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# Macworld

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# Apple threatens to leave UK market after court ruling

UK ruling forces Apple to pay what its lawyers say could be an “unacceptable” fee for technology. **Petter Ahrnstedt** reports

**F**ollowing a court decision that could see the company pay as much as \$7 billion (around £5bn) to use a patent covering technology in the iPhone, Apple has threatened to leave the UK market, according to the financial site This Is Money. Should this happen, sales of the iPhone in the UK would cease and

there would be wider restrictions on Apple’s services and products.

Optis Cellular Technology is suing Apple for infringing its patents after Apple refused to pay licence fees for using what it regarded as ‘standardized’ technology in its products. In June, a High Court judge ruled that Apple had infringed two Optis patents, covering technology



which helps iPhones connect to 3G and 4G networks.

The fees Apple would have to pay for the patents has not yet been set, and would be determined at a trial in 2022. But the licence fees have been estimated at \$7bn, which gives an idea of the stakes – and Mr Justice Meade, at a hearing earlier this year, warned Apple it “might be disappointed” by the rate.

This may be true, but even before the numbers are worked out the company is already hinting that it might walk away from the UK market rather than pay the fees.

“Apple’s position is it should indeed be able to reflect on the terms and decide whether commercially it is right to accept them or to leave the UK market,” said Marie Demetriou, a lawyer acting for Apple. “There may be terms that are set by the court which are just commercially unacceptable.”

It is extremely unlikely, however, that the company would carry out this threat, given the large revenues it gets from the UK smartphone market.

This is not the first time Apple has threatened to leave a country. In 2007 and 2008, a similar conflict developed between the company and the Norwegian consumer ombudsman

over the way DRM-protected iTunes tracks could only be played on Apple products. Apple backed down.





# Apple goes retro with free downloads of OS X Lion and Mountain Lion

You no longer have to pay an upgrade fee to get older download codes, but you can if you want. **Roman Loyola** reports

**W**hile macOS is currently on version 11 (otherwise known as Big Sur) and macOS 12 Monterey is coming later this year, there are plenty of people who use old versions of the Mac operating system. Some are still using OS X 10.7 Lion

and OS X 10.8 Mountain Lion, and until recently, you had to pay Apple £20 to get download codes for those OSes. But there's good news: Apple is now offering Lion and Mountain Lion for free for anyone who wants them.

To get Lion and Mountain Lion for free, you can visit the support



documents for those operating systems on Apple's website:

**Mac OS X Lion installer free download (4.72GB):** [fave.co/3i3ogPP](https://fave.co/3i3ogPP)

**Mac OS X Mountain Lion installer free download (4.45GB):** [fave.co/3yTXlwS](https://fave.co/3yTXlwS)

You can find downloadable copies of Snow Leopard ([fave.co/2UHO8uv](https://fave.co/2UHO8uv)) and Leopard ([fave.co/3eaJYjl](https://fave.co/3eaJYjl)) on the Internet Archive and the reviews on the Internet Archive's pages have tips on how to create USB installers from the downloads.

## COMPATIBILITY

Lion runs on Macs that came prior to the launch of Mountain Lion in 2012. Mountain Lion runs on the Macs below, but you may not be able to downgrade to it unless you completely reformat the drive. You can't install an old OS on top of a newer one. Also, the oldest OS an M1 Mac can run is Big Sur.

- iMac (Mid 2007-2020).
- MacBook (Late 2008 Aluminium, or Early 2009 or newer).
- MacBook Pro (Mid/Late 2007 or newer).
- MacBook Air (Late 2008 or newer).
- Mac mini (Early 2009 or newer).
- Mac Pro (Early 2008 or newer).
- Xserve (Early 2009).

## SNOW LEOPARD

Mac OS X 10.6 Snow Leopard was released in 2009 and introduced the Mac App Store. Apple used to sell it for £19.99, but no longer offers it.





# Apple designates the 2015 MacBook as ‘vintage’

The original MacBook ushered in USB-C and the Magic Keyboard.  
**Michael Simon** reports

**W**hen Apple launched the MacBook in 2015, it was supposed to be a new era for Apple’s ultraportable laptops. Thinner and lighter than the Air with a 12in Retina

display and a sole USB-C port, it seemed to usher in a new era for Apple’s laptops. But the price tag and processor held it back, and the keyboard ended up being one of the most reviled in Apple’s history.



Less than four years later, Apple discontinued the MacBook line after just two revisions. Now it has officially designated the 2015 MacBook as ‘vintage’, meaning that ‘Apple stopped distributing them for sale more than five and less than seven years ago’. It’s the first Mac from 2015 that has been declared vintage.

This doesn’t usually mean much, but in light of recent rumours (see page 19), it could be significant. Apple is rumoured to be working on a new MacBook with an Apple silicon that could come in colours similar to the iMac. According to several reports, the machine will have a 13in display, MagSafe and a faster processor than the M1. It was originally rumoured to arrive later this year, but it’s possible that the release gets pushed to 2022 due to industry-wide supply constraints.



# How, why and if to install the new beta on your iPhone, iPad and Mac

Here's everything you need to know about getting beta software on your Apple devices. **Michael Simon** reports

**A**s you are no doubt aware, there are a bunch of new betas available for your Apple devices. At any given time, Apple has betas of iOS, iPadOS and macOS, along with tvOS and watchOS – and you don't need

to be a developer to try them out. So you probably have questions such as why you would want them, how to get them on your devices, and, above all, should you download them at all. In this article we'll tell you everything you need to know.



## AVAILABLE BETAS

At the moment, Apple is offering two versions of each OS, the latest version of the current OS and a preview of the next one:

- iOS 14.7 and iOS 15.
- iPadOS 14.7 and iPadOS 15.
- macOS 11.4 Big Sur and macOS 12 Monterey.
- watchOS 7.6 and watchOS 8.
- tvOS 14.7 and tvOS 15.

You can only have one profile installed on your phone at a time, so you'll need to decide which version you want. Once iOS 15 is released, there will only be iOS 15 betas until the iOS 16 beta launches.

## RISK

Whenever you download beta software, whether it's an app or an OS, there's an inherent risk. After all, it's beta for a reason – it's not finished yet. Apple offers beta versions of software for the explicit purpose of finding bugs and reporting them, so you're essentially volunteering to work for Apple for free.

But the risk is relatively low. By the time betas reach the public, they're usually pretty stable. However, if you rely on your iPhone for work or other

important business, you might not want to install it on your main device. Certain apps might not work before they're updated, some important features (like phone calls or networks) could periodically crash, and most importantly, battery life could suffer.

## ARE THE FEATURES IN THE BETA WORTH IT?

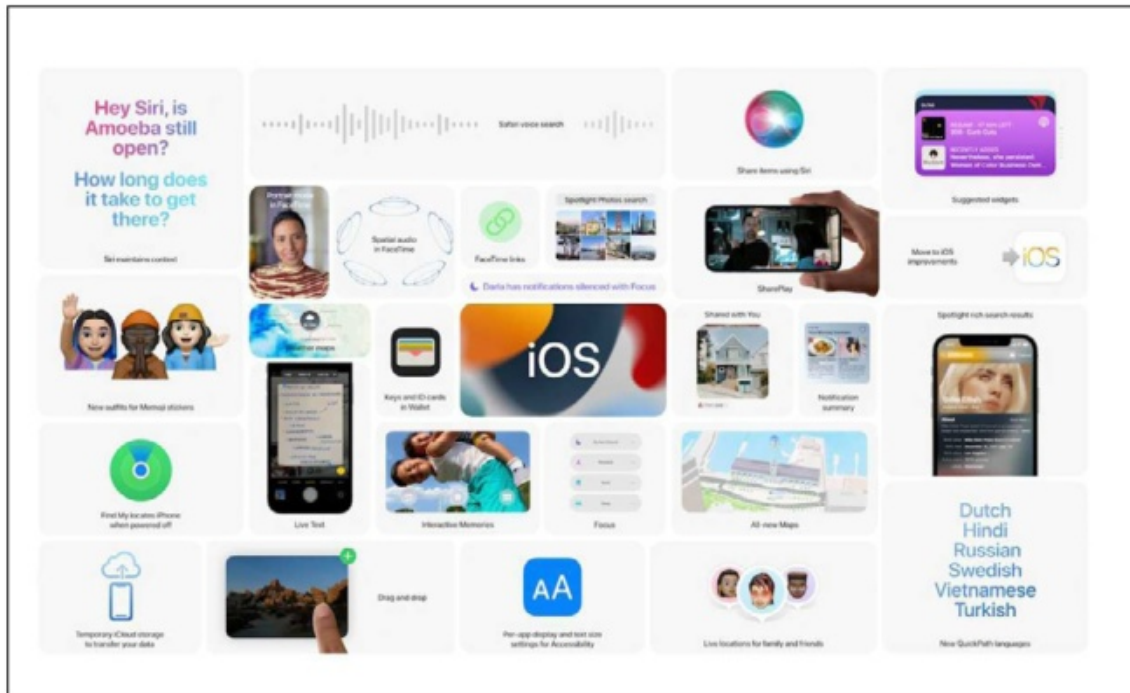
Many of the betas that Apple releases are relatively minor, with bug fixes, performance improvements, and small tweaks and features. But at least once in each update cycle, Apple releases a feature-packed update that brings several enhancements that we didn't get in the fall. For example, the iOS 14.5 update that landed in April delivered Unlock iPhone with Apple Watch, App Tracking Transparency, and new emoji, along with several important updates to the iPad.

## HOW TO GET THE BETAS

If you've decided to accept all of the warnings above, finding the betas is easy. Just head over to Apple's Beta Software Programme site ([fave.co/3g7Ld4O](https://fave.co/3g7Ld4O)) and sign in using the right device:

**iOS:** iPhone

**iPadOS:** iPad



There are a lot of new features in the iOS 15 public beta, but more betas are largely about fixing bugs and enhancing performance.

**macOS:** Mac

**watchOS:** iPhone

**tvOS:** Mac, iPhone or iPad

You'll need to sign in using the same Apple ID that you use on the device on which you're going to be installing the beta. After you sign in, choose the OS you want and tap/click the Enrol Your Devices tab. Then choose the OS that you want and follow the instructions to download the profile or, in the case of macOS, the access utility.

You'll need to go through the process of uploading the profile onto your device, downloading the beta and installing it, which will require several restarts and a chunk of time. So make sure you have a half-hour or

so because you don't want to rush it.

## NEW BETA

When testing new software, Apple generally pushes out updates every two weeks. They will arrive on your device just like the regular updates do, in the Software Update tab in the Settings app or System Preferences on your Mac.

## FINAL VERSION

Before Apple pushes out the final version of an OS update after a period of beta testing, the final version will first land on beta devices. Then you can either decide to leave the beta programme or remain part of it to get the next beta as soon as it arrives.

## HOW TO LEAVE THE BETA PROGRAMME

If you don't want to get beta updates anymore, you can opt-out of the programme. Unless you erase and restore your device, the beta will remain until a new commercial version of the current operating system arrives. In the case of watchOS and tvOS, you can't immediately return to the current OS.



**iOS/iPad OS:** To stop receiving beta updates and return to the current version of the OS, you'll need to delete the beta profile and wait for the next software update. Go to Settings > General, tap Profiles & Device Management, then the iOS Beta Software Profile. Tap Remove Profile, then restart your device.

**macOS:** To stop receiving macOS updates, you'll need to unenrol your Mac. Go to System Preferences > Software Update, then tap Details under the message that says, 'This Mac is enrolled in the Apple Beta Software Programme'. Confirm the change, choose Restore Defaults.

**watchOS:** To stop receiving the watchOS betas, go to the Watch app on your iPhone, tap the My Watch tab, then go to General > Profiles and tap the watchOS 8 Beta Software Profile that appears. Then tap Remove Profile.

**tvOS:** Go to Settings and click System > Software Update and then turn off Get Public Beta Updates.



# The next MacBook Pro

Here are the major features that have been rumoured for the next MacBook Pro. **Roman Loyola** reports

**W**ith the continuation of the Apple silicon roll-out, the MacBook Pro is in line for some major changes. The company will likely take the opportunity of the new models based on Apple silicon to introduce new designs, features and refinements.

## SIZES, DESIGN AND COLOURS

Bloomberg's Mark Gurman reported that Apple will release a "redesigned" MacBook Pro this summer. It will be available in 14- and 16in models; Gurman did not state if the current 13in M1 MacBook Pro will undergo any design changes, though iOS



developer Dylandkt tweeted in January that the “upcoming MacBook Pro models may not feature a logo on the bottom bezel”.

Analyst Ming Chi-Kuo said in a research note (via Macrumors) that the laptop will see a redesign in 2021. In an earlier note from May 2020 (via Macrumors), Kuo said that Apple is working on a 14in MacBook Pro – essentially, a transformation of the higher-end 13in models, similar to what happened when Apple released the 16in MacBook Pro to replace the 15in models. It’s unclear if the lower-end 13in MacBook Pro would remain in the line-up if a 14in version is revealed.

Jon Prosser of Front Page Tech reports that Apple will release a MacBook Air or a reintroduction of the MacBook in colour offerings and a white bezel similar to those of the new 24in iMac. If Apple is using colours in its consumer-level products, it’s possible that Apple sticks with the Space Grey and silver options for the higher-end, which includes the MacBook Pro. And according to a tweet by previously accurate Dylandkt, the MacBook Pro branding might be removed.

## DISPLAY

In March 2020, analyst Ming Chi-Kuo released a note reporting on Apple’s

use of mini-LEDs in new products, including the 2021 versions of the 14in and 16in MacBook Pro. Apple already launched its first mini-LED screen in the 12.9in iPad Pro, so it’s clear Apple is already working on the tech. While an earlier report from DigiTimes suggested that Apple might delay the launch of mini-LED to 2022, Ming-Chi Kuo reported in July that Apple is preparing production of the display tech for a launch in late 2021.

Mini-LED is a backlighting technology for displays, but several more LEDs are used than what is currently implemented. This results in better control of the backlight, better image contrast, and greater dynamic range. If Apple’s description of the iPad Pro is any indication, the new display will deliver “true-to-life detail with a 1,000,000:1 contrast ratio ... (and) breathtaking 1000 nits of full-screen brightness and 1600 nits of peak brightness”.

## MAGSAFE AND PORTS

Bloomberg’s Mark Gurman reported that the MacBook Pro that will be released next will have a MagSafe charger, an SD card slot, an HDMI port and “more Thunderbolt ports” (the current 13in MacBook Pro has two Thunderbolt/USB 4 ports; the



**The 13in MacBook Pro has two Thunderbolt 3/USB-C ports. Chances are a rumoured 14in model will also have two ports.**

current Intel-based 16in MacBook Pro has four Thunderbolt 3/USB-C ports.)

Analyst Ming Chi-Kuo (via Macrumors) said in a research note that MagSafe will be on the new 14- and 16in MacBook Pro. Introduced in Mac laptops in 2006, MagSafe was a magnetic power adapter connector that could easily disconnect from the laptop using non-axial force – tugs from angles other than straight away. Its implementation meant that if the laptop was plugged in and for whatever reason, the cable was tripped over or pulled, the connection would break and the laptop would be spared from flying off the work surface. MagSafe was a separate,

dedicated plug for power, however, and disappeared when Apple switched to USB-C connectors in 2016. The USB-C connectors support battery charging but do not have a breakaway connector.

Apple has transitioned to Thunderbolt/USB 4 ports in its M1

Macs, and Apple will continue with this in upcoming models.

## FRONT CAMERA

The MacBook Pro has had an underwhelming 720p FaceTime HD camera for about a decade, but the most frustrating feature on Apple’s high-end laptop might be getting a long-overdue update. According to @dylandkt on Twitter, the MacBook Pro “will actually be getting an updated improved 1080p webcam for the next model”, which will presumably be the same hardware in the 24in iMac. Apple upgraded the webcam in its all-in-one with a 1080p FaceTime HD camera with an M1 image signal processor and



we found it to be a huge upgrade over the 720p model.

## END OF THE TOUCH BAR

The Touch Bar is a polarizing feature of the higher-end MacBook Pro models – those who dislike it are expressive about it, while people who like it don't really say much (at least it seems that way). In a January 2021 note, analyst Ming-Chi Kuo said that the OLED Touch Bar will be replaced by function keys. In July, an analyst at Display Supply Chain Consultants seemingly confirmed that report, telling investors that Apple is planning to “cancel the Touch Bar” in the future. Apple introduced the Touch Bar in 2016 to replace the function keys with “a brilliant, Retina-quality Multi-Touch display”, but it has been a decisive feature.

## PROCESSOR AND OTHER SPECS

A Twitter rumour has seemingly leaked small but significant details about the next MacBook Pro. iOS developer Dylandkt – who previously predicted the M1 in the iMac – claims the MacBook's chip will be branded as the M1X and bring “more thunderbolt channels, more CPU cores, more GPU cores, and greater power draw”. The

speculation for Apple silicon in the higher-end MacBook Pro models is that Apple will use this opportunity to reveal the next in line in the M-series. Bloomberg's Mark Gurman reported that Apple's “redesigned” 14- and 16in MacBook Pro will have Apple's system on a chip that features a 10-core CPU (eight performance cores and two efficiency cores), 16 or 32 graphics core options, a maximum of 64GB of memory, and an “improved Neural Engine”.

He added that it's possible that at the end of 2021, the 13in MacBook Pro will have a new System on a Chip that replaces the M1. The new SoC will be faster but have eight CPU cores (four performance cores, four efficiency cores) like the M1. The graphics cores will increase from eight to ten. The chip will reportedly be called the M1X, as evidenced by several rumours and Apple's own tags on the YouTube video for its WWDC keynote.

Apple has been rumoured to be including 5G and Face ID support in its laptops, but Gurman reported that those features do not appear “to be coming soon”.

## PRICE AND RELEASE

According to Bloomberg's Mark Gurman, Apple will release the new

14- and 16in MacBook Pro with Apple silicon this summer. We had originally hoped that the new machines would arrive at WWDC, but the event has come and gone without a release. DigiTimes, which has a spotty track record for rumours but is more accurate when it comes to shipping, says that “volume production of the 14in MacBook Pro is likely to begin in the fourth quarter of 2021, and the 16in model will start in the first quarter of 2022”.

However, sources recently told the publication that shipments will kick off in the third quarter, so an autumn launch is likely, possibly around the time the 13in MacBook Pro launched last year. More recently, Twitter leaker Dylan also said new MacBooks will arrive in the fourth quarter of 2021 and the Economic Daily News, which has been a reliable source of supply chain information in China, said Apple only began to increase its manufacturing capacity in late June. Finally, Ming-Chi Kuo reported in July that production for the new MacBook Pro would begin in the third quarter.

Prices have not been leaked but based on prior Apple silicon launches, the 16in model will likely still start at £2,399, with the 14in MacBook Pro possibly taking the place of the £1,799

13in MacBook Pro. It is not clear if the current 13in M1 MacBook Pro will remain in the line-up.





# The next MacBook Air

Here's everything we know so far about the next MacBook Air.

**Roman Loyola** reports

**A**pple made some drastic changes when it launched the new MacBook Air in 2018, but other than the processor and the keyboard, there haven't been any major improvements since. But if we can believe the latest rumours, that could be changing this year, as Apple prepared to launch a drastic overhaul to its cheapest

notebook. Here's everything we've heard about the new MacBook Air:

## NAME AND PRICE

We're assuming for the sake of this article that Apple will stick with the MacBook Air name for the next revision, but this hasn't been confirmed yet. So it's possible that Apple reintroduces the MacBook,

which was discontinued in 2019 and recently vintaged by Apple (see page 8 for details). Apple sold the Air alongside the MacBook Air for a short time, so it's also possible that the current Air either gets a price cut to make room for the new model at the £999 tier or sticks around at the same price as a cheaper option for a higher-priced MacBook.

## DESIGN AND COLOURS

It's been reported for months that Apple is working on a lighter and thinner redesign for the MacBook Air. More recently, serial leaker Jon Prosser reported on his Front Page Tech YouTube channel that the new MacBook Air will be switch to a flat design rather than the classic tapered look, but retain its incredible thinness. It could also have full-size function keys, which would make the trackpad slightly smaller.

Apple will be making several colours for the MacBook Air, according to Prosser, likely in hues to match the new iMac, so green, blue, yellow, orange, pink, purple and silver. Prosser also said the bezels will be thinner and switch from black to white while the bottom will gain two rubber strips instead of the standard circular feet.

## DISPLAY

According to Mark Gurman at Bloomberg, Apple considered a larger 15in screen for the MacBook Air, but the company decided to shelve that model for the time being. However, even if the new Air sticks with the same size screen, it still could be getting an upgrade. We heard rumblings months ago that the same mini-LED in the 12.9in iPad Pro could be coming to the MacBook Air, but it looks likely now. Ming-Chi Kuo, who has an incredible track record with rumours, reports that Apple will debut a mini-LED in the MacBook Air in 2022 following a debut in the MacBook Pro later this year.

As seen in the new 12.9in iPad Pro, mini-LED is a backlighting technology for displays, but as its name suggests, uses a higher concentration of smaller LEDs. This results in better control of the backlight, better image contrast, and greater dynamic range.

## MAGSAFE AND PORTS

The new MacBook Air, which could be released later this year or in early 2022, could make the return of the MagSafe connector, according to Bloomberg's Mark Gurman. MagSafe was a magnetic power adapter connector that

could easily disconnect from the laptop using non-axial force – tugs from angles other than straight away – that was introduced in 2016. Its implementation meant that if someone yanked or tripped over the cable, the connection would break but the laptop would be spared from flying off the work surface. Apple retired MagSafe when it switched to USB-C connectors in 2016, which do not have a breakaway connector.

Apple reintroduced the MagSafe brand as a magnetic charging system for the iPhone 12 and the new iMac has a magnetic power cord that doesn't have the MagSafe branding. Presumably, any MagSafe-related technology for Apple's laptops would be in a similar vein as its implementation starting in 2006, but

will likely still use USB-C for charging. As for connectivity ports, Apple has transitioned to Thunderbolt/USB 4 ports in its M1 Macs, and it's a good bet that Apple will continue with this in the new MacBook Air. The question then becomes how many ports – traditionally, the MacBook Air has two ports on one side. In his report about the colour offerings for a new MacBook Air or MacBook, Jon Prosser said that the new laptop will have two ports but with a better placement – one on each side rather than both on the left edge.

## PROCESSOR AND MEMORY

Mark Gurman of Bloomberg reported that at the end of 2021, we could see a new MacBook Air with a new System

on a Chip (SoC) that replaces the M1. The new SoC will be faster but have eight CPU cores (four performance cores, four efficiency cores) like the M1. The



**MagSafe could be making a comeback in the next MacBook Air.**



graphics cores will increase from seven or eight to nine or ten. While it was originally assumed that the chip would be the same M1X chip that's rumoured for the MacBook Pro, a rumour from Twitter user @dylandkt says the MacBook Air might use the next-generation M2 chip instead.

or £1,199 and leaves an older M1 model at the £999 tier, much like it did with the 21.5in iMac after the 24in model arrived.

## PRICE AND RELEASE DATE

Apple released the current MacBook in November of 2020, so it's likely that a new model will arrive at around the same time. Prosser said to expect the MacBook Air near "the end of 2021" and Bloomberg has reported it's scheduled to arrive in the "second half of this year at the earliest".

Both have suggested that the new MacBook Air could slip to early 2022 as well and a report from Twitter user @dylandkt also says the new laptop won't arrive until 2022. Recently, rumours have suggested that Apple may be prioritizing the redesigned MacBook Pro models, so it's looking more likely that the MacBook Air doesn't launch until next year.

