of how loud you are ever likely to play it. **HOLLIN JONES**



Satechi USB-4 Multiport

Versatile portable hub for MacBook owners

\$149.99 From satechi.net

Features 1x USB-A (3.2), 2x USB-C, 1x HDMI 2.1 (4K @ 60Hz), 1x 2.5 Gigabit Ethernet, 1x audio in/out **Needs** Mac with USB-C

The Multiport Adapter squeezes six ports and connectors into its compact design.

THERE'S NO SHORTAGE of portable USB hubs available for use with your MacBook, but choosing the right one can be tricky. With no mains power supply these portable hubs can only offer a limited selection of ports and connectors, but Satechi's new USB-4 Multiport Adapter manages to provide a good set of ports and connectors that will be useful for many MacBook users. It's also up to date with some of the latest technologies that provide good performance for the devices that you connect to your Mac.

The Multiport Adapter isn't quite pocket-size, but it's easy to carry in a bag with your laptop when you're traveling, and sturdy enough to cope with a few bumps along the way. We also like the 4.8-inch USB-C cable, which gives you some room to play with when you're connecting several devices at once.

The Multiport Adapter is one of the more expensive portable hubs, but it can

earn its keep with no less than six ports and connectors. There's a single USB-A (3.2) port, and two USB-C ports, with one providing up to 100W power output for charging other devices (depending, of course, on the power output of your MacBook itself). There's an HDMI port, and this supports HDMI 2.1 with 60Hz refresh for a 4K display. It's also the first portable hub we've seen that includes a 2.5 Gigabit Ethernet port for high-speed wired connections.

The last option is a 3.5mm audio socket — which might seem unnecessary, as most MacBooks still have their own audio sockets. However, this could come in handy for podcasting or other tasks where you might want to use external speakers and a microphone at the same time. There's no slot for memory cards, though, so photographers might prefer a rival hub that swaps the audio port for a memory card slot instead. **CLIFF JOSEPH**

THE BOTTOM LINE

Pricy but versatile hub for MacBook.

- Six ports and connectors
- Lightweight, compact design
- No memory card slot
- Expensive

GREAT ■ ■ ■ ■



Branch Verve

Style meets comfort in this ergonomic chair

\$549 From branchfurniture.com

Features Six-point adjustment, 3D knit back, 27 inches x 27 inches x 37-41 inches (WxDxH)

THE BRANCH VERVE is all about giving you the best of everything. It's classy and playful, stylish and practical, aesthetic and ergonomic. What's more, it's comfortable enough for work and luxurious enough for play, making it a terrific option for work-from-home professionals whose work and play space are one and the same.

The Branch Verve comes neatly packaged and with all the tools you need for assembly. Branch includes an instruction book in the box to guide you through setup, but if you've assembled an office chair before, you'll not need it. The assembly is easy as well. You do have to screw in the bridge, which secures the backrest, and the arms to the seat, but that's about it. Everything else you only need to insert or pop in.

The seat is made of high-density molded foam covered in a soft weave fabric to give your backside that plush experience. The backrest is made of a 3D-knit polyester mesh fabric that keeps things breezy and breathable while also offering a hammock-like experience, especially when you're reclining. The Branch Verve comes in Galaxy (black), Mist (white), or vibrant Coral.

There are six different types of adjustments, including an impressively designed padded lumbar rest that you can easily slide up or

down the backrest's inverted A-shaped, glass-reinforced polyamide frame. Unlike other lumbar support that pushes your back to arch unnaturally, this one offers the support it needs without putting you in a weird position.

You can adjust the seat height from 16.5 to 20.5 inches, which should cover most people. Sadly, those over six-foot-five might find it too short at its highest, but those under five feet will find it perfect at its lowest.

We also love the armrests. They aren't the 4D kind you'd normally see on ergonomic office chairs, offering just height adjustment, but they do have a beautiful form and offer more than enough padding for your arms.

The Verve doesn't just make adjustments easy, but also intuitive to do. Most of the adjustment levers are within arm's reach. Meanwhile, to adjust the lumbar rest, you just reach both arms back and push up or down accordingly. The armrest height adjustment is a no-brainer too. The only real struggle is the tilt tension cycle dial. It's still within arm's reach, but it needs some muscle to turn it.

Overall, we never once experienced back fatigue or pain with the Verve, and we sometimes put in 10 to 12 hours of work in a day. The fact that its armrests are slim, instead of unnecessarily thick, also makes it possible for us to slip the chair under our desk when we

want to recline, but still maintain that same distance from our monitor without ever needing to adjust the height of either the desk or the chair.

MICHELLE RAE UY

**WE NEVER ONCE HAD
BACK PAIN, EVEN AFTER
10 TO 12 HOURS OF WORK**

THE BOTTOM LINE

Stylish, comfortable and great for working or even gaming.

- 📦 Supportive & luxurious
- 📦 Intuitive adjustability
- 📦 Breathable & spacious
- 📦 Beautiful modern form

AWESOME ■■■■■



Proof that style can be fused with ergonomics.

GROUP TEST

REVIEWED BY NICK PEERS

ON TEST...

- > ASUS ZenWiFi XT9
- > Devolo Magic WiFi 6
- > eero Pro 6E
- > Google Nest WiFi
- > Linksys Atlas 6
- > Netgear Orbi 750 series

MESH NETWORK DEVICES

Extend your Wi-Fi network to all corners of your home





EVER STRUGGLED TO get decent Wi-Fi coverage throughout your home? If you have dead spots in key areas, or your network is overwhelmed with too many devices trying to stream at once, you need a mesh network. This utilizes two or more devices – routers and satellites – to blanket your home in a strong, stable wireless system. Traditionally prices have been prohibitively expensive, but as the technology matures and new options come to market, investing in a mesh network has become increasingly affordable.

In this roundup we've taken a selection of systems spanning various budgets and technologies, from older Wi-Fi 5 (or 802.11ac in "old speak") to newer Wi-Fi 6 and 6E technologies that can deliver blistering speeds at greater ranges than before. We've deliberately focused on systems that comprise two devices: a core router and one satellite, designed to boost the signal to a specific dead spot in a regular-sized home.

Read on to discover if mesh is the Wi-Fi network your home has been missing.

How we tested

We tested each system in a three-bedroom duplex with a 70-yard backyard. We set up each router, explored its features (including security settings) and then installed the free Wi-Fi SweetSpots app on an iPhone to benchmark its performance and range in various areas of the house. We then installed one satellite in two separate locations and benchmarked performance in the same areas as before to see what effect they had on the signal.

Things to consider...

>>> WIRELESS CHANNELS

Does the system provide a dedicated “backhaul” channel? This is used to relay the signal from the router to its satellites, and prevents your main wireless channels from being saturated.

>>> LAN PORTS

Gigabit (1 Gbps) connections are the bare minimum – ideally, the router will supply one or more 2.5 Gbps ports too.

>>> PLACEMENT

The closer your satellite is placed to your router, the stronger the signal it can relay to other areas of your home. A good app will suggest whether you need to move the satellite for a better signal.

>>> MORE DEVICES

If you have two or more dead spots in your home, consider investing in additional satellites.



> ASUS ZenWiFi XT9

\$449.99 From [asus.com](https://www.asus.com)

1 This mesh system pairs two AX7800 tri-band XT9 routers together and can work with any modern ASUS router that supports AiMesh (basically most models since 2018) to expand your network further.

Setup is through the ASUS Router app, and through the web interface users can access a set of eye-catching services and options, from AiCloud (remote access to drives) to parental controls and advanced security – no subscription fees in sight. Like the others on test, WPA3 encryption requires enabling manually, but it includes backward WPA2 compatibility

so older devices are not locked out.

Performance-wise, the XT9 topped the charts in all our tests. It’s a powerhouse of a router, with performance and stability secured through a dedicated backhaul channel. It trounces the similarly priced eero Pro 6E. If you like the idea, but lack the funds, ASUS’s AX6000 XT8 system costs around \$350.

+ Fantastic performance and range

+ Plenty of extra ports

+ Extra features don’t require a subscription

- Very expensive

AWESOME ■ ■ ■ ■ ■

> Devolo Magic 2 WiFi Next

\$184.99 From [devolo.com](https://www.devolo.com)

2 Devolo’s offering isn’t a traditional wireless mesh solution; instead, it utilizes your electrical wiring to deliver a strong, stable Wi-Fi signal to where it’s needed. Two plugs are provided – a LAN plug that connects to your router or modem, and a wireless plug with two Ethernet ports to extend both wireless and wired connections to anywhere in your home.

Setup is a simple case of installing the app, then plugging in both devices within two minutes of each other. More advanced configuration is done using the free Cockpit app.

There’s a noticeable uplift in performance, but the Devolo is not as fast as other Wi-Fi 6 devices. That’s because your maximum speed is determined by the quality of your wiring – our wired connection maxed out at 1,300Mbps. Nevertheless, it’s the best way to deliver a stable network connection to an outbuilding or far-flung corner of your home.

+ Straightforward to set up

+ Extends both wired and Wi-Fi to another location

+ Can place far from your router

- Less range than its rivals

GREAT ■ ■ ■ ■ ■



> eero Pro 6E

\$499 From eero.com

3 Amazon's new flagship mesh system is a tri-band device offering Wi-Fi through 2.4 GHz, 5 GHz and 6 GHz bands, the latter exclusively for Wi-Fi 6 transmissions. Two Ethernet ports for LAN or WAN access are provided – one 1 Gbps, the other 2.5 Gbps.

Each device can function as either router or satellite. Setup requires you to sign up for an eero account, along with an option to link the eero to your Amazon account, enabling you to integrate it into your Amazon smart home system.

The app is your only way to configure and monitor

your network and offers fewer options than those found on other systems. Parental control and security can be added for an additional subscription.

Performance was good, but struggled at range – potentially due to the lack of a dedicated backhaul channel. Amazon aficionados should consider the cheaper eero Pro 6 instead.

➤ Performance on a par with rivals

➤ Does not take up too much room

➤ Lack of advanced configuration options

➤ Most expensive option

SOLID ■■■■

> Google Nest Wifi

\$149 From store.google.com

4 Google's recently announced Nest Wifi Pro model arrived just too late for this roundup, but it gave us an opportunity to check out the original mesh option, now a budget choice for those with no compelling need for Wi-Fi 6 support. Our speed tests confirmed that while it's competitive over the older 802.11ac network, its more limited coverage does adversely affect its performance at the edge of its range.

The satellite node serves double duty as a home assistant and smart speaker (you can disable its voice recognition if you don't buy

into the smart home ethos). Setup is straightforward through the Google Home app, although advanced settings are hidden away a few taps from the main screen. WPA3 support isn't enabled by default, and there's no compatibility fallback for older devices. It's fantastic value, but remember you're investing in yesterday's technology.

➤ Easy setup, simple to administer

➤ Satellite serves as smart speaker

➤ So-so performance

➤ No support for Wi-Fi 6 (or the Nest Wifi Pro)

GOOD ■■■■



> Linksys Atlas 6

\$279.99 From linksys.com

5 Linksys' Atlas 6 series builds a mesh network using multiple dual-band routers capable of AX3000 speeds. Each router offers three Gigabit LAN ports in addition to the all-important 1 Gbps WAN port that connects to your modem. The Linksys app stands out with its incredibly easy, jargon-free and above all painless set-up process.

Like all the devices on test, the latest WPA3 encryption isn't enabled by default – annoying, because it supports WPA2 as a fallback.

Performance-wise, the Atlas 6 achieved excellent speeds and a decent range,

despite the fact it doesn't have a dedicated third band for backhauling traffic between satellite and router. There was some lag on older devices when first switching to a new location, but this quickly resolved itself and given the major saving of choosing dual-band over tri-band, is a compromise worth considering in return for affordable Wi-Fi 6.

➤ Excellent Wi-Fi speeds

➤ Good value for money

➤ No dedicated band for mesh traffic

➤ WAN port Gigabit only

GREAT ■■■■■

> Netgear Orbi 750 series

\$449.99 From netgear.com

6 This AX4200 system from Netgear combines a single router with dedicated satellite nodes. They look practically identical – a tall, elliptical design – but you can tell them apart by the ports on the back: the router has four (one WAN, three LAN), while the satellite has just two (both LAN).

An app is supplied for setup, but perhaps in part due to Netgear's extensive mesh range, it feels slow and cumbersome compared to the other products we tested. Again, WPA2 encryption is enabled by default – in this case, however, that's a sensible move as the Orbi's

WPA3 support comes with no WPA2 fallback for old devices.

Other disappointments: Netgear charges rolling subscriptions for security (Armor) and parental control protection after a 30-day trial. At least both performance and range were up there with the best on test. An expensive choice, even without those additional subscription costs.

➤ Excellent performance and range

➤ Plenty of wired connection options

➤ Not the quickest set-up process

➤ Very expensive

GOOD ■■■■■



THE WINNER

ASUS ZENWiFi XT9

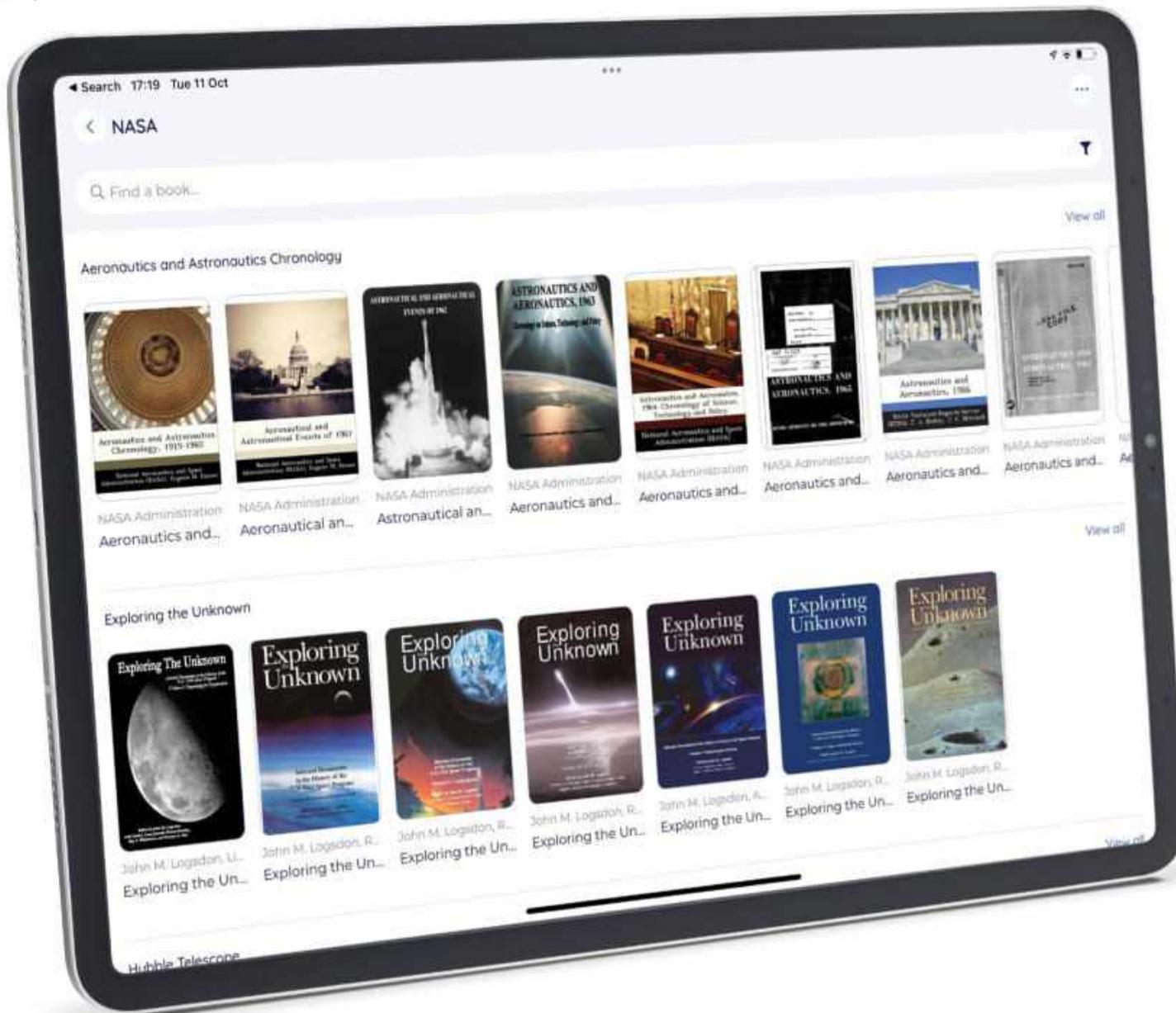
Power, performance, range, security – the ASUS XT9 has it all

IN THEORY, THE more you pay, the better mesh system you'll get. That's why the ASUS XT9 comes out on top: it's the fastest on test, with the widest coverage and a host of extra useful features, including those (security and parental controls) that are only available on subscription with rival products. For power users looking to futureproof their home, it's our clear winner.

If you don't need all the XT9's bells and whistles, though, you can find a system to improve your home's spotty Wi-Fi coverage that won't blow your budget. If you need to extend your network to the far corner of your home, Devolo's HomePlug option is both effective and affordable. If you want Wi-Fi 6 without incurring a huge cost, then Linksys' Atlas 6 system could be the mesh network you're looking for. While Google's Nest WiFi might be getting long in the tooth, it's a cheap and effective option for those with older devices. Ultimately, though, if you want the best of the best, you'll return to the ASUS XT9, a mesh system suited to any home.



You can add your own libraries of books for others to borrow. There are also a few built-in to the app, like this one from NASA.



BookFusion

Read, organize, take notes on, and share your favorite eBooks

Free with limitations; subscriptions from \$1.99/month From bookfusion.com

Needs iOS 12 or later; iPad OS 12 or later; macOS 11.0 or later

 **WHEN THE IPAD** first launched, it seemed like the perfect platform for reading eBooks that, for whatever reason, weren't suited to e-ink readers like Amazon's Kindle. In addition to Apple's iBooks, as it was at the time, several third-party eBook readers launched and created what seemed to be a vibrant, growing market. And then... nothing.

Apple's app improved and very quickly didn't just become the standard, it pretty much killed innovation in the eBook

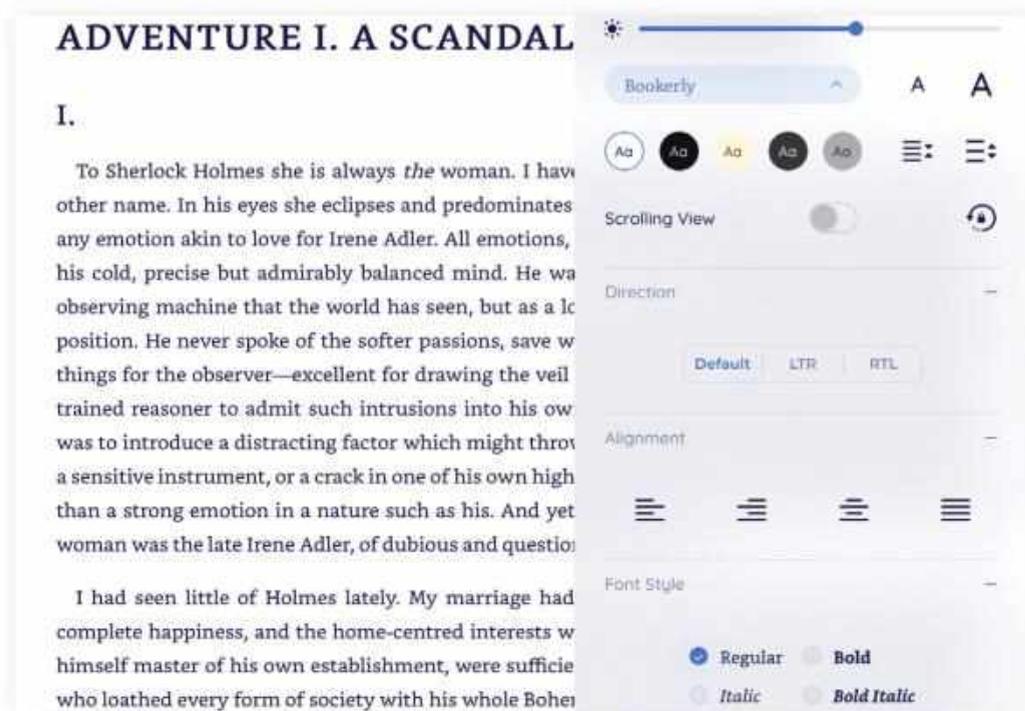
space. That might all have changed with BookFusion, however. This EPUB and PDF reader and organizer is more flexible and more open than Apple's Books app, and plays much more nicely with other platforms, like Amazon's Kindle for example.

You can link your BookFusion account to your Kindle account and import your books, or you can send books in BookFusion to your Kindle (up to two a month in the free version). Aside from pulling in your Kindle books, there are several other ways you can add

books to a BookFusion library. You can "upload" them from the files app on your iPad or iPhone (up to ten in the free version of the app), or you can buy them using the built-in book store. You can also "borrow" them from one of the built-in public libraries in the app, of which there are currently five, including a NASA library, with hundreds of books between them.

A PERSONAL BOOK SHELF

Once you've added books to your library, you can edit their metadata, including the book



You can change the font, size and color of text, as well as adjust margins and spacing to make reading more comfortable.

cover, title, categories, and tags. Books can be organized on shelves or series. Shelves sit within the Books section of the app, while Series have their own section. How you split books between shelves and series is up to you.

To make finding books easier, you can hide shelves — though not the All Books shelf, which would be useful. And you can choose to only view books on a shelf that you've marked as a favorite, or a “plan to read”.

BookFusion excels as a reader, thanks to the ability to customize almost every aspect of the layout from font and type size, to the width of margins and the spacing between lines. We also like that when you tap the Contents button, instead of taking over the screen like Apple's Books app does, it slides out from the side and takes up less than half the screen, even in portrait view.

You can highlight sections of text and make notes as you read, and those notes can be

exported in a number of different formats, including text, HTML, and Markdown.

If you don't like the BookFusion reader, you can use the Share button to open a book in any app that supports its format.

BookFusion is not without its rough edges. For example, while you can, sort of, sync books, notes and highlights across devices, it's a one-way process from the desktop version of another eBook reader called Calibre, and needs a browser plug-in as well as the Calibre app on your Mac. **KENNY HEMPHILL**

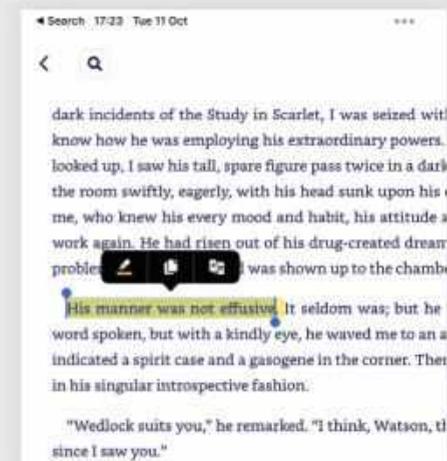
THE BOTTOM LINE

BookFusion will be most useful to organizations that want to create their own libraries, but it's an excellent eBook reader for the rest of us.

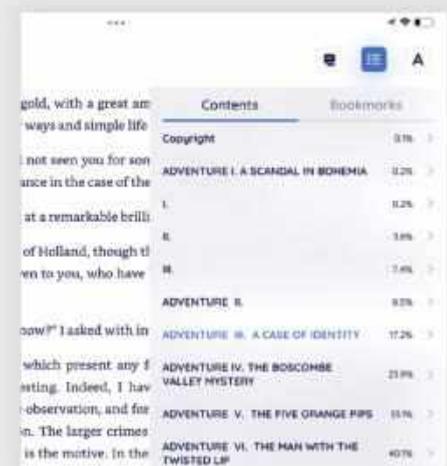
- Excellent customization options
- Can import Kindle books
- Built-in libraries
- Syncing isn't really syncing

GREAT ■■■■■

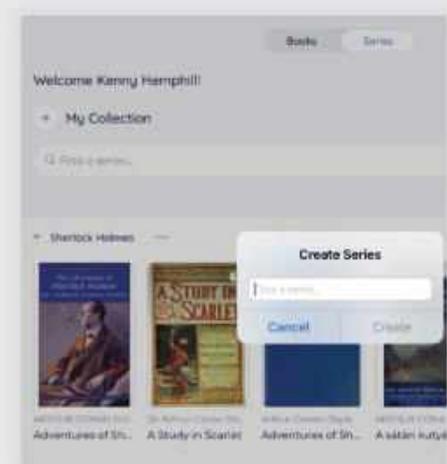
APP TIPS BookFusion's handy features



When you're reading a book, tap and hold on text, then select it and tap the highlighter pen to highlight it.