As far as the price goes, Apple might start this new MacBook Air a little higher than the current model. With a mini-LED display and a new colourful design, it's possible that Apple starts the new Air at £1,099



# The next iMac

Here's a round-up of the new features that have been rumoured for the next iMac. **Roman Loyola** reports

**T**he 24in iMac was released not too long ago, but we're still waiting for its bigger, faster sibling to replace the current Intel-based 27in iMac. Bloomberg reported in May that Apple had put the larger iMac aside to focus on the 24in iMac's launch, but since that Mac is now available, the rumour mill for the larger iMac should start.

## SIZES, DESIGN AND COLOURS

In January, Bloomberg reported that Apple planned on replacing both the Intel-based 21.5in and 27in iMacs with new machines that feature a new design and Apple's M1 system on a chip (SoC). Apple introduced the first Apple silicon-based redesigned all-in-one with the 24in iMac with a new

design that shortens the chin, trims the bezels, and shrinks the enclosure down to an impressive 11.5mm.

As for the larger iMac, it will reportedly use the same design as the 24in iMac, and speculation is that it could house a display as large as 32 inches. The current 27in iMac measures 650x516x203mm, and while Apple's new design helps make the 24in iMac smaller than the 21.5in iMac it replaced, there isn't that much of a difference in size – 547x461x14mm (with the stand) versus 528x450x1175mm. So a new larger iMac could have a similar footprint to the 27in Intel iMac.

Apple offers the 24in iMac in several different colour choices, but there haven't been reports on what

colour choices Apple will use for the larger iMac. The larger iMac is considered to be a pro-level iMac, and to create a differentiation between the consumer and pro levels, Apple may decide on different colour choices like the iPhone Pro, or stick with the traditional silver like that on the 27in iMac or Space Grey like on the discontinued iMac Pro.

## DISPLAY

To get an idea of what we could expect with the display in the larger iMac, let's look at what's being used in the current iMac line-up, as well as the Pro Display XDR.

**24in iMac:** 4.5K Retina display (4,480x2,520 resolution) 500 nits



The next large iMac will look nothing like the current 27in model (right) and more like the 24in iMac (left).



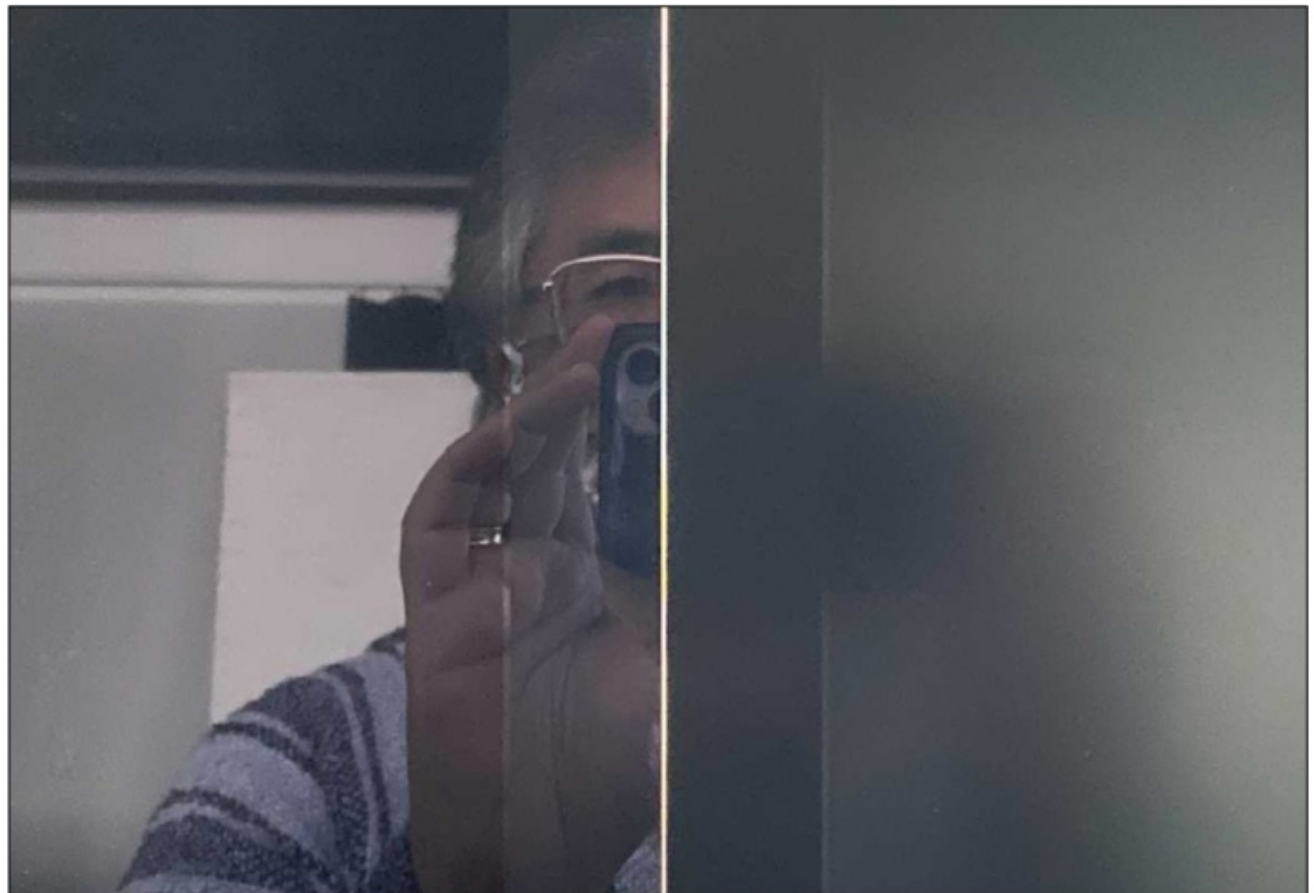
brightness, wide colour (P3), True Tone technology.

**27in iMac and iMac Pro:** 5K Retina display (5,120x2,880 resolution), 500 nits brightness, wide colour (P3), True Tone technology.

**Pro Display XDR:** 6K Retina display (6,016x3,384 resolution), 1,000 nits (XDR) or 500 nits (SDR) brightness, wide colour (P3), True Tone technology.

Since the 24in iMac is a 4.5K display, it seems that Apple needs to provide at least 6K resolution on the larger iMac – a 5K display doesn't provide enough value. The brightness will likely stay at 500 nits, and it will have P3 wide colour support and True Tone technology.

The upcoming larger iMac will have smaller bezels than the 27in iMac and iMac Pro, which could help the display reach a higher pixel density without having to make the display much bigger.



The 27in iMac has a nano-texture glass option (right) that does a better job of resisting glare and reflections.

The 27in iMac comes with standard glass on the front of the display, but for £300, Apple offers a nano-texture glass that provides a matte-like finish and does a good job of cutting down glare. Apple will probably continue to offer this with the new larger iMac. As you can see above, it dramatically cuts down on the gloss and glare.

## APPLE SILICON

The 24in iMac fits in Apple's consumer product line-up, and it's outfitted with the M1, the same SoC that's in Apple's other consumer Macs. The larger iMac, however, is part of Apple's pro Mac line, and will have a faster SoC. To figure out what Apple could do,

let's consider what a Bloomberg report said about upcoming SoCs.

**M1X:** A Bloomberg report about the upcoming 14in and 16in MacBook Pros and high-end Mac mini said that that machine will have Apple's SoC with 10 processing cores, eight of them performance cores, and the other two as efficiency cores. To speed up graphics performance, this new SoC will be offered with 16 or 32 GPU cores. Bloomberg also said that the upcoming pro-level SoC will support a maximum of 64GB of RAM, which is four times the maximum supported in the M1.

**M2:** The latest reports say the redesigned MacBook Air will get the next-gen M2 processor, which is expected to release early next year

**M2X:** In a Bloomberg report, Mark Gurman said that the upcoming Mac Pro will feature an Apple SoC with 20 or 40 computing core variations, with 16/32 performance cores and 4/8 efficiency cores. And the GPU would be available with 64 or 128 cores. Gurman isn't sure if this chip (or a variation of it) would find its way into an iMac, but he doesn't discount the possibility.

While there has been no word on whether the larger iMac will have this same SoC as those upcoming pro Macs, it gives an idea of what Apple could implement. Apple could use the M1X in the larger iMac, but it also seems possible that Apple could use, say, an M-series SoC with 12 performance cores and four efficiency cores. The iMac's slim profile must be considered here because it plays a role in the cooling system for the SoC, which could mean the Mac Pro's chip might not technically be able to be used in an iMac.

## PORTS

The 24in iMac comes with Thunderbolt and USB-C ports, and that's it. Rumours of the 14- and 16in MacBook Pro and high-end Mac mini speculate that Apple will add more Thunderbolt ports, and also equip these Macs with USB-A ports.

The larger iMac will probably have more ports than its 24in sibling, but if Apple is determined to stick to the iMac having a thin profile, that could prevent some ports from being implemented. For example, reports say that the upcoming MacBook Pro could have an SD card slot, which has been a staple of the 27in iMac. It could be left out if the size of an SD



**The Ethernet-equipped power adapter will probably be standard with the larger iMac.**

card module is prohibitive. (It does seem like an SD card slot is the type of item that could be placed in the side of the large iMac, like it is on the 24in model.) Even USB-A ports are in jeopardy if Apple sticks with the ultra-thin frame.

For the £1,449 and £1,649 24in iMac, Apple placed the Ethernet port in the power adapter brick. The same power adapter is likely to be used for the larger iMac as well.

## OTHER FEATURES

The 24in iMac has an improved FaceTime camera that relies on the M1 to provide better image quality. That same FaceTime camera

implementation is expected for the larger iMac as well. It's possible that the camera could support Face ID, since True Depth references were spotted in macOS Big Sur. (If the larger iMac ships at the end of this year, it will run macOS Monterey.) If it doesn't have Face

ID, it will likely have Touch ID built into the keyboard like the 24in iMac.

The current 27in iMac has RAM slots that are user-accessible. With Apple silicon, RAM is built into the SoC, and if Apple also insists on maintaining the thinness of the iMac, there's a good chance that the RAM will not be user upgradable.

## PRICE AND RELEASE DATE

According to Bloomberg, the larger iMac was "paused" so that Apple could get the 24in iMac out. No ship date for the larger iMac has been set, with several reports speculating that it could ship at the end of this year. However, the industry is faced with



a semiconductor shortage, which will affect when the new iMac will be available since Apple is likely to give the MacBook Pro priority. As for the price, it will likely fall in line with the pricing of the current 27in iMac, which starts at £1,799 since Apple kept similar pricing to the 21.5in iMac when it launched the 24in model.



# The next Mac processor

We have a good idea of what Apple's planning – and it's going to be epic. **Michael Simon** reports

**W**hen Apple released the M1 chip at the end of last year, two things were clear: Macs were a whole lot faster and the future was incredibly bright. What we didn't know was how Apple would handle updates now that the entry-level models were as fast as some of the Pro machines. At the time, Apple said it was

developing “a family of chips” that would be unveiled as the transition continued over the next couple of years, and now that it seems the M1 Macs have all been released, we're anxiously awaiting the next step.

The first update to the M1 chip is likely to arrive within the next couple of months. Apple has already updated its entire line-up of consumer-level

Macs with the M1 chip in the MacBook Air, 13in MacBook Pro, Mac mini and 24in iMac, and rumours are piling up about the next round of Apple silicon-based Macs. According to the latest speculation, Apple will be following a similar cadence to the A-series chips in the iPhone and iPad but with way more power between generations. Here's what we know so far.

## M1

Apple's M1 processor is based on the 5nm A14 chip the first arrived in the iPad Air and later the iPhone 12. It has 4 high-performance cores with 192KB of L1 instruction cache and 128KB of L1 data cache and shared 12MB L2 cache and 4 energy-efficient cores with 128KB of instruction cache, 64KB of L1 data cache, and shared 4MB L2 cache. That makes a total of 8 cores split evenly among power and efficiency leading to tremendous speed boosts over the prior models. The System on a Chip (SoC) also has an 8-core GPU in most models



**A redesigned 16in MacBook Pro will likely showcase the M1X processor.**

(the entry-level MacBook Air and 24in iMac have a 7-core GPU) with 128 execution units and up to 24,576 concurrent threads.

Memory has also changed. With the M1, the LP-DDR4 memory isn't just soldered to the motherboard, it's actually part of the chip itself. That means it's faster and more efficient than before, but it's also a bit more limited – you can only get 8GB or 16GB in an M1 Mac and there's no way to upgrade it after purchase. (That won't be a surprise for MacBook buyers but the same unfortunately applies to desktop models.) And finally, the chip has a 16-core Neural Engine, along with the Secure Enclave and USB4/Thunderbolt support.



## M1X: LATE 2021

We started hearing about the development of an M1X chip earlier this year, and it looks to be making an appearance in the redesigned 14- and 16in MacBook Pro later this year. Much like the A12X in the 2018 iPad Pro, it will be built on the same architecture as the existing M1 processor but bring faster all-around performance.

According to CPU Monkey, which claims to have received benchmarks of the upcoming chip, the M1X could have a 12-core CPU with 10 high-performance cores and two high-efficiency cores, and a 16-core GPU with 256 execution units and a shared 32GB L2 cache and up to 64GB of LPDDR4X. In a slightly different take, Bloomberg's Mark Gurman has reported slightly different M1X CPU specs, with eight high-performance cores and two high-efficiency cores.

Based on what we know of prior 'X' releases, that makes sense. For example, the A12 in the iPhone Xs was a six-core CPU

with two high-performance cores and four high-efficiency cores while the A12X was an eight-core chip with four high-performance cores and four high-efficiency cores.

Those specs would give Apple's higher-end M1X Macs a nice performance boost over the current crop of M1 machines. It's also rumoured that they will bring support for four Thunderbolt/USB 4 ports.

## M2: EARLY 2022

Apple's M2 chip will likely arrive in the next MacBook Air, which looks to get a complete redesign with new colours to match the 24in iMac. According to Bloomberg, Apple's next-generation processor "will include the same



**Apple is reportedly developing a new Mac Pro with an incredibly powerful custom chip inside.**

number of computing cores as the M1 but run faster”. That’s similar to how Apple approaches A-series upgrades, which has had six cores since the A11 processor despite vastly improved performance. As far as the GPU goes, Bloomberg says that the cores will increase from seven or eight to nine or 10.

We don’t know yet how speeds compare, but based on previous chips, we can expect the M2 processor to actually be a bit slower than the M1X chip. The same limitations on USB4/Thunderbolt and RAM will likely remain as well since Apple is establishing non-X chips as consumer products for users who aren’t as demanding.

## M2X: LATE 2022

According to reports, Apple is planning an even higher-end chip for the Mac Pro, which could “come in 20 or 40 computing core variations, made up of 16 high-performance or 32 high-performance cores and four or eight high-efficiency cores”, according to Bloomberg. The workstation-calibre chip is also rumoured to have 64 core or 128 core options for graphics, which would replace the AMD GPUs in current models. Those specs are comparable to what Intel

and AMD offer in their top-of-the-line chips and would challenge the fastest PCs, at least on paper.

Apple could very well call this chip the M2X, but since the Mac Pro processor would represent such a big jump from even the rumoured chips, it will likely be separated from the pack with a whole new naming system. (Apple has previously used the ‘Z’ identifier on chips to indicate improved graphics performance.)

Mark Gurman reported that the next iMac will likely use the M1X or M2X chip in the next iMac, but it’s not clear if he’s referring to this chip or a lower-powered M2 variant.

It’s also possible that Apple pairs two M1X chips inside the Mac Pro to boost performance, a tactic it last used with the Power Mac G4 back in 2001. But however Apple plans to go about it, expect the new Mac Pro to bring tremendous speed that blows away today’s model and caters to ultra-high computing demands. This chip and machine won’t be for mere mortals, but thankfully Apple has plenty in the works that are.



# 5 Windows 11 features Apple should steal for macOS

Steal and steal alike. **Michael Simon** reports

It's been six years since Microsoft unveiled a new version of Windows, but this December Windows 10 users with eligible PCs will be able to upgrade to a brand new version of Microsoft's OS called Windows 11. And whether they want to admit it or not, it's going to look a lot like macOS.

Microsoft has changed a lot about the way Windows looks and works, but it's hard to deny its 'modern, fresh, clean and beautiful' interface borrows heavily from Apple's style with rounded corners, subtle transparency, and an overall fluidity that would feel right at home on a MacBook.



Despite its familiar interface elements, Windows 11 brings plenty of features that Mac users don't have. It leverages the touch-friendly nature of many PCs, introduces new ways to type and talk, taps into the power of the Xbox ecosystem to elevate PC gaming, and revamps the Microsoft Store with Android apps and a completely new revenue share policy that lets some developers keep 100 per cent of what they sell. Of course, we're not going to see any of that in macOS anytime soon, but there are some features that would work really well on our Macs.

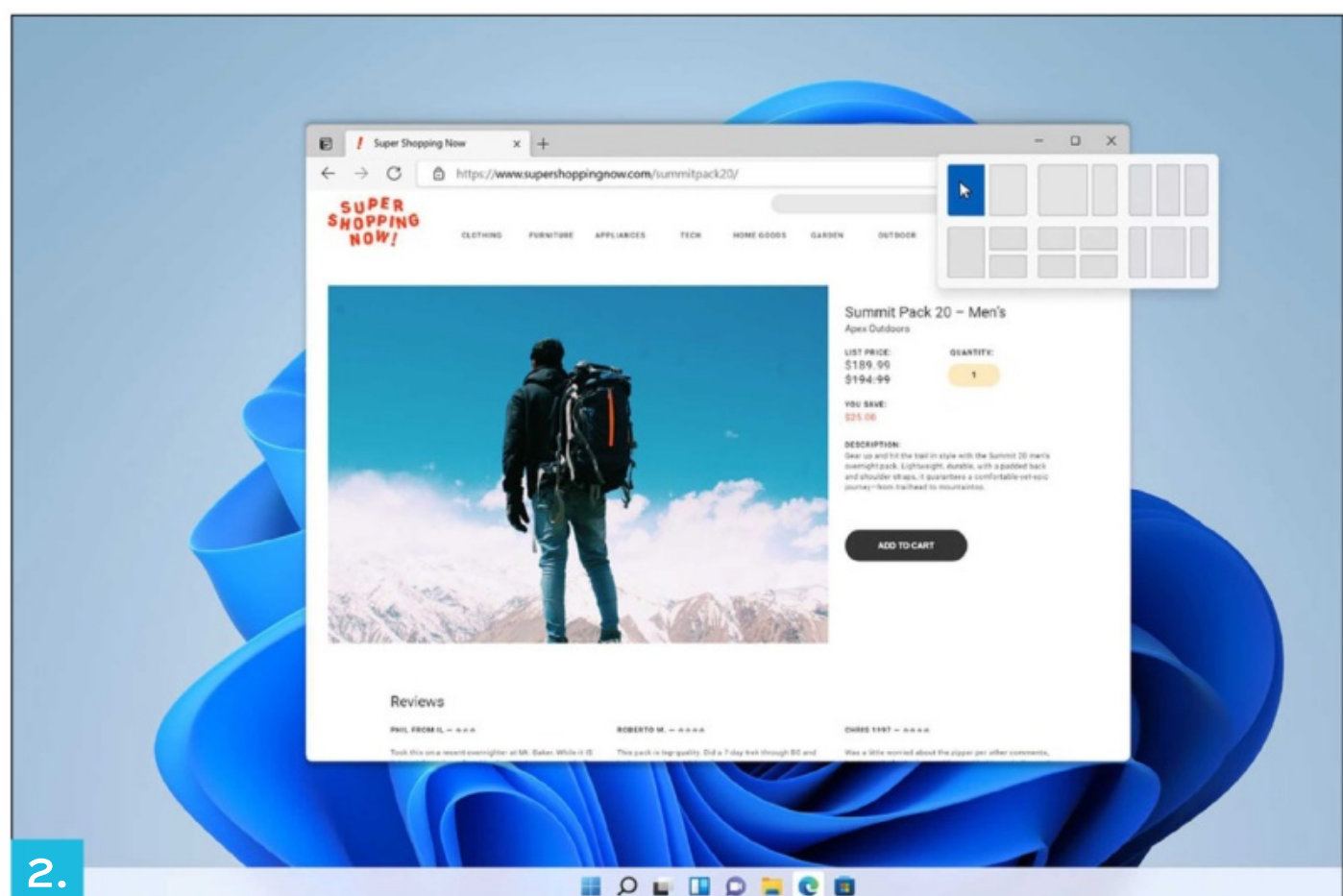
## 1. VERTICAL TABS

Apple revamped Safari's tab management in a big way with the upcoming launch on macOS Monterey, but Windows 11 has a neat feature in the Edge browser that makes it even easier to see and organize your tabs. Instead of collecting them in a horizontal row above your

window, you can also see them in a vertical list by clicking an icon in the top left corner. In an instant, you'll be able to see your open tabs as if they were bookmarks in Safari's sidebar, which makes it easy to find individual pages in a sea of open tabs. The new Safari will show tab groups in the sidebar, but not the individual tabs.

## 2. SNAP LAYOUTS

One of Windows 10's best features is the ability to quickly snap an app to the left or right side of the screen to quickly work side by side in full view. Apple introduced a similar system in macOS Catalina that lets you use apps side by side in Split View. But Windows 11 takes it even further with new layouts that let you use two,



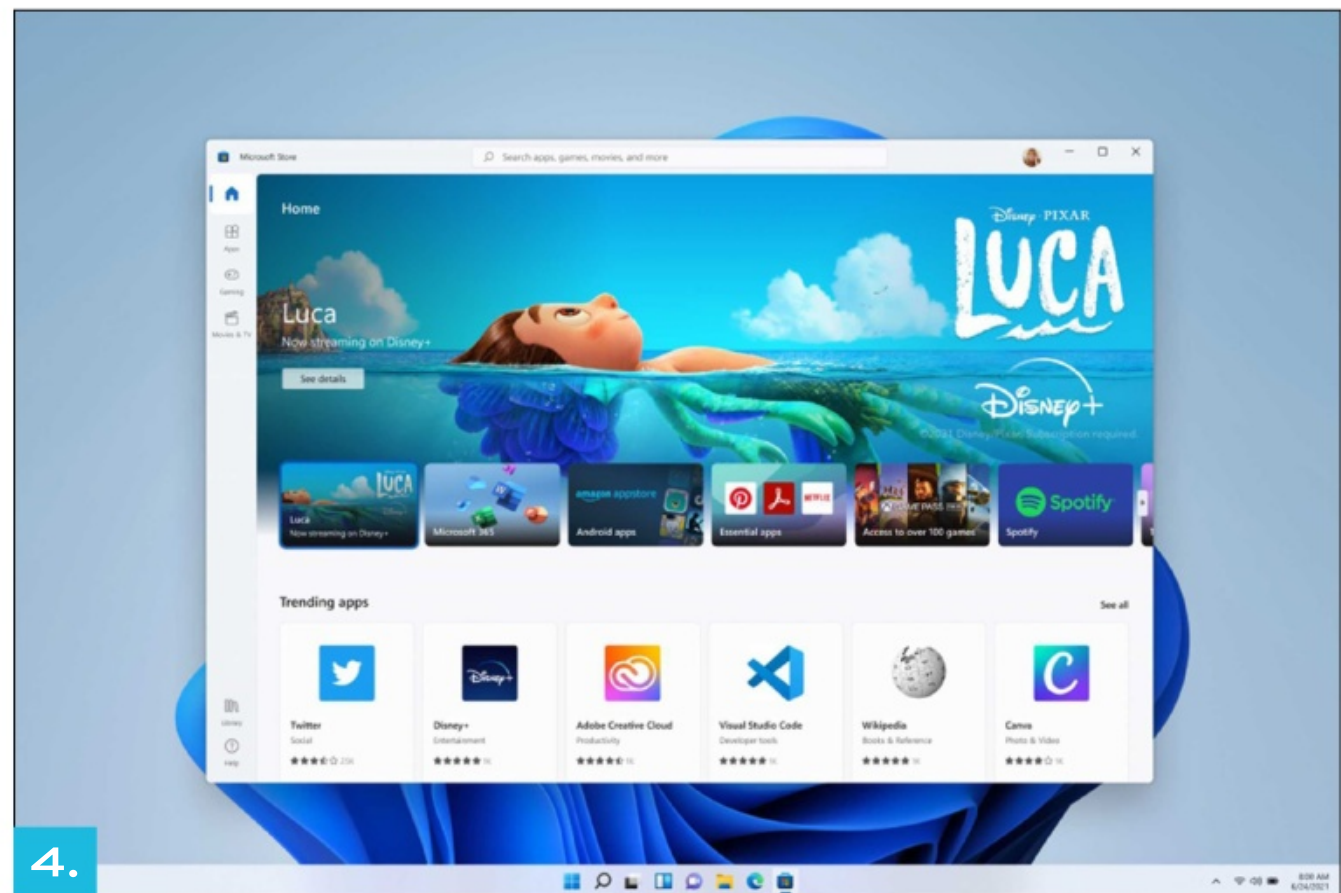
three, or four apps at once in several preset layouts for quick and easy multitasking, and there are different layouts for different monitor set-ups and dimensions.