Tap the screen when you're reading, and then tap the middle icon at the top right to see a list of chapters.



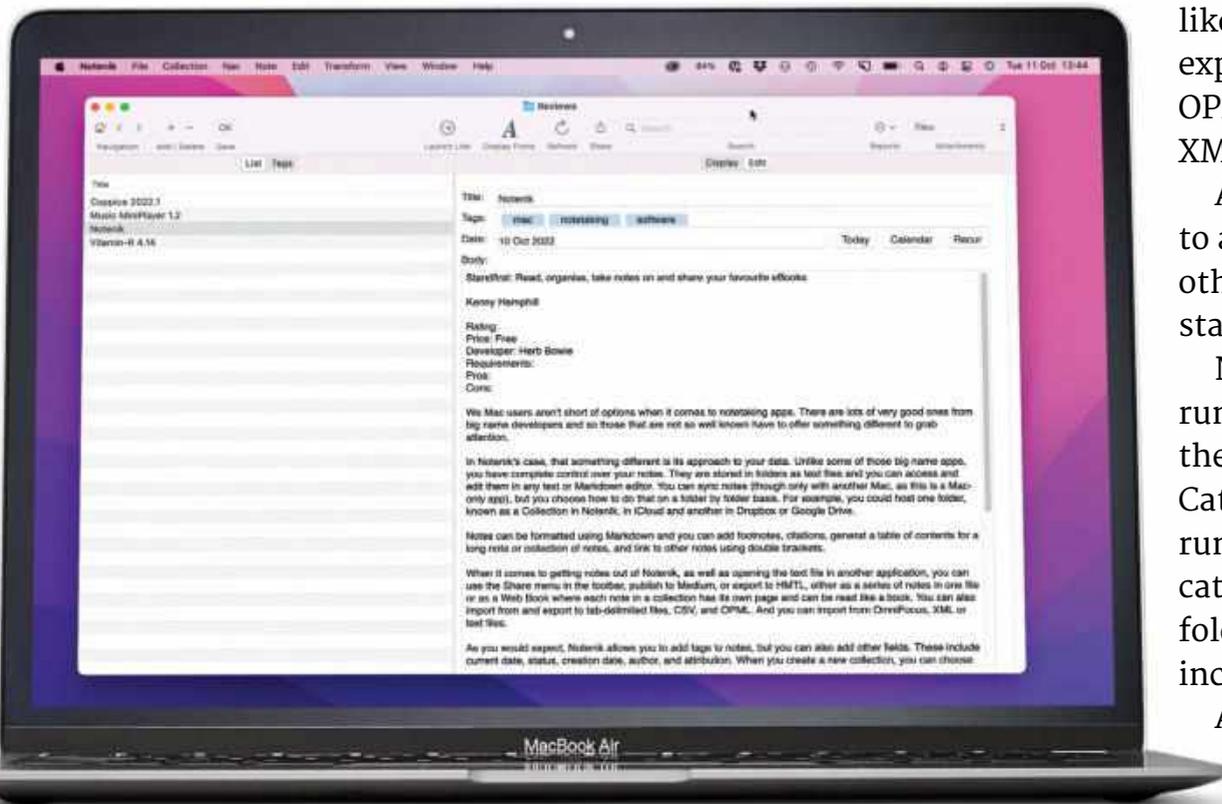
Create series to keep books on a theme together. In Bookshelf view, tap Series then “+” and type a name.

Notenik 10

A powerful app for a customizable note-taking experience

Free From notenik.app

Needs macOS 10.13 or later



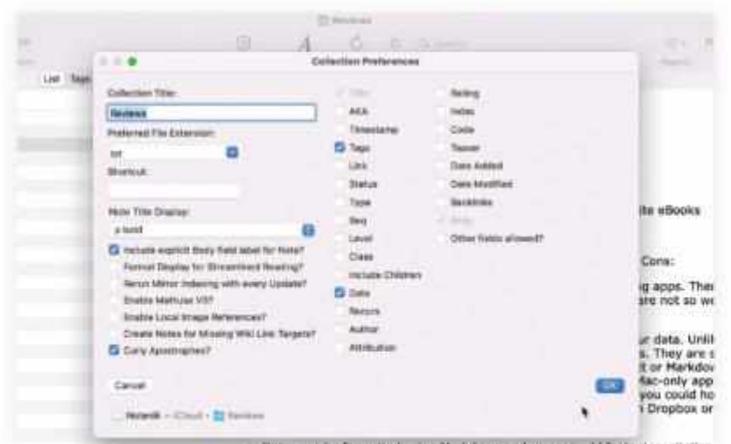
like a book. You can also import from and export to tab-delimited files, CSV, and OPML. And you can import from OmniFocus, XML or text files.

As you would expect, Notenik allows you to add tags to notes, but you can also add other fields. These include current date, status, creation date, author, and attribution.

Notenik also has support for recording and running scripts, and generating reports of their results. One such script “Populate App Catalog” is built-in. Create a new collection, run the script and Notenik will generate a catalog of the apps in your Applications folder (or any other folder you point it to), including each app’s metadata.

As a native Mac app, Notenik’s interface, menus and keyboard shortcuts all feel familiar. However, the degree to which you can customize it mean there are lots of menu options, which can make it seem intimidating at first. Fortunately, there’s an excellent manual on the developer’s website.

There are a few idiosyncracies. The word count feature reports words and characters for entire notes, but we couldn’t do the same for selected text. And we noticed that whenever we clicked on a menu option while editing a note, the note switched to display mode and we had to select Edit to continue editing. **KENNY HEMPHILL**



You can create and run scripts, like this one that creates a catalog of apps in your Applications folder.

Notenik stores notes as Markdown-formatted text files that you can open and edit in any application.



NOTENIK IS A note-taking app that gives you complete control over your notes. They are stored in folders as text files and you can

access and edit them in any text or Markdown editor. You can sync notes (though only with another Mac, as this is a Mac-only app), but how you choose to do that is on a folder-by-folder basis. For example, you could host one folder, known as a Collection in Notenik, in iCloud and another in Dropbox or Google Drive.

Notes can be formatted using Markdown and you can add footnotes, citations, generate a table of contents for a long note or collection of notes, and link to other notes using double brackets.

When it comes to getting notes out of Notenik, as well as opening the text file in another application, you can use the Share menu in the toolbar, publish to Medium, or export to HTML, either as a series of notes in one file or as a Web Book, where each note in a collection has its own page and can be read

THE BOTTOM LINE

Notenik is a great note-taking app for creating libraries of inter-connected notes to be shared online, and it’s free!

- Notes stored as text files
- Lots of import and export options
- Powerful features
- Mac only

GREAT ■ ■ ■ ■

Cult of the Lamb

Time to play merry hell

\$24.99 From cultofthelamb.com

Needs OS X 10.9 or later



IN AN ALTERNATE reality, where animals rule the world, your cutesy cartoon lamb protagonist smiles as they dispose of unbelievers, desecrate their corpses, and recruit new followers to their cult in this indie action-adventure game.

The game begins with you being sacrificed to the gods of the Old Faith. In the underworld you are greeted by The One Who Waits, who resurrects you so you can launch a cult in their name and destroy the Old Faith.

Back in the land of the living, you must navigate your way through procedurally generated levels, killing apostates and freeing captives to convert them to your sect. Recruits head to your base, and the more followers you enlist, the more your power grows.

Back at the base, you assign followers to collect resources or pray at a shrine. At the temple, you belt out sermons and perform rituals to improve your settlement's faith. You need to manage your followers' needs in order to keep expanding, and while there's lots to do, it feels manageable.

CHOOSE EVIL

The game makes it very clear that you are to be as dastardly as possible. Followers



Preach to your flock to gain new abilities.



Combat is fast-paced, challenging, and thoroughly enjoyable.

exist for maximum extraction in order to make you — and thus the cult — become as powerful as possible. It's a fun premise when you consider the saccharine character design, and it feels delightfully subversive.

Combat is fun and fast-flowing, complemented by diverse enemy types that encourage you to keep moving and dodging. The procedural worlds borrow other roguelike elements — dying sends you back to the base to grind again, for example — which keeps things fresh and challenging.

It's wrapped up in a world that is cleverly crafted to give a weird, unsettling feel that aptly suits its subject matter. People speak in a strange, guttural tongue. Monsters are Lovecraftian in their appearance. Levels are beautifully designed and dressed in a dark palette of blacks, reds and purples. It really is stunning to take in. Each run into the procedural wilds feels like progress, tempting you back for another shot at godliness. **ALEX BLAKE**



The game's eerie world is crafted like a weird fiction masterpiece.

THE BOTTOM LINE

Cult of the Lamb is a fanatically good recruit-em-up.

- Fascinating world and premise
- Gorgeous graphics
- Fun combat
- Multi-layered base-building

AWESOME ■■■■■

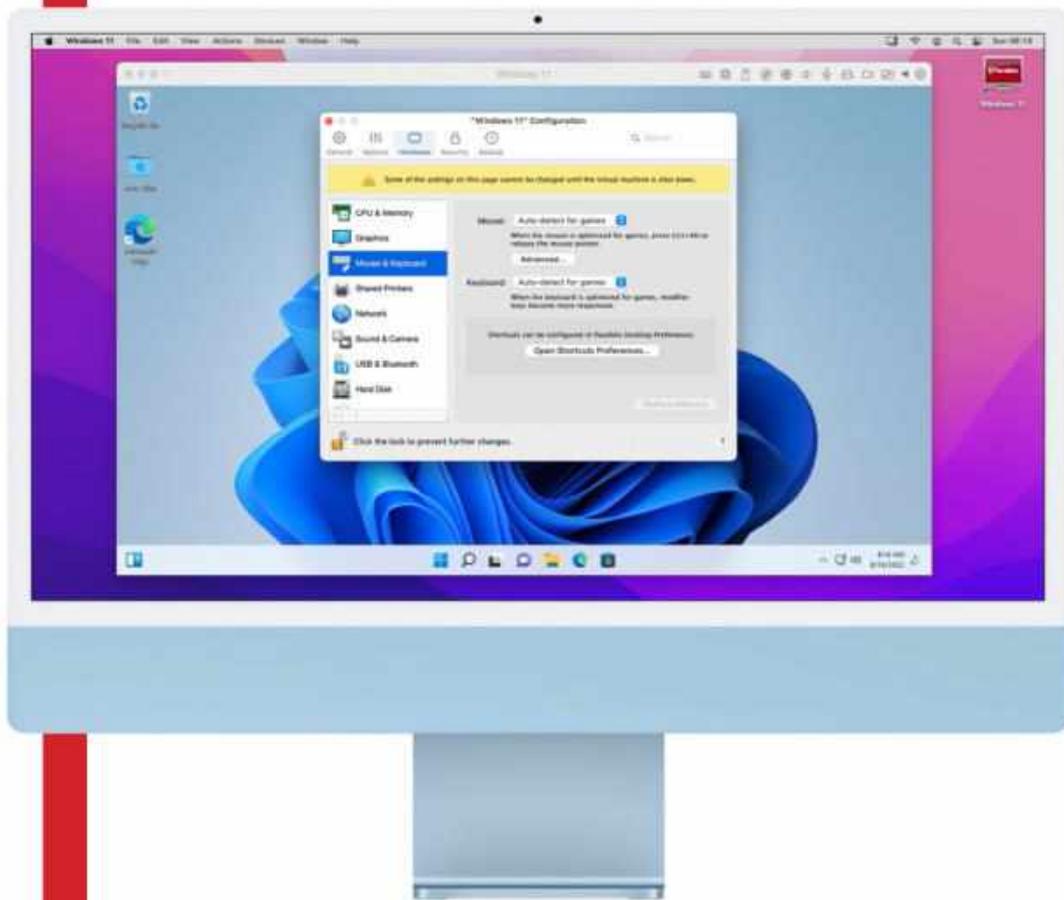


Parallels Desktop 18

Still the best way to run Windows, macOS and Linux on a Mac

From **\$99.99; upgrades \$69.99** From parallels.com

Needs macOS 10.14 or later, 4GB of memory VERSION UPDATE



A YEAR AGO, Parallels delivered the first virtualization app to make full use of Apple silicon Macs, including Monterey virtual machines (VMs). Five new Mac models later, including the first M2 Macs, Parallels Desktop 18 remains the only commercial app to run macOS as a guest on those Macs.

Unlike open-source rival UTM, Parallels can't emulate different architectures: it runs ARM guests on Apple silicon Macs, and Intel x86 guests on Intel Macs. On Apple silicon Macs, this new version still virtualizes Windows 10 and 11 for ARM, four Linux distros for 64-bit ARM processors, and macOS from Monterey onwards, but not Big Sur. On Intel Macs it will virtualize Windows from XP and earlier to 11, almost any Linux distro using Intel kernel 2.6.29 or later, macOS from 10.7 to 13, and others including Solaris, BSD and a special version of Android.

Virtualizing the OSes available for Intel processors isn't a challenge, but silicon Macs are so different they need an alternative

Windows 11 for ARM virtual machines have extensive options to support devices including games controllers.

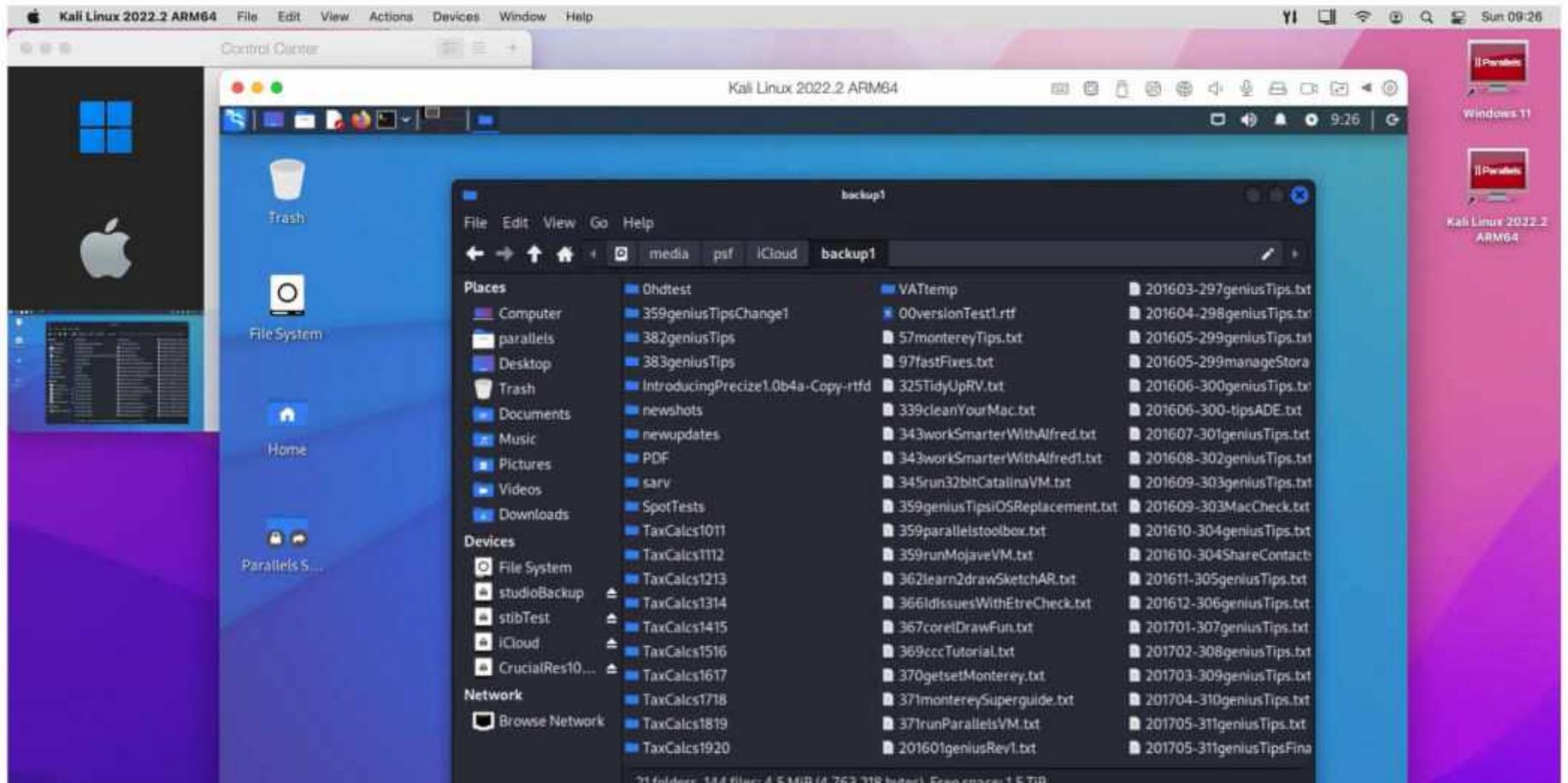
approach. Parallels has worked with Apple on a solution based on a standard already used in Linux, using Virtio (for virtual input/output) devices. These must be built into the guest operating system to connect with a device in the host macOS, so replacing hardware-specific device drivers in a new software framework. Apple has changed Monterey and Ventura to support these devices as both guest and host, which is why Apple silicon Macs can't run Big Sur in a VM.

For VMs running on ARM Macs this enables almost all code to run at full speed. Apple's special display device also supports Metal and GPU acceleration, delivering performance as good as native macOS. Like other apps using these new features in Monterey and Ventura, Parallels Desktop 18 provides excellent compatibility and speed, and supports the translation of Intel-only apps using Rosetta 2, but it's limited to the devices supported by macOS.

Strangely, Apple decided that this doesn't include connecting to any service requiring an Apple ID, preventing macOS VMs from any access to iCloud services, syncing, or iCloud Drive. As App Store connections also rely on your Apple ID, macOS VMs can't run any third-party or paid-for apps from the App Store, although Apple's free apps like Pages still work. While Apple could change



Installing macOS on an Apple silicon Mac invites you to sign in with your Apple ID, but it can't see it through.



its mind for Ventura, Monterey VMs will probably never run most App Store apps, a severe limitation for many potential users.

Some features in this new support for Virtio devices aren't available in Monterey, only in Ventura. The worst is a lack of shared folders to exchange files between macOS guests and host, which needs a Virtio file system in Ventura but not Monterey. An easy workaround is using file sharing and virtual networking, both clumsy and slow. Shared clipboards also don't work in Monterey, preventing copy and paste between guest and host. Users needing to change a guest's secure boot settings, perhaps to disable SIP, require Ventura as the host, as entering Recovery mode isn't supported on Monterey hosts. Parallels continues to fail to provide GUI controls for macOS VMs on Apple silicon Macs, which still have to be set up by editing a text configuration file.

Start Parallels Desktop 18 on Apple silicon to be drawn straight into downloading and installing Windows 11 for ARM without joining Microsoft's Insider Preview program. Licensing Windows for ARM remains complex and controversial: some claim you only need a valid Windows license to make your VM legitimate if unsupported by Microsoft. Larger enterprises need to check

their standing, as Windows 11 for ARM isn't sold by Microsoft — accessible through its Insider Preview program only. Until Microsoft clarifies licensing, doubt remains.

INTEL APPS

Parallels Desktop 18 improves compatibility of Intel apps running in Windows 11 for ARM, in particular in file access to disk to resolve problems saving files from MS Office to Shared Folders, and *Counter-Strike: Global Offensive* now runs. Parallels claims only 0.01% of Intel apps remain unable to run on Apple silicon Macs.

Got an M1 Ultra-powered Mac Studio? Give your Windows 11 VM more memory and cores: Parallels Desktop Pro and Business editions can virtualize up to 62GB of memory and 18 cores for full speed in Windows 11. All editions can sync with and benefit from ProMotion display refresh rates when set in the host's Display pane. There are also improvements in USB 3.0 support for live streaming devices, and for game controllers.

Parallels Desktop 18 is a worthy upgrade, and best if you want easy access to macOS, Windows and Linux on modern Macs. But virtualizing macOS on Apple silicon Macs still has drawbacks that won't all be resolved with Ventura. **HOWARD OAKLEY**

Standard Linux distros like Kali are simple and quick to install, and have full iCloud access.

THE BOTTOM LINE

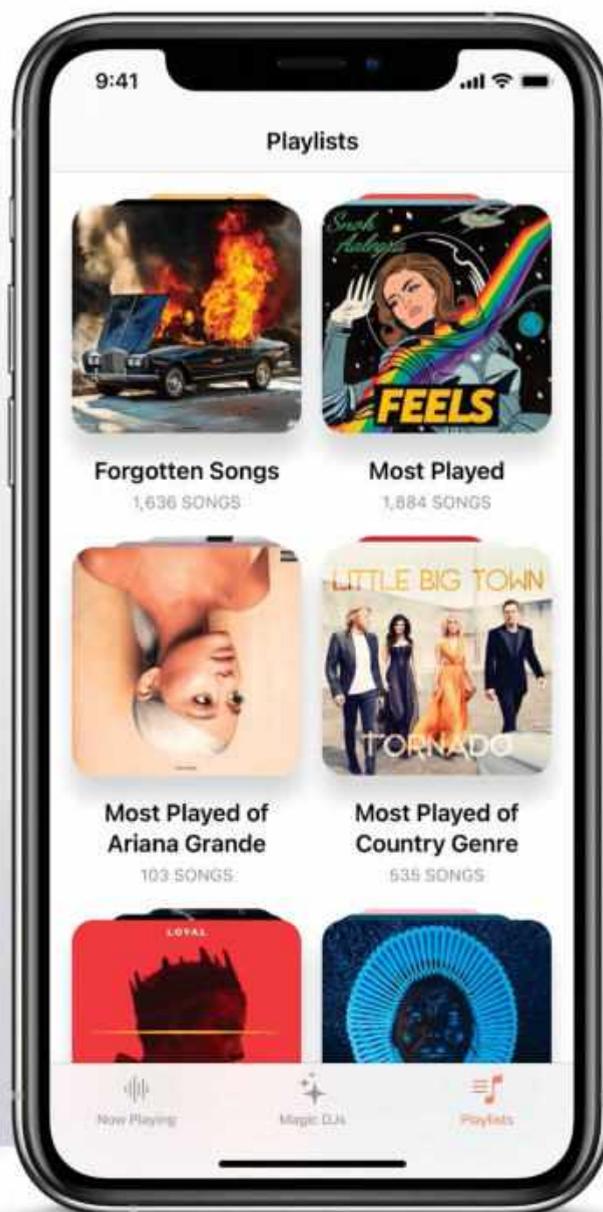
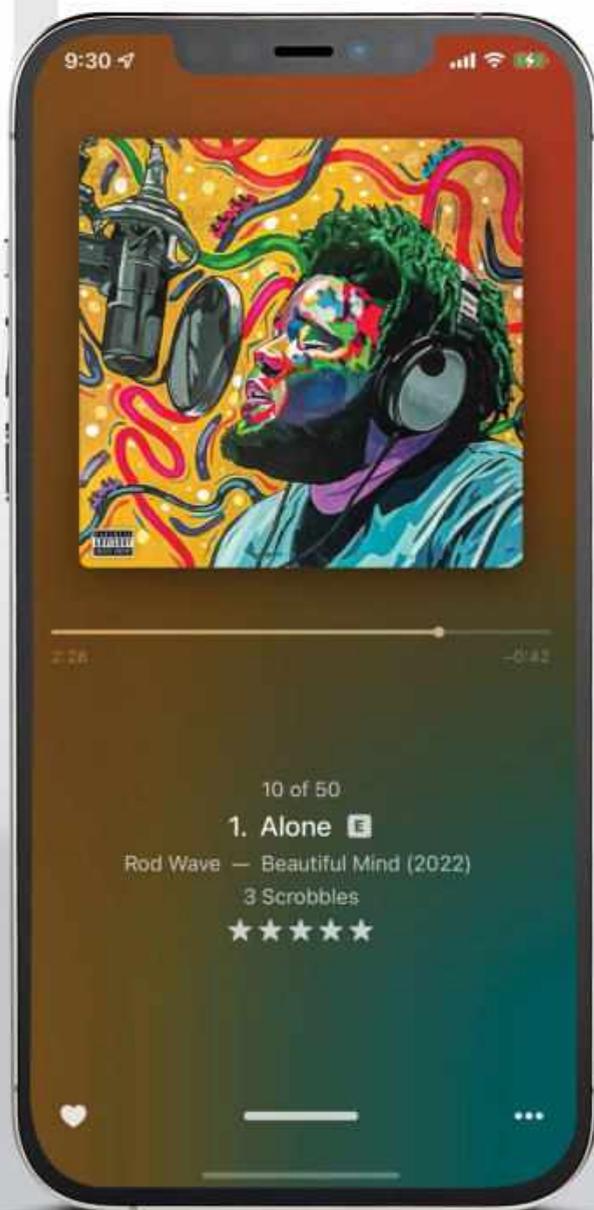
The best virtualizer giving easy access to Windows 11 and Linux on Apple silicon, but still limited when running macOS.

- Windows 11 and Linux support
- Performance close to host
- Runs on Apple silicon Macs
- Apple silicon limitations

GREAT ■ ■ ■ ■ ■

6 APPS Give Apple Music a bit of a boost

Clever tools to enhance your music library **BY ALEX BLAKE**



Marvis Pro

\$7.99 From [appaddy.wixsite.com](https://www.appaddy.wixsite.com)

Needs iOS 15.1+; macOS 12.2+

 Apple loves control, and that extends to its apps. If you wish Apple Music was a bit more customizable, Marvis Pro could be for you. While the player interface may seem similar to Apple Music on the surface, it conceals a huge range of features. You can choose what metadata is shown on the playing screen, whether the app indicates the streaming quality of each track, how playlists are sorted and filtered, how tracks are displayed in your library, and much more.

SongCapsule

\$4.99 From [sorcererhat.com](https://www.sorcererhat.com)

Needs iOS 15.2+; macOS 12.1+

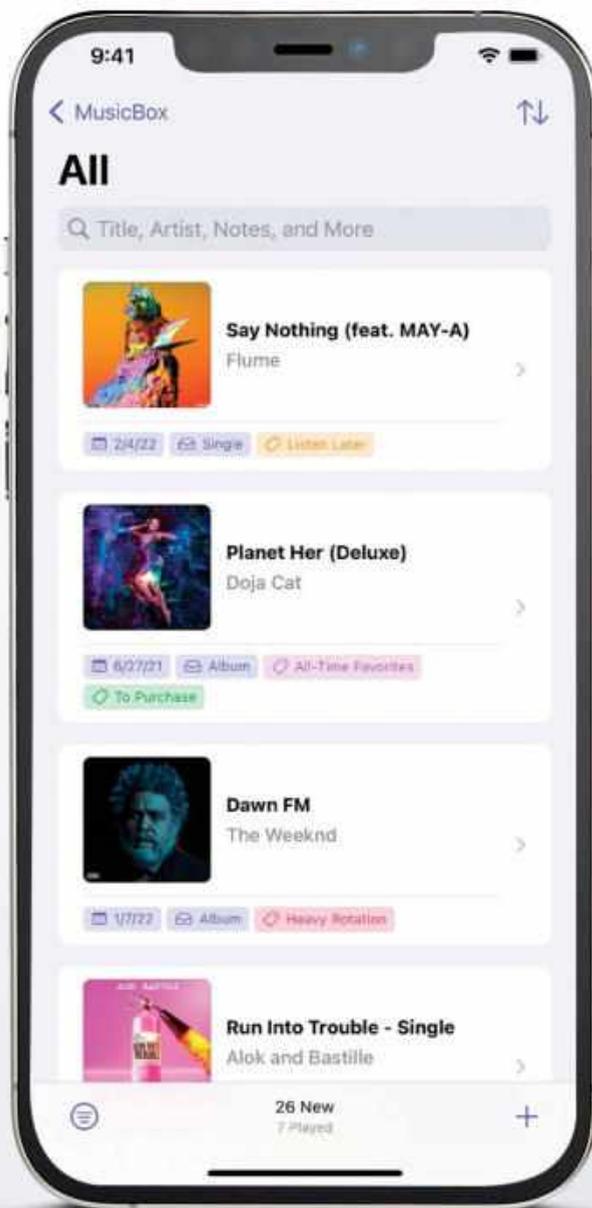
 If you're a bit bored of Apple Music's playlists, or just want a new way to experience your library, definitely consider giving SongCapsule a try. This neat app scans your entire music library, then automatically builds a bunch of smart playlists for you to enjoy. From deep dives into your favorite artists to lists that help you rediscover forgotten gems, you'll gain a new appreciation of the tunes you love. SongCapsule also uses iCloud to keep your music in sync across all your devices.

Albums

Free (IAPs) From [albumstheapp.com](https://www.albumstheapp.com)

Needs iOS 15.0 or later

 For many artists, an album is a way to impart a crafted story onto the listener – but that gets lost if you stick to singles and playlists. As the name suggests, Albums puts the focus squarely on complete records, letting you browse through album art, skip to the next album in your library, or shuffle through tracks on each record. All the core functions, including iCloud sync, are available for free, though if you want more useful tools at your disposal, Albums Premium is \$1.99/month.

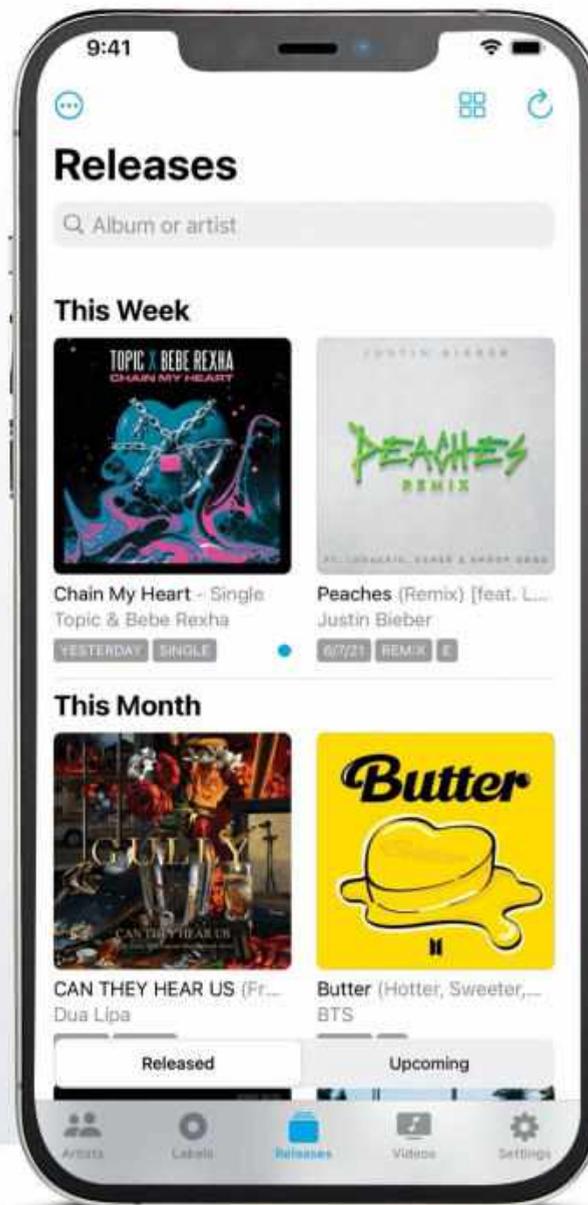


MusicBox

\$2.99 From marcosatanaka.com

Needs iOS 15.0+; macOS 12.0+

 There's not always time to listen to your favorite tracks, but that's where MusicBox comes in. It's a "save for later" app that can store all the tunes you don't have time for right now. It also lets you add tags and notes, categorize albums and individual tracks, handle metadata, and much more. You can add music by drag and drop, pasting a URL, or from a share sheet, then create smart filters to find just what you need. It's a deeply clever app and is also well-integrated into iOS.

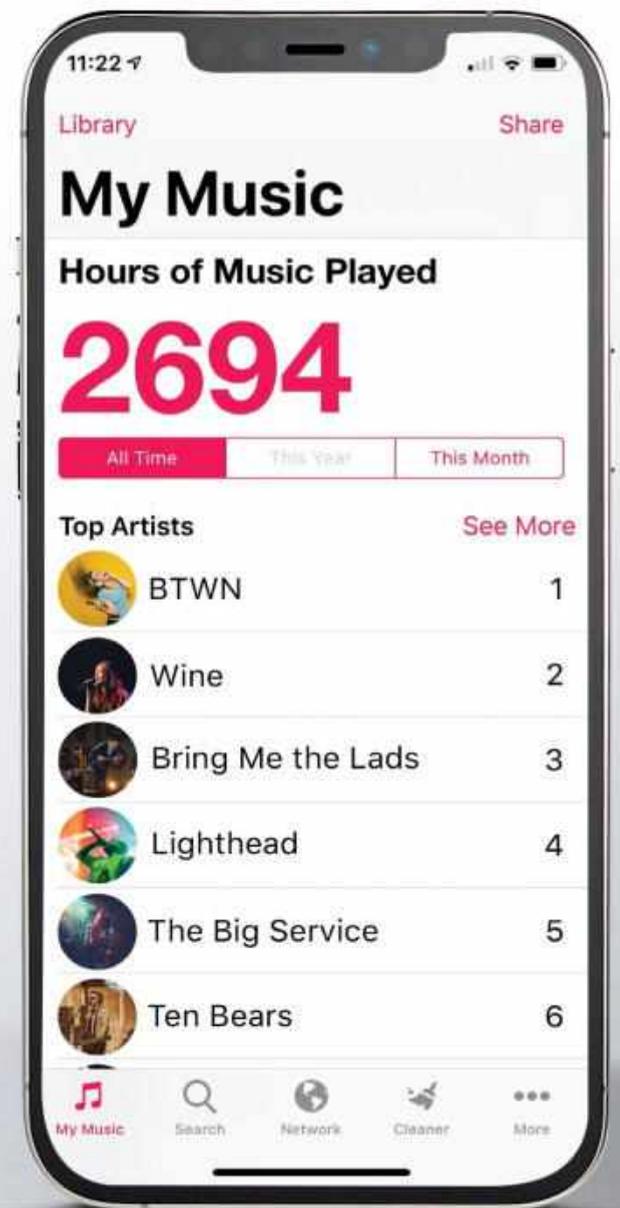


MusicHarbor

Free (IAPs) From marcosatanaka.com

Needs iOS 14.1+; macOS 11.0+

 Keeping up with the latest releases can be challenging, especially if you follow a lot of different artists. MusicHarbor might be the answer, as it shows you all the latest music from artists and labels you follow, as well as upcoming music sorted chronologically. You can tune it to your liking, hiding collaborative releases and filter albums, singles, compilations, live shows, and more. And it even keeps you up to speed with the latest artist happenings from Google News.



snd.wave

Free (IAPs) From sndwave.app

Needs iOS 11.0+; macOS 11.0+

 When you consume a lot of music, you rack up the listening hours pretty quickly. If you've ever been curious to know what your top albums are or how many hours you've spent listening to Rick Astley (what, just us?), snd.wave has your back. Aside from your top charts, it'll show you stats for any track in your library, let you see how you stack up against other listeners, and help you clear out some of the songs that you never listen to. That makes it both informative and useful.

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
KEYBOARD	NuPhy Air75 Wireless Mechanical	nuphy.com	\$109.95	#189
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 Drivestor 2 Pro AS3302T	asustor.com	\$249	#190
WIRELESS CHARGER	Belkin BoostCharge Pro Portable	belkin.com	\$59.99	#197
DESKTOP SPEAKERS	Klipsch ProMedia Heritage 2.1	klipsch.com	\$349	#196
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	Insta360 ONE RS	insta360.com	\$299.99	#199
SMART TV PLAYER	Roku Streaming Stick 4K	roku.com	\$49.99	#190
PORTABLE DAC	iFi Go Blu	ifi-audio.com	\$199	#189
PORTABLE SSD	OWC Envoy Pro FX	eshop.macsales.com	\$219	#201

> iOS/iPadOS APPS

CATEGORY	PRODUCT	WEB	PRICE	ISSUE
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
IDEAS ORGANIZER	 OmniOutliner3	omnigroup.com	Free (IAPs)	#141
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
WEATHER	 Carrot Weather 5	meetcarrot.com	\$0.99/month	#180

> macOS APPS

CATEGORY	PRODUCT	WEB	PRICE	ISSUE
TO DO (PRODUCTIVITY)	 Things 3	culturedcode.com	\$49.99	#194
WRITING	 Scrivener	literatureandlatte.app	\$49	#200
EMAIL	 Spark	sparkmailapp.com	Free	#190
PHOTO EDITOR	 Luminar Neo	skylum.com	\$79	#194
VIDEO EDITOR	 Final Cut Pro	apple.com	\$299.99	#124
SCREEN CAPTURE	 ScreenFlow 9	telestream.net	\$129.00	#164
MUSIC CREATION	 Logic Pro	apple.com	\$199.99	#141
PASSWORD MANAGER	 LastPass	lastpass.com	From \$3/month	#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
TIME-TRACKING	 Tyme 3	tyme-app.com	\$3.99/month	#169
VIRTUAL PRIVATE NETWORK	 NordVPN	nordvpn.com	\$11.95/month	#186

NEW!



**GET STARTED WITH**

Purchases and subscriptions

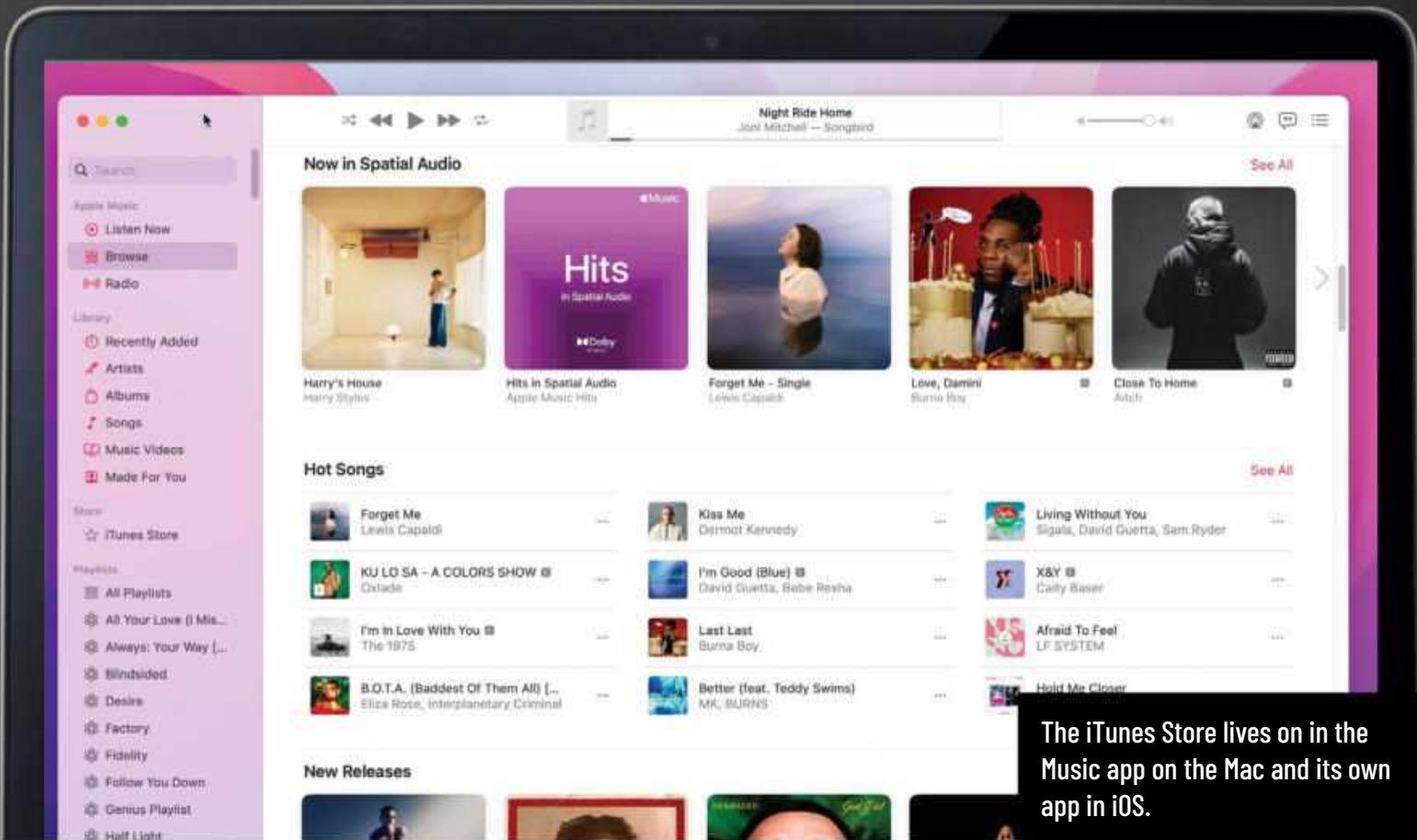
Whether it's renting movies, streaming music, or buying books, you can get it from Apple

WRITTEN BY **KENNY HEMPHILL**



THE LAST COUPLE of decades have seen Apple transition from being a maker of hardware and software, into a full-blown media company that secures distribution deals for movies and buys screening rights to major sports leagues. Since it started selling music downloads in 2003, Apple has added movies and TV shows to rent or buy, books, magazines, streaming music, streaming TV shows and movies, games and, of course, apps. Most recently of all, it's entered the realm of Peloton and the like by enabling you to subscribe to exercise classes through Apple Fitness+.

All of these can be bought, rented or subscribed to from your Mac or iOS device. But the way in which you do so, and just as importantly, the way in which you cancel a subscription, is not always obvious, so over the next few pages we'll take you through how to do just that for all the content Apple provides. Whether you want to buy a movie or ebook, subscribe to a premium podcast, or sign up for Apple Music, here's how... ■



Buy, rent or subscribe

There are several options for consuming music, TV and movies from Apple



UNTIL RELATIVELY RECENTLY, if you wanted

to listen to or buy music on your Mac, rent or buy a movie, or subscribe to a podcast, you would head for the same app: iTunes.

Now, you have three apps to navigate, depending on what you want to do. Despite the increase in

the number of apps, though, it's now easier to find what you want. iTunes had become a sprawling mess of an app, and its replacements are a big improvement. However, the iTunes Store lives on. There's still an app in iOS 16 and the store in the Music app still bears its name. In the TV app, however, it's just called Store. The

iTunes Store app sells music, TV shows and movies, while on the Mac, as we've discussed, Music is accessed in one app and movies and TV shows in another. But if you want to pay for a season pass for a current show in iOS, you do that in the TV app.

Confused? Here's how to navigate those apps and find what you want. ■

QUICK LOOK Music's interface

A

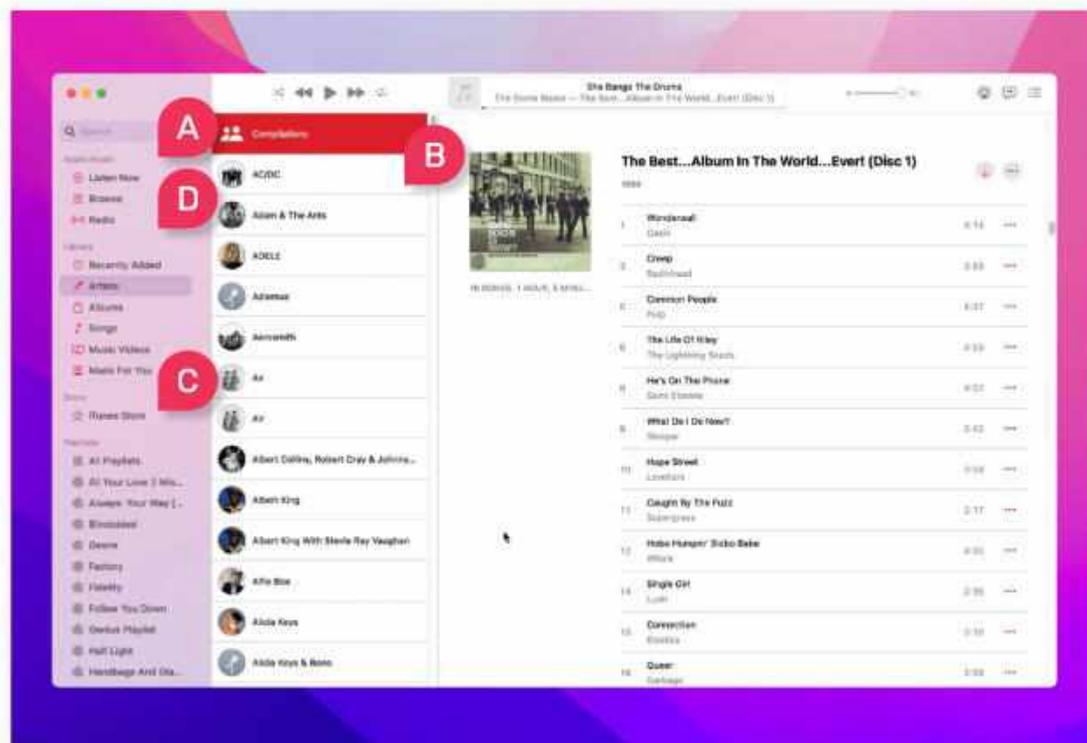
TUNE VIEW

The Apple Music section enables you to choose how you view songs on Apple's streaming service.

B

ALL OR DOWNLOADS

You can choose to view all the tracks in your library, or only those that you've downloaded.



C

BUY SONGS

The iTunes Store enables you to buy tracks and albums you can download for offline listening, instead of simply streaming them.

D

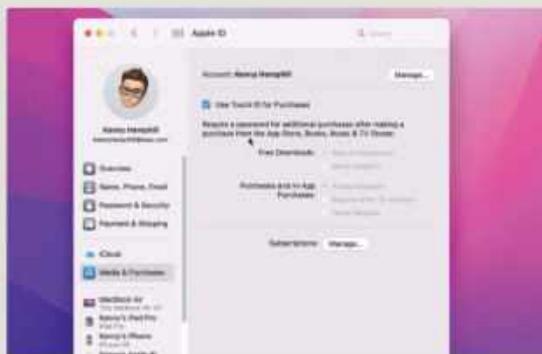
RADIO STATIONS

Under the Radio section is where you'll be able to find all of the Apple Music radio stations and programs to listen in to.

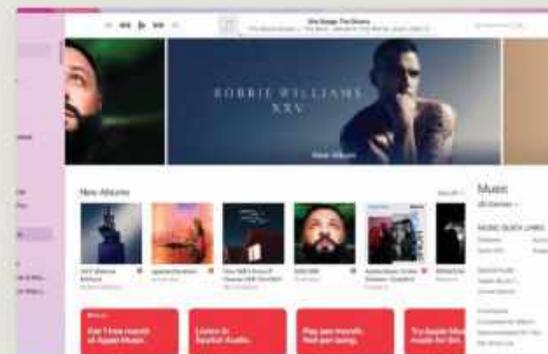
HOW TO Find and pay for content in Music, TV & iTunes



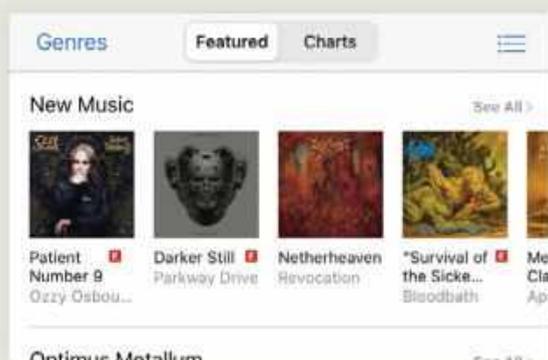
1 Subscribe to Music
In the Music app, click Account then Join Apple Music. Sign in with your Apple ID, then follow the instructions. To manage an existing subscription, click the option in Account > Account Settings > Settings.