### 3. SMART EXTERNAL DISPLAYS

We've all been frustrated by shifting and wrongly sized windows when we unplug our MacBook from an external monitor, and Windows 11 has a nifty way to fix that. When Windows 11 detects that a display has been removed, the windows that were on that screen will automatically minimize to avoid a mangled mess of overlapping apps. And when you plug it in again, those windows will return to the place where they were.

### 4. COMMERCE OPTIONS

While Apple is being bombarded in court by developers who feel the company's 30 per cent cut is too high, Microsoft is changing its own rules in Windows 11. While the terms of the Microsoft Store have

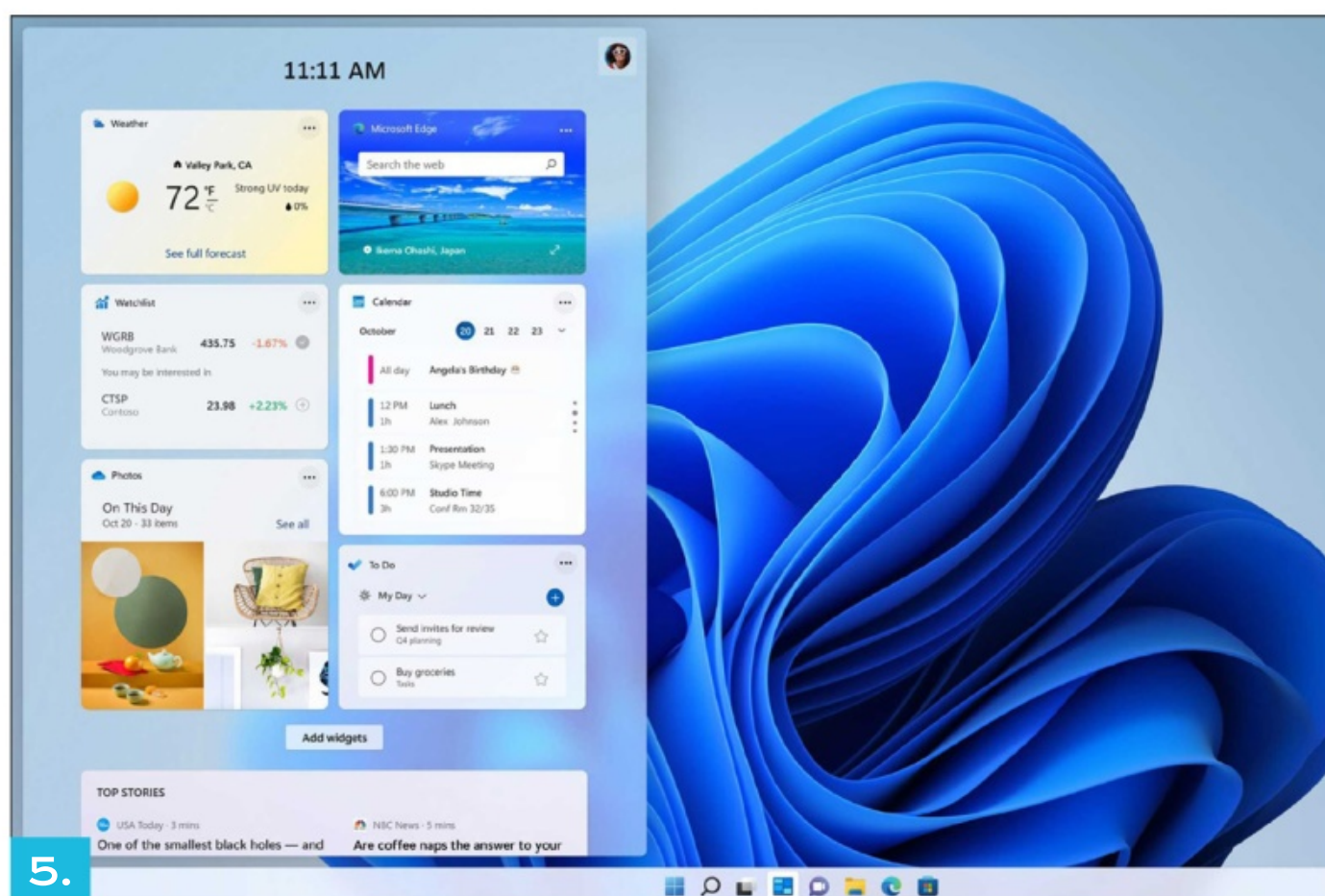


always been friendlier than the Mac App Store (85/15), in Windows 11 Microsoft is giving developers the option to keep 100 per cent of what they sell by using their own third-party commerce platforms. On one hand, it's obviously a response to Apple's regulatory issues, but it also begs the question – if Microsoft can afford to make that change, why can't Apple? Allowing third-party commerce engines would open the Mac App Store to developers put off by Apple's terms and open the door for the iOS App Store to relax its conditions as well. It seems inevitable that Apple will have to relent at some point, and it makes sense to start with the Mac, where the App Store isn't the only way to download.

## 5. WIDGET FEED

Windows users will finally get widgets when version 11 arrives on their desktops and laptops, and while it looks very similar to macOS Big Sur, with customizable and resizable blocks of data, Microsoft has also integrated widgets with a news feed to give a full dashboard of information. Rather than a skinny rail of widgets, users can expand the widgets pane in Windows 11 to fill the entire screen, where they'll find an array of useful information, from traffic and sports to a customizable news feed that presents stories that will be of interest using both local and national sources. Microsoft has even built a way to contribute to local publications if you like what you read. With Apple News

and News+, it seems like a wasted opportunity to leave all those articles cooped up in an app.







# The M1 iMac has more in common with the iMac G3 than just colours

It's hard to stop thinking about the connections between the new and original iMac. **Jason Snell** reports

It's hard not to look at the new 24in iMac, which I've been using for the past week, and not feel at least a little pang of nostalgia for the original iMac. Introduced in 1998,

not only did the iMac G3 save Apple, it injected a blast of colour into the beige world of personal computers.

That sense of nostalgia lessened when I picked up the new 24in iMac

and carried it around my house. (The original iMac weighed about four times the new model.) And yet, for all that has changed over the past 23 years, you'd be surprised about some of the similarities between the original iMac and these new models. It's not all about the colour. But let me be clear: a lot of it is about the colour.

## THE RETURN OF COLOUR

Once Apple replaced the iMac G3 with the sunflower-like iMac G4, colour was banished from the Mac for many years. iMacs were white plastic, then eventually varying shades of silver aluminium. But the original Bondi Blue iMac (named after the water off Sydney's Bondi Beach) – and its successors in blueberry, lime, sage,

tangerine, strawberry, grape, ruby and indigo – has finally had its revenge.

Like the original iMac, the 24in iMac is meant to be shown off, not hidden away. Back in the 1990s, computers were beige towers or boxes shaped like pizza boxes, usually attached by a rat's nest of cords to a boxy beige monitor and a couple of beige speakers. Computers were utilitarian, had no personality, and were meant to be used and ignored.

The original iMac had style and begged for you to make it the centrepiece in your office or family room. Later generations of the iMac G3 added colour choices and became a way to express style and personality. The 24in iMac brings back that same feeling.

The model Apple sent me was just what I had asked for – namely, orange. I love it. It looks amazing. I can't walk into a room where it's set up without thinking, "I can't believe Apple made an orange iMac." It boggles my mind.





But here's the thing: if you don't like orange, no problem. There's also pink, blue, green, purple and – for the very first time, because who wants to buy an iMac called 'lemon' – yellow.

Here's a lesson Apple learned the last time it made

colourful computers: Not everyone has a preference for one. Apple was so excited about bringing colour to the Mac, it even made a professional Mac tower, the Power Mac G3, out of bright blue plastic. Professional users revolted, and Apple relented: the Power Mac G4 was grey, and even future iMac G3 models came in sedate non-colours like graphite and snow.

That was a hard lesson learned and not forgotten. While Apple is clearly excited about offering the 24in iMac in six bright colours, it's also making the computer available in the same silver shade that iMacs have worn for 14 years now. Early reports suggest that silver is the second most popular colour, after blue. While I am



a real champion of brightly coloured Macs, offering a neutral choice is the right thing to do.

## COLOURFUL PERIPHERALS TO MATCH

The original iMac wasn't the only thing that Apple made that was Bondi Blue. It made a keyboard and mouse that matched. And in that spirit, the 24in iMac has a wide array of peripherals, all available in six colourful shades, plus good old silver.

This has got to be a nightmare for the company's supply chain, but while Apple is much larger than it was in 1998, it's been slowly introducing more iPhone models in more colours. Apple knows how to do



this. (It helps itself out by limiting the purple, orange, and yellow models to online orders only.)

Still, this is taking what Apple did with the original iMac to a whole new level. There's not one colourful keyboard model, but three. The £1,249 iMac comes in only four colours and has a basic Magic Keyboard. Beyond that, though, there are seven different colour options for the Touch ID keyboard, and seven Magic Trackpads, and seven Magic Mouses. Throw in international keyboard layouts and things get very complicated very quickly!

It gets even more complicated. The 24in iMac ships with a USB-C-to-Lightning cable for pairing peripherals

to the iMac. That cable, which has a braided cover – making it the nicest Lightning cable Apple has ever made – also comes in seven colours. And the magnetic power attachment on the back of the iMac is similarly braided and coloured, meaning that there are seven versions of that cable. (It's actually 11 versions, because the £1,249 model ships with a power brick that lacks an Ethernet port and there are four colours of that one.)

While I'm discussing peripherals and cables, it's worth noting a huge similarity between the two iMacs. The original iMac marked a clean break from previous Mac peripherals by dumping all old ports and replacing them with a shiny, new port type,

USB. Since then, every iMac has had at least one of those blocky, non-reversible USB-A ports – until the new 24in iMac. Like the original, the new iMac dumps the old ports like USB-A and



The original iMac mouse (right) doesn't have a lot in common with the new model, but they're both coloured to match their iMacs.



**When open Edge tabs are pinned to the Taskbar, you'll be able to see previews of each, as well as where they are in open windows.**

only has USB-C-style connectors (two with Thunderbolt), and the more expensive models have two additional USB 3 ports.

## **THE iMAC IS ALWAYS ABOUT THE DISPLAY**

If there's been one fundamental of iMac design through the years, it's that the display is at the centre of things. For the original iMac, that was a bulbous CRT. But Apple's design embraced the CRT, exposing its wiring via translucent plastic, and curving the entire iMac around the shape of the back of the tube.

The advent of flat-panel technology allowed Apple to try something different with the iMac. The iMac G4 stuffed the computer in a half-sphere, with the screen floating above on a chrome arm. It's a gorgeous design, but as

flat screens got bigger and heavier, it turned out to be an untenable one. So in 2004, Apple redefined the iMac as a single flat slab on a stand, a display and a computer all wrapped up in one.

That was probably a tough decision, and while it was pragmatic, it had one huge trade-off: the iMac was thick. Over the years, Apple has tried to get it thinner, but even the most recent move to a unibody aluminium enclosure kept a lot of bulk and tried to hide it by tapering the edges of the iMac.

In some ways, the 24in iMac feels like a mixture of the idealism of that





floating iMac G4 design and the pragmatism of ensuing models. It's shockingly thin and light and entirely flat, making it feel more like a 24in iPad on a stand.

## STARTING AT £1,249, THEN AND NOW

The original iMac cost £1,249. The new iMac starts at £1,249. Coincidence? Yeah, probably. (It's been a long time. £1,249 in 1998 pounds is more than £2,000 today. But it's funny that it's the same price.)

But the important point here is that phrase, 'starts at'. When Apple began selling the original Bondi iMac, it was one of a kind, but the company realized there was money to

be made by offering a variety of models at different price points. Eventually there was the iMac DV, the iMac Special Edition, and of course the original, bargain model.

When there's money to be made, today's Apple does not miss a beat. While the £1,249 price for the 24in

iMac is nice, that model has limited colour options and you'll need to pay more if you want an Ethernet port or a keyboard with Touch ID. Add in 1TB of storage and 16GB of RAM and you can very quickly take that £1,249 computer up to £1,849. This is why Apple has all the money.

## A TIME OF TRANSITION FOR APPLE

Maybe colour on computers is like fashion, a trend that recurs every 20 years or so. But I do wonder if it's no coincidence that the original iMac and the 24in iMac come at times of transition in the Mac.

Back in 1998, Steve Jobs had just returned and was trying to keep



Apple afloat – he did, thanks to the iMac. The iPod followed, then the iPhone and the rest is history. But Jobs returned to Apple because the company had bought his company, NeXT, in order to take its software and transform it into the next-generation Mac operating system. The original iMac shipped with Mac OS 8.1, but everyone involved knew that Mac OS X was taking shape in the background and that would define the future of the platform.

Things aren't quite as fraught today as they were when the first iMac arrived on the scene, but this is still a momentous time for the Mac. The 24in iMac is the first Mac to be completely redesigned around an Apple-built processor. MacOS is changing rapidly, picking up features and software from iPadOS. The tools that developers use to build software for Apple's platforms runs only on macOS, but most of those developers are building iOS apps, not Mac apps. Apple seems to be trying to address this by offering ways for software to reach across all of Apple's platforms, but will that strengthen the Mac or erase what makes it uniquely the Mac?

The new iMac, like the original, has the fortune to live in interesting times. Things may be a bit stressful and

unsure, but at least we can look at the pretty colours.



# 3 apps Apple should have updated instead of Safari

Mail, Calendar and Home need attention. **Dan Moren** reports

**A**s much fun as it is to see Apple roll out updates to its major platforms every summer, it's always a slightly bittersweet experience. Even though there are new features and shiny things galore to pore over, there seems to be some software that is left

shivering in the cold rain, their faces plastered against the window while newer features are showered with love and adulation.

Of course, Apple's platforms are so expansive these days that the company can't possibly update each and every app on a yearly basis. But

even so, there are a few that seem to perpetually languish, year over year, to the point that one wonders if Apple forgot about them, while others get updates of dubious necessity. More frustratingly, some of those very apps are ones that users rely on day in and day out. Apps that may not be exciting, but are definitely necessary.

As we continue to comb through the fallout from this year's Worldwide Developers Conference, it's worth taking a look at some of the apps that Apple didn't make substantial changes to and which could maybe use a little bit of care and attention of their own.

## 1. MAILING IT IN

Sure, there's Messages and Slack and Twitter DMs and Snapchat, and so on. But email still forms the backbone of a lot of what we do online. (Ever risked getting a password reset via a Twitter DM?) Some may view it as a necessary evil – me, maybe I'm old, but in a world where technology means we're always reachable, I delight in

having a medium where it's okay not to respond immediately.

But the Mail app on iOS and Mac hasn't really changed in several years. There have been tweaks here and there, yes, but fundamentally the way we deal with email has remained the same. Which is a shame, because it seems like some of the technologies that Apple likes to talk up – like AI and machine learning – could be a real boon when it comes to dealing with our inboxes.

It's not as though the mail field is totally stagnant, either. Competitors like Hey and the recently released Big Mail have shown that there are better ways to help organize our mail, using improved categorization and triaging,



Apps like Big Mail show that Apple's Mail app has some catching up to do.



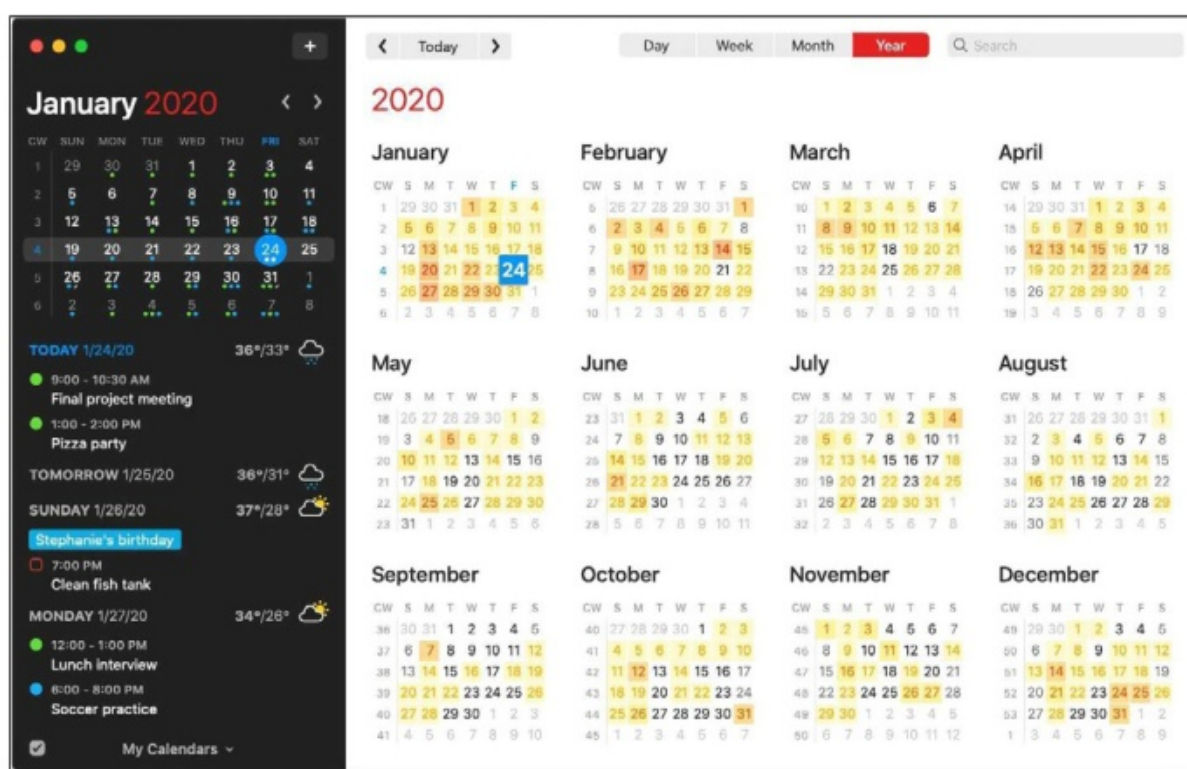
to return it to its erstwhile utility instead of being the modern day equivalent of a sales circular.

Apple, to its credit, did announce that Mail extensions would be getting a new lease on life in macOS Monterey, but instead of leaving it all up to third-party developers, I'd love to see the company put some of that vaunted innovation to work here to rethink how we all deal with the necessity of email.

## 2. CALENDAR IS SO LAST YEAR

Here's what I'll say about Apple's Calendar app: it's better than a paper calendar. Mostly.

I use Calendar every single day and, like Mail, it doesn't seem to have seen a substantial update in years. (In fact, by comparison, Mail is practically a hotbed of activity.) While third party alternatives like Fantastical have greatly improved how we deal with our schedules, Calendar – though it long ago lost the skeuomorphic stitched leather design – seems to be content to mimic its analogue compatriot.



Apple's Calendar app can't compete with third-party apps like Fantastical.

A simple example: in the newest updates to Apple's platforms, both Notes and Reminders got the ability to add and filter by tags. I've long wanted a similar feature for Calendar, especially in cases where I have the same event on multiple calendars (generally because they are shared with different groups of people). And yet, I'm stuck having three copies of the same event, crunched together in one small time slot. It's a problem others have solved, but Apple seems to steadfast in its belief that the Calendar app is good enough as it is.

## 3. HOME AWAY FROM HOME APP

Before this year's WWDC, I was intensely hopeful that Apple would

take the opportunity provide a significant revamp of the Home app. Alas, that dream didn't come true, and we remain stuck with the same somewhat unwieldy software we've had for years.

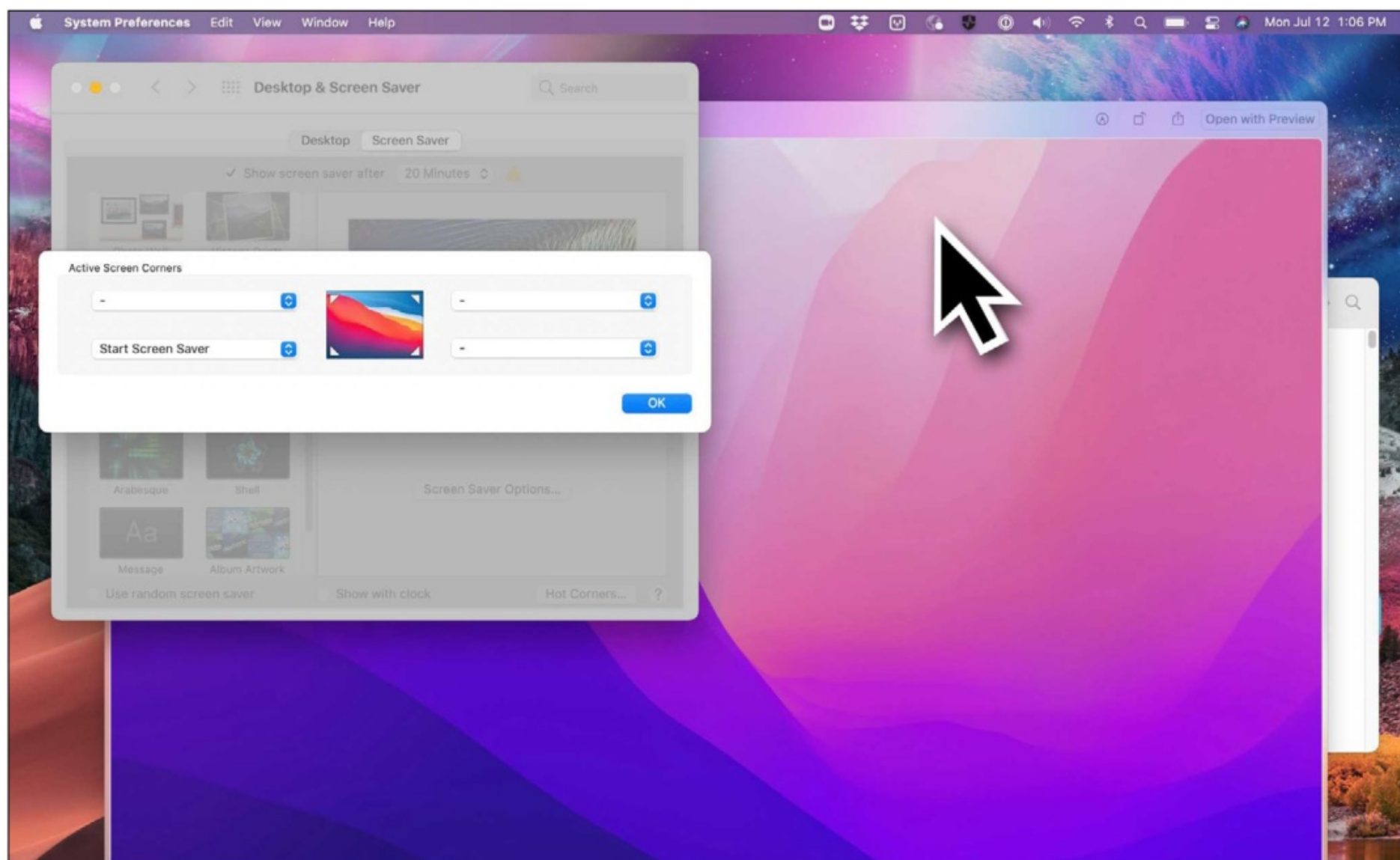
That app was generally fine when we had a few devices here and there, but the number of smart home accessories has ramped up rapidly over the past few years and the Home app gets quickly overwhelmed. As someone with quite a few smart home devices, I sometimes end up paging through multiple screens, then having to scroll down just to find the device I want to control. Having any more than a couple scenes quickly becomes unwieldy, as they scroll off the screen, and there isn't even a search option, for those cases where you can't find what you're looking for.