2 Apple One
Apple One includes Music streaming, Apple Arcade and iCloud storage. Go to System Preferences and click Apple ID. Choose Media & Purchases, then click Manage, next to Subscriptions. Select a tier.



3 iTunes on Mac
In the Music app, click iTunes Store in the sidebar. Navigate using either the cards in the main window or the options on the right-hand side. To search for something, type in the search field and choose iTunes Store.



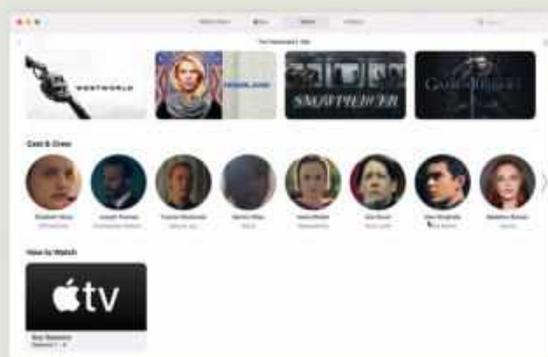
4 iTunes on iOS
Tap the iTunes Store app, then tap Music at the bottom. To search for a song, tap the magnifying glass and type in the search field. Tap Genres to see music categorized by genre, or Charts to see current hits.



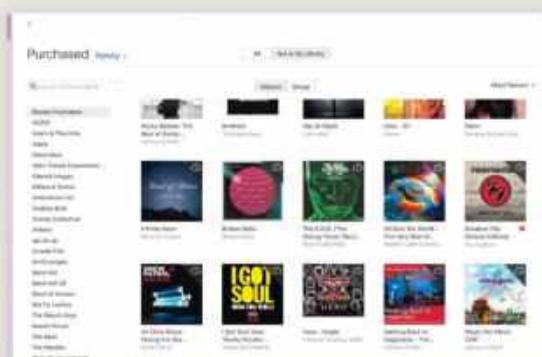
5 Purchase music
When you find the song you want in the iTunes Store, tap it to preview it, then tap the price to buy it. Tap an album to see a track listing. On the Mac, click a song to preview it or click the price to buy it.



6 Buy a movie (Mac)
Launch the TV app and click Store > Movies. When you find the movie you want, click it and select Buy or Rent. Not all movies are available with both options. For TV shows, which can only be bought, click TV.



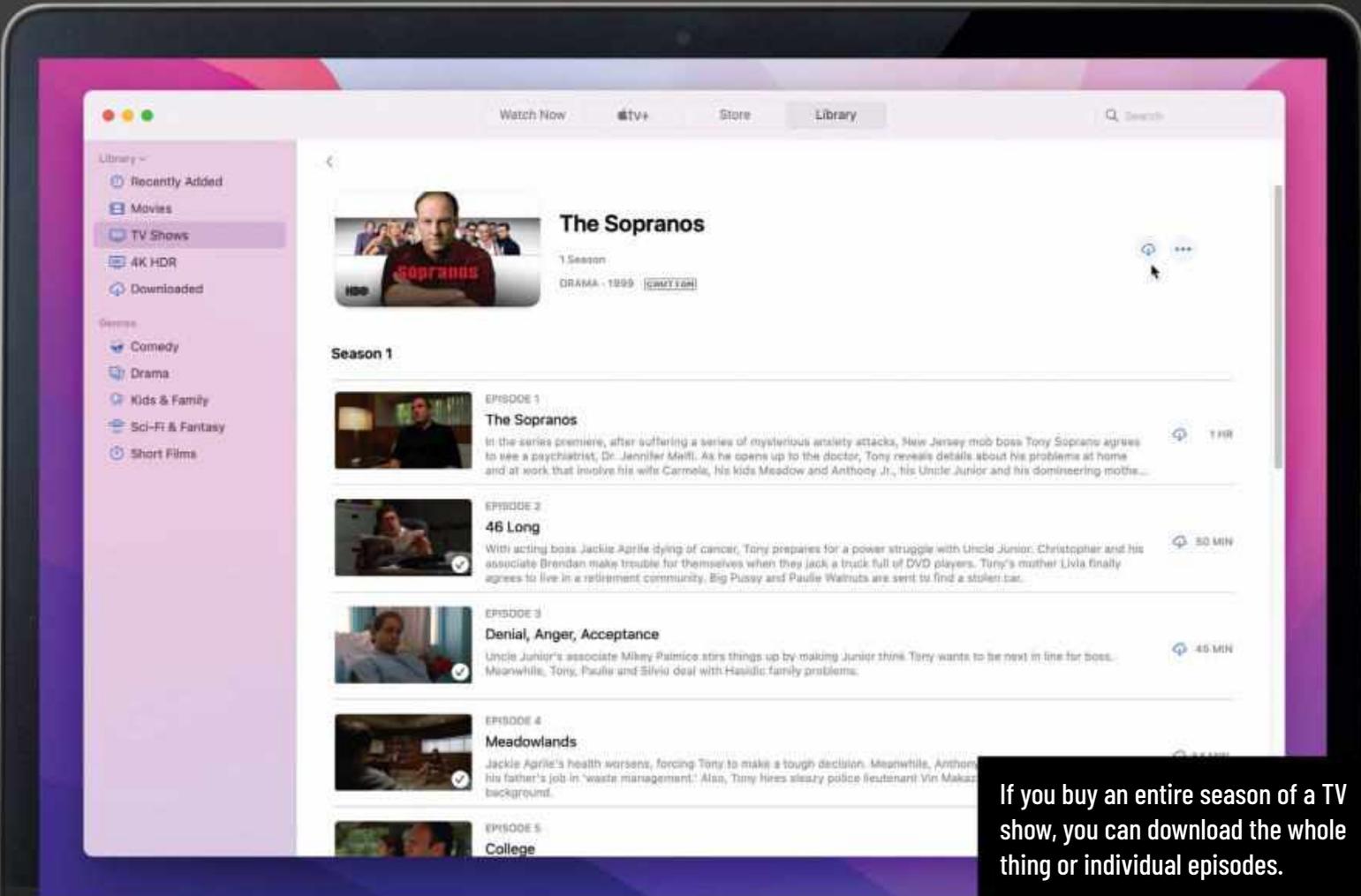
7 Get a season pass
In the TV app on Mac or iOS, click or tap Store then TV Shows. Click or tap the show you want. Scroll down to "How to Watch". If a season pass is available, you'll see a Buy Seasons card. Click it and choose a season.



8 Find purchases
In the Music app on Mac, scroll to the bottom of the screen and click Purchased. In the TV app, click Library, then Movies or TV Shows. In the iTunes Store app, tap the "..." icon at the bottom of the screen, then Purchased.



9 Manage access
In Music on Mac, click Account > Account Settings. Go to "Downloads and Purchases". Click Manage Devices, then Remove. In iOS 16, go to Settings > Apple ID > Media & Purchases > View Account > Remove This Device.



If you buy an entire season of a TV show, you can download the whole thing or individual episodes.

Do more with the apps

Here's how to hide items, manage downloads and subscribe to apps



MUSIC, TV SHOWS and movies are only a few of the digital goodies Apple now offers. You can buy books in the Books app, subscribe to newspapers and magazines in News, get access to hundreds of games in Apple Arcade, and pay for premium versions of podcasts in the Podcasts app. And

Fitness+, Apple's suite of exercise classes, is now available to all iPhone owners instead of being restricted to those who also have an Apple Watch.

Add to all that the variety of subscription options for third-party apps, different tiers for iCloud storage and the Apple One grouped plans, and it can quickly become

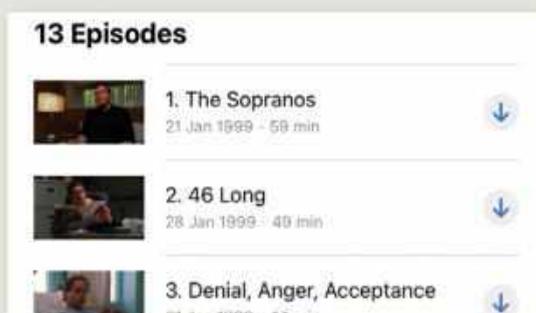
complicated, with lots of different subscriptions to keep track of.

Thankfully, every subscription you pay for via Apple is available to view on any device signed in with your Apple ID. We'll show you how to find out which subscriptions are active, which have expired, and how to cancel those you no longer want. ■

HOW TO Manage downloads



1 Download music
In the Music app on Mac, click the down arrow next to the album you want to download. To download a song, hover over it and click the down arrow. In iOS, tap the down arrow, or tap the more button next to a song.



2 Movies and TV
In the TV app on Mac, click Library then a category in the sidebar. Find the show/movie you want, hover over it and click the download button. In the TV app on iOS, locate the movie/show, tap it then tap the down arrow.



3 Delete downloads
In the Music app on Mac, click View > Only Downloaded Music. Pick the album you want to delete, click the "..." icon and Remove Download. In iOS, tap Library > Downloaded. To delete the item you want, tap "..." and Remove.

HOW TO Hide or unhide purchases on Mac



1 Hide music

Hidden music disappears from your library and libraries of those you share with. In the Music app, click Account > Purchased, then Click All. Hover over the item you want to hide and click the "X" in the top-left corner.



2 Hide movies or TV

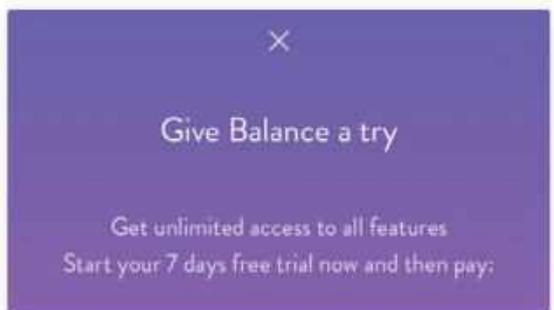
Launch the TV app on your Mac and click Library. Find the item you want to hide. Click the "..." icon and then choose "Delete from Library". In the dialog box, click Hide Movie or Hide TV Show to remove it from your library.



3 Unhide content

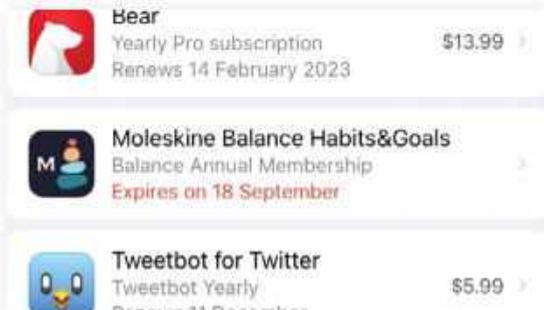
In the Music or TV app, click Account > Account Settings. Navigate to the "Downloads and Purchases" section and click Manage next to Hidden Purchases. Select the content you want to unhide, then click Unhide.

HOW TO Subscribe to and cancel apps



1 Buy a subscription

Go to the App Store and find the app you want to download. When it's downloaded launch the app. You will usually be shown a pop-up offering the premium subscription or a free trial, so tap the one you want to go for.



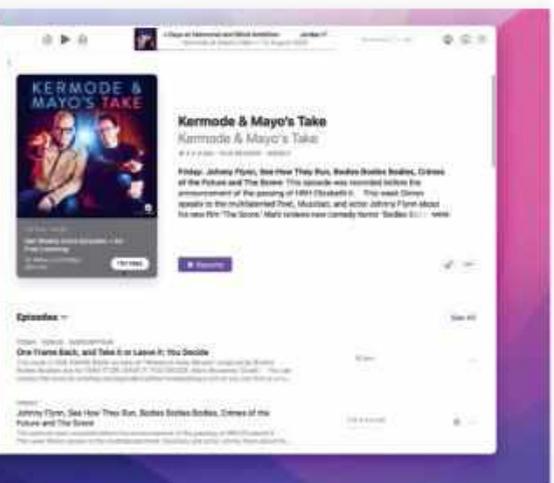
2 Pay and check

Confirm the payment on your Mac or iOS device by following the instructions on screen. Go to Settings > Apple ID. Tap Subscriptions and then the name of the app, and you'll see details of your subscription.



3 Cancel it

On Mac, in System Preferences click your Apple ID. Select Media & Purchases and then click Manage next to Subscriptions. Click Edit next to the subscription and then Cancel. In iOS, it's Settings > Apple ID > Subscriptions.



> BOOKS, PODCASTS AND MORE

The entertainment options continue

The Books app is the place to go to buy books to read or audiobooks to listen to. When you launch the app, you'll see there are two stores, one for each type of book. Browse the store you want, and when you find a book to buy, click the price. If you listen to podcasts using Apple's Podcasts app, you can sign up for premium versions of some podcasts, which usually entitles you to extra episodes and ad-free listening. Most offer a free trial. In Podcasts, click or tap Browse and look for Explore Subscriptions to see all the podcasts that offer premium extras.



Email Mac|Life at ask@maclife.com

macOS malware scans

UNTIL THE RELEASE of Monterey 12.3 last March, macOS had only limited tools to tackle malware. Its Malware Removal Tool (MRT) scans your Mac shortly after startup, and XProtect checks apps for signatures of known malware when they're first run.

Over the last six months this has changed dramatically with the arrival of XProtect Remediator, posing as a new XProtect app in the Core Services folder on your Mac's Data volume. Several times a day this scans for telltale signs of the troublesome and versatile Trojan known as DubRobber or XCSSET, and checks daily for others including Adload, Pirrit, Trovi and CloudMensis.

This new protection is only available for Catalina and later — proof once again that running the current, or more recent, versions of macOS brings the best security.

> No ARM Boot Camp

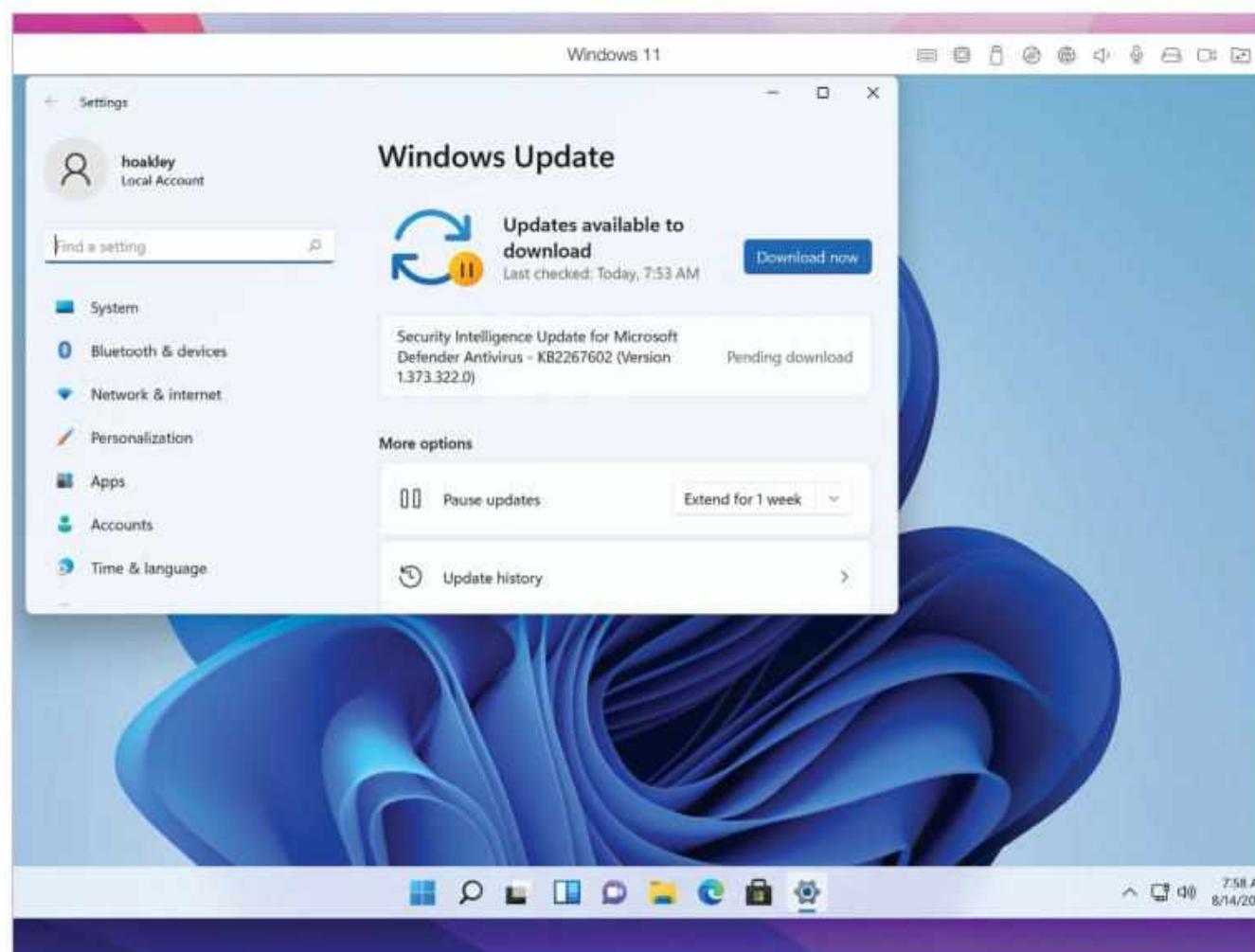
Why don't Apple silicon Macs support Windows for ARM in Boot Camp?

In terms of hardware, Intel Macs are only really a special build of PC, and getting them to start in and run Microsoft Windows was relatively straightforward. Although made a bit more complicated with the addition of the T2 chip, they have remained highly compatible with other PCs.

Not only do Apple silicon Macs have a completely different processor, but all the supporting electronics in their chips are different too. While the special versions of Windows made for Microsoft's ARM-based Surface touchscreen systems are built to run on ARM processors, they're designed for

completely different firmware and supporting hardware systems.

Apple silicon Macs have to start up from their internal SSD, from which they prepare to run macOS. There is a point in that process that can be used to run another operating system, like Asahi Linux, but for that to work with Windows on ARM it would require a lot of changes. Unless Microsoft decides to build in support for Apple's hardware, the only way to run Windows on Apple silicon is in a virtual machine, as that can provide Windows and Linux with virtual devices in software.



Unless Microsoft decides to port Windows for ARM to Apple silicon, a virtual machine is the only option.

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

> Secure your devices

Which security protection should I use on my iPhone and iPad?

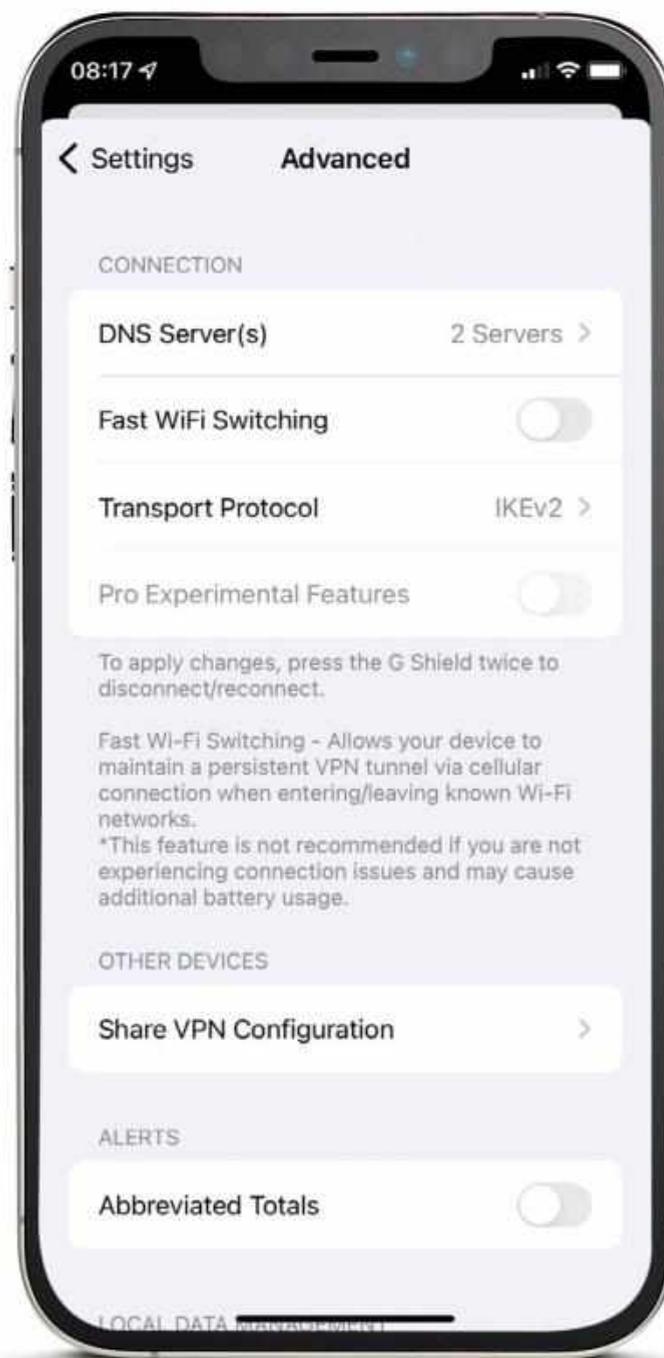
Apple intends that users shouldn't need any additional security protection for their devices. Central to that is the provision of apps only through its App Store, where Apple can ensure that none are malicious. When run in iOS or iPadOS, they're constrained to a "sandbox" intended to block them from any malicious behavior.

Defenses also rely on ensuring you update your devices promptly when Apple releases new versions of iOS and iPadOS, which invariably contain essential fixes to their security.

However, some sophisticated spyware has been able to break through these protections, although unless you're likely to be targeted by attacks from state-sponsored security agencies, you're almost certainly never going to be affected. If you do think that's a realistic risk, however, you need advice from a security professional.

More likely are the increasing number of unwanted apps that try to steal private information, potentially unwanted programs (PUPs), and phishing attacks from websites, text and email messages. The best defense against those isn't any additional software, but your behavior.

Because iOS and iPadOS are locked down, it's not possible to create software with general security protection features in the way that can be done for macOS, and you should be extremely suspicious of apps claiming otherwise. You can get a useful free scam and ad blocker in Malwarebytes Mobile Security, and Guardian provides a free software firewall without



Software firewall apps can help keep devices secure, but wise behavior is the most important protection.

having to subscribe to its VPN service. Those can be useful adjuncts, but keeping up to date and selecting apps carefully are far more important.

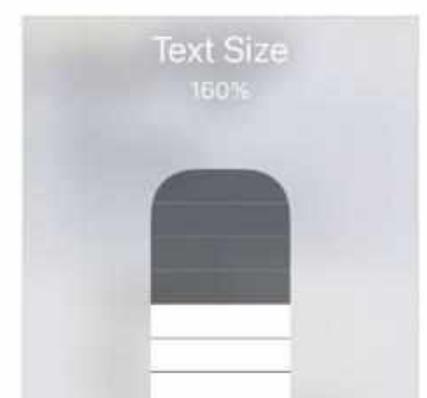
Quick-fire questions & answers

HOW SHOULD I REPORT A FRAUDULENT MESSAGE?

Any email, text or message that looks suspicious and claims to be from Apple should be forwarded to reportphishing@apple.com. Those claiming to be from named banks or official services should likewise be reported to the organisation concerned. In Messages, you can tap Report Junk for any others. Further details are at apple.co/3KPehvn.

HOW TO CHANGE TEXT SIZE WHEN I'M USING AN APP?

The simplest way is to add the Text Size control to the Control Center, in Settings > Control Center. Then when you're using the app, to increase its text size, drag from the top right to open Control Center, tap the Text Size control, and adjust the setting for that app.



DO LOGITECH MICE WORK WITH UNIVERSAL CONTROL?

Recent wireless models should work fine with Options+ software. Logitech warns that configurations made in Options+ apply only to the Mac on which those are set. Universal Control also overrides the Flow feature if that has been set up. If you prefer Flow, disable Universal Control first.

DOES A STUDIO DISPLAY WORK FROM A TB3 DOCK?

Provided the Thunderbolt 3 dock is Mac compatible, it should drive a Studio Display well. When Apple releases “firmware” updates for the display, your Mac should recognize and install them.

The only quirk is that the display isn’t then listed in the Graphics/Displays items in System Info, but appears in the Thunderbolt section.



Every bootable copy of macOS on Apple silicon requires an “owner”, assigned at the start of installation.

> Make a bootable external drive

How can I make an external bootable clone of the internal SSD in my M1 MacBook Pro? I’ve tried using Carbon Copy Cloner, but just get an error 108. Is this impossible on Apple silicon Macs?

Apple silicon Macs are designed to be able to start up from external drives, but creating them using cloning techniques is no longer a reliable option, and is not recommended. Instead, it’s much better to install macOS on them using Apple’s full installer app. This is because of the way macOS always starts up from the internal SSD in an Apple silicon Mac, and how external boot disks require secure ownership – but unlike T2 models they don’t need any change in startup security, in Recovery mode.

Start by formatting the external drive in APFS, then either download and run the current macOS installer from the App Store, or start up in Recovery and go to Install

macOS there. Opt to install to your external SSD, and leave the process to complete. You’ll be asked to select a user to make the owner of the new startup volume, and should then copy the account settings for that user when invited.

At the end of the first phase of installation, time will stand still when the installer says there’s only a minute or so remaining. Give it ample time, and your Mac will then go through the usual sequence of black screens and progress bars as the installation completes.

Once those are done, your Mac should start up from your external drive, and will complete personalization, setup, and two-factor authentication.

> A Studio Display never closes

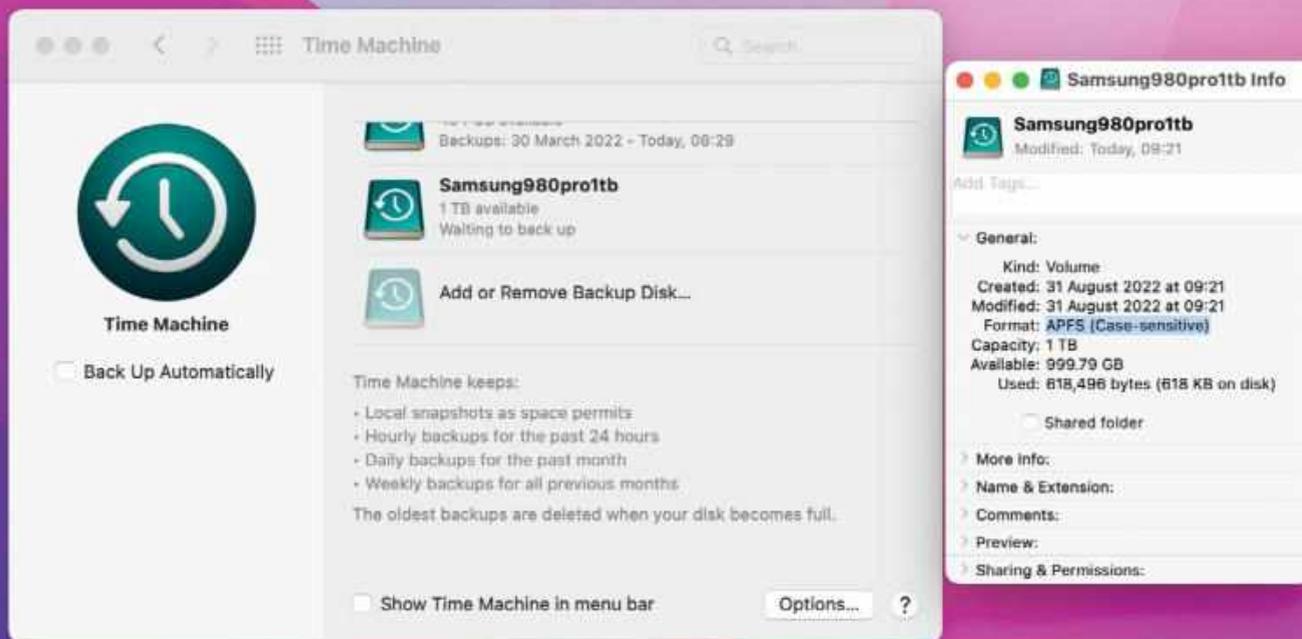
Although I love the image and adjustable stand of my Studio Display, it behaves quite oddly at times. It never turns off, so whenever I connect my MacBook Pro to it, the notebook powers up, and it keeps attached disks running even when it’s off. How can I take control of it?

Apple’s Studio Display is designed to be always on when it’s provided with power, and has no off button at all. This has some unexpected side-effects, in that it will immediately power on notebooks when you connect it to them by Thunderbolt, as it does to any peripherals connected to its three

USB-C ports. Currently there’s no way to change those behaviors, apart from supplying it with power from a switched wall power and turning that off.

For solid-state peripherals, this shouldn’t be any problem. However, it doesn’t appear that it will do rotating hard disks any favours. When

you shut your Mac down, the Studio Display does power down the USB-C ports for a few seconds before powering them back up. With a spinning hard disk connected, it would first be spun down, then spun back up, generally considered to be the events that contribute most to mechanical wear, thus to disk failure.



When Time Machine creates a new backup store, it now uses APFS format, preventing you from copying or moving it.

> Network quality zero

The 1TB external disk I keep my Time Machine backups on is almost full. How should I move them to a replacement 4TB disk, so I can use that for backup storage?

This depends whether your current backup store is a traditional HFS+ volume, or the more modern APFS. To discover which it is, select that volume in the Finder and use the Get Info command in the File menu. In the top section, its kind should be Volume, and the format will either be Mac OS Extended or APFS (case-sensitive).

Copying Time Machine backups from an HFS+ volume takes forever, is prone to error, but can be done. Copying them from APFS currently isn't possible, as those

backups are built on snapshots, which can't be copied to another volume or drive.

When you start making backups to your new drive, Time Machine will probably insist it uses an APFS volume anyway. The best plan is to keep your existing backups as an archive. If you ever need to access them, they'll still be available through the Finder rather than the Time Machine app. Then start a new backup set on the APFS volume Time Machine will create for you on the replacement drive.

WHY WON'T MY EXTERNAL DVD DRIVE WORK IN MONTEREY?

Optical drives should work well in Monterey. Some older models may not be compatible, though, and it's worth checking whether updates are available to help. Otherwise, once you have confirmed that the cable isn't to blame, try a modern drive.

WILL A USB-C HUB WORK ON A MAC STUDIO (M1 MAX) FRONT PORT?

Yes, if it's Mac compatible. Beware, though: the front USB-C ports share a maximum throughput of 10Gbps, so a couple of SSDs may work at slower than normal speeds. But for other devices a hub should be fine.

As the display has the full iOS from an iPhone inside it, maybe Apple will provide the user with some control over this behavior in the future.

You may wish to avoid connecting spinning hard disks to the USB-C ports on a Studio Display to reduce their wear.



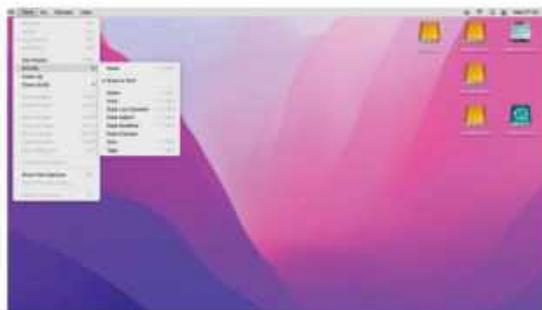
> Ordering your desktop

I like SSDs shown in custom order, but also want them to snap into place. How can I do that in Monterey?

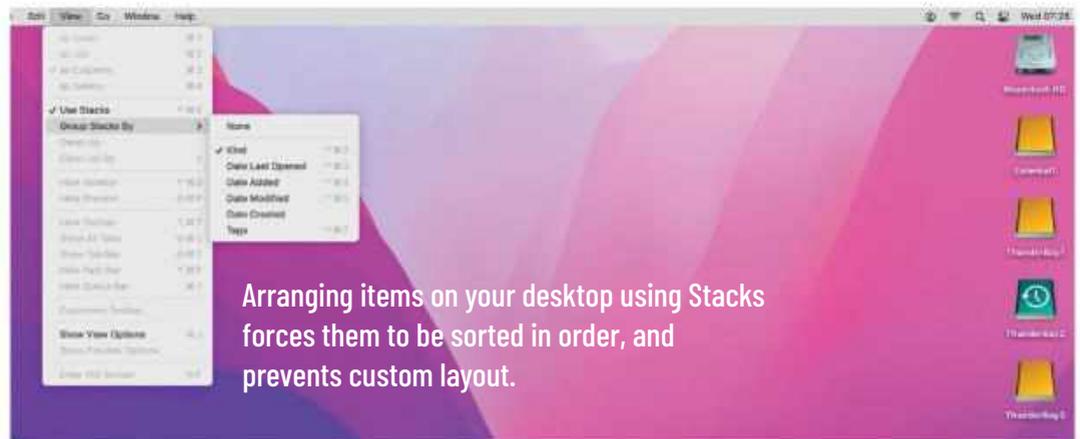
You have two choices for displaying items on the desktop: either use Stacks and accept the order it places them in, or you can choose to turn Stacks off and position them in the order you want. Click on the desktop

and uncheck Use Stacks in the View menu. If the Sort By sub-menu is set to Off, you can place them wherever you want. Enabling Snap to Grid places them regularly, but in custom order. When you enable Use Stacks, they'll be

placed in order by name or another sort option, and setting sort order to None disables the stacks. Currently there's no way to lock items in place without using Stacks or snapping them to a grid.



With Stacks turned off, you can order the items how you wish, and use Snap to Grid for a regular layout.



Arranging items on your desktop using Stacks forces them to be sorted in order, and prevents custom layout.

HOW TO RECOVER THE POINTER FROM UNIVERSAL CONTROL?

Press `Cmd+Opt+Ctrl+[Delete]` at the same time. The pointer should reappear on its original display, under full control. You can also connect a wireless mouse or trackpad using its charging cable, turning it into a USB device.

WHY WON'T MY MACBOOK COMPACT A SPARSE BUNDLE?

Probably because it's running on battery. Compacting takes time, during which any loss of power could destroy the sparse bundle. macOS won't start compacting on battery power unless you override that behavior using `hdiutil's -batteryallowed` option or in the app using it.

> Setting global preferences

I prefer the expanded Save window in all my apps. There used to be a way to set that in a global preference, but does that still work in Monterey?

As recently as macOS Mojave, you could use the two Terminal commands:

```
defaults write -g
NSNavPanelExpandedStateForSaveMode
-bool true
```

and

```
defaults write -g
NSNavPanelExpandedStateForSaveMode2
-bool true
```

to make the full and expanded version of the Save window the default across all apps. As far as we can tell, that's no longer a global preference setting, but has to be made for each individual app. The good news is that you don't need to go into Terminal or type in commands to do that. All you have to do now is save one file from that app, and in the process click on the disclose button at the right of the Where pop-up, to use the expanded form of the dialog. The app should then use that until you choose

otherwise. Apple has removed many of these global settings in more recent versions of macOS, although as most were undocumented they've been used decreasingly anyway. Some global defaults remain in Monterey, although no one seems sure which still work. You can check whether they already exist using a command like:

```
defaults read -g
NSNavPanelExpandedStateForSaveMode
```

although note that non-existence doesn't mean that the setting has gone.



Choosing the minimal Save window (left) or its expanded version (right) is set for individual apps.

> Migrating from a damaged Mac

I used a housekeeping utility to remove apps from my old Mac before switching to my new M1 iMac. It has gone too far, damaging some so I can't migrate. How can I restore them ready to migrate?

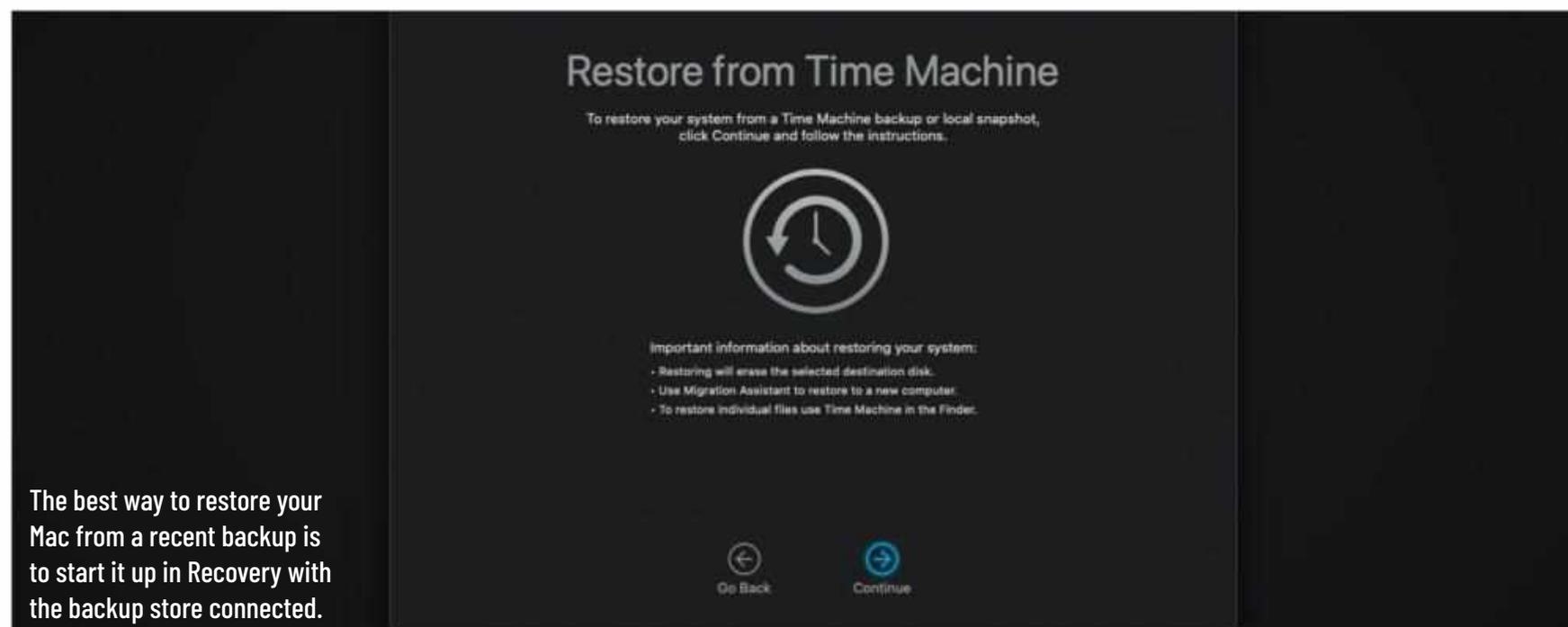
This is one of the dangers of these utilities, and it's always best to do your own housekeeping, erring on the side of safety. You now have two choices: use your backups to restore to your old Mac before migrating it to the new one, or use those backups to set your new Mac up directly.

Using your direct route, start your new iMac up without the backup drive connected, personalize the Mac, and

set it up with a new user account, ideally using the same short name as your old Mac. Once it's up and running, install any macOS software updates, then connect your backup drive and run Migration Assistant from the Utilities folder. When it asks you what to migrate from, select the latest backup made before you performed any housekeeping. When it asks you what you want to migrate from that backup,

take your time and ensure that you select what's good to go across, then ensure that it's migrated into your fresh user account.

If you intend on keeping your old Mac, you can start it up in Recovery and either migrate or restore to that from the same backup to return it to its previous state. But by that time you'll probably be content using your new iMac instead.

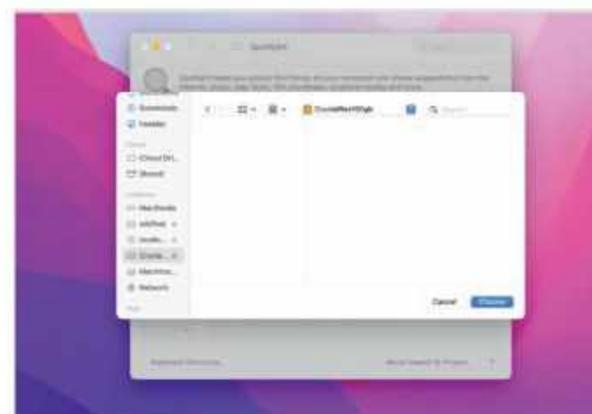


HOW TO REPORT A BUG IN MACOS TO APPLE?

Draw up a clear description of the bug, and how an engineer can reproduce it. Before reporting, check with Apple Support that it really is a bug, not a misunderstanding. Then head over to apple.com/feedback, click on macOS in the macOS Apps section, and complete the form.

HOW TO FORCE SPOTLIGHT TO RE-INDEX A DISK?

Open the Spotlight pane and select Privacy. Click on the "+" at the lower left and select the volumes on that disk to add them to that list. Close the pane and wait a minute, open it again, select those volumes and remove them using the "-" tool. Re-indexing appears in Activity Monitor's CPU tab.



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MacLife

CREATE

HOW TO DO ANYTHING ON YOUR MAC, IPHONE & IPAD

Use Mail Merge in Pages

Pull data in to docs to customize contact details

REQUIRES

Mac (running Big Sur or later), iPhone (iOS 14 or later), or iPad (iPadOS 14 or later)

YOU WILL LEARN

How to merge contact details with documents in Pages

IT WILL TAKE

45 minutes



THE ABILITY TO merge contact details with documents has been missing from Pages for almost a decade. But now, the ability to send the same letter to lots of different people — without having to create a new document manually and then copy and paste into each one — is back in Pages 12.1.

Mail Merge is one of those features that if you need it, it's indispensable and if you don't, you probably haven't even noticed it was missing. However, for a tool that aims to be an alternative to the likes of

Microsoft Word, it was a glaring omission and meant relying on workarounds using AppleScript to fill the gap.

Mail Merge in Pages 12.1 enables you to pull in contacts' details from the Contacts app or from a Numbers spreadsheet and use them to replace placeholders in any document. It's worth noting that the spreadsheet has to be in Numbers format, it won't work with Excel or CSV files. We'll show you how to prepare your contacts in Contacts and Numbers, and how to merge them in your Pages documents. **KENNY HEMPHILL**

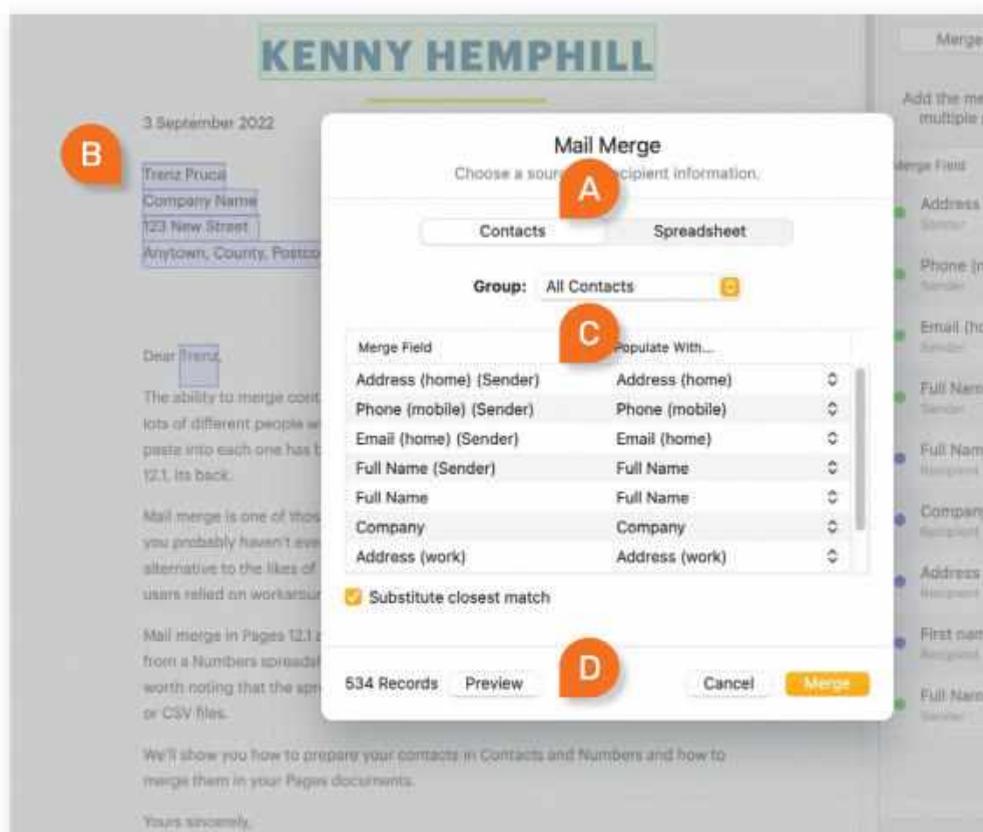
QUICK LOOK The merging options

A CONTACTS OR NUMBERS

You can choose to merge data from a group in the Contacts app or from a Numbers spreadsheet.

B PLACEHOLDERS IN TEMPLATES

Letter templates in Pages already feature placeholders for merge fields, but you can add them to any document.



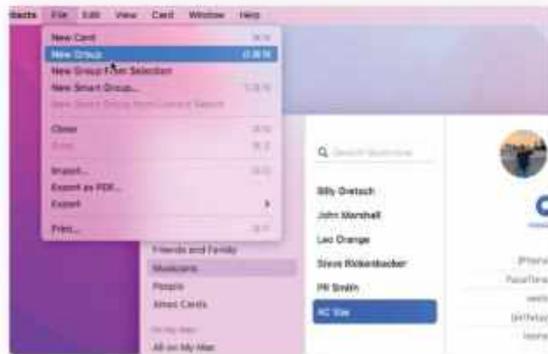
C MATCH THE FIELDS

Once you've chosen the source of the merge data, you need to tell Pages how to match the fields.

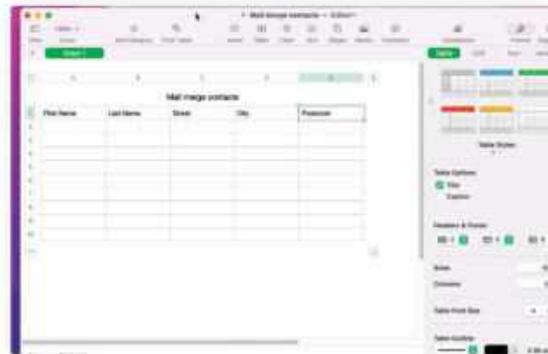
D PREVIEW THE LETTER

Before you click Merge, you can preview how the data from your source will be filled in on the letter.

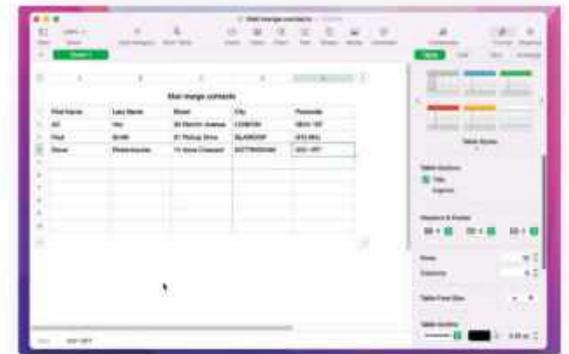
HOW TO Merge contacts in Pages



1 Create a group
In Contacts on Mac, click File > New Group, give it a name and drag contacts onto it in the sidebar. You can't create groups in iOS and iPadOS, but in Contacts on **icloud.com**, click "+" and New Group to create one.