Apple has, to be fair, improved some elements of the app, by surfacing information from some accessories, so you can, for example, see temperature or cameras at a glance.

But on the Mac in particular, the Home app feels clumsy, since it's essentially the iPad version of the app, with an interface that's out of place in a point-and-click environment. (One reason I've largely

turned to a third-party app, like HomeControl Menu, which enables the far more Mac-like experience of letting you control your accessories from the menu bar).

If Apple wants to make the smart home a bigger part of its business – and its investment in Thread radios in the HomePod mini and Apple TV, as well as its part in the new Matter standard suggest it does – then the company needs to start showing its commitment where it matters: at home.



# 4 macOS tips that will turn you into a power user

Transform your workflow with these easy settings and tweaks.  
**Michael Simon** reports

**W**e write lots of complicated how-tos and in-depth buying guides here at Macworld, but sometimes we just want to quickly tell you about our favourite tricks and tips that take mere seconds to use but will save you lots of time and frustration.

## 1. SHAKE TO FIND YOUR CURSOR

If you've ever lost your mouse in a sea of windows and spent tens of seconds trying to find it, you'll wonder where this trick has been your whole life. Go to the Accessibility pane in System Preferences, then Display, and finally Cursor. Make sure the 'Shake



mouse pointer to locate' checkbox is selected. Now, you'll be able to quickly move your mouse or your finger over the trackpad for a second or two to briefly enlarge your cursor so you can quickly spot it.

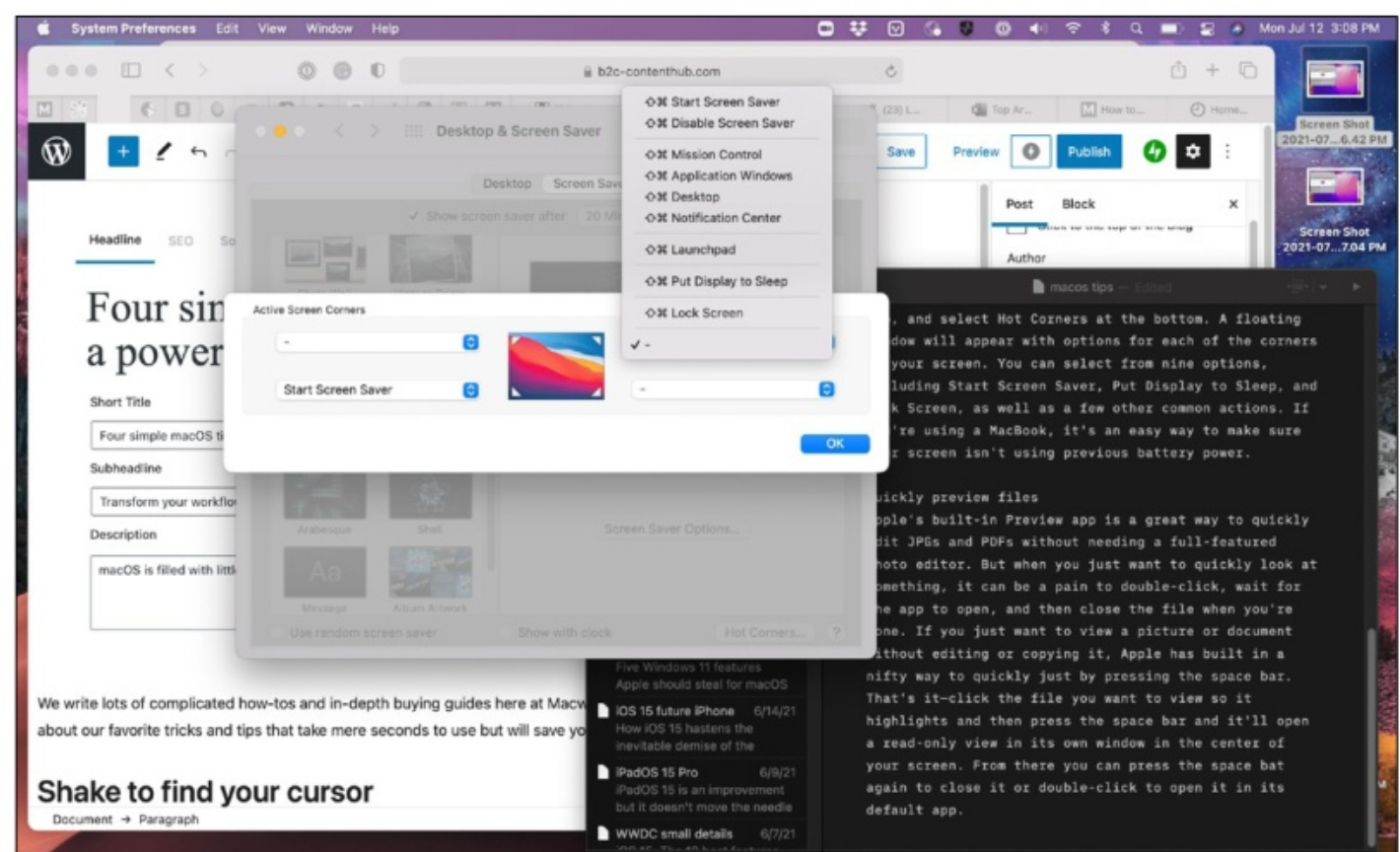
## 2. BRING THE SCROLL BARS BACK

A few generations ago, Apple decided to clean up the interface by removing the scroll bars from the right edge of windows. They magically appear and disappear when you start scrolling, but if you want to quickly grab a scroll bar and move to a specific point in a browser or document, it's tricky and not very intuitive. But you can turn them back on. Head over to the General pane in System Preferences and you'll see an Always option under the Show scroll bars section. It may look weird at first if you've been living without them for a while, but you'll get over that the first

time you instinctively grab a scroll bar and swiftly move through a lengthy web page.

## 3. USE YOUR CORNERS

Mac veterans know all about the usefulness of Hot Corners, but if you're new to the Mac, you might not have stumbled upon the feature yet. To find it, go to the Desktop & Screen Saver pane in System Preferences, click on the Screen Saver tab, and select Hot Corners at the bottom. A pop-up window will appear with drop-down menus for each of the corners of your screen. You can select from nine options, including Start Screen Saver, Put Display to Sleep, and Lock Screen, as well as a few other



Hot Corners in macOS lets you apply a variety of actions when you move your cursor into one of the corners of your screen.

common actions. (If you're using an external display, the corners will shift to that display.) It's especially useful if you're using a MacBook – set a corner to start the screen saver or sleep and you've got an easy way to make sure your screen isn't using precious battery power.

#### 4. QUICKLY PREVIEW FILES

Apple's built-in Preview app is a great way to quickly edit JPEGs and PDFs without needing a full-featured photo editor. But when you just want to quickly look at something, it can be a pain to double-click, wait for the app to open, and then close the file when you're done. If you just want to view a picture or document without editing or copying it, Apple has built a nifty way to quickly just by pressing the space bar. That's all there is to do – just click and highlight the file you want to view and then press the space bar to open a read-only view in its own window in the centre of your screen. From there you can press the space bar again to close it or triple-click to open the file in its default app. And that's not all: the space-bar preview function works in other ways than just previewing files. For example, if you select a drive icon and press the space bar, you can

see info on the amount of storage the drive has. Try it on any icon and see what happens.



# 3 ways to control a Mac with your Apple Watch

Play music, switch slides and unlock without touching the keyboard.  
**Lance Whitney** reports

**Y**ou already know your Apple Watch has awesome health and fitness features, but you might not know that it can also help you use and control your Mac. From unlocking to controlling apps and music, you can enlist the aid of your watch when your mouse isn't within reach.

## 1. **UNLOCK YOUR MAC**

To unlock your Mac with your Apple Watch, your devices must meet certain hardware and software requirements. To check whether your system is compatible, hold down the Option key, click the Apple menu icon in the top left corner, and select System Information. Select the



Wi-Fi tab under Network, then find Interfaces, and make sure it says Auto Unlock is supported.

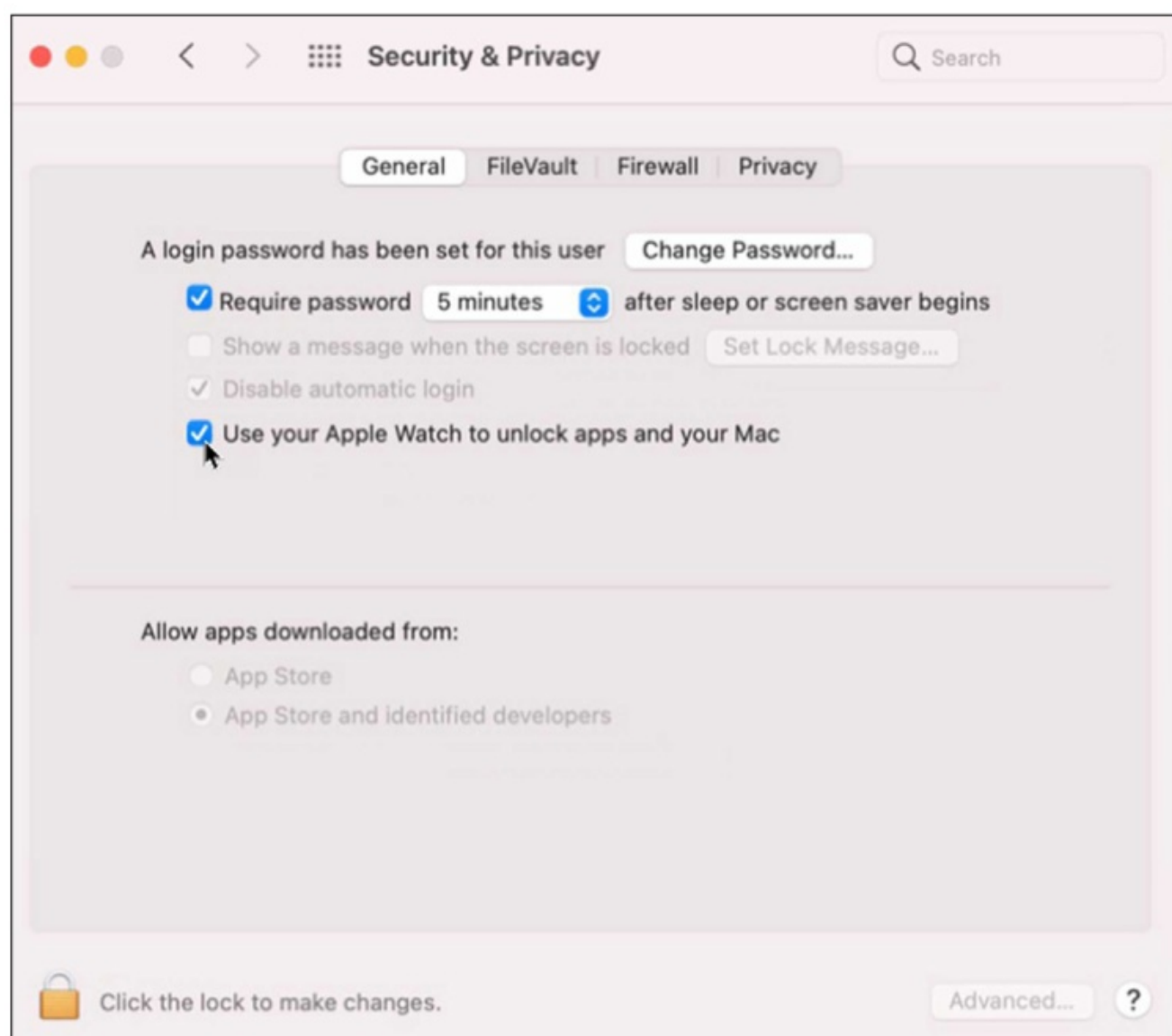
Next, make sure that Wi-Fi and Bluetooth are enabled on your Mac, that your Mac and Apple Watch are both signed into iCloud with the same Apple ID, and that your watch is set up with a passcode. Then, click the Apple menu icon again (don't hold Option this time), open System Preferences, and select Security & Privacy. Under the General tab you'll see 'Use your Apple Watch to unlock apps and your Mac'. Make sure it's checked.

Now, the next time your Mac asks you to enter your password to confirm an app installation, change a setting in System Preferences, or wake from sleep, your watch will automatically unlock your Mac just like it does when you're wearing a mask with Face ID on your iPhone. You'll feel slight buzz on your wrist and see a message that your Mac was unlocked.

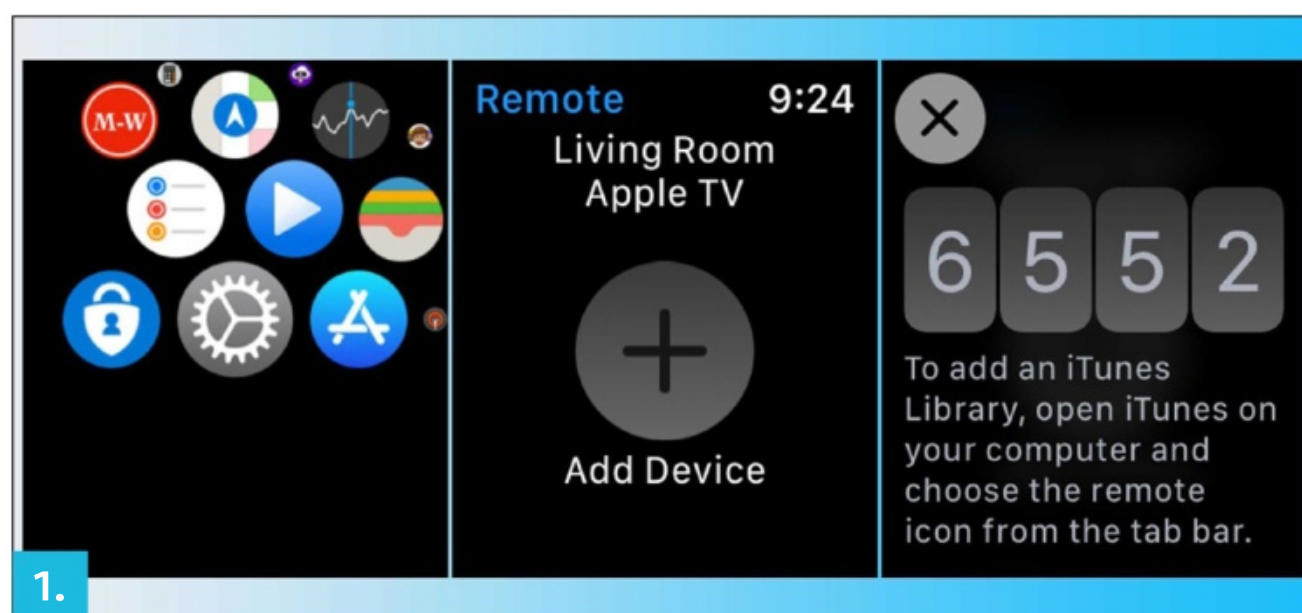
## 2. CONTROL MUSIC

To control music on your Mac with your watch, open the Remote app on your Apple Watch (the one with a

white triangle in a blue circle), tap Add Device, and take note of the four-digit number that appears. Then open Music on your Mac and select your Apple Watch under Devices. (On pre-Catalina Macs, click the Remote button near the top left of the iTunes window.) When prompted, type the four-digit number from your Apple Watch and you'll see a message telling



Under the General tab you'll see 'Use your Apple Watch to unlock apps and your Mac'. Make sure it's checked.

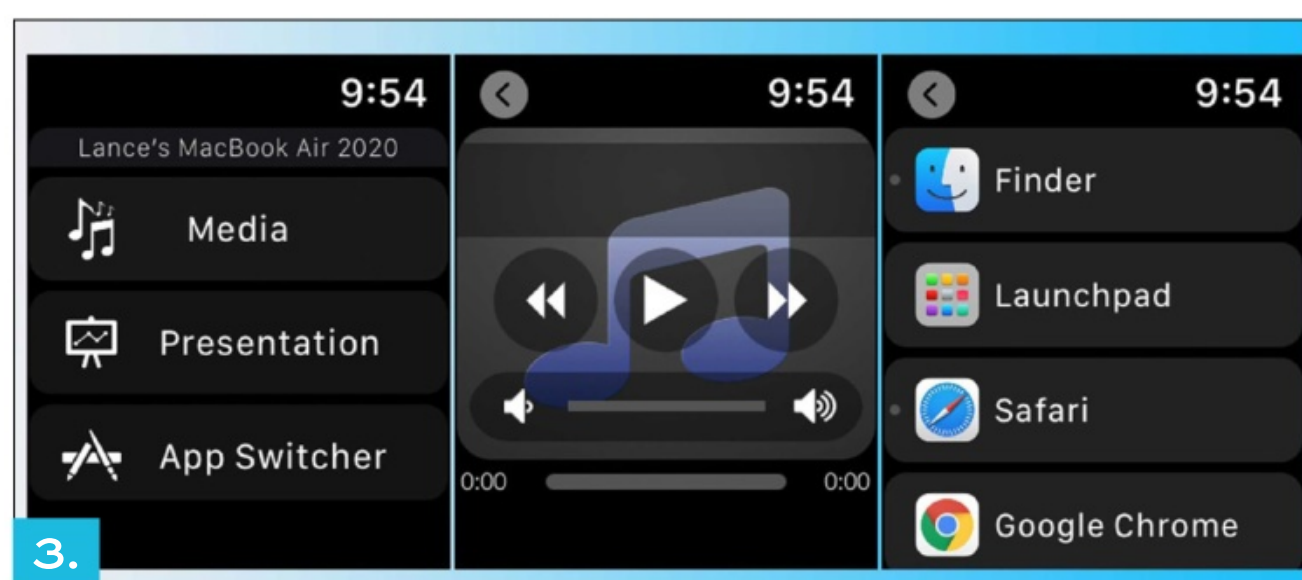


where you can pause, restart, skip to the previous song, or jump to the next song – see image 2.

### 3. USE A MOBILE APP

With a little help, you can control more than Music on your Mac. For example, you can download Mobile Mouse, (free from [fave.co/3edN5HJ](https://fave.co/3edN5HJ)) that will let you open any app on your Mac and control music or a presentation from your wrist – see image 3.

Here's how it works. First, download the correct version of Mobile Mouse Server for your Mac. Follow the



you that the Remote app is now able to control iTunes or Music. Click OK – see image 1.

Then all you need to do is start playing a song on your Mac. You'll see a playback screen on your watch

steps to grant the necessary access. Then download the Mobile Mouse app for your iPhone and install it on your Apple Watch. Open the app on your Watch and select the things you want to control – Media, Presentation

or App Switcher – and you’ll be able to control the coordinating thing on your Mac. Unfortunately, you can only control one thing at a time, so you can’t play music and a presentation, but it’s easy enough to switch between the options.





# Force a native M1 Mac app to run as an Intel app

Force an app to use Apple Rosetta environment with an Apple silicon Mac. **Roman Loyola** reports

**W**hen Apple released the first Macs with the M1 processor (the first generation of Apple silicon), it also introduced a whole new architecture to run apps on the Mac. So to take full advantage of the new chip's speeds, Intel software needs to be re-written specifically for the M1 processor. Developers need time to write apps with that 'native' code, however, so Apple created a translation tool called Rosetta 2

that allows for existing Intel-based software made for Intel Macs to run on Apple silicon.

If you have an M1 Mac, you're probably already using Rosetta without realizing it. The first time you launched an app that requires it, an alert appeared to tell you the Rosetta is needed and ask for your permission to install it. After the installation, Rosetta is automatically available to any app that needs it. The same goes for M1 apps. If a native app is

available, your Mac will automatically run that version.

However, there may be a time when you have a Universal app (an app designed to run on both Intel and Apple silicon Macs) and you want to run the Intel rather than the M1 version. This could be due to an M1 app that's missing a feature you need, or if you're using an app with third-party plug-ins or extensions that are only compatible with Intel.

In those instances, it's possible to force a Universal app to run the Rosetta version instead. And you can switch back to running natively when you need to. Here's how it's done.

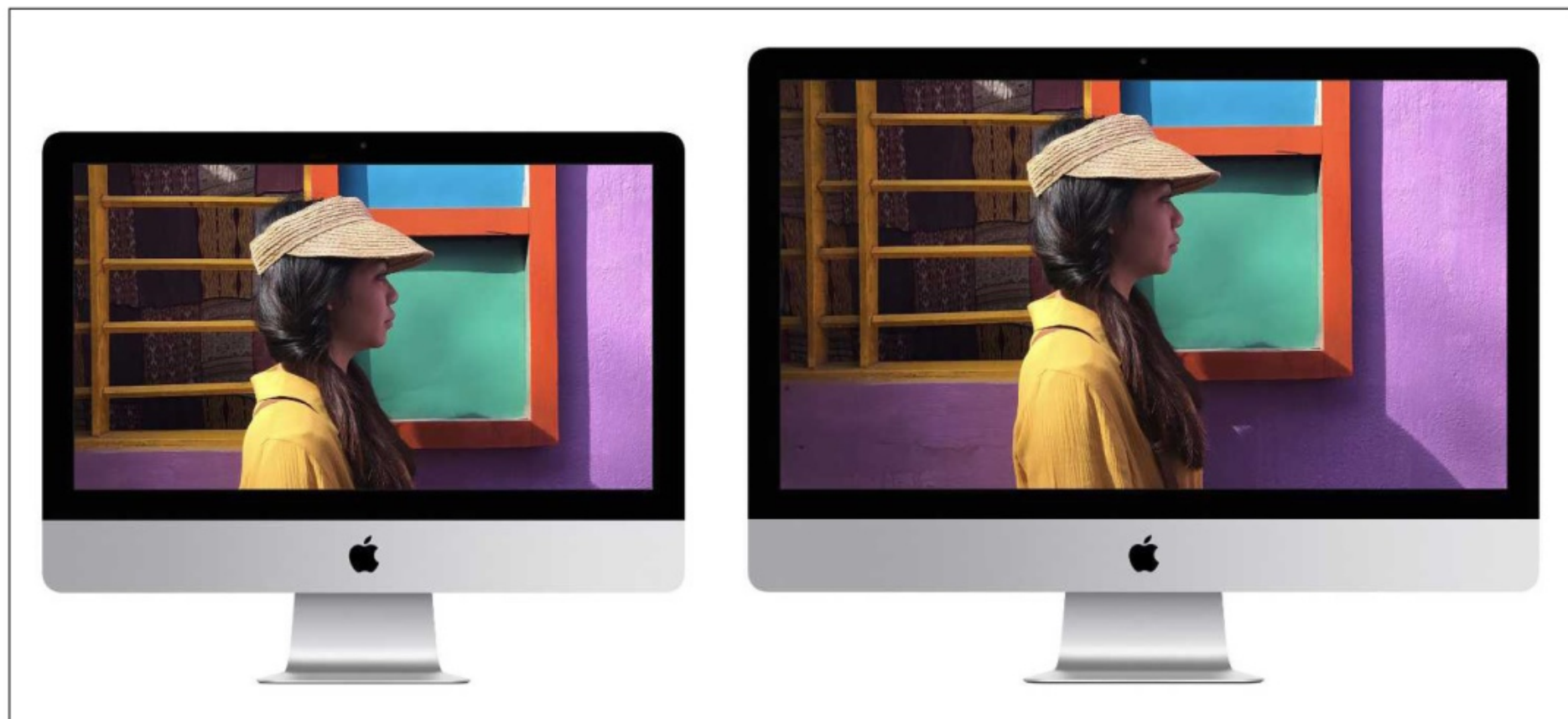
1. Find the app in your Applications folder.
2. Select the app, and then press Command-I (or right-click/use the File menu and select Get Info.). This will open an Info window with details about the app.
3. In the Info window, look for a checkbox labelled, 'Open using Rosetta'. Check the box.
4. Close the Info window.
5. If you're already running the app, quit and relaunch.

Now, whenever you launch that app, your Mac will run the Intel version of the software and use the translation

layer. If you want to stop using Rosetta, just repeat the instructions and uncheck the box.



On Apple silicon Macs, you can force a Universal app to run using Rosetta by checking the option in the app's Info box.



# Restore an unresponsive Mac from another Mac

If your recent series Mac won't boot, you can try to 'revive' or 'restore' it. **Glenn Fleishman** reports

**D**espite our best efforts, sometimes a macOS update goes wrong, such as the power going out in the middle of the process. Other glitches can occur, including ones that are undiagnosable.

If your Intel Mac with a T2 security chip or any M1 Apple silicon Mac won't start up normally or through recoveryOS, you can try to revive it by fixing the firmware inside these chips that handles aspects of security

and start-up management while preserving all your files. If that fails, you can opt to restore it, which wipes the machine clean, but will get it working again. Both processes are made for system administrators but can be used by anyone.

(You launch recoveryOS by starting up or restarting an Intel Mac with Command-R held down, or shutting down your M1 Mac completely, then holding down the power button for about 10 seconds, until the Options



gear appears.) This revive or restore process works only for Intel Macs with the T2 chip, which includes all Intel models shipped starting in 2018 plus the 2017 iMac Pro, and with the three M1-based Macs released in 2020. Of all those models, only the 2019 Mac Pro provides a visual indication that something's wrong with its firmware or start-up process: its status light turn amber and flashes SOS in Morse Code (three short, three long, and three short) if it needs to be revived.

Apple provides complicated instructions for applicable Intel Macs and all M1-based Macs, which are aimed at school and business computer professionals. It's a lot to wade through for 'civilian' users, so here's a simplified guide that should help you through it. You only need to consult Apple's more exhaustive guide if you want to look up the Thunderbolt port locator illustrations described below.

First, you need to obtain Apple Configurator 2 ([fave.co/3kd6wEh](https://fave.co/3kd6wEh)), a free utility from Apple designed to deploy and manage Apple devices (requires macOS Catalina or later).

Next, you need to make sure you have the right cables. Apple requires the Mac being revived be plugged into power, including laptops, and that



**You can get Apple Configurator 2 in the App Store.**

power can't be provided from another Mac over USB-C. However, you also need a USB-C data cable to connect the two Macs, and it has to be plain USB-C designed for USB 3.1 Gen 2 or later, not a Thunderbolt 3 cable. Now you can set up the revival process.

## REVIVE YOUR MAC

In none of the below cases will you see anything on screen until after Configurator gets to work. Follow these steps:

- 1.** Install Configurator 2 onto the Mac you're going to use to revive your unresponsive computer.
- 2.** Disconnect your unresponsive

Mac from power, whether it's an AC-powered iMac, iMac Pro, or Mac mini, or a laptop plugged into a power adapter. On a laptop, hold down the power button for about five seconds to ensure it's powered down. If it's a Mac mini or iMac Pro, make sure there's a monitor attached so you can see progress later, during revival (or restoration).

**3.** Connect the Mac that's reviving the other via a particular port on the unresponsive Mac. One Thunderbolt port on every Mac covered by this technology is specially equipped to allow revival or restoration. See the list at the bottom of this article to find yours.

**4.** Power up the unresponsive Mac in a way that varies by model:

**Intel Mac mini, iMac or iMac Pro:** Hold down the power button, plug it into power, and keep holding down for three seconds.

**Intel Mac laptop (any model):** Hold down the power button and the left Control key, the left Option key, and the right Shift all at once for about three seconds.

**M1 Mac mini:** Making sure the power has been disconnected for more than

10 seconds, hold down the power button, plug the computer into power, and release the button. Its status light should glow amber now.

### **M1 MacBook Air or 13in MacBook**

**Pro:** This is similar to the Intel models, but note the differences. First press the power button, and then immediately hold down the power button along with the left Control key, the left Option key, and the right Shift for about ten seconds. Release Control, Option and Shift, but keep holding down the power button until it appears in Configurator on the attached Mac.

Now you can attempt to revive the firmware, which keeps all your files intact:

**1.** On the Mac running Configurator, in its device window, your other Mac should appear if you have the cables connected correctly. Select the Mac you're connected to, and then choose Actions > Advanced > Revive Device and click Revive.

**2.** The unresponsive Mac will show an Apple logo intermittently during revival. If successful, it will reboot.

**3.** macOS may still not be working correctly, even if the revive functions.

In that case, however, the Mac is now responsive and has recoveryOS correctly installed. You can restart into recoveryOS as described above, and then reinstall macOS without erasing any of your files.

**4.** You can disconnect cables from the other Mac.

## RESTORE YOUR MAC

If this process fails, you may be unable to recover any data from that Mac, and it requires a complete restoration, which resets the Mac and erases its contents. It's a last-ditch process, and if you have unique data not backed up on that Mac, you should determine whether there's any other way to get data from it before proceeding.

To restore your Mac's firmware, after ensuring you have made every effort to extract needed files:

**1.** On the Mac running Configurator, in its device window, select the Mac you're connected to, and then choose Actions > Advanced > Restore and click Restore.

**2.** The unresponsive Mac will show an Apple logo intermittently while restoration proceeds. If successful, it will reboot.

**3. With an Intel Mac:** Now hold down Shift-Option-Command-R to install

the version of macOS that your Mac shipped with or the oldest version still available. After reinstallation, you can upgrade to a later macOS.

**With an M1-based Mac:** macOS Set-up Assistant appears to guide you through installing Big Sur.

**4.** You can disconnect cables from the other Mac.

## WHICH PORT TO USE

Apple snuck in a special feature on one Thunderbolt port on every Mac covered by this revival and restoration feature. Here's the rundown, which you can also see in graphical form in the support document for Intel Macs ([fave.co/2T6R2Xk](https://fave.co/2T6R2Xk)) and M1 Macs ([fave.co/2VubFNU](https://fave.co/2VubFNU)). In cases of left and right, you have the ports facing you directly so left and right are your left and right.

**Intel Mac mini:** Rightmost Thunderbolt port.

**Intel Mac laptops:** When looking at the left side of the laptop, the Thunderbolt port at right.

**Intel 2020 iMac or iMac Pro:** The rightmost Thunderbolt port on the back of the unit, whether it's four (iMac Pro) or two (iMac).





On the Intel Mac mini, you'll need to use the rightmost Thunderbolt port.

**Intel 2019 iMac Pro (tower):** The Thunderbolt port farther away from the power button on the top of the computer.

**Intel 2019 iMac Pro (rack mounted):** The Thunderbolt port closer to the power button.

**M1 Mac mini:** The Thunderbolt port on the left, furthest from the HDMI port.

**M1 Mac laptops:** On the left side of the laptop, the Thunderbolt port on the left (there are no Thunderbolt on the other side of these models).



# Change the window background colour and image for Terminal

Learn how to make Terminal use a user-defined background image each time you open a new window. **Rob Griffiths** reports

**A**s you may or may not know, you can customize the background of a Terminal window in macOS. You can use either a colour or an image, and you can also set a

transparency level for the selected colour or image. You access these settings in the Terminal > Preferences screen; click the Profiles tab.

On the left, you'll find a column of shell profiles, each using different

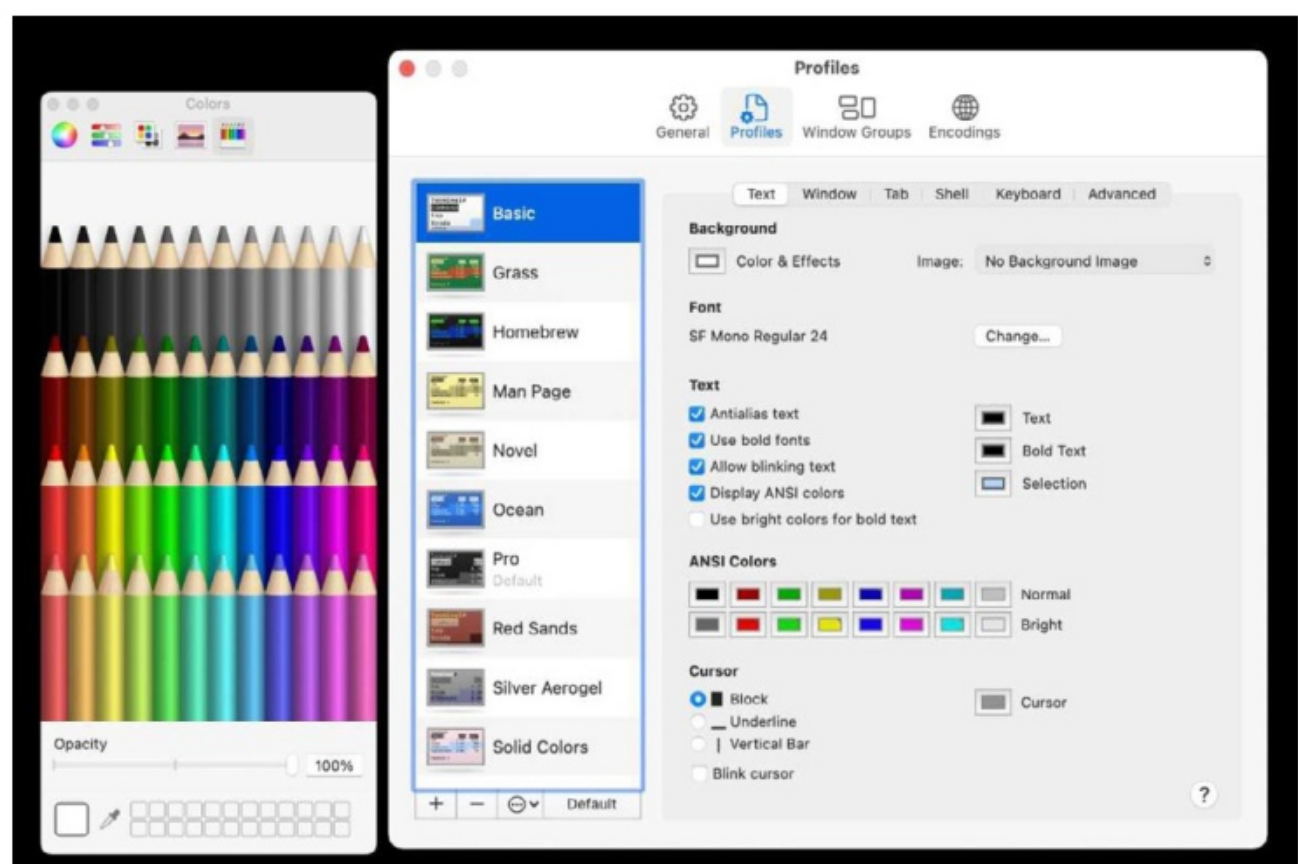
colour combinations. You can select one of those, or you can customize a profile. Click on a profile, and then in the main section of the window, you find the profile's settings. To change the background colour, click the Colour & Effects button in the Background section. A colour picker window will pop up, and you can select the colour of your choice

If you want to use an image, click the pop-up menu next to the Image setting. When clicked, a Choose button appears, and then when you click on that, the file dialog appears. Navigate to the image you want to use, select it, and click the Open button. When you open a new window, the image will be in the background.

Here's a trick: instead of selecting a particular image file, select a folder that contains a number of images and click Open. Now every time you open a new Terminal window (Command-N), Terminal will randomly display one of the selected images from the folder you specified. Whether

you find this effect interesting, useful or distracting probably depends on the types of images you choose to place in the chosen folder.

But here's one way to use this trick that might actually be useful – or at worst, not incredibly distracting. In your favourite image editor, create a new image with relatively tiny dimensions – say 20x20 pixels. Fill this image with a colour you'd like to use as a Terminal background, and save it to a 'Terminal Colours' folder (or whatever you'd care to call it) as a TIFF, PNG or JPEG (other formats probably work fine, too; these are the three I tested). Now change the fill to another colour you'd like to use for your background, and



**You can change the window background colour or use an image in the Profiles section of the Terminal preferences.**



save it as a new name to the same folder. Repeat until you have a nice assortment of background colours saved to that folder.

Switch to Terminal and repeat the steps to set an image as the window background. Select the Terminal Colours folder you made for your background images. Now, every time you open a new Terminal window, you'll see one of your colour swatches as the background – Terminal automatically scales your tiny image to fill the Terminal's screen. And while solid colours might not be as interesting to look at as fancy background images, they're much less distracting to the eye – and not nearly as boring as using the same colour every time you open Terminal.

## USE DRAG AND DROP TO TEST COLOURS

In macOS, you can try different colours for your Terminal window by dragging and dropping colour swatches onto the window. To use drag and- drop, you need to get a colour picker on the screen. You can get one by clicking Terminal > Preferences > Profiles, and then click on any of the colour boxes next to Colour & Effects, Text, Bold Text, Selection, Cursor or any of the boxes

under ANSI Colours. A colour picker window will appear.

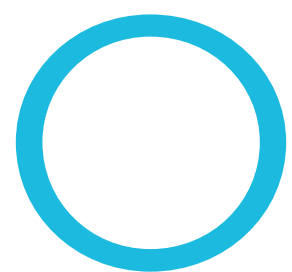
To change the background colour, drag a colour swatch from the colour picker and drop it on the window. Repeat as necessary with varying colours until you have one you like.

However, any colour that you drag and drop does not change the setting permanently. To set the colour permanently, you have to go to the colour picker for Background: Colour & Effects in the Profiles settings and select the colour.



# Apple will stick with ‘13’ for the next iPhone

A report says Apple won’t go ‘s’ this year. **Michael Simon** reports



One of the only things we don’t know about the next iPhone is what it will be called. Recent reports have suggested that Apple will go with ‘12s’ due to the relative lack of monumental new features, but now it looks like Apple has decided against that route.

According to the Economic Daily News, Apple will be naming the new handset the iPhone 13, based on the publications supply chain sources. Previous reports have basically confirmed that there will be four models of iPhone again, so the new line-up should look very similar to the iPhone 12, with an iPhone 13, 13 mini,

13 Pro and 13 Pro Max. Apple hasn't followed a predictable cadence for its iPhone names since the iPhone 6s, so it's not surprising that it's jumping right to iPhone 13. Here's how the last few models have looked:

**iPhone 7:** 2016

**iPhone 8:** 2017

**iPhone X:** 2017

**iPhone Xs:** 2018

**iPhone 11:** 2019

**iPhone 12:** 2020

Rumours about the next iPhone have painted a near-complete picture of the device, with a smaller notch, faster processor, better camera and a high-refresh screen on the Pro models. Other smaller improvements may also arrive, including reverse wireless charging, better battery life, and new colours.

The iPhone 13 name is something of a risk for Apple due to the unlucky nature of the number. However, the numbering ultimately doesn't matter, since it's mainly used as a marketing identifier. The phone itself doesn't have any numbering on it, and Apple hasn't put a number on the box since the iPhone 7.





# The next iPhone SE

Everything we know so far. **Michael Simon** reports

In 2020, after a four-year wait, Apple finally updated the iPhone SE to... the iPhone SE. Hanging on to the same name is a little confusing – Apple differentiates the new model when necessary by calling it the 2nd-generation iPhone SE, but most people either call it the iPhone SE (2020) or iPhone SE 2.

Whatever you call it, it's not very likely to be updated in 2021. It's also

not very likely that Apple will wait another four years to update its most affordable iPhone. We currently expect the new iPhone SE (which may be called the iPhone SE (2022), iPhone SE (3rd-generation), or iPhone SE 3) to be released in the first half of 2022. Here's a summary of all the latest rumours, leaks, and other information we've been able to gather about the next revision of

Apple's most affordable iPhone. All of this is subject to change until Apple officially announces it.

## DESIGN AND DISPLAY

Currently, the most reliable analysts expect the next iPhone SE to physically resemble the current model. That's perhaps a little disappointing – the iPhone SE is based on the body of the iPhone 8, which is now discontinued. However, analyst Ming-Chi Kuo believes Apple plans to move ahead with another SE model to feature the 4.7in LCD display, a Home button with Touch ID and no Face ID. In other words,

the next iPhone SE is once again rumoured to be based on the iPhone 8's shell, with select new components.

Apple is also said to be working on an updated version of the iPhone 11, which features a 6.1in LCD and Face ID. If this were to release in 2022, the iPhone 11 would be more than two years old, which fits in with Apple's pattern of the iPhone SE using old iPhone bodies and screen technology with some new internal components. This potential phone may launch as the iPhone SE Plus that was originally rumoured to release in the second half of 2021, but more recent rumours suggest a 2022 or 2023 release date.



Apple is said to be working on an updated version of the iPhone 11.

## 5G

The big selling point of the next iPhone SE is said to be that it is the most affordable 5G iPhone ever. The iPhone 12 mini is currently the least expensive

5G iPhone at £699, so you can expect the iPhone SE to cost less than that, though it may not retain the £399 price of the current iPhone SE.

It's unknown if the iPhone SE will support 5G in addition to sub-6GHz frequencies. The iPhone 8's body was never designed for antenna modules necessary for good 5G reception, though it's not clear to what degree that would be a problem, or if Apple could easily modify it.

## PROCESSOR

Apple has historically outfitted the iPhone SE with the very latest Apple A-series processor; the one used in the most recent high-end iPhone models. That means a 3rd-generation iPhone SE launching in the spring of 2022 would have the same processor as the iPhone 13 launching later this year, which we expect to be the A15. That will make it fast, a great value, and eligible for iOS updates for a very long time, as was the case with the prior iPhone SE models. Apple's cost-cutting comes from the body, display, cameras, and other such features (don't expect MagSafe, for example).

## CAMERA

When the iPhone SE 3 lands, it is expected to carry the same single

12Mp wide-angle rear camera as the current model, along with a lone front-facing camera. The current model has a 7Mp front-facing camera, which we would like to see upgraded to 12Mp, but we've heard no rumours about it one way or the other.

Don't expect huge improvements in camera quality from fancy new sensors, though. Apple is likely to tout the improved camera quality of the new iPhone SE, but it will come mostly from improved visual processing of the A15 relative to the A13 in the current 2nd-gen iPhone SE.

## PRICE AND RELEASE

We don't know what the iPhone SE will cost, only that it should be less expensive than any other iPhone. The iPhone 12 mini currently retails for £699, and the iPhone SE for £399, each offering 64GB of storage. With the inclusion of 5G and the associated licensing costs, it's quite possible that the iPhone SE gets a price hike to something like £449 or £499, but we don't expect it to cost more than that.

Apple has released the past two iPhone SE models in the spring, and that tracks with the current reports for the 3rd-generation model, which pegs it as coming in the first half of 2022. The rumoured iPhone SE Plus, based



on the iPhone 11 with Face ID, would definitely carry a price premium of at least £100 (placing it in the £499 to £599 range) and may be released in 2022 alongside the next iPhone SE, though some rumours say it may not be released until 2023



# The iPhone 14 might have a 120Hz ProMotion display on all models

A cheaper model with a better screen could be on the way. **Michael Simon** reports

**W**hile we're waiting for the iPhone 13 to make an appearance in September, plans for the iPhone 14 are already well underway. And if you've been

wanting a cheaper iPhone 12 Pro Max, the phone of your dreams might be on the way.

By now you've already heard that Apple will almost certainly offer its first iPhones with 120Hz ProMotion

displays this year. All reports indicate that the faster displays will be exclusive to the iPhone 13 Pro models, however. That's likely due to a variety of reasons – marketing, cost, and battery life – but also because the only supplier for the LTPO TFT OLED displays Apple needs to deliver ProMotion displays is Samsung and yields are reportedly low enough where it wouldn't be able to supply enough orders to cover all four models.

That might change in 2022. According to a new report in Korea-based The Elec, LG is in the process of converting its display manufacturing line to LTPO TFT OLED with the hope that it can join Samsung in supplying displays for the new all-OLED iPhone line-up in 2022. That would mean the non-Pro models would join the iPhone 14 Pro and iPhone 14 Pro Max in getting 120Hz displays, in the same way Apple added OLED to the entire line-up last year.

Previous rumours indicated that Apple would dump the iPhone mini in 2022 in favour of a new non-Pro Max phone that would have the same 6.7in display as the current Pro Max but cost £200 less. Add to that rumours that the Pro models will get a 48Mp wide-angle lens and large-phone

lovers will have two incredible models to choose from.





# The next iPad mini

Here are the major features and changes that have been rumoured for the next iPad mini. **Roman Loyola** reports

It's been over two years since the iPad mini had its last update, so the rumours of a new version are heating up. We look at the most credible reports of the upcoming model.

## DESIGN AND DISPLAY

Mark Gurman of Bloomberg reported in June that the next iPad mini

will have thinner bezels. Analyst Ming-Chi Kuo also talked about the thinner bezels, which allows the iPad mini to increase its screen size from 7.9 inches to 8.4 inches. However, recent rumours suggest that Apple will completely redesign the iPad mini with a look that's closer to the iPad Air.

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Apple has been transitioning the iPad line to reflect the design of the iPhone 12, with its flat edges. The mini is next to undergo the ‘flat’ change according to several reports, including a comprehensive rundown from Jon Prosser of Front Page Tech and confirmation from Mark Gurman, who says the mini is due for its “biggest redesign in (its) nine-year history”.

Prosser says the new model will be similar in size to the existing iPad mini, with a Liquid Retina display (rounded corners) and an ‘edge-to-edge’ design. He adds that the iPad mini will be available in gold, silver and black (though we think he meant Space Grey.) The current Space Grey iPad mini has a black bezel, while the gold and silver models have white bezels, but Apple switched to all-black bezels with the iPad Air regardless of colour.

Kuo previously reported that Apple has planned to update the iPad mini with a mini-LED screen, but that has likely been pushed back to the next upgrade cycle. The

current iPad mini uses an iPS LCD display like other iPads except for the new 12.9in iPad Pro.