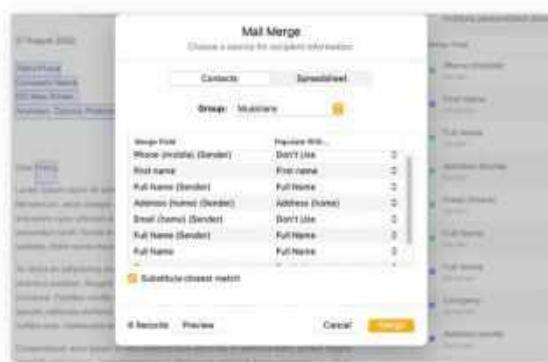
2 A Numbers source
In Numbers on Mac, iOS or iPadOS, create a new document and add a table to it. Give the column headers the names of the fields you want to use in your document, such as first name, last name, street, postcode.



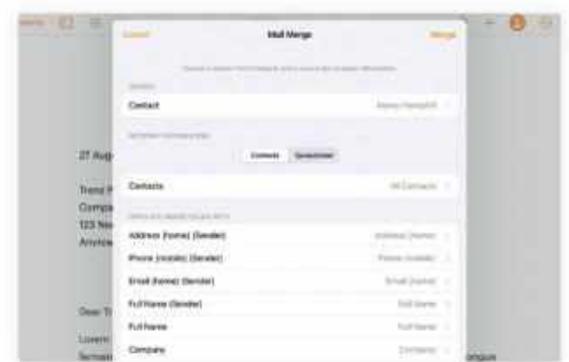
3 Populate table
Once you've created the table, add the details for the contacts you want to merge with your Pages document. You can type them manually or copy and paste. Save the document to iCloud when you're done.



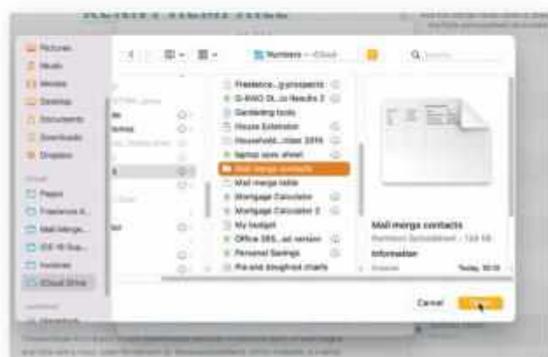
4 Create a letter
In any version of Pages, choose a letter template in the Template Chooser and click or tap Create to create a new document. Type the content of the letter, leaving the recipient's details blank.



5 Mail Merge on Mac
In the right-hand sidebar, click on Document and then the Mail Merge button at the bottom of the window. Select Merge in the window that opens and then choose your new Contacts group from the menu. Click Merge.



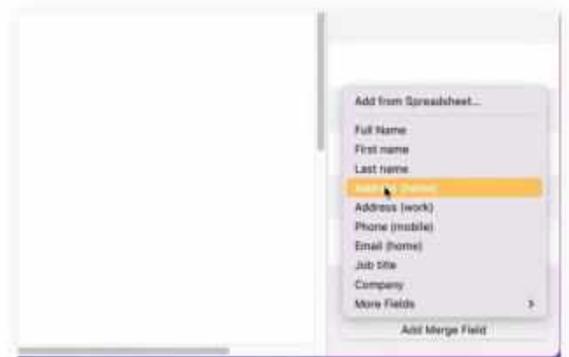
6 Merge on an iPad
In Edit mode, tap the "..." icon and then Mail Merge. Tap Merge, then tap Contact under Sender and choose a sender. Tap Contacts under Recipient Information and choose the group you created earlier. Tap Merge.



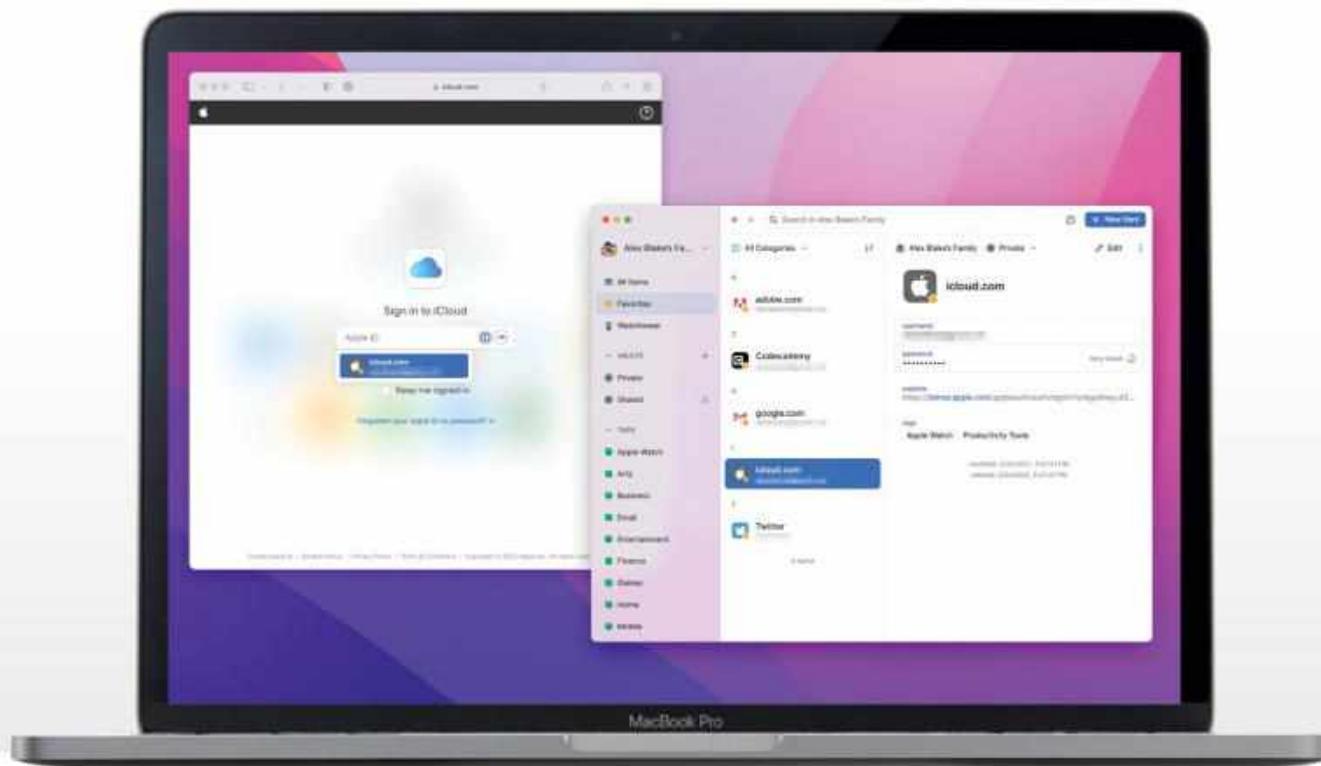
7 Merge spreadsheet
Click Document > Mail Merge > Merge. Choose "Add from Spreadsheet", navigate to the Numbers file and click Open. If the spreadsheet contains multiple tables, make sure the table you want is selected.



8 Finish up
You'll see two columns, Merge Field and Populate With. Click Select in the latter and choose which column from your spreadsheet you want to use to populate that field. Or, click Don't Use. When you're done, click Merge.



9 Add fields
Letter templates have fields already in position. To add fields to any document, go to Document > Mail Merge and position the cursor where you want to add it. Click Add Merge Field and choose from the menu.



Super-strength passwords

1Password 8 for Mac keeps all your precious data under lock and key

REQUIRES

1Password 8 for Mac,
macOS 10.15 or later

YOU WILL LEARN

How to secure logins,
sensitive info, private notes,
and more

IT WILL TAKE

10 minutes



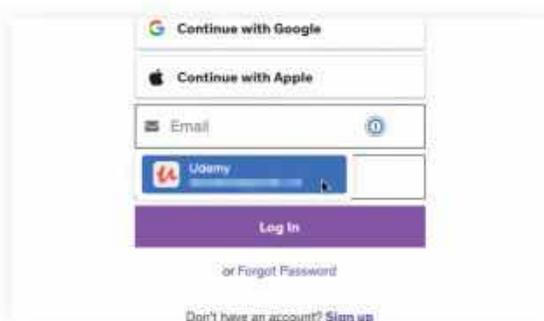
WE ALL KNOW we need to use strong, unique passwords for our accounts, but doing this for every single login is a slog. No wonder so many people reuse “Password123” for everything.

But there’s a better way — use a password manager. 1Password is one of the best there is, and it can generate and save strong, unique passwords so you never even need to think about them. All you need to remember is a master password — and if you have an Apple

Watch, you can unlock the app with that instead. It even goes beyond passwords. The app can save your addresses, vaccination dates, driver’s licence, private notes, and more. It even works with SSH keys and one-time passcodes. That makes it a one-stop shop for all the info you want to keep safe.

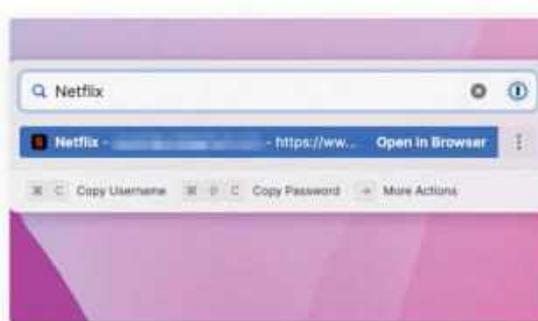
In this tutorial, we’ll show you how to use 1Password 8 and its Safari extension (which you should install before starting) to ramp up your login security. It’s way easier to use than you think. **ALEX BLAKE**

HOW TO Master the basics



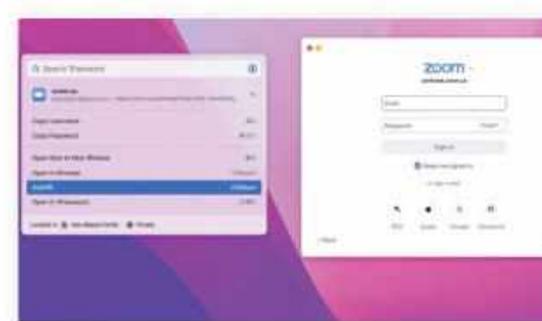
1 Autofill

Install the 1Password Safari extension. On a website where you have a saved login, click the 1Password icon in the form field, then choose your login. Its username and password will be automatically filled in.



2 Quick Access

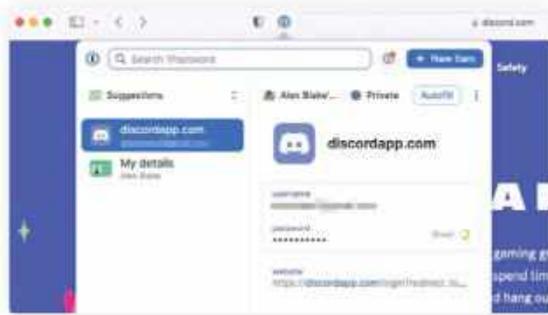
Press Shift+Cmd+Spacebar to open 1Password’s Quick Access bar. This works like Spotlight — search for a login and the entry appears. You can copy the password, autofill it if you’re on the right website, and more.



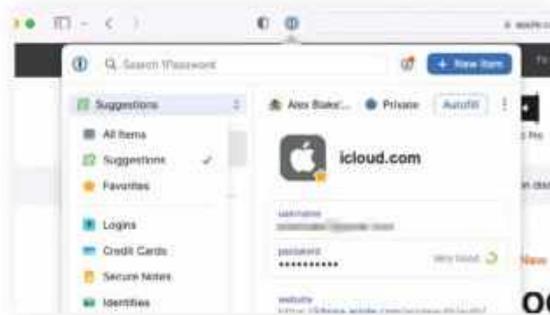
3 Autofill in apps

Password autofill also works in apps. Press Shift+Cmd+Spacebar and Quick Access should show the app’s login. Press Shift+Return to autofill it. 1Password even clicks the Sign In button for you!

HOW TO Use 1Password in Safari



1 View a login
When you click the 1Password button in Safari, it will show your current website's login (if there is one saved). Click Autofill to enter its info, or click the "..." button to edit the login, add it to favorites, and more.

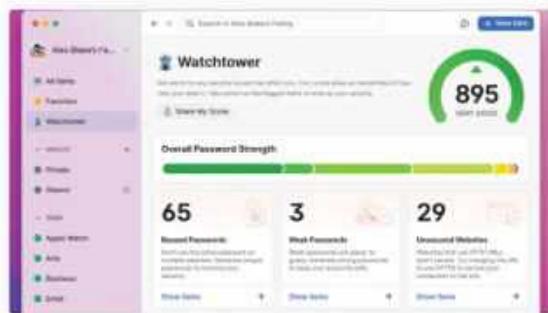


2 Browse your info
On the left, click Suggestions. Here you can browse saved information in different categories, such as credit cards and your personal details. You can view your favorites and all your saved items at once.



3 Save a new login
When you register for a new website account, 1Password can save the details. When you get to the password field, click Use Suggested Password. Add any extra details in the pop-up window, then click Save.

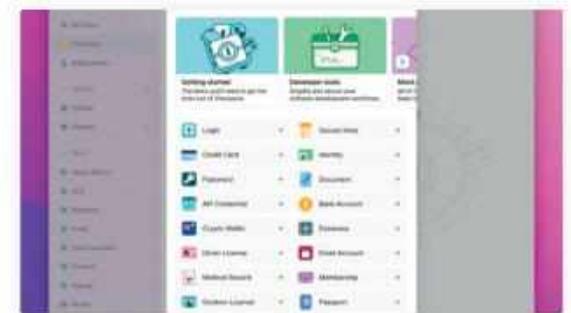
HOW TO Go deeper



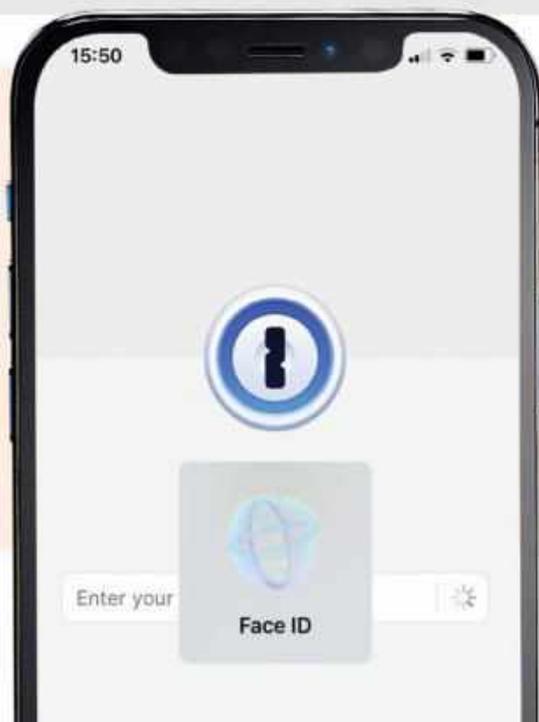
1 The Watchtower
In the sidebar, click Watchtower. This rates your passwords and shows suggestions to improve. Click Show Items next to the suggestions; choose an item in the list, then follow the on-screen instructions to secure it.



2 Apple Watch unlock
First, ensure Apple Watch unlock is enabled in System Preferences > Security & Privacy > General. Then click 1Password > Preferences > Security and tick the checkbox next to Apple Watch.



3 Not just passwords
1Password 8 can store more than just email addresses and passwords. Click New Item in the top right; there are options for driver's licences, passports, medical records, payment cards, and more.



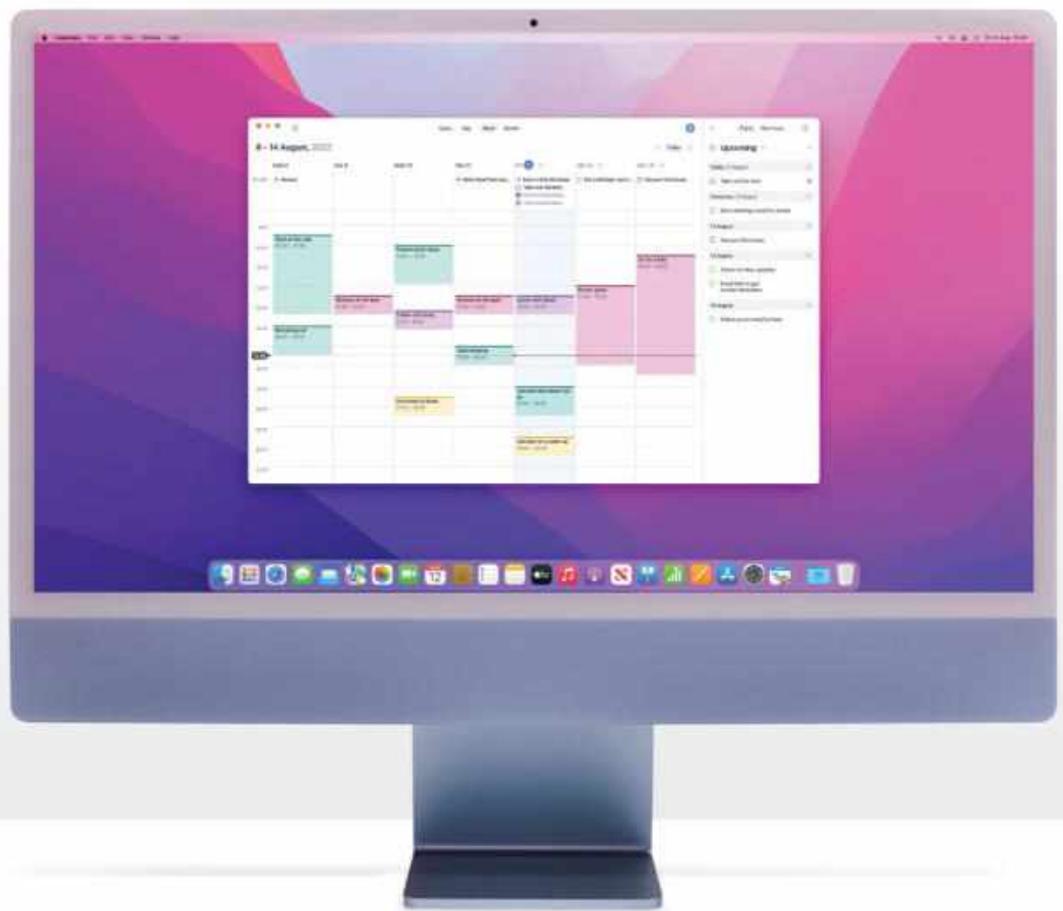
> 1PASSWORD 8 ON iOS

Working together with the Mac app

1Password 8 also has an iOS app. Mac features like Watchtower are present and accounted for, as are favorites and collections. As well as syncing all your logins across your devices, it also has some iOS-specific features. For example, the new version of the app lets you show, hide, and rearrange home screen items, making it easy to find what you need. And you can unlock the app using Face ID, giving you an incredibly secure way to keep your logins safe. Use it in tandem with the Mac app so you always have your saved items to hand.

Organize your day

Overhaul your schedule and get organized like never before



REQUIRES

Calendars (from readdle.com), macOS 11 or later, optional subscription

YOU WILL LEARN

To manage events with this Readdle app

IT WILL TAKE

10 minutes



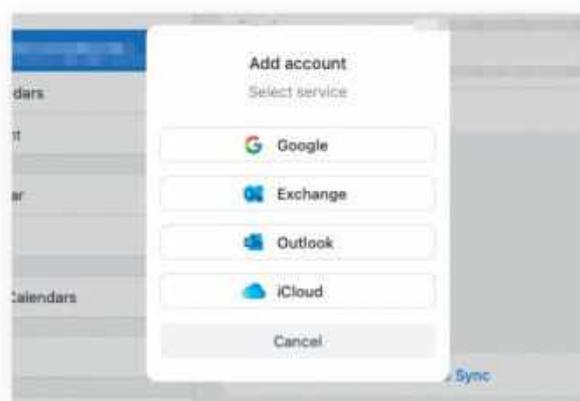
APPLE'S CALENDAR APP is fine for managing your day-to-day appointments, but it's no great shakes. Swap it out for the (similarly named) Calendars from Readdle, though, and you'll have a more modern way to keep track of everything.

Calendars boasts a plethora of power tools, from natural language entry to integrated reminders. It syncs across Mac, iPhone, iPad and Apple Watch, works with popular video-calling apps like Zoom and Google Meet, and lets you create new

events with Siri. Got events that you frequently add to your calendar? Calendars lets you save time with its Shortcuts feature. These work like templates that are stored in the sidebar and can be assigned quickly and easily whenever you need them.

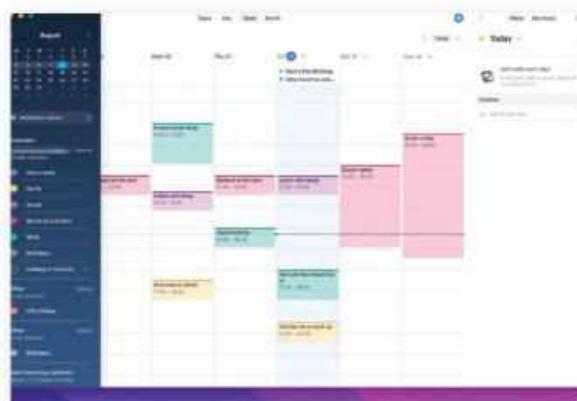
Calendars is free to use but has a subscription that unlocks its most interesting features, which we'll cover here. Once you start using this app, you'll wonder how you got by with Apple's Calendar app. **ALEX BLAKE**

HOW TO Manage your daily tasks with Calendars



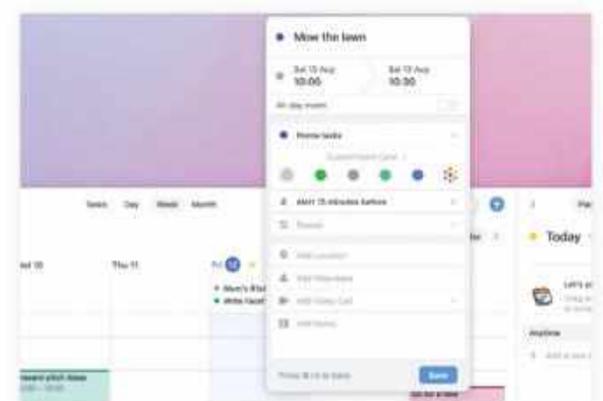
1 Add your accounts

During the set-up process you can add calendar accounts from iCloud, Google, Outlook, and more. You can also add local calendars. To add another one later, click Calendars > Add Account and follow the on-screen prompts.



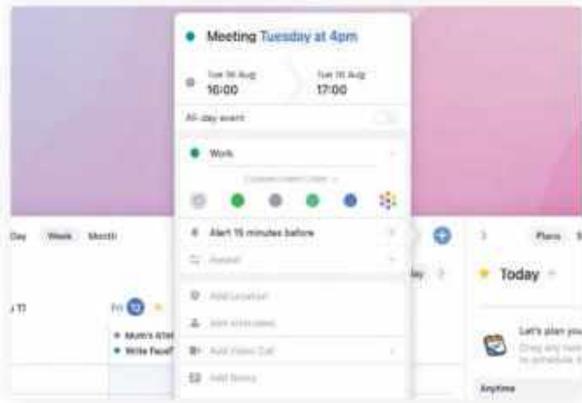
2 Hide calendars

Click the three-line icon in the top-left corner to see a list of your calendar accounts. Click the checkboxes by each calendar to add or remove them. You can change calendar colors by clicking Edit Calendars at the bottom.