## TOUCH ID POWER BUTTON

Several reports have stated that the home button is going away in the next iPad mini. It will still have Touch ID, but the sensor will be built into the power button, an implementation that was introduced with the fourth-generation iPad Air. In our review, we called it “a good solution that works very well”.

Jon Prosser believes that Apple will replace the Lightning port on the next iPad mini with USB-C. He calls this an “interesting move”, which implies that maybe this rumour isn’t as solid as the others. The entry-level



**The iPad Air moved Touch ID to the power button, which could happen on the iPad mini.**

iPad and iPad mini are the only two iPad models that still have a Lightning port, while the iPad Pro and iPad Air use USB-C.

The current iPad mini already supports the Apple Pencil, but Prosser reports Apple may be designing a smaller version that would work better with the iPad mini's form factor. We've heard rumblings that Apple is working on a 3rd-gen Apple Pencil, but we assumed it would be for the iPad Pro.

## A14 PROCESSOR

Jon Prosser says that Apple will use an 'A14' processor in the next iPad mini. The iPad Air and iPhone 12 use an A14 Bionic processor with a neural engine, which is likely the model Prosser is referring to. However, it's possible that Apple is using a system on a chip that's an incremental step-down, as the A14 labelling implies, which would create some distance between it and the iPad Air. Apple has made different versions of chips before, such as the A12Z in the previous iPad Air and the M1 with a 7-core GPU.

## RELEASE DATE AND PRICE

Several reports have stated that the next iPad mini will be available

later this year, most recently Mark Gurman from Bloomberg who said the new mini "should be a go" for an autumn launch. Prices have not been reported, but we assume that they'll be the same as or very close to the price of the current iPad mini, which starts at £399 for 64GB of storage.



# Apple plans mini-LED blitz with 11in iPad Pro

Better displays are on the way. **Michael Simon** reports

**T**he 12.9in iPad Pro may be Apple's first device with a mini-LED display, but it won't be the last. According to Ming-Chi Kuo, Apple will update several of its products with the next-

gen screen tech as it moves away from LCD for all but a few entry-level products.

First and foremost, Kuo says Apple will update the 11in iPad Pro next year, seemingly as part of a larger



upgrade with an M1X or M2 processor. Previous reports indicate that Apple's flagship iPad is in line for something of a redesign, with a glass back and wireless charging. Kuo doesn't mention whether the 11in iPad Pro would receive a £100 price hike like the 12.9in one, but it's possible Apple bumps the price to £849 to create some more separation between it and the £579 iPad Air.

Also on deck are mini-LED displays for the upcoming MacBooks. We've already heard that Apple is planning a massive update to the MacBook Pro with a redesign 16in model and a new 14in one, and Kuo says they will both of which will sport mini-LED displays when they launch later this year. He adds that the next MacBook Air, which is reportedly due to arrive in early 2022, will also feature a mini-LED display.

Mini-LED display tech is similar to OLED with a 1,000,000:1 contrast ratio and a full-screen brightness of 1,000-plus nits that uses thousands of tiny LEDs for more control and balance than a traditional LCD. In our testing of the 12.9in iPad Pro, we found the screen to be impressive but not tremendously superior to the LCD display on the 2020 model. But it might be more noticeable

on the MacBook Air and MacBook Pro, which currently have lower maximum brightnesses of 400 and 500 nits respectively.

A push into mini-LED for the 11in iPad Pro, MacBook Air and MacBook Pro would leave just a few products with LCD screens: the entry-level iPad, iPad mini and iPhone SE.



# The iPad's Home Screen isn't the desktop we need

So close yet so far. **Michael Simon** reports

**A**t WWDC20, when Apple showed off widgets and the App Library in iOS 14, my first reaction was, “This would be better on the iPad”.

At WWDC21, when Apple showed off widgets and the App Library in iPadOS 15, my first reaction was, “This should be better on the iPad”. The concept is good. In iPadOS 15,

Apple is giving iPad users the ability to remove Home Screen pages and organize their apps into ‘helpful categories’ that are only visible when you need them to be. It makes the iPad Home Screen feel a bit more like a desktop – especially when you hide the other Home Screens – and lets you find apps and locate icons much quicker and more easily.

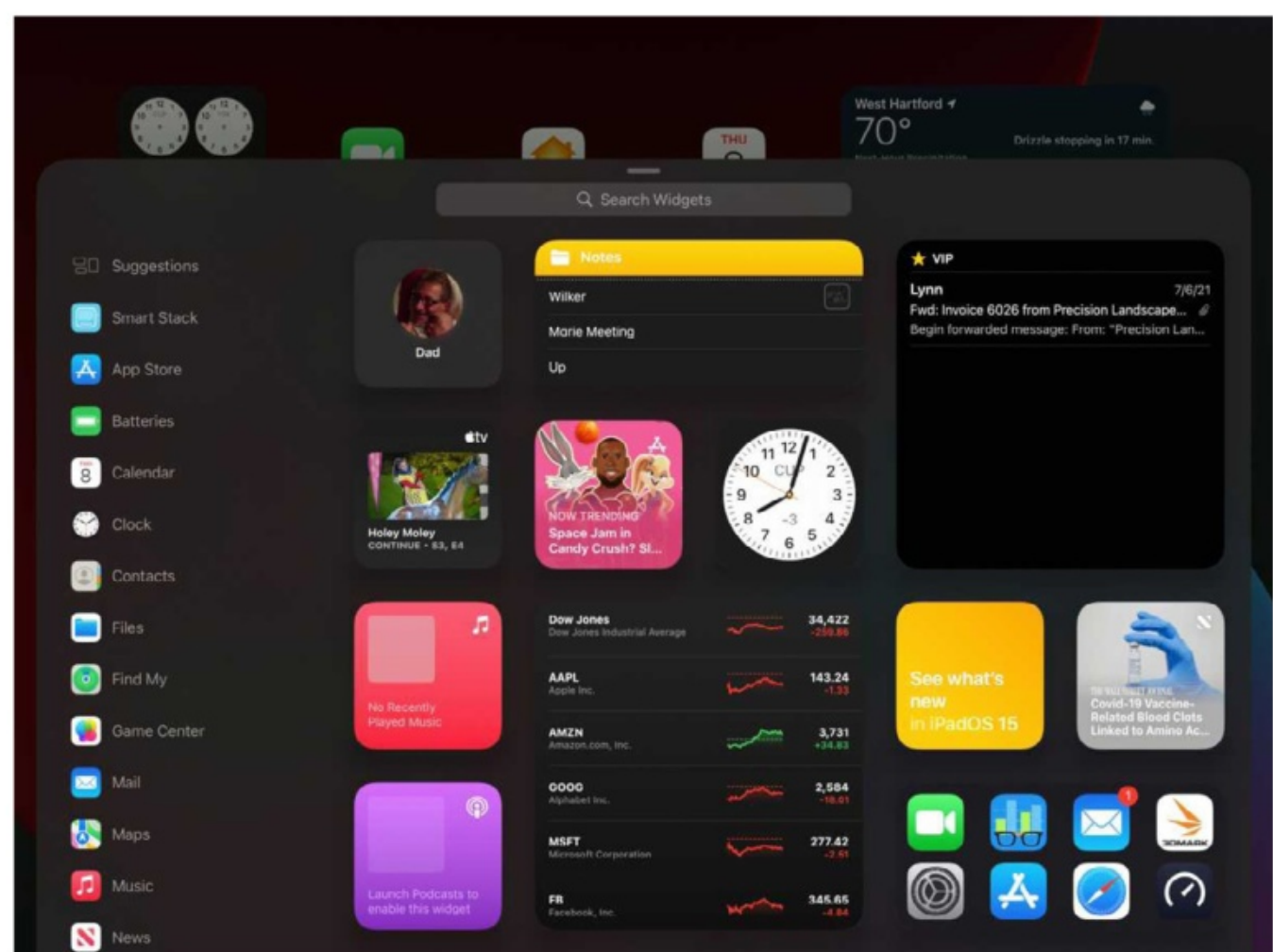
With a handy icon in the dock, it feels a lot like Launchpad on the Mac with one shortcoming – you can’t customize it. On the Mac, you’re able to move icons around and create folders to create a personalized space, but on the iPad, it’s the same as it is on the iPhone. Apple’s machine learning engine automatically slides apps into folders based on use and there’s no way to change anything.

Granted, Apple’s algorithm does a pretty good job, but it still feels very static and rigid. Like the Mac, the iPad is more of a productivity device than the iPhone, and not knowing

where an app will land each time you launch the App Library is a limitation that slows down your workflow. It’s the same as it is on the iPhone, but where it’s a mere annoyance there, it’s a downright hindrance on the iPad.

## WIDGETS, WAYWARD AND WANTING

Another iOS 14 feature that made it to the iPad a year late – for reasons I don’t quite understand – is proper Home Screen widgets. Apple has brought all of the widgets from iOS, plus a few larger ones available only on the iPad, and they look and act just like iPhone widgets, sliding in between the icons on



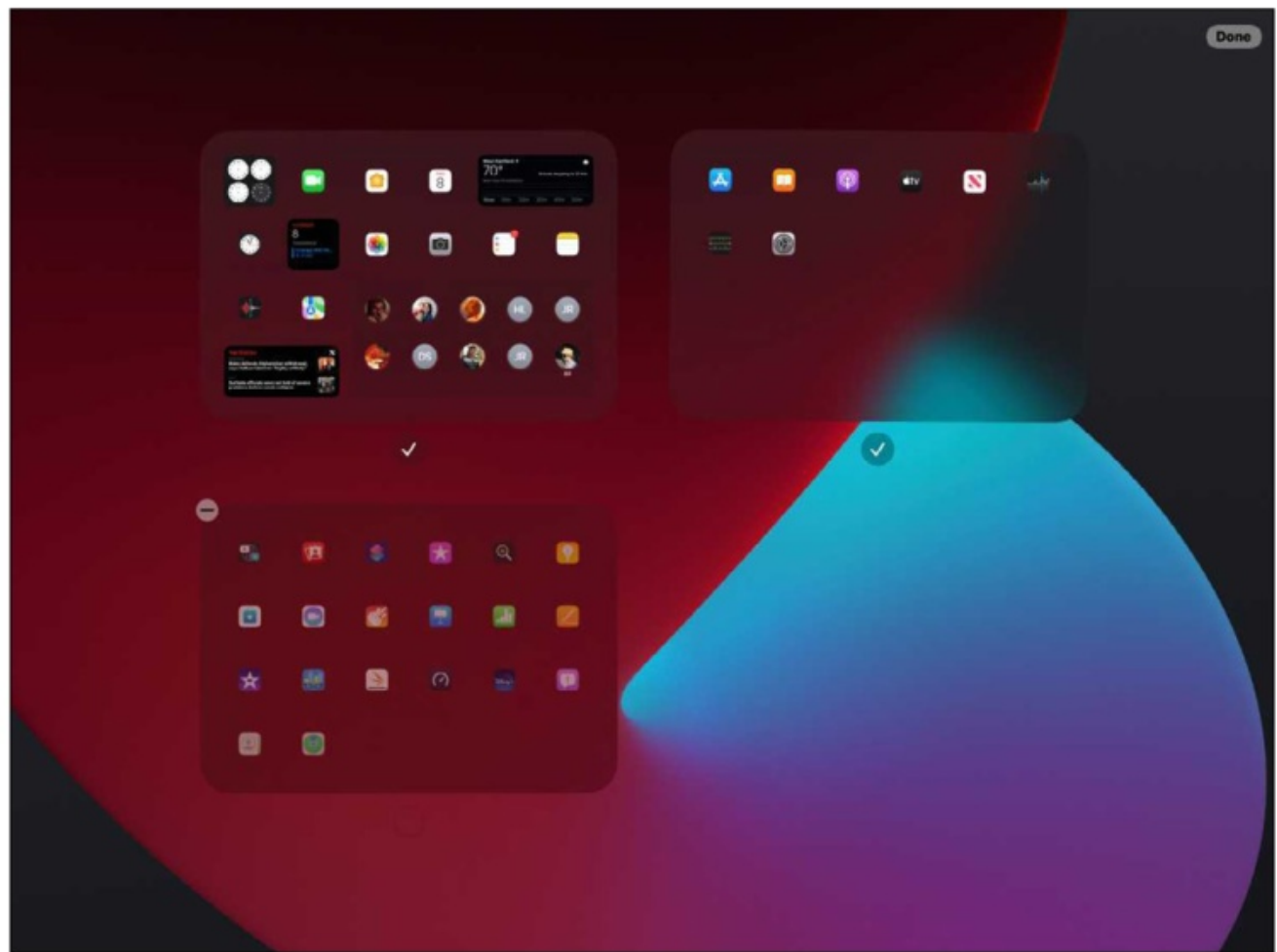
On the iPad, widgets look off.



the Home Screen without disrupting the existing grid. Widgets in iPadOS 15 are supposed to do the same for the iPad that they did for the iPhone, but it doesn't feel quite right. Widgets follow a similar concept to iOS but aren't nearly as natural.

On the iPhone Home Screen, widgets elevate the experience and blend seamlessly with the existing icon grid. Icons and widgets are the same height and they all fit well together. Small widgets look great alongside large ones, icons fill in the gaps nicely, and it all flows perfectly.

On the iPad, widgets look off. Since there's more vertical and horizontal space around the widgets, they look like they're floating between the grid rather than part of it. It feels like two systems running side by side rather than in unison. While it's an improvement over the previous method, which moved widgets out of the Notification Centre and onto the Home Screen in a somewhat slipshod



**The best part of iPadOS 15 is the ability to remove Home Screens full of apps.**

way, widgets somehow still look out of place. In iOS 14, the Today screen was basically plopped onto the left side of the first Home Screen in a scrollable column of iOS-style widgets, but in iPadOS 15 they're more integrated but still not really part of the whole.

You can see it in Apple's preview images. I wondered why Apple's iPadOS 15 screenshots showed widgets at the top of the screen and icons at the bottom, and it's clearly because that's how they look best. But even if you follow that example, it still doesn't feel like a fluid Home Screen. Widgets are simultaneously cramped and scattered, and even the

large-format ones, which take up four columns and two rows and are quite big, are mere extensions of the iPhone version rather than iPad-specific versions. There's too much space, not enough information, and feel like a missed opportunity.

While the App Library and Home Screen widgets bring the iPad a little closer to the Mac, it's still frustratingly tied to iOS in far too many ways. I wanted a new iPadOS Home Screen experience that took the iOS 14 concept and reimagined it for a larger screen. Instead, I got iPhone widgets on the iPad.

Some of the issues have to do with the unique nature of the iPad's display. Unlike the iPhone and Mac, it needs to fluidly switch between portrait and landscape modes, and Apple handles that well in iPadOS 15. But that's also something of an excuse for letting the iPad Home Screen stagnate. Waiting a year for the same widgets and App Library on the iPhone is a let-down, and there's nothing transformative or transcendent about using it.

Even setting aside the iPad Pro's M1 processor and XDR display, Apple's tablet has a ton of untapped potential that's been an update away from greatness for far too many

years. iPadOS 15 brought some of the pieces we've been missing. Not we just need iPadOS 16 to put them in the right places.

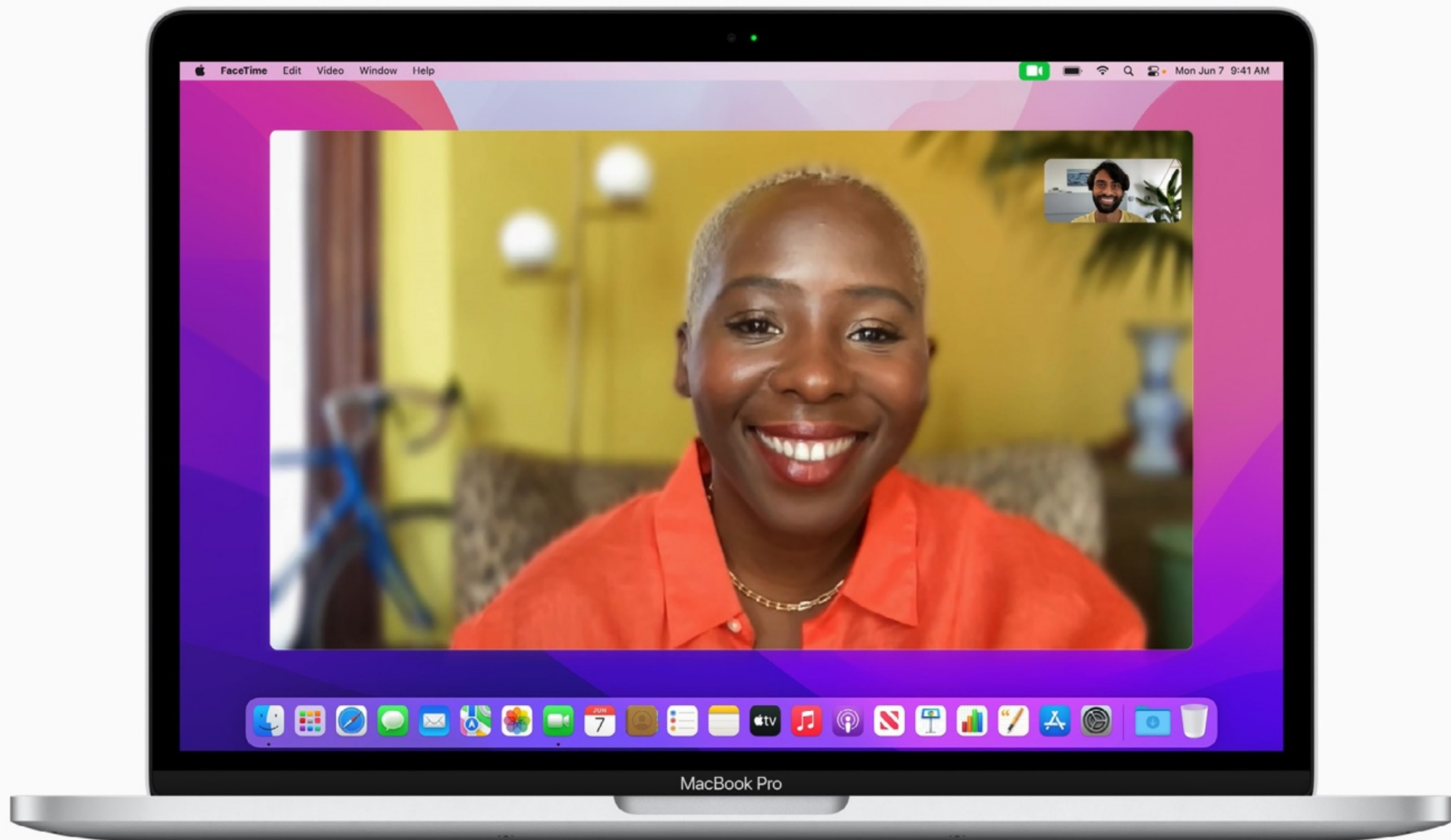


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# Best noise-cancelling headphones

Noise-cancelling headphones isolate you from distractions, so you can concentrate on your music. **Macworld staff** reports

**N**oise-cancelling headphones are one of the most popular types of cans, and for good reason. They block out ambient noise that can distract from you enjoying your favourite tunes. While they're particularly useful for air travel and daily commutes – especially via public transport – they're also great

at isolating you from at-home noise pollution, whether that be your dog barking, the whir of your Mac's cooling fans, or your neighbour's lawn mower.

Noise cancellation can be accomplished in two ways: through active or passive measures. Our focus here is on the former. The latter isn't a technology per se; rather, it refers to how much ambient noise

a headphone will physically block. Closed-back over-ear headphones and in-ear headphones with memory-foam tips offer the best passive noise cancellation.

Headphones with active noise cancellation (ANC) identify sound waves associated with noise and electronically generate an inverse sound wave that cancels it out. Here's what we mean: a sound wave is similar to the ripples in a pond. Toss a pebble in the pond, then introduce ripples of the opposite pattern, and you'll smooth the pond's surface. Active noise cancellation works

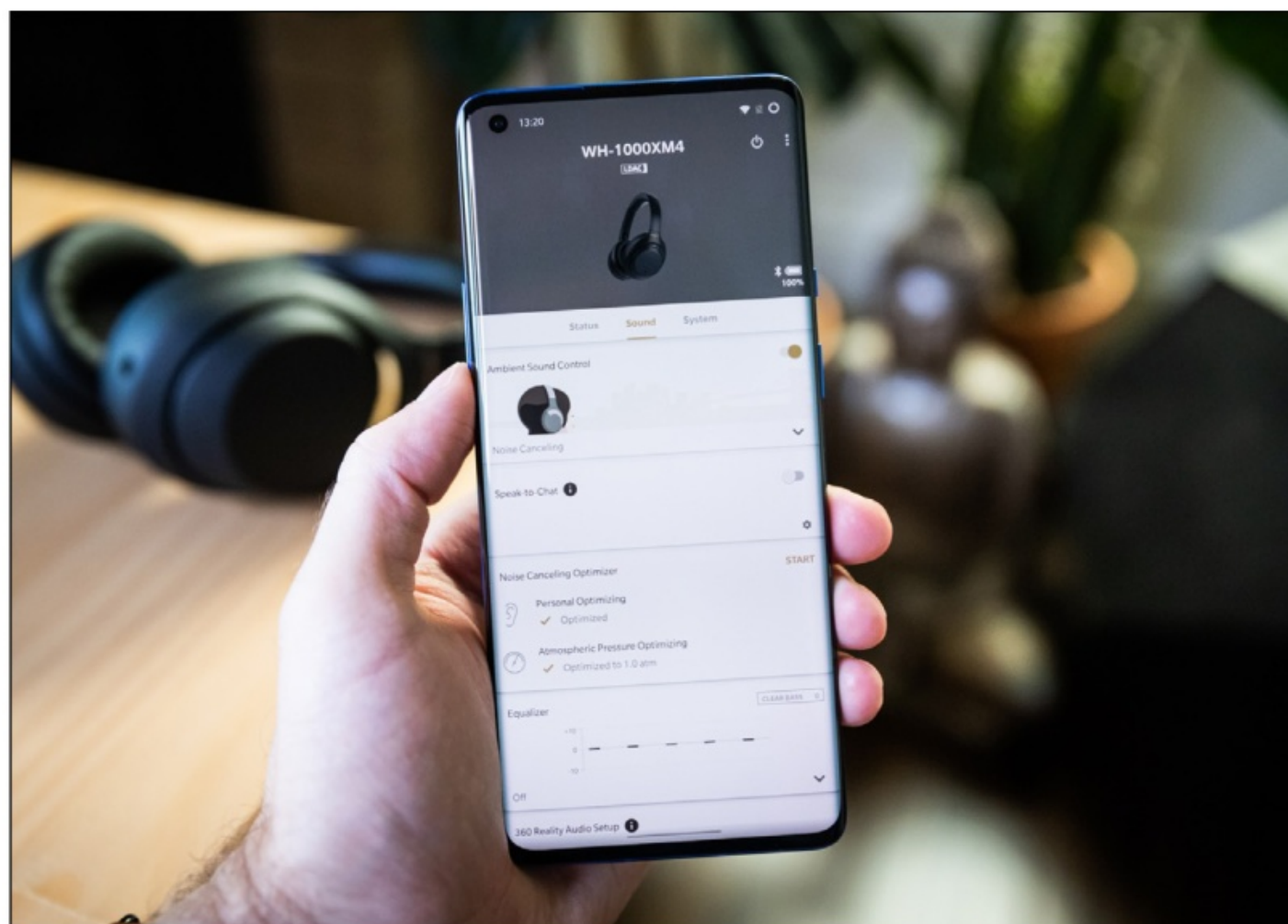
in a similar manner. Microphones mounted on the headphone analyse ambient sound waves and then produce inverse sound waves that will cancel them out.

As you might expect, the ANC technologies from some manufacturers are incredibly effective; others, less so. We've tested models from AKG, Bose, Bowers & Wilkins, JBL, Libratone, and Sony and found them to be very good.

Adaptive noise cancellation is the most sophisticated type of ANC. It operates on the same principles, but adapts to your surroundings to

apply more or less of the effect and to even bring in sounds from the outside world.

Some adaptive noise-cancelling solutions even take into account how fast you're moving, the air pressure around you, and whether you're likely in a plane, taking a walk, or



**Most ANC headphone manufacturers, including Sony, provide a mobile app that lets you tailor their headphone's noise cancellation to your preferences.**



holding a conversation. Many operate in conjunction with a mobile app on your smartphone.

Some individuals find that ANC headphones exert pressure on their ears, creating a similar sensation to being under water. If you find ANC headphones to be uncomfortable, you'll prefer a model with good passive noise cancellation. That type of headphone deliver other benefits, too: They're the least likely to colour the music you're listening to, and they don't need batteries. On the other hand, not all headphones with passive noise cancellation are wireless.

## BEST NOISE-CANCELLING HEADPHONES

### Sony WH-1000XM4

**Price:** £349 from [fave.co/34P4TV7](https://fave.co/34P4TV7)

Two years ago, when I reviewed Sony's WH-1000XM3 active noise-cancelling headphones, I said that Sony had finally eclipsed Bose in this category. And I wasn't the only one to say it. Now, the company is back with the all-new WH-1000XM4. While these new cans don't advance the ball by a lot, they nonetheless are my new top recommendation for music lovers looking for great-sounding headphones that also deliver terrific noise cancellation.



Sony made some small refinements to its already amazing ANC headphones.

Key improvements include a proximity sensor that automatically toggles play/pause when you put the headphones on and take them off, support for Sony's LDAC high-res audio codec (a common feature on high-end digital audio players), and multipoint connection via Bluetooth 5.0 (so you can connect to two sources at once). Sony made other very small improvements to the hardware and software, too; but for the most part, those are just tweaks to a winning foundation.



Let's dive into the specifics that make Sony's WH-1000XM4 so great, and why the older WH-1000XM3 – which are still available and can be found for about £90 less if you shop around – remain a great value.

## The same hardware, refined

The Sony WH-1000XM4 maintains the signature look this line is known for, with subtle gold accents and minimal buttons. Most of the controls are still handled by taps and swipes on the right ear cup. I've grown accustomed to this but it's never been my favourite means of navigation. The easy-to-find Power button sits on the bottom of the left ear cup, along with a Custom button that can be programmed to either select Ambient Sound Control options or activate voice assistants.



There are some tiny changes, but at this distance you'd be hard pressed to tell the difference between the new and old version.

It's a minimal and classy design that still holds up years later, but the touch controls still present a learning curve.

The slim headband introduced in the previous model is very comfortable along the top of the head. Sony claims the newer model features slightly upgraded ear pads, which should help during long listening sessions, but I could barely tell a difference. The new set is more comfortable compared to the old model, but that could also be attributed to the wear I've placed on the older pair. I've worn the WH-1000XM3 on plenty of long flights and encountered some pressure fatigue after many hours, so any upgrade in that area is welcome. Overall, it's a comfortable design that sits snug on my head and melts away

while I'm working. The swivelling cups and folding design are also retained, so the new model is easy to stuff in a backpack. I'm happy they didn't mess with a winning formula.

For more protection in transit, the included



The side of the headphones has a nice texture when using the touch controls.

carrying case got a slight upgrade, too, with improved stitching and a stiffer shell that should last even longer. Other tiny upgrades to the case include cloth pockets for the zipper to recede into, and extra flap length on the divider. Apart from the



The carrying case is tough and has some nice touches.

stiffer case, none of these changes make a huge difference, but I appreciate the attention to detail Sony paid to things as minor as the carrying case. As before, provided accessories include a 3.5mm cable, a very short USB-C charging cable, and an airline adapter.

Sony claims the same 30 hours of battery life with noise

cancelling enabled, and with my heavy mixed usage over the course of my review, I found the battery to last almost as long as the previous pair. Here again, Sony promises its optional power adapter will deliver the same quick-charge feature that

provides five hours of listening time after just 10 minutes of charging, but Sony didn't send that component, so I wasn't able to test that claim. The stock USB-C cable charged the cans within a couple hours.

My favourite new feature on the WH-1000XM4 is a proximity



sensor that detects when you take the cans off, so as to automatically pause playback. The music resumes instantly when you put them back over your ears. This worked like a charm. I tried to trick the sensor by placing the headphones on my thigh, tightly around my neck, and even wore them like a crown and I never triggered a false positive. When I returned the headphones to my ears, the music quickly resumed with no problem. This feature alone would make me consider upgrading from the previous version, and not just because it should extend battery life.

## Top-notch noise cancellation

As I've already mentioned, Sony holds the active noise-cancellation crown with its WH-1000XM3. The WH-1000XM4 feature the same HD Noise Cancelling Processor QN1 as the previous generation, but with a new algorithm. This chip processes ambient noise samples captured by a pair of sensors on each ear cup at a rate of 700 times each second. Be that as it may, my ears could barely discern any difference between the noise-cancellation performance of the WH-1000XM4 compared to its predecessor.



I couldn't feel the proximity sensor while I was wearing these.

Any noise-cancellation strategy starts passively, with large ear cups that form a tight but comfortable seal around your ears to blunt the sharp edges of loud sounds and quiet



the high-pitch hum of appliances. This is an underappreciated aspect of the experience, and it's where cheaper headphones typically falter.

Active noise cancellation filters out low and mid-range frequency noise to a great degree, but filtering low-frequency noise is where active noise-cancelling headphones really shine – even if it can be disorienting for people experiencing it for the first time. Transient (high-amplitude, short-duration) sounds can still penetrate this system, and these headphones do their best to clamp down on the signal, but it can be jarring if the transient is very loud.

I am at least as pleased with the WH-1000XM4's active noise cancellation as I was with the previous generation. My daily life has been very different than what it was at the beginning of the year. I work out of my home instead of going to the office, and I travel infrequently, but I still appreciate how these headphones allow me to focus when I need to get work done.



**The ear pads are soft and comfortable.**

My testing included things like spinning up the fans on my gaming PC, hanging outside in a park, and using a fantastic white noise machine to name a few. The previous model served me well during many hours of air travel and on public transit, and I have no reason to believe that the new model won't deliver the same results.

I appreciate the Ambient Sound Control feature in Sony's companion app that lets you tailor noise cancellation to your situation. These headphones sense where you're wearing them and what you're doing, and they tailor their noise cancellation accordingly. If you're at home and relatively stationary, you'll get full cancellation so you can concentrate on your music. If you're walking, the

headphones will pipe in some ambient sound to improve your situational awareness (so you don't get run over by a bus, for example). It's a great system and the app lets you fine-tune these settings to your heart's content; nonetheless, I quickly discovered I preferred manually triggering my ANC settings using the Custom button.

Sony also provides ways to quickly override noise cancellation, pause or lower the volume of your music, and pipe in ambient sound if you need to stop and speak to someone without removing the headphones. This is also useful when you're at an airport and need to listen for a boarding call. This Quick Attention mode was present in the previous model and is activated when you place your hand over the right ear cup. I didn't use this feature much, preferring instead to take the headphones off. Unfortunately, Quick Attention mode cannot be defeated, and there were a few times when I accidentally triggered it while adjusting the fit.

A new automatic override feature – Speak-to-Chat – can be enabled/disabled in the app. When enabled, it recognizes when you begin to speak and pauses the music while pumping in ambient sound, so you can hold a conversation without any other

intervention. In theory, it provides a better way to chat with someone than holding your hand over the earcup, but I found that it was prone to being triggered by a cough or someone else speaking while close to me. It will stay in this mode for 30 seconds by default, but you can tweak its sensitivity and duration in the app. I just never found myself in a situation where I preferred Speak-to-Chat to just taking the damn headphones off.

## Audio quality and AI upscaling

Sony touts three other features that it says enable the WH-1000XM4 to deliver a high-end audio performance: the aforementioned new algorithm running on Sony's QN1 processor, support for Bluetooth 5.0 and Sony's own LDAC codec and Sony's DSEE Extreme audio technology, which uses artificial intelligence – Sony's Edge-AI – to restore in real time information that's been lost when you're listening to tracks that were compressed using lossy codecs such as MP3.

Like its older sibling, the WH-1000XM4 supports the SBC and AAC Bluetooth codecs in addition to LDAC, but there is no support for any of Qualcomm's aptX codecs. I found LDAC to be superior to the other two,



**Without DSEE Extreme processing, I found the WH-1000XM4 exhibited a more accurate signal compared to the WH-1000XM3.**

so I used that primarily for this review. The device you use for playback will also need to support your codec of choice, of course, so I relied mostly on a OnePlus 8 Pro smartphone for the task, as it's one of few that do. LDAC support is more commonly found on high-res digital audio players.

I streamed tracks mostly from YouTube Music, conducting multiple critical listening sessions in a variety of playback situations with a long list of songs that I'm very familiar with to compare the WH-1000XM4 to the WH-1000XM3 I reviewed in late 2018.

Both sets of noise cancelling headphones sound great for the price.

If you're looking for studio-grade equipment with minimal signal colouration, you shouldn't be looking at ANC headphones anyway. But that doesn't mean listening to music with ANC is a diminished experience.

From a sonic standpoint, I discovered very

few differences between the two new and older cans; in other words, there's not much of a reason to upgrade if you already own the XM3. That said, I do enjoy really pushing my listening abilities, so here are some examples of differences I found.

I've already mentioned Sony's DSEE Extreme audio technology, which is an upgrade over the DSEE HX tech present in the older WH-1000XM3. Sony hypes this hard, so I was surprised to discover that for me, enabling it had the opposite of the promised effect: subtle details in the music – particularly at higher frequencies played at lower volume



– were lost. In Led Zeppelin’s *Stairway to Heaven*, the processing muted details in the fantastic acoustic guitar track – characteristics such as fingers sliding on the guitar neck, and the reverb that hangs overhead were diminished in the mix, lessening the beautiful depth of the soundscape.

In classic jazz tracks like *So What*, from Miles Davis, I noticed small details around the finger work on the upright bass were less present, and the high transients from the horns and drummer’s hi-hat brushes were slightly compressed. On the flip side, vocal tracks were far more present in the mix, not so much as to enable a depth separation from the instrumentation, but more like a mix of EQ boosting and stronger compression. Disabling DSEE Extreme brought back most of the fine details in instrumentation, as well some of the dynamic range, but it sat the vocals back down into the mix. Compared to DSEE HX on the XM3, DSEE Extreme on the XM4 felt like the signal was being normalized for more even instrumentation, while also emphasizing the vocal tracks.

This heavy-handed processing was revealed even more with heavily compressed tracks from albums like Metallica’s infamous *Death Magnetic*.

In these scenarios, the vocals again took centre stage, while the mid- to low-end was pulled back along with clean high signals. The full mix was more compressed and normalized than with DSEE Extreme disabled, and it didn’t do any favours to aggressive music like metal.

Sony’s documentation says DSEE Extreme “upscales compressed digital music files” and “dynamically recognizes instrumentation, musical genres” with the goal of trying to “resort the high-range sound lost in compression”. So, my next thought was to listen to tracks that were poorly recorded and mixed to see if that’s where the processing truly shines. I loaded up some older punk recordings, such as *In My Eyes*, by Minor Threat, and set YouTube Music to its lowest bandwidth consumption/lowest audio quality setting.

I immediately detected most of the same compression tendencies. While I did notice a bit of smoothing of the lower bit depth with DSEE Extreme enabled in these instances, which provided a cleaner mix with less noise, it wasn’t enough for me to overlook the rest of the processing taking place.

After all my critical listening tests, my assumption is that DSEE Extreme acts as a more subtle

and accurate normalize function than what's present in many music players, allowing listening to be more seamless between tracks and with an even experience between genres. I should emphasize that the effect is slight and might not even be noticeable to the average user – indeed, it didn't diminish my normal listening experiences – but I wanted to put my finger on just what this processing was trying to achieve and highlight it here. People like me who prefer to err on the side of accuracy are advised to leave DSEE Extreme turned off, but that's just my opinion.

Without DSEE Extreme processing, I found the WH-1000XM4 exhibited a more accurate signal compared to the WH-1000XM3. The older headphones are fully burned in now, and they continue to provide a great listening experience, but the colouration – particularly in the low-end thumps and sharp highs – is noticeable when listening to the

pair back to back. The newer model sounds a bit more muted in the mids and is slightly lacking in dynamic range – which indicates they are more accurate – but this is exposed only in extreme A/B testing. Without that direct comparison, these headphones provide a fantastic listening experience in many different genres. Sony has set a high bar for other ANC headphone manufacturers to clear.

### **The rest of the experience**

There are just a few more details to cover when it comes to my day-to-day experience with the WH-1000XM4. Sony's companion app, Headphones Connect has been consistently



**Microphone quality in calls is subpar, but to be expected.**

updated throughout the years, and it remains a rock-solid experience for me. There are plenty of settings to tweak to your liking, and changes made to things like noise cancellation take effect immediately. Firmware updates for the headphones are handled automatically with little disruption, and I haven't encountered any bugs, performance glitches or unwanted battery drain on my mobile devices. I've been burned far too many times by great hardware saddled with a horrible app, so it's refreshing that it's not the case here.

The Sony WH-1000XM4 includes a much-requested feature: Bluetooth multipoint pairing, which allows you to pair the headphones with multiple devices at once. This is handy because it allows you to use a laptop or a digital audio player for music playback, and still get audible audio alerts and phone calls from your smartphone. Multipoint was easy to set up and easy to use, and I didn't have any problems switching back and forth between devices. Sony's implementation does, however, suffer from one very unfortunate drawback: Bluetooth multipoint pairing is only available if you're using the AAC codec. So, you'll need to decide which is more important: high-resolution

audio for music listening via LDAC, or the convenience of Bluetooth multipoint. I opted for LDAC; iPhone users don't have a choice – they can only use AAC with the WH-1000XM4.

The WH-1000XM4's microphone is the last aspect I'd like to discuss. While it never happened to me, many WH-1000XM3 users reported encountering technical problems with that headphone's mic. That said, neither of these cans is a headset, so don't expect great phone-call experiences from them. They're adequate for a short call to a friend or loved one, but don't rely on either for an important business meeting. The WH-1000XM4's mic quality specifically is faint and cannot capture the vocal clarity needed for serious use. I can live with that trade-off.

## Verdict

If you have £350 to spend on active noise-cancelling headphones, the Sony WH-1000XM4 get my highest recommendation. They deliver top-shelf noise cancellation, they're comfortable to wear, they're packed with features, and – most importantly – they sound fantastic.

There's not a lot here to warrant an upgrade recommendation if you already own the WH-1000XM3 – and



if your budget is tighter and you find a great deal on those cans – you should definitely pick them up while they’re still around. But if you want the absolute best of the best, look no further than the Sony WH-1000XM4.

**Adam Patrick Murray**

## **BEST BUDGET NOISE-CANCELLING HEADPHONES**

### **Wyze Noise-Cancelling Headphones**

**Price:** £79 from [fave.co/3iwJPtS](https://fave.co/3iwJPtS)

When you really want to zone out, you need active noise-cancelling headphones. Few headsets cancel noise better than these Wyze Headphones, which are also one of

the most comfortable headsets I’ve worn. You do pay a slight sonic price for this trick, but that simply means the sound goes from very good to merely good. The kicker: £79. Until I looked up the price at the end of my evaluation, I was thinking £150.

### **Design**

The Wyze headphones I tested come in basic black, sport low-latency/low-power Bluetooth 5.0, and are among the most comfy I’ve tested. The ear cup pads are extremely plush, and my ears never came close to making contact with the speaker grills. The adjustable headband is firm, but not too tight, and the cushion for the top of your head is as comfortable as the cup pads.

The one area where I’m now going to be critical of all headphones is controls. The controls on the Wyze (noise-cancellation button on the left, power/up/down/enter on the right) are as well placed as any I’ve experienced, but after the joystick on the

Marshall Major IV, everything else seems dated. That’s not a knock on



The Wyze headphone controls are easy to reach and relatively easy to use.

Wyze, just a plea for all vendors to adopt a superior design.

The left cup is home to the 3.5mm input jack, and the right cup houses the USB-C charging port. The outside of the right cup is also used as a touch surface to control your voice assistant. Wyze includes both audio and charging cables, as well as a simple carry bag. There's no 1/4-inch adapter or airline adapter included.

I'd like to compliment Wyze on its quick-start guide, which is succinct, but thorough and far easier to read than some of the tiny booklets other vendors provide. Kudos as well for all-paper/cardboard packaging and no shrink wrapping. You can easily recycle everything but the phones themselves. (Although that's also possible in most locales, if you take the trouble.)

There is of course an app that allows EQ'ing the unit and choosing the level of ambient noise reduction.

## Performance (noise abatement and sound)

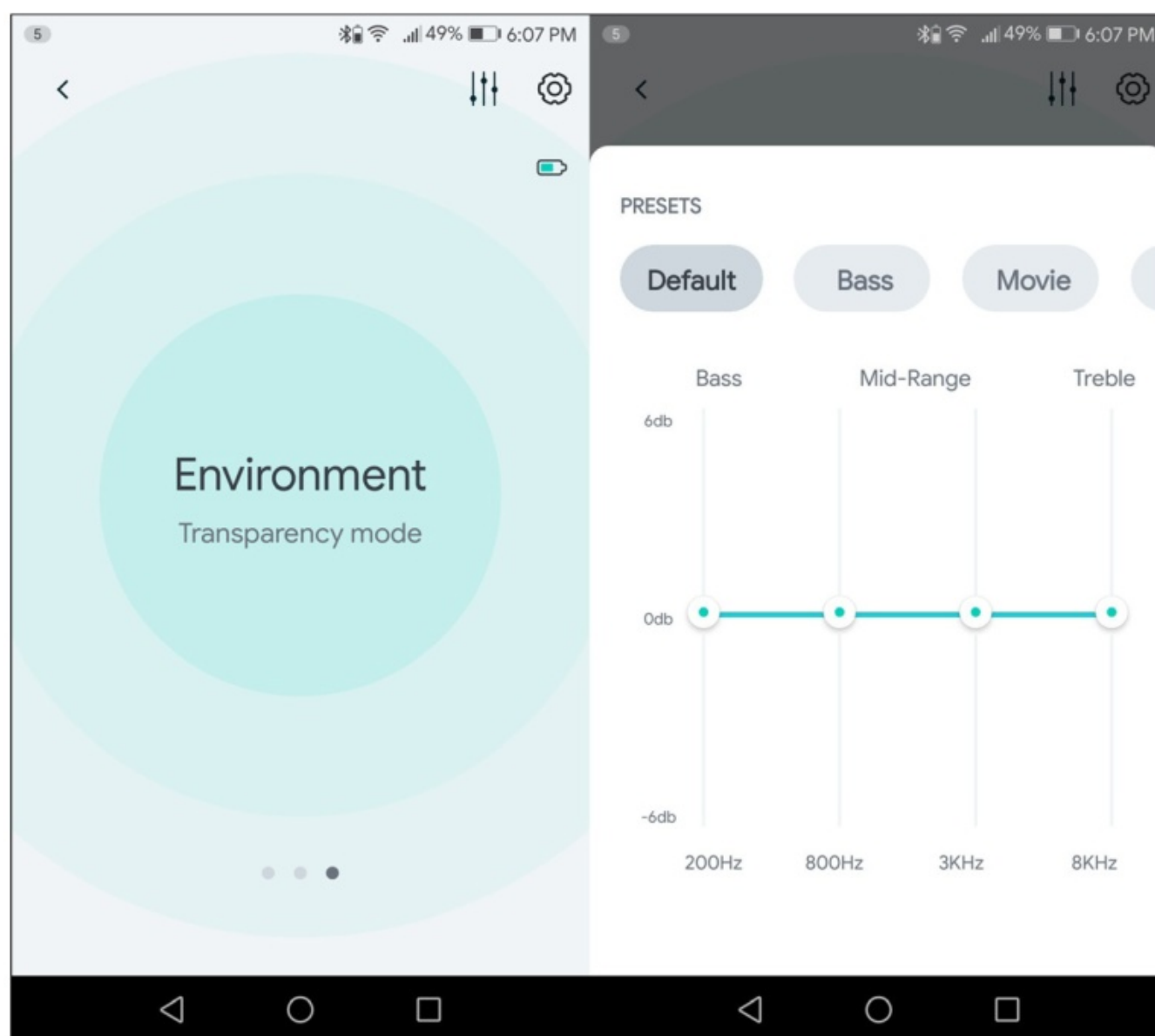
There's no arguing the efficacy of the Wyze ambient noise reduction. As these are over-ear headphones, they block a lot of noise without an electronic assist. With active noise cancellation (adding a phase-opposite signal to the audio) enabled, they become very, very quiet. If I were on an airplane, they're definitely one of the sets I'd consider bringing along.

On the other hand, activating noise cancellation slightly alters frequency response. The Wyze headphones sound very good without cancellation enabled, and merely good with it on. That's the nature of the cancellation

beast, but I will say I hear ever so slightly less difference in sonics between the two modes with my Sony WH-XB900H headset.



Wyze's headphones come in a carrying bag with a USB-C charging cable and a 3.5mm male-to-male cable for wired use.



Wyze's app with noise-reduction settings and EQ.

Sans said noise cancellation, the bass was spot-on, round and punchy without sounding like a subwoofer. Unless of course, you're a subwoofer fiend. (Is that still a thing?) Separation? They're headphones. It's perfect. The mid-range is clean and accurate, though I'd opt for just a tad more in the upper regions. There are just enough highs for my taste, though I wouldn't say no to a pinch more. Younger ears will wonder what I'm going on about.

My above comments are on the default settings. The EQ seemed

to work well with cuts and gain with the bass, but I didn't notice huge gains in the mids or highs no matter how many dB I boosted. The sound doesn't need much tweaking anyway, so no biggie.

Run time was very good, but I didn't quite make the 20 hours Wyze claims. I saw around 16, but then I left them (off-ear) playing

at a relatively high volume. Overall, I'd have no problem using these headphones as my daily drivers if I wasn't currently stuck on, yes the Marshall Major IV's. But those don't do noise cancellation, so I'll take the Wyze on the plane, and they're also in my listen-to-recording-mixdowns brigade.

## Verdict

As I've said several times now, the Wyze headphones are super comfortable and do a stellar job of shutting off the sound from the



outside world. They sound good if not great in that mode, and very good when not cancelling noise. Head to head, I'd give a slight nod to the aforementioned WH-XB900n's in terms of sound. Then again, the Sony's (£150) are far more expensive.

Jon L. Jacobi

## BEST NOISE-CANCELLING HEADPHONES FOR GAMERS

**Bang & Olufsen Beoplay Portal**

**Price:** £449 from [fave.co/3gbORdM](https://fave.co/3gbORdM)

Bang & Olufsen – B&O – is about to turn the headphone world on end with the launch of its Beoplay Portal, a high-end noise-cancelling headphone

whose meticulous industrial design, pristine audio performance, and underlying technology make it the first premium headphone that will easily satisfy the audiophile, the road warrior, and the hardcore gamer with a single product.

### Exquisite industrial design, premium materials

The Beoplay Portal represents the pinnacle of B&O's legendary industrial design. My review sample came in black anthracite, but the Portal is also available in grey mist and navy.