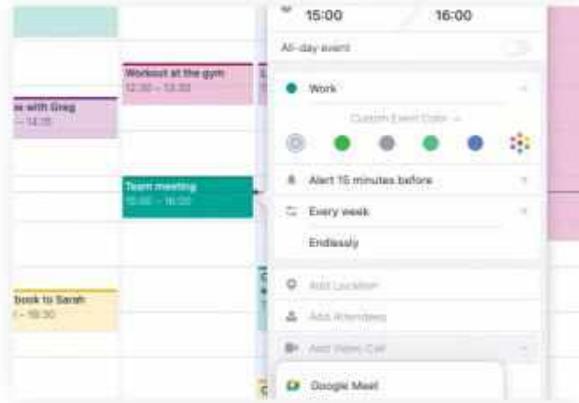
3 Create an event

Click the blue "+" in the top-right corner to create a new event. Enter an event title, date and time, assign it to a calendar, and pick from extra options like attendees and location. When you're done, click Save.



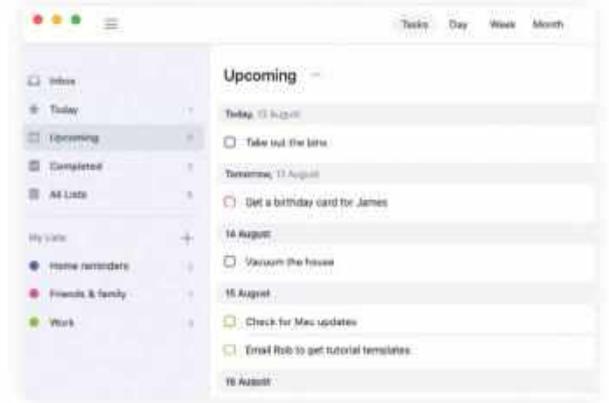
4 Language input

Calendars knows natural language. When creating an event, type “Meeting Tuesday at 4pm” and Calendars will schedule the event at the correct time. It understands contact names, locations, times, and more.



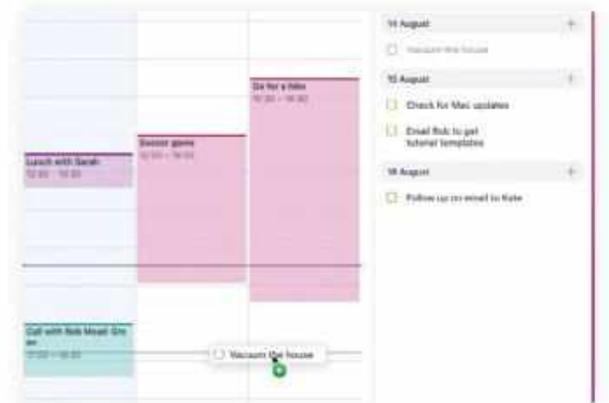
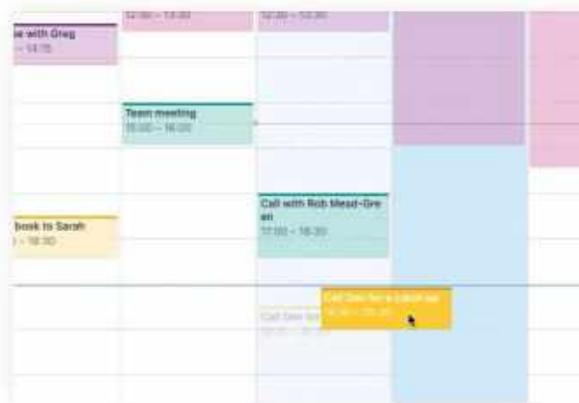
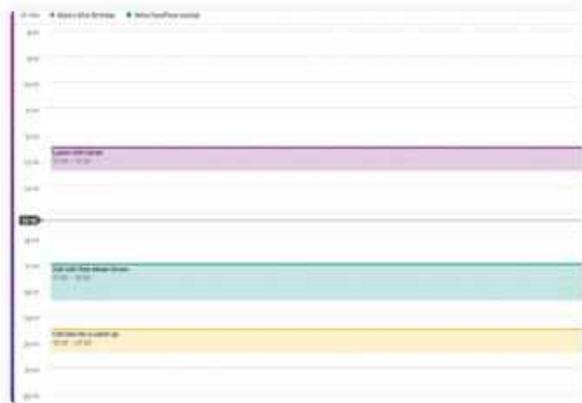
5 Video-calling apps

When creating an event, click Add Video Call and select an app from the list. Calendars will then automatically create a meeting link with a password for your video call. You might need to log into the video app first.



6 Views and tasks

Change the view using the Day, Week, or Month buttons at the top to zoom in or out of your schedule. If you’ve connected Calendars to a reminders app like Google Tasks, your to-dos will be stored in the Tasks tab.



7 The day today

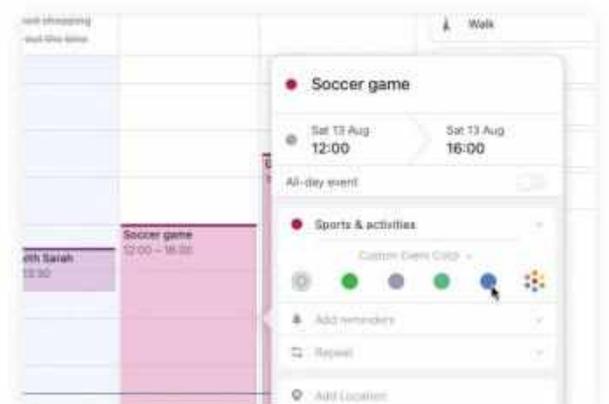
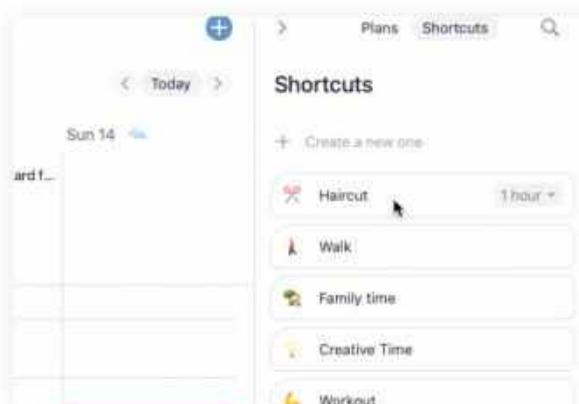
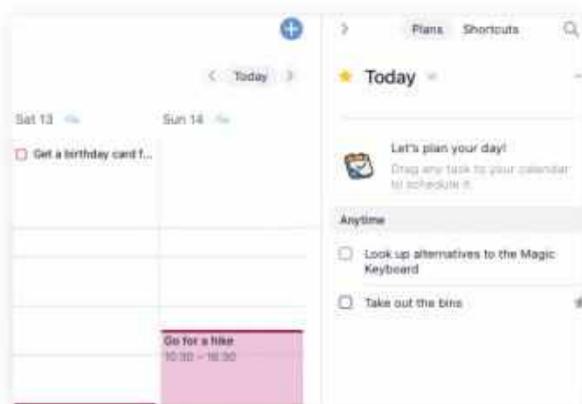
Click Day to see what’s coming up on your plan today. At the top is the date, the weather, and a list of your tasks and all-day events. Underneath is your schedule, with each event blocked out for its planned duration.

8 Drag and drop

Calendars has some neat time-saving features. In any view you can drag and drop a calendar event to move it to a new time. That’s quicker than clicking each event, manually changing the time, and then saving.

9 Make some plans

On the right, click Plans to see a list of your reminders, which you can drag on to the calendar. Click the arrow by Today to view your tasks inbox, upcoming to-dos, completed tasks, or to filter by each reminder list.



10 Add a reminder

At the top of the reminders list, click “Add a new task” and start typing. This is a quick way to add reminders without having to navigate to the Tasks tab. When you’re done, you can drag the reminder to your calendar.

11 Shortcuts

In the top right, click Shortcuts > Create a new one. Enter the shortcut’s name and set an emoji and event duration, if you like. Now just drag the shortcut from this menu on to your calendar whenever you need it.

12 New color scheme

By default, events take the color of the calendar they’re assigned to. But you can set a new color (just once or for all future events if it repeats) by selecting the event, then clicking Edit and choosing a new shade.



Customize your Lock Screen

Make your iPhone your own with cool wallpapers and widgets in iOS 16

REQUIRES
iOS or iPadOS 16

YOU WILL LEARN

How to customize your Lock Screen in iOS 16

IT WILL TAKE

30 minutes



GENIUS TIP

Go to Settings > Notifications to show notifications as a stack, a list, or hidden with just the number of unread ones displayed.



THERE ARE A ton of new features in iOS 16, but one that is likely to see more use than most is the ability to customize your Lock Screen. Whereas you've long been able to change the photo or image and have some control over the notifications that appear, you can't do much else. In iOS 16, all that changes.

Wallpaper options now go much further. You can choose from the new



Widgets on the Lock Screen enable you to see calendar events, reminders, activity stats and more with just a glance at your phone.

People category, after which iOS will show you photos of people from your Photos Library that it thinks would work well as a wallpaper. In some cases, a masking effect will place the clock partially behind the subject but in front of the background.

There are new Weather and Astronomy wallpapers that are similar to the equivalent Apple Watch faces and change throughout the day, and there's even an option to use emojis as your wallpaper, if you must. You can also alter the font and color of the clock, and apply photo effects to wallpaper.

Perhaps the most useful of all are the new widgets that enable you to see things like upcoming calendar events, your activity status, battery levels for your devices and current weather right on your Lock Screen.

Notifications have also been improved and now slide up from the bottom of the screen, and new Live Activities enable you to easily keep track of scores from sports events, food delivery updates and Uber journeys without leaving the Lock Screen.

KENNY HEMPHILL

HOW TO Make a personalized Lock Screen



1 Choose wallpaper

Tap and hold on the Lock Screen and tap the "+". Swipe up to scroll through the sections of different wallpapers, including Suggested Photos. If you see one you like, tap it, then tap Add to select it.



2 Make your own

If none of the suggestions appeal to you, tap Photos at the top of the screen and either scroll through your photos, search for one, or tap Albums to choose an album to look through. Tap a photo you like.



3 Edit photo

Swipe left over the screen to see the different photo filter options. To see more options, such as Depth Effect if it's available, tap the "..." icon. Use two fingers to unpinch to zoom in and crop the photo. When you're happy, tap Add.



4 Customize clock

In the customization screen, after choosing a wallpaper, tap the clock. Tap one of the font options and one of the color options below. If you select the globe, you can change the numerals to Arabic Indic or Devanagari.



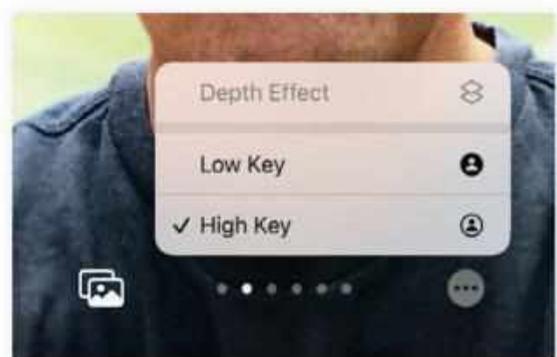
5 Add widgets

In the same customisation screen, tap Add Widgets, or if there are widgets already there, tap them. Tap "-" to remove a widget and then tap a widget to add it from the Add Widgets drawer. Tap "X" then Add to finish.



6 Change top widget

There's another space for widgets, above the clock. To change it on a wallpaper, choose Customise and tap the widget. Swipe up over the list to see them all and tap one to choose it. Tap "X" then Add to confirm.



7 Edit portraits

If you choose a photo taken in Portrait mode as your Lock Screen photo, swipe through options such as Studio and Color Wash. Tap "..." to switch between Low Key and High Key or change the color of a color wash.



8 Choose a Focus

Long press the Lock Screen and tap Focus. Choose a focus from the menu, or you can tap Focus Settings to edit the settings of an existing focus or create a new one. Tap the "X" then the Lock Screen to finish.



9 New Home Screen

When you create a new Lock Screen, iOS 16 changes your Home Screen, iOS 16 changes your Home Screen wallpaper too. To choose a different Home Screen, go to Settings > Wallpaper and tap Customise under the Home Screen image.



Tweak messages in iOS 16

Whether you need to edit, unsend, or host a SharePlay, here's how

REQUIRES
iOS 16 or iPadOS 16

YOU WILL LEARN
How to use the new features in the Messages app

IT WILL TAKE
30 minutes



MESSAGES HAS GRADUALLY been catching up with apps like WhatsApp and Microsoft Teams, and in iOS 16 and iPadOS 16, it gets some of its most useful additions yet.

Until now, if you sent an angry message to your boss, there was nothing you could do except wait for the fallout. Now, you can unsend the message and they won't know anything about it. Alternatively, you can edit the message — although, be warned: your boss will be able to see the

edits you have made. Messages also joins the SharePlay party. When SharePlay first launched, you could only use it while you were on a FaceTime call. Now, you can use it in Messages, too.

You have long been able to share files in Messages, but now when you share a document and collaborate on it, you will be able to see in the Messages thread when someone else in the conversation edits the file. Plus, you can send messages directly from the app in which you're working. **KENNY HEMPHILL**

HOW TO Edit, unsend, and more


GENIUS TIP

You can now report SMS messages as junk, as well as iMessage. However, it's only currently available with two US carriers.



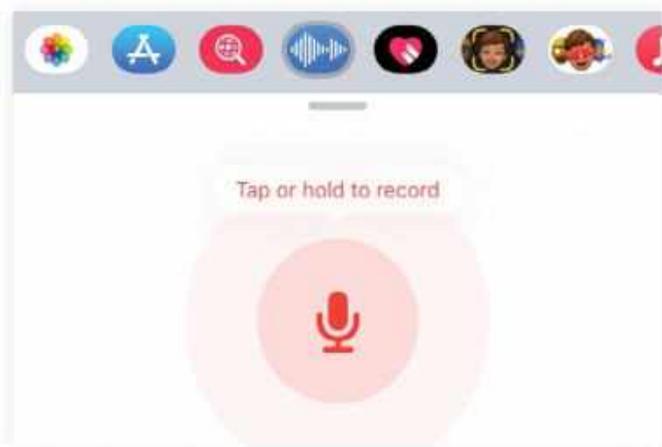
1 Unsend a message
Both sender and receiver need to be using iOS 16, iPadOS 16, or macOS Ventura. Tap and hold on the message and choose Undo Send from the menu. The message will disappear from the thread on all devices.



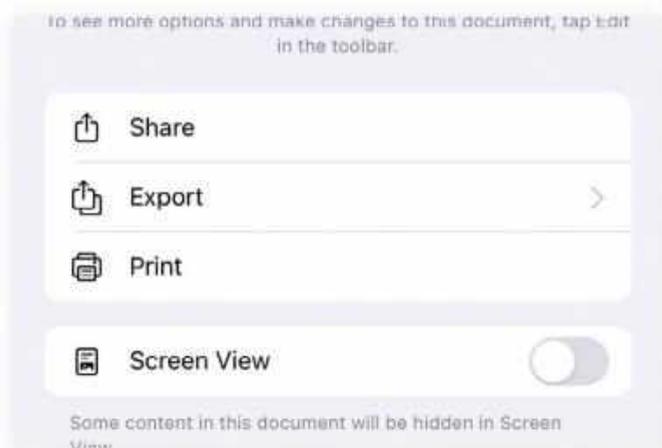
2 Edit a message
As for editing, both parties need to be using a compatible version of Messages on iPhone, iPad, Watch or Mac. Tap and hold on the message until the menu appears, tap Edit, make changes and tap the blue checkmark.



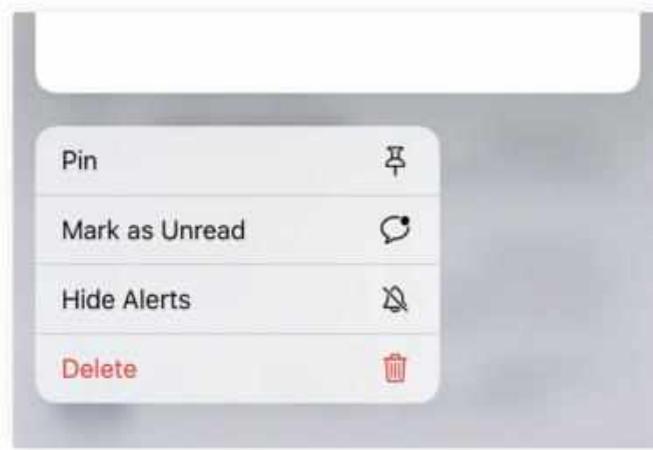
3 Recover and restore
Deleted messages are now moved to a Recently Deleted section in Messages. In the main Messages screen, tap Edit at the top-left corner and then Recently Deleted to see them. Tap a message then tap Recover to restore it.



5 Send an audio message
Previously, tapping the microphone in the text box enabled you to send an audio message. Now, you need to tap the app icon beneath the text box, tap the audio wave, then tap the mic to start recording your message.



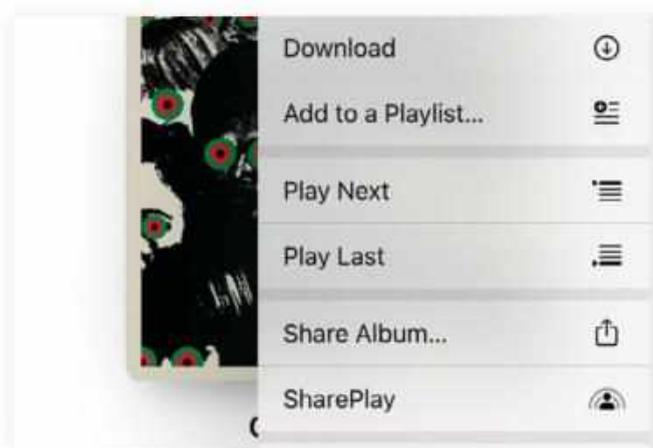
7 Collaborate with others
Collaboration works in Apple apps and some third-party apps. Tap Collaborate in the toolbar or the Share icon. Choose Messages and select the options for the document. Type the contact's details and tap Send.



4 Mark as unread
You can mark conversations as unread, though not individual messages. Tap on a conversation thread in the main Messages screen and tap "Mark as Unread". A blue dot will then appear next to the message.



6 Dictate a message
Dictation has improved in Messages. Tap the microphone at the right of the text window. Start dictating. When you're done, tap the microphone in the keyboard. You can add emoji, edit the text, or send the message as is.



8 Use SharePlay
Navigate to the app from which you want to watch or listen, such as Music. Tap the "..." button. Tap SharePlay. Pick a contact and tap Messages to start sharing. Both parties must have an account with the service to join.



JARGON BUSTER

SharePlay enables you to watch TV shows/movies or listen to music with friends, and playback is synced on everyone's device.

GENIUS TIP

The joy of syncing: you can send a message on one device and unsend or edit on another, for up to 15 minutes after sending it.



WHAT IS AVAXHOME?

AVAXHOME-

the biggest Internet portal,
providing you various content:
brand new books, trending movies,
fresh magazines, hot games,
recent software, latest music releases.

Unlimited satisfaction one low price

Cheap constant access to piping hot media

Protect your downloadings from Big brother

Safer, than torrent-trackers

18 years of seamless operation and our users' satisfaction

All languages

Brand new content

One site



AVXLIVE . ICU

AvaxHome - Your End Place

We have everything for all of your needs. Just open <https://avxlive.icu>



Master multitasking on iPad

Do more with your iPad by running multiple apps side by side

REQUIRES

An M1-powered iPad for Stage Manager, iPadOS 16

YOU WILL LEARN

The different ways to multitask on iPad

IT WILL TAKE

10 minutes



GENIUS TIP

Stage Manager works best on iPads that are connected to external displays, especially larger displays that have lots of room for multitasking.



EVER SINCE THE very first iPad was unveiled way back in 2010, users have demanded Mac-style multitasking — and

Apple has tried various ways to deliver it, with mixed results. In addition to the two existing ways to multitask, Slide Over and Split View, some recent iPad Air and iPad Pro models now have a third option available: Stage Manager.

Stage Manager is in iPadOS 16 (and macOS Ventura), and it's the most Mac-like interface Apple has used on the iPad. It enables you to run several apps in their own resizable windows, just like you would on a Mac desktop, and you can switch between them by tapping. It feels very Mac-like, especially if you have an external keyboard and mouse.

Stage Manager isn't for everyone, though. For starters it only works on M1-powered iPads, which means owners of older iPads (and even the new iPad 10th gen) won't benefit from the feature.

You can find out more about iPadOS 16, and get a better insight into all the new

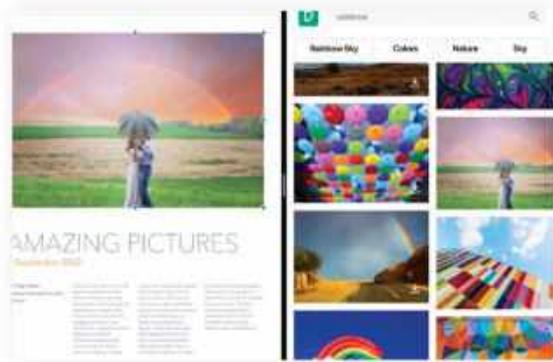


The recently used apps in the left-hand side look nice but take up room; you can disable them in Settings.

aspects of Stage Manager on the iPad by heading over to our main feature on page 12 (if you've not looked there already).

In this tutorial, we'll look at the three different ways you can organize your apps for multitasking on your iPad: Split View, which as you'd expect splits the screen between two apps; Slide Over, where one app floats above another; and the new Stage Manager. **CARRIE MARSHALL**

HOW TO View multiple apps on iPad



- 1 Split the view**
Tap on the “...” at the very top of the app you’re currently using and tap Split View. The app will move to the side and your Home Screen appears; tap the app you want to launch. You can adjust the split by dragging it.



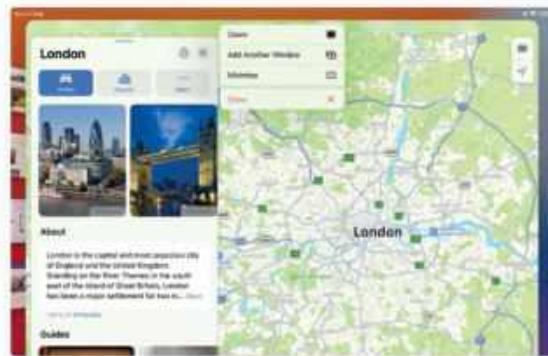
- 2 Slide it over**
If you want your current app to take up most of the available screen space, use Slide Over instead of Split View. This brings up the second app in a narrower panel. As with Split View you can drag and drop between apps.



- 3 Toggle on**
On an iPad with an M1 processor, you can also use the new Stage Manager feature in iPadOS 16. To do that, you’ll need to switch it on first, so go to Settings > Home Screen & Multitasking > Stage Manager.



- 4 Stage Manager**
To move into Stage Manager, pull down from the top right of the screen to display your iPad’s Control Centre. You should now see the Stage Manager toggle; here it’s the very bottom icon. Tap it to continue.



- 5 Open your first app**
Open an app and you’ll see that now, it doesn’t open full screen. Instead it leaves room for other recent apps in the column at the left. To add another app, tap the “...” at the top of the app and then Add Another Window.



- 6 Open your next app**
Tap on the app you want to open next and you should now see the screen looking like this. You’ll see there are grab handles at the lower right and lower left of the two app windows; drag them to resize the app’s window.



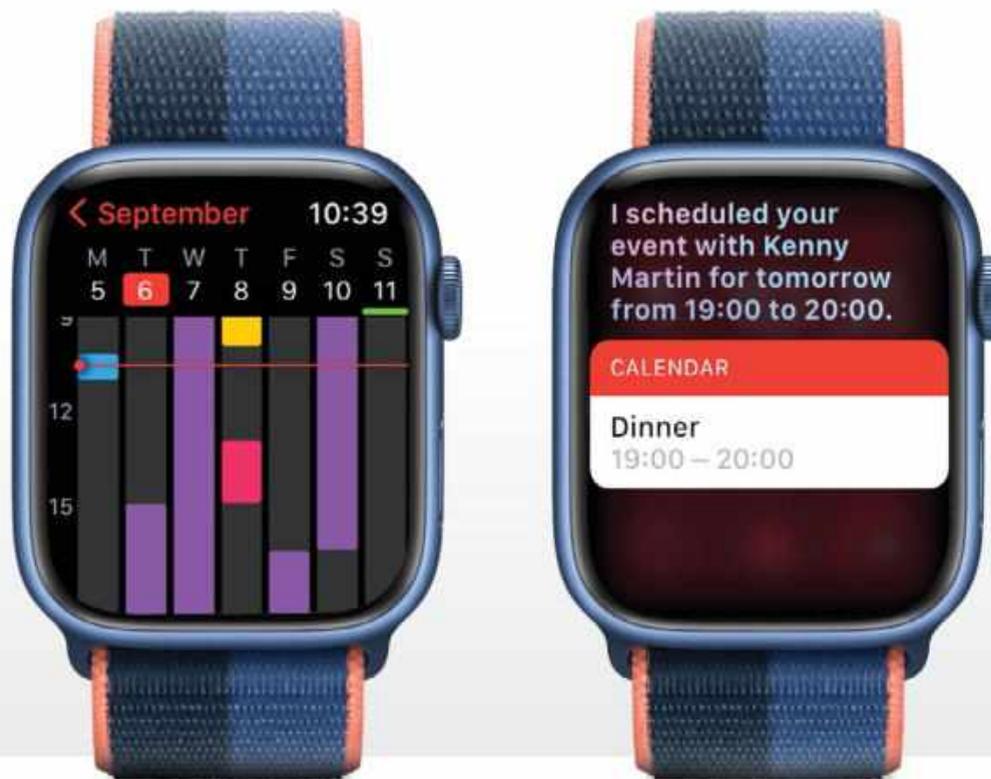
- 7 Adjust and switch**
Here we’ve made Apple Maps take up the lion’s share of the screen space, and we can switch between our two apps simply by tapping on the one we want. As with Slide Over and Split View you can drag between apps.



- 8 Drag between apps**
Simply highlight the text or image you want to copy from the first app, then press and hold, dragging it over its destination. Here we’re dragging from a Wikipedia page in Safari to an open doc in Pages.



- 9 Leave the stage**
You can go back to normal, single-app mode by tapping the “...” at the top of an open app and selecting Zoom. Or, pull down Control Centre from the top right and tap on the Stage Manager toggle to switch it off again.



Create events on Apple Watch

With watchOS 9, you no longer need your iPhone to create events

REQUIRES

watchOS 9

YOU WILL LEARN

How to create new calendar events in watchOS

IT WILL TAKE

5 minutes



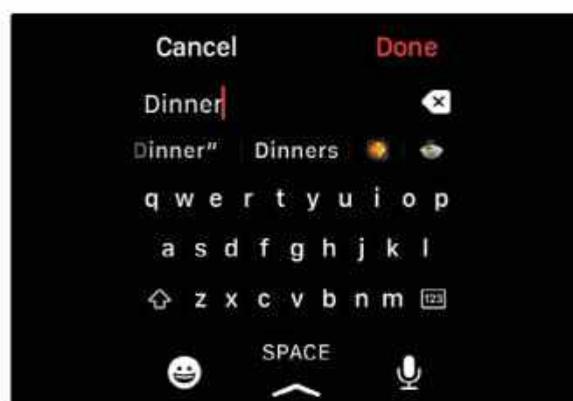
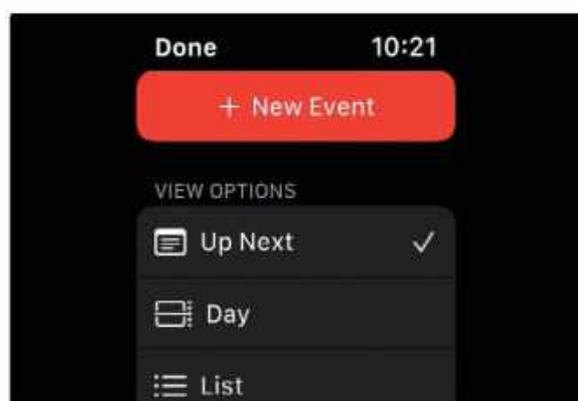
WHEN IT COMES to OS updates, watchOS gets the least attention. This year is no exception: there's no watchOS equivalent to Stage Manager on iPad or to the iPhone's new ability to cut pets and people out of photos. But that doesn't mean watchOS updates aren't important.

watchOS 9 makes your Apple Watch more customizable, more useful and more powerful than before, and while many of the improvements may seem far from

headline-grabbing they will actually save you a lot of time in the months to come.

The updates to the Watch Calendar app are a great example of that; you can now navigate more quickly to specific days and weeks, and it has the same event creation options as the iPhone app — so you can create new events, add them to specific calendars, send invitations to other attendees and more. It's the sort of thing we like about updates; it all makes life a little easier. **CARRIE MARSHALL**

HOW TO Set up an event on Apple Watch



1 Open the calendar
When you open the Calendar app on your Apple Watch, you'll see three different view options to show your upcoming events, and a big red New Event button. Tap on New Event to add your new calendar item.

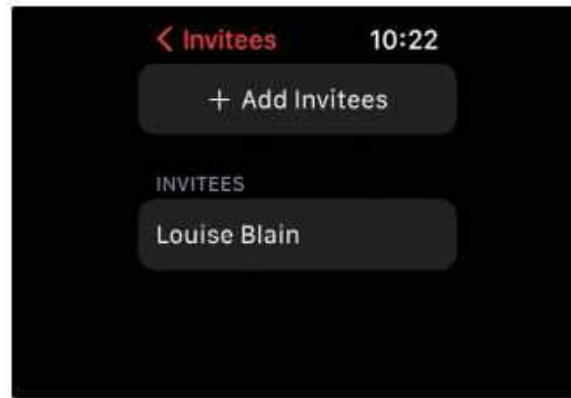
2 Add a title
First we need to add a title. If you have a crowded schedule it's wise to use really descriptive names, but our event here is just catching up with a friend so we'll type "dinner". You can use the microphone if you prefer.

3 Set the times
By default, new Calendar events are all-day events, but you can quickly change that by tapping on the event start time and using the Digital Crown to specify when the event will start. Do the same for its finish time.



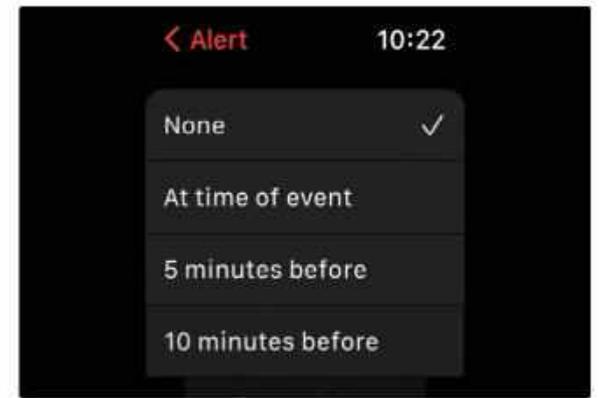
4 Choose a calendar

We use multiple calendars to keep track of different things – personal events, work deadlines, and so on. You can't create new calendars on the Watch but you can assign new events to calendars you've already created.



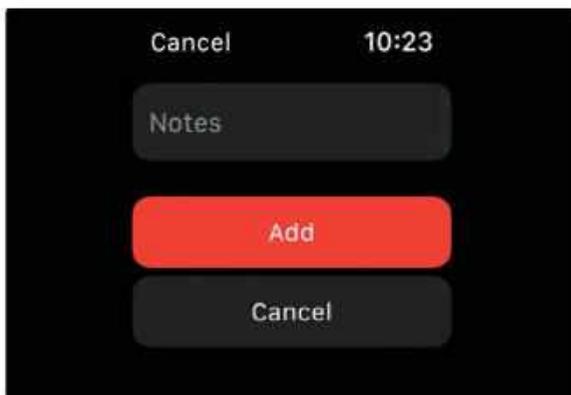
5 Add invitees

If your event involves others, you can send them calendar invites from the New Event screen on your Watch. All you need to do is pick the appropriate contact(s). If you change or delete the event they'll be notified automatically.



6 Set an alert

One of the most useful Calendar features is its ability to alert you of an upcoming event so there's enough time to prepare for it. Simply tap on Alert and tell your Apple Watch how far in advance you want to be reminded of this event.



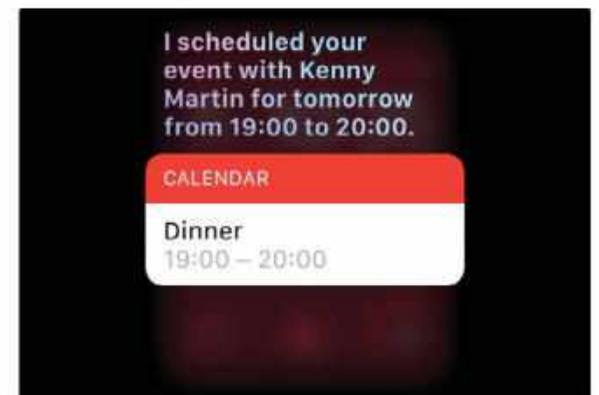
7 Add a note

The final step is to add a note, if you want to include one – we use this field to remind us of relevant information such as who paid the bill the last time or what items we need to remember to take along. Tap on Add when you're finished.



8 Speak to Siri

If all that typing seems a bit unnecessary, you can use Siri. Simply press and hold the Digital Crown and tell Siri what you want, for example "create an event in my (calendar name) calendar on (date and time) with (contact name)".



9 See new event

Provided Siri hasn't misheard you – something that happens occasionally in noisier environments or if you have similarly named contacts – you should see a screen like this, confirming the new event you've just asked Siri to create.



10 Confirm it's correct

Siri doesn't show any additional details about your new event such as the calendar name or invited contacts in its confirmation screen, but if you check the new entry in the calendar app you'll see that it's stored those settings too.



11 Clear any conflict

In a nice touch, Siri will warn you if your new event conflicts with any other event in your calendar. If you dismiss the warning as we've done here, that conflict information will still be visible in the Calendar entry for those events.



12 Use a complication

Many Apple Watch faces can include a Calendar view as a compilation of upcoming events. Here we've added the Calendar view to the centre of the colorful watchOS 9 Modular watch face so we know what we've got planned.



Make dynamic presentations

Give your animated presentations extra pizzazz in Keynote 12.1

REQUIRES

macOS 11.0 or later, iPadOS 14 or later, Keynote 12.1

YOU WILL LEARN

How to use dynamic background animations in Keynote

IT WILL TAKE

30 minutes



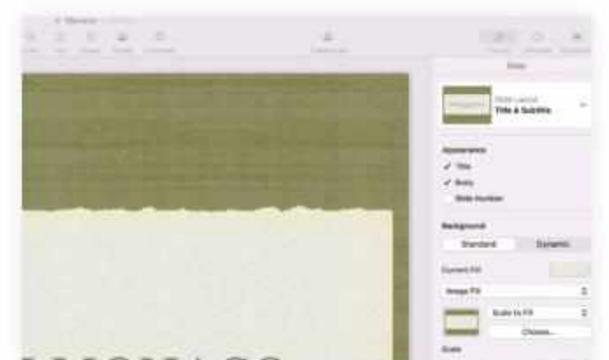
DYNAMIC BACKGROUNDS ARE a new feature introduced with Keynote 12.1, which was released in June of this year. If you're not up to date with the latest version of Keynote, make sure you update before starting this guide. You must be running macOS 11.0 (Big Sur) or later, or iPadOS 14 or later if you're using an iPad.

The new dynamic backgrounds feature lets you add subtle motion to your Keynote slides, which move continuously as you view. If you use the same dynamic background on consecutive slides, the

animation continues to play without interruption as you move between them. It's also worth noting that these animations are generated procedurally, so they don't have too much of an effect on the size of your Keynote file.

Keynote's dynamic backgrounds can do much to make your keynote presentations more interesting, but as always, don't overdo them. Sometimes, less is more. Too many differing animated backgrounds can look messy and may become overwhelming for people trying to follow the slides. **IAN OSBORNE**

HOW TO Get started with a dynamic background



1 Create document

Here we're going to edit a dynamic background into a presentation we've already made, but the guide works just as well when designing from scratch. First, open the document in question (or start a new one).

2 Open the sidebars

If the left sidebar isn't visible, click View (top left) and select Navigator. In the top-right corner of the screen, click on the Format icon to open the right-hand sidebar. In the left-hand sidebar, click on the slide you want to edit.

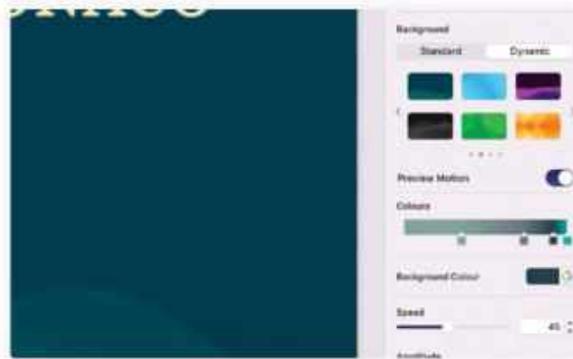
3 Select background

If you currently have a text or picture box selected, click on the slide's background to select that instead. In the right-hand sidebar, look for the section titled "Background", and its Standard and Dynamic tabs.



4 Add the background

Click the Dynamic tab, and choose a dynamic background from those on offer. You can use the chevrons on either side of the six backgrounds shown in the sidebar to navigate through the full range.



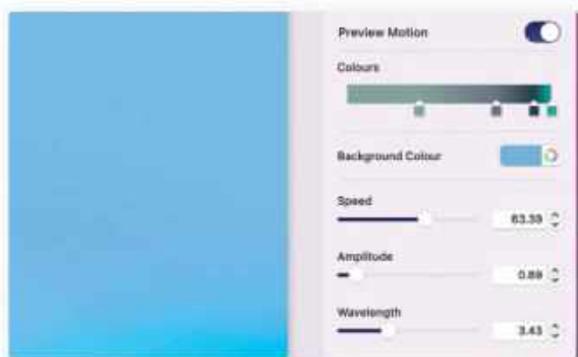
5 Preview and Colors

The Preview Motion switch turns the dynamic movement on and off while you're working on your presentation. Use the Colors sliders on the gradient bar to get the precise tones and blends that you're looking for.



6 Background Color

Click on the box labelled Background Color to choose a new main color for your dynamic background. Click the color wheel next to it and you can change its opacity too, using the slider in the new window.



7 Other controls

The other dynamic background controls differ according to which background you've chosen. Here we have Speed, Amplitude, Wavelength and Focus. Experiment with them using the slider bars until you find what works.



8 Save background

Now that you've created your own custom dynamic background, you'll want to save it. Go to the background picker, navigate to the blank page and click the "+" in the first option. The background is now saved for later use.



9 The other slides

If you wish to use the background on other slides in your presentation, simply hold down Shift and select other slides in the slide picker on the left. The slides will then automatically be given the new background.

HOW TO Add dynamic backgrounds on your iPad



1 Using an iPad

If you're using Keynote on an iPad, dynamic backgrounds work in a very similar way to Keynote on a Mac. Tap on the background of a slide, and then click the brush icon to see the formatting tools in a pop-up window.



2 The backgrounds

In the window that appears, tap on the Background option, and then select the Dynamic tab as shown. Choose a background from the picker at the top; swipe the options right and left to cycle through them.



3 Multiple slides

To select every slide, tap the currently highlighted one and choose Select All from the contextual menu. You can then add a dynamic background to the whole presentation at once instead of slide by slide.

How GaN chargers work

They're smaller, lighter and quicker, but what's their secret?



YOU WILL LEARN

What a GaN charger is, why it's an improvement on current chargers and what they can do for travellers.

THE NEXT GENERATION OF CHARGERS WORK MUCH SMARTER, AND WITH GREATER EFFICIENCY



KEY FACT

GaN chargers generate less heat than regular models, and transfer power more efficiently. This means they can be built with several outlets, charging multiple devices at once, including notebooks. The future of mobile device charging belongs to GaN chargers.



GaN CHARGERS ARE cool. Not in the informal statement of approval sense, but they're quite literally cool. By using gallium nitride (GaN for short) instead of silicon for their transformers, GaN chargers generate less heat when charging. This means the components can be packed closer together in the unit, making them smaller and easier to carry around. And with less energy being lost to heat, the power is more efficiently transferred into the device that you're charging. They can also carry a greater voltage than silicon too. The end result? Faster charging.

Gallium nitride itself isn't a new discovery. It's been used in blue light-emitting diodes (LEDs) since the Nineties, and later provided the breakthrough that made the first white LEDs possible. It's also used for solar cell arrays on satellites, and the blue lasers used in Blu-ray players. But it's the potential of gallium nitride semiconductors in chargers and power supply units we're interested in here, and in this area, it's fairly new.

Back in the day, a charger was a very simple device. It transferred mains power to a battery-powered device, constantly charging the battery. Yet as mobile technology advanced, it was realized that this was a very poor way of powering up. Receiving a constant power supply in this



The extra power enables it to charge multiple devices without being physically larger than a regular charger.

way, even when the battery was full, caused degradation over time. A degraded battery holds less power, meaning you got shorter and shorter use from your mobile device before it needed charging again.

The next generation of chargers work much smarter, and with greater efficiency. A silicon-based chip inside the device monitors the battery capacity and notes how full it currently is, adjusting the power going into the cell accordingly. A fast charger might fill your battery up to around 80% full as quickly as possible, but slows down greatly for the last 20%, reducing wear and tear on the battery and prolonging its life.

TRAVEL FRIENDLY

For the emerging GaN charger generation, a gallium nitride semiconductor chip replaces the silicon-based one. As stated, GaN chips are more energy efficient than silicon chips. When a regular charger is plugged into the mains, it gets warm to the touch. Not so GaN chargers, which lose much less energy as heat. This means heat-dissipating components such as heatsinks aren't needed. Passive components that reduce the flow of electricity through a circuit are in less demand too.

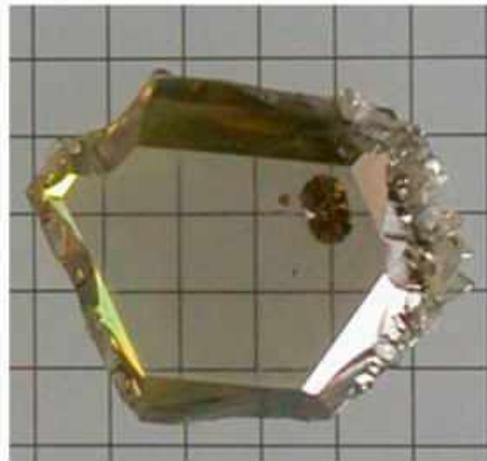
With the transistors giving off less heat you can place them closer together, and incorporate several outlets into the same charging device too. This means you can charge multiple devices at once, with the charger providing enough power to do so. And with GaN chargers of around 65W appearing, they have enough power to charge a laptop.

This is obviously great news for holidaymakers and business travellers. Where before you might need to carry separate chargers for your MacBook, iPad, iPhone and Apple Watch, now a single charger might cover all your equipment. And that charger might actually be

> WHAT IS GALLIUM NITRIDE?

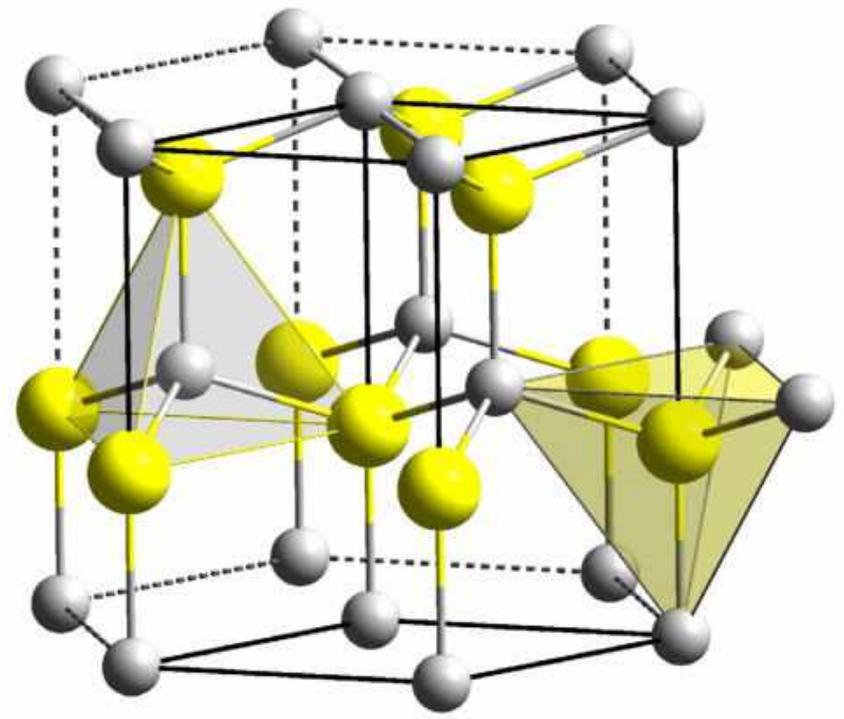
Gallium nitride (GaN) is a direct bandgap semiconductor that combines gallium (atomic number 31) and nitrogen (atomic number 7). It has a very hard hexagonal crystal structure, is very stable and has a wide bandgap. All semiconductor materials have a bandgap, an energy range where no electrons can exist. The wider the bandgap, the higher voltages it can sustain, and higher temperatures it can tolerate. Gallium nitride's bandgap is 3.4 eV, while silicon's is only 1.12 eV.

As well as a wide bandgap, a GaN transformer has a higher breakdown strength, better thermal conductivity, a faster switching speed and lower on-resistance, making it ideal for power-based devices. According to EPC Corporation, GaN



conducts electrons more than 1,000 times more efficiently than silicon.

Gallium nitride is the technology that makes possible high-resolution color screens found in flat-screen televisions, mobile phones, tablets, notebook computers and monitors. It's also used to generate the blue lasers used in Blu-ray players.



Gallium nitride has a hard crystalline structure, and conducts electrons more efficiently than silicon.

Source: GaN Wurtzite crystal structure, Wikipedia

smaller and lighter than the ones you're used to as well. It's also likely to last longer before failing. With less heat generated by the charging process there's less strain on the charger, meaning it's less susceptible to wear and tear.

But is there a drawback in using gallium nitride instead of silicon for charging products? At the moment, there is: cost. A gallium nitride semiconductor as used in GaN chargers are more expensive than silicon semiconductors. As a result, a gallium nitride-based charger is considerably more expensive than a silicon-based model. Yet this isn't likely to be the case for long. As GaN chargers become more popular, gallium nitride semiconductors are likely to come down in price due to economies of scale. Better still, as GaN chargers produce much less heat than silicon chargers, they need fewer components such as heatsinks, passive inductive and capacitive circuit elements and more. This, of course, will bring down the price. Semiconductor

manufacturers GaN Systems predict an eventual saving of 10–20% for products that use gallium nitride semiconductors.

GOING, GOING, GAN

GaN chargers are not yet widespread, but you can already buy one if you wish. Third-party manufacturer Belkin, for example, has a powerful 108W four-port GaN charger for just under \$90. With two USB-C and two USB-A ports, you'll be able to power a laptop and three additional devices. Amazon has a competitively priced two-port 65W charger for a little under \$20. This charger has a 45W USB-C port and an 18W USB-A port; just the thing for laptops, tablets and phones. For a little under \$40, MINIX has a 66W three-port GaN charger (two USB-C and one USB-A), which comes with UK, US and European plugs, so it's ideal for travellers.

With gallium nitride chargers, the future for mobile devices looks very cool indeed. **IAN OSBORNE**



KEY FACT

According to several sources, Apple is working on GaN chargers, for possible release in late 2022. Several third-party manufacturers make GaN chargers that are faster, smaller and simply better than the ones Apple supplies itself, so a move to gallium nitride chargers would make sense. It would also allow Apple to streamline its charger line-up, with a single charger covering a wider range of products.



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