Lifting the Beoplay Portal out of the box is a sensory-confounding experience.

Your eyes see an aluminium and leather-wrapped headphone that you know from experience should have density and weight; but your tactile senses hold something that is impossibly light at a mere 282g.

Everything about the Beoplay Portal screams



The Bang & Olufsen Beoplay Portal headphone pulls double duty as a gaming headset that's particularly effective when used with Microsoft's Xbox gaming console.

high end. The top of the headband is covered in a gorgeous, durable cowhide, while its memory-foam earpads are wrapped in genuine lambskin. The ear pads are thicker than I've seen on other B&O headphones I've reviewed, creating a deeper cavity for your ears. They're also tapered and provide an extra tight seal all around your head.

I've been constructively critical of past generations of B&O headphones for being uncomfortable to wear for long listening sessions, but that's not the case here. B&O wrapped the underside of this headband with a bamboo-fibre textile that is both durable and breathable. Gone are the days when a B&O headphone would cause me fatigue or pain from the top of its headband. The Beoplay Portal features a unique offset padding to relieve any pressure on the top of your head. In fact, when you look at the headband, you'll see the offset as a slight V-shaped notch at the headband's midpoint. I spent hours and hours wearing the Portal –



**Whether you use it for gaming or music listening, the Beoplay Portal is a luxurious headset.**

including falling asleep while wearing it – with no discomfort whatsoever. Kudos to B&O's design team.

The Beoplay Portal's brushed-aluminium arms expand – no, glide – with a smoothness that I've not experienced with any other headphone. It's pure butter. There's no clicking, no stuttering of any kind. Let the arms go and voilà, they lock solidly into place like pure magic.

The aluminium discs on each ear cup exemplify B&O's focus on form and function. Light seems to dance across them; and on closer inspection, you'll notice that the light spreads into a subtle coloured gradient. In low light or gaming environments rich with colour LEDs,

you'll be drawn to the eye-catching effects the materials create. B&O told me the company used a proprietary anodization technique it first developed for its Beosound One NY Edition loudspeaker.

As with previous-generation B&O headphones, the discs have a functional aspect too. Tap twice quickly on either ear cup to pause and twice again to play. If you're on a call or using the Portal in conjunction with Zoom or Teams, tapping twice mutes/unmutes the call.

Oddly, the Portal does not come with any sort of carrying case. B&O typically accessorizes their headphones with a luxurious carrying pouch of some sort, but not here.

The Portal sports Bluetooth 5.1 and multipoint Bluetooth. You can add up to eight devices and have two devices paired at a time. Note that gaming connections take priority.

## Touch Bar volume control

Each ear cup features a vertical Touch Bar that is (in my opinion) one of the most outstanding features of the Portal and is, for now, unique to this headphone. Once you use the Touch Bar, you'll never want to go back to buttons or gesture-based controls. This vertical bar is mounted flush on the left and right ear cup, with a small bump at the end that orients you to the sliders' boundaries. The right slider controls the headphone's

volume. Slide your finger up to increase volume and down to decrease. The left slider controls the Portal's adaptive noise cancelling and transparency. Slide up for transparency and down for ANC. When you've hit the limit of either, the headphone will give you a distinct, gentle prompt.



The anodized aluminium disc has a subtle gradient thanks to a manufacturing process that B&O developed.





**The Beoplay Portal features a Touch Bar that smoothly adjusts the volume as you slide your finger over it.**

The most brilliant part is the fine-tuning B&O has performed. Not only does sliding your finger up or down feel completely natural but the speed at which the volume increases or decreases is Goldilocks perfect – and it worked every time. I tried to see if I could get the Touch Bar to misfire by laying down on a pillow or rubbing my head on a headrest. The Portal would have none of it.

### **Noise cancelling and transparency features**

Active noise cancelling is a modern marvel; but when done wrong, it can wreak havoc on a headphone's sonic performance. In my experience, B&O has never had the best noise cancelling performance, but they've

always delivered superior sound thanks to their tuning. The Portal improves upon the company's ANC performance while maintaining a high bar for audio reproduction. You won't hear any overt hiss, and the underwater effect that so many

competitors suffer from is not a factor here. My review unit had two strength settings for transparency, and two for adaptive noise cancellation. A B&O representative told me a future firmware update will increase this to five gradients for each, allowing you to fine-tune each setting to your environment and preference.

With ANC enabled, the Portal provided a black background from which music burst. I tested this headphone in the presence of noise generated by HVAC systems, boilers, air purifiers, and more. In each instance, these cans did a superb job of reducing ambient noise so I could focus my attention on the music. I did not, however, have an opportunity to evaluate B&O's new ANC algorithm



The contoured lambskin ear pads fit perfectly to the shape of your head.

on an aircraft. And all that said, Sony and Bose – in that order – still do active noise cancellation even better.

The Portal comes with a 3.5mm analogue cable and a 6-foot USB-C to USB-A cable that does double-duty as a charger and as a digital audio transport for a computer, smart device, or gaming console. I found out the hard way, however, that you can only use the Portal as an active headphone. If its battery runs out, you can't switch to the 3.5mm analogue jack and use it like a plain old headphone.

## Built with gamers in mind

Gamers – particularly Xbox owners – will dig the Beoplay Portal because

it takes advantage of Microsoft's protocol for stable, low-latency, uncompressed, wireless audio with an Xbox Series S/X or Xbox One. Plug Microsoft's Xbox Wireless Adapter for Windows 10 into your Windows 10 computer and you'll get the same support on that platform. Should you want to use the headphone with a mobile Android device,

there's support for the aptX Adaptive codec via Bluetooth. The AAC and SBC codecs are also supported.

Bang & Olufsen has replaced one of the most ubiquitous features of gaming headsets – the boom mic – with what it calls the 'virtual boom arm'. Instead of mounting a single mic on the end of a flexible stalk, the Portal uses an array of microphones that use directional beamforming technology to isolate and amplify your voice while screening out background noise. Whether you're trash-talking an opponent, making a phone call, or participating in a video conference, your voice will come through clear as crystal. And a feature called 'Own Voice' will use the Portal's mics to

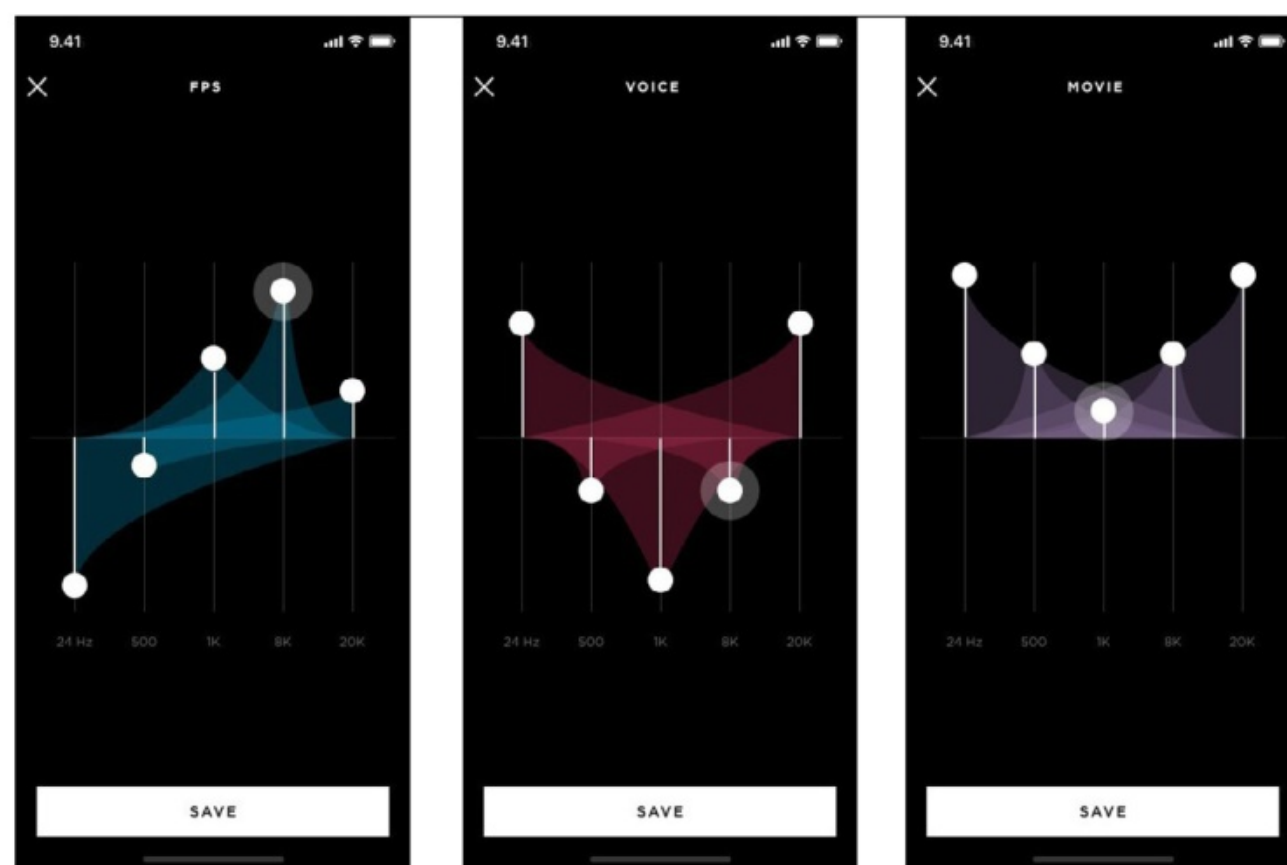
pipe your own voice through the headset, eliminating a common annoyance with headsets of all types.

I did, however, experience an occasional anomaly with my iPhone 12 that I couldn't quite pin down. When lifting/shifting one of the ear cups off my head and placing it back again, people on the other end of the call could no longer hear me unless I broke and then restored the wireless connection to my iPhone.

B&O was not able to provide me with the latest version of its mobile app, which has been updated with unique features for the Beoplay Portal. But I did get a one-on-one briefing as to what you can expect

from the updated software. Once you pair the Portal to the Bang and Olufsen app, you'll have the option to activate one of three gaming DSP modes: Gaming, FPS (first-person shooter) and RPG (role-playing game). It was inferred that more gaming DSP modes will become available down the road. In the meantime, you can create custom EQ profiles of your own. In case you're wondering, the Portal does not feature audio head tracking.

The Beoplay Portal headphone sounds glorious. If you're a fan of B&Os voicing – a crisp top end, a pristine midrange, and a tight bottom end – you'll experience it in full here.



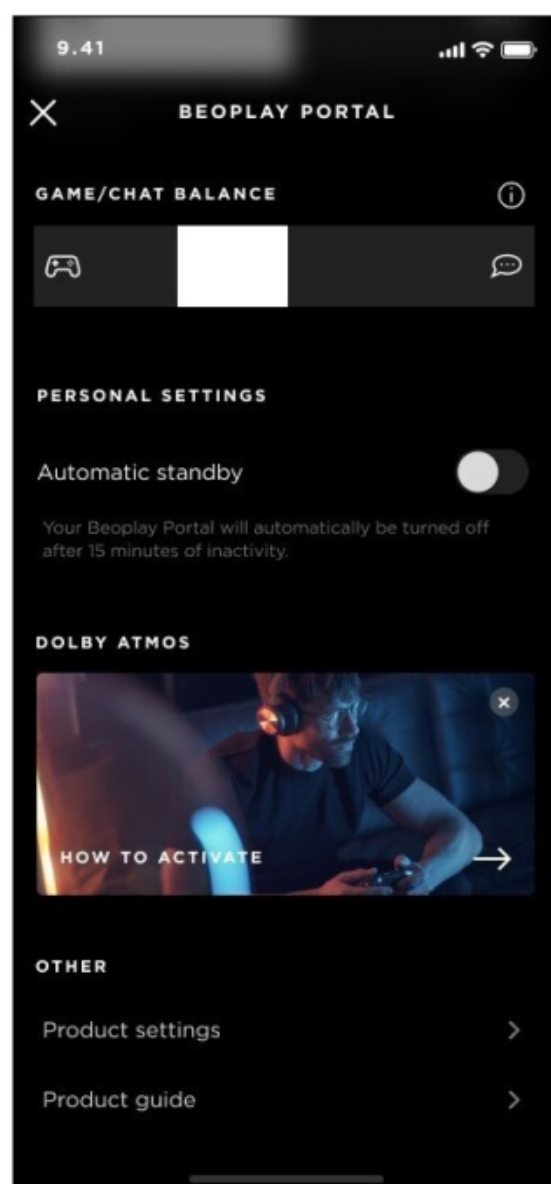
**B&O's mobile app features EQ presets for different types of games as well as for voice calls and movies. You can also create your own and save them.**

I used a combination of high-res music files and streamed content via Tidal, all played through my Roon Nucleus media server.

The Beoplay Portal revelled in creating deep, rich musical layers that are not commonly experienced through headphones. Going through my endless Rolodex of female vocalists: Adele,



The Beoplay Portal supports Dolby Atmos for immersive movie watching.



top end or muddy the midrange, there was none of that with the Portal.

## Verdict

The Bang & Olufsen Beoplay Portal is a triple-threat wireless headphone that everyone can love: The discerning music listener, the road warrior looking for sonic isolation on the go, and the hardcore gamer rocking the latest console or PC hardware. The Portal really can do it all: Entertainment, relaxation, and productivity. But what seals the deal for me is the head-turning design, luxurious feel, and that killer Touch Bar volume control. **Theo Nicolakis**

Alicia Keys, Holly Cole, Norah Jones, Pink, Sarah McLachlan, and Suzanne Vega to name but a few, I always heard crisp, clear and full bodied vocals.

The near sub-sonic bass lines on Bonnie McKee's Trouble, Sade's Soldier of Love, and Natasha Bedingfeld's These Words were exceptional. B&O's balance between killing outside noise and delivering intoxicating musical reproduction is among the best I've heard. Switching between various ANC modes, I could barely discern any impact on the music whatsoever. Unlike some of the competition, whose ANC will dull the



# Help Desk

Solutions to all your Mac problems. **Glenn Fleishman** reports

## CHANGE YOUR NAME ON YOUR MAC'S USER ACCOUNT

People wind up with a new name, often one that better reflects who they are or have become, for all sorts of reasons. macOS can keep up with the name you use, so you aren't staring at your past identity indefinitely. It's not obvious, but you don't have to dig into

the guts of macOS, either. Just take care to follow steps carefully.

There are a couple of requirements:

- You can't change the name of an account while logged into the account you're changing, so you have to have at least two accounts on the Mac.

- You must have administrative access from the account you log into to change the other account's full name.

**Warning:** As with anything involving system-level changes, I strongly recommend initiating a manual Time Machine backup or updating a clone on an external drive in case something goes wrong.

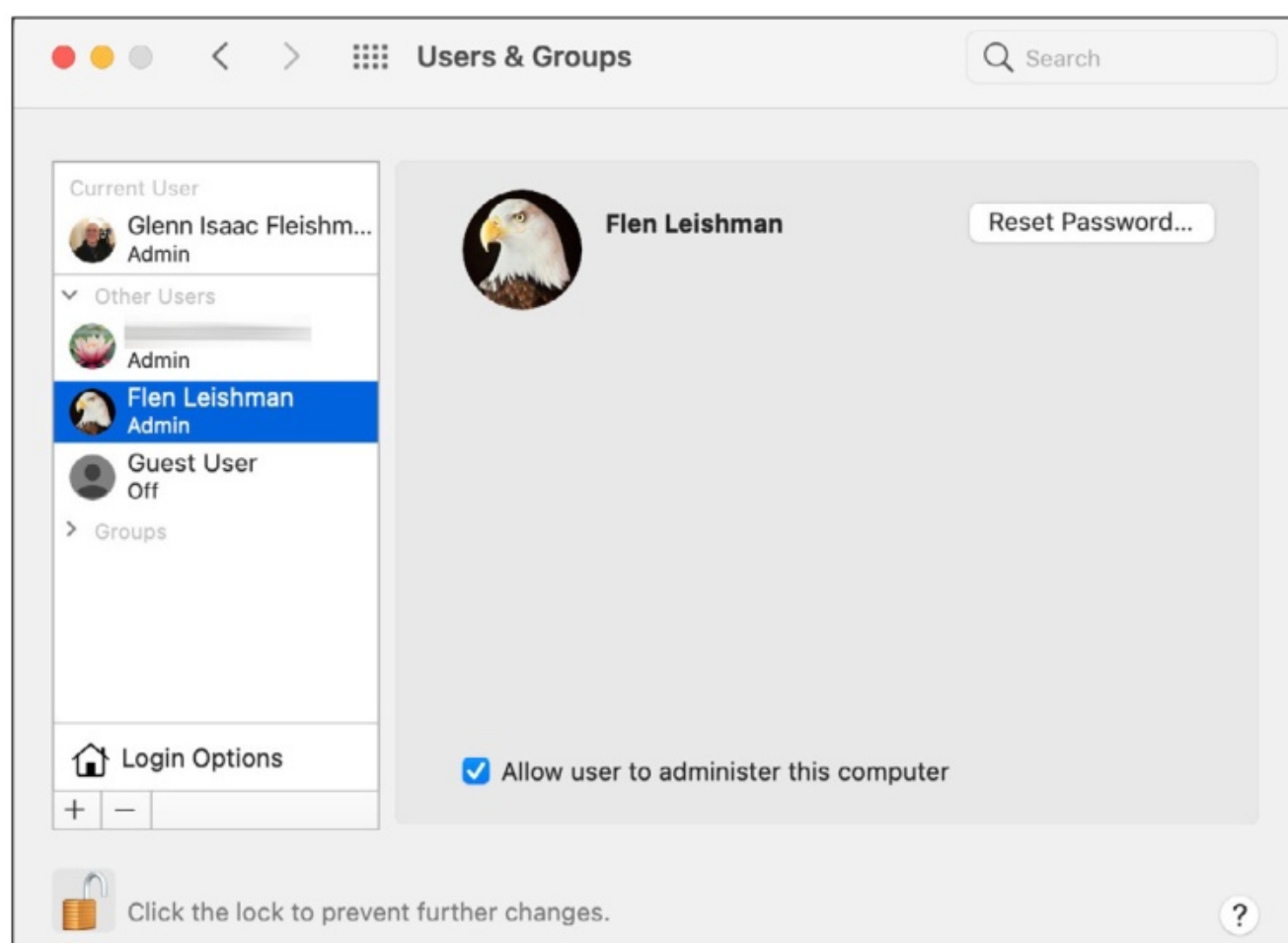
It's easy to set up a new account:

1. Open the Users & Groups preference pane.
2. Click the lock icon at the lower-left corner and authenticate yourself.
3. Click the + (plus sign) at the lower-left corner to add an account.

4. Fill out details, but be sure to choose Administrator from the New Account pop-up menu.

With an existing account you want to elevate to an administrator:

1. Open the Users & Groups preference pane.
2. Click the lock icon at the lower-left corner and authenticate yourself.
3. Select the account in the list at left.
4. Check the box 'Allow the user to administer this computer'.
5. macOS notes that you have to restart your Mac for that to take effect; do so.

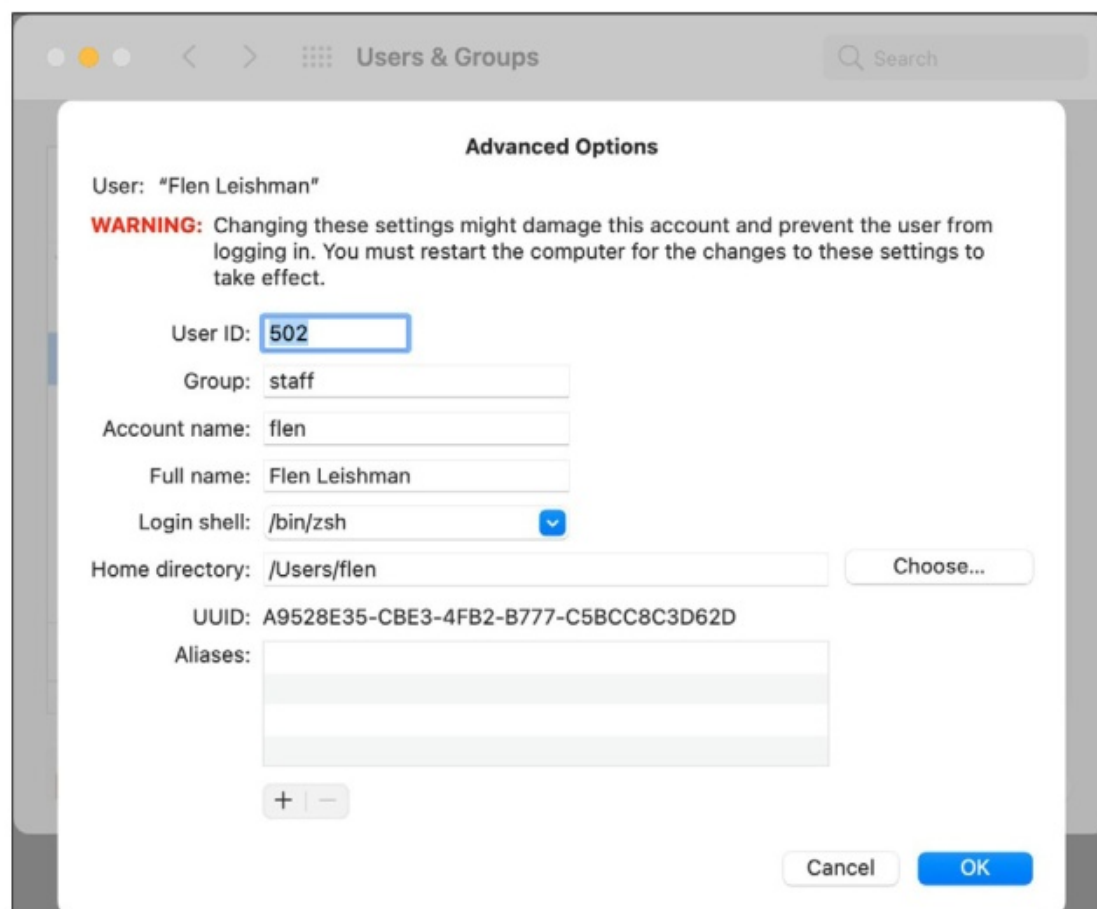


You can upgrade an existing account to have administrator privileges.

Once logged into a different account than the one you're changing and out of the account you're changing (if you have fast-user switching enabled), you can proceed.

If you want to change the folder name in the Users directory for your account, start by following these steps; it's optional:





**Advanced Options for a user account lets you change the account's display name (Full name) and path to the user's directory.**

1. If you're sharing that user directory, start in the Sharing preference pane, select the File Sharing item in the left-hand menu, click the shared folder in Shared Folders, and click the – (minus sign) to remove it.
2. Now, in the Finder, choose Go > Go to Folder and type in **/Users/** and click Go.
3. Rename the account folder without any spaces.
4. Enter the current account's password when prompted.

Now you can proceed to the account's full name. (**Warning:** Changing any other item than those

noted in these steps could cause problems.)

1. Open the Users & Groups preference pane.
2. Click the lock icon at the lower-left corner and authenticate yourself.
3. Control-click the account name to change and select Advanced Options.
4. Carefully change the 'Full name' field.
5. If you changed the Users directory for the account above, change the 'Home directory' field to

exactly match what you entered after **/Users/** (you can also click Choose and navigate to the new folder to avoid having to type it in).

6. Click OK.
7. Restart the Mac.
8. Log into your account, which should now show the updated name.

## LOCK FILES IN MACOS BIG SUR'S FINDER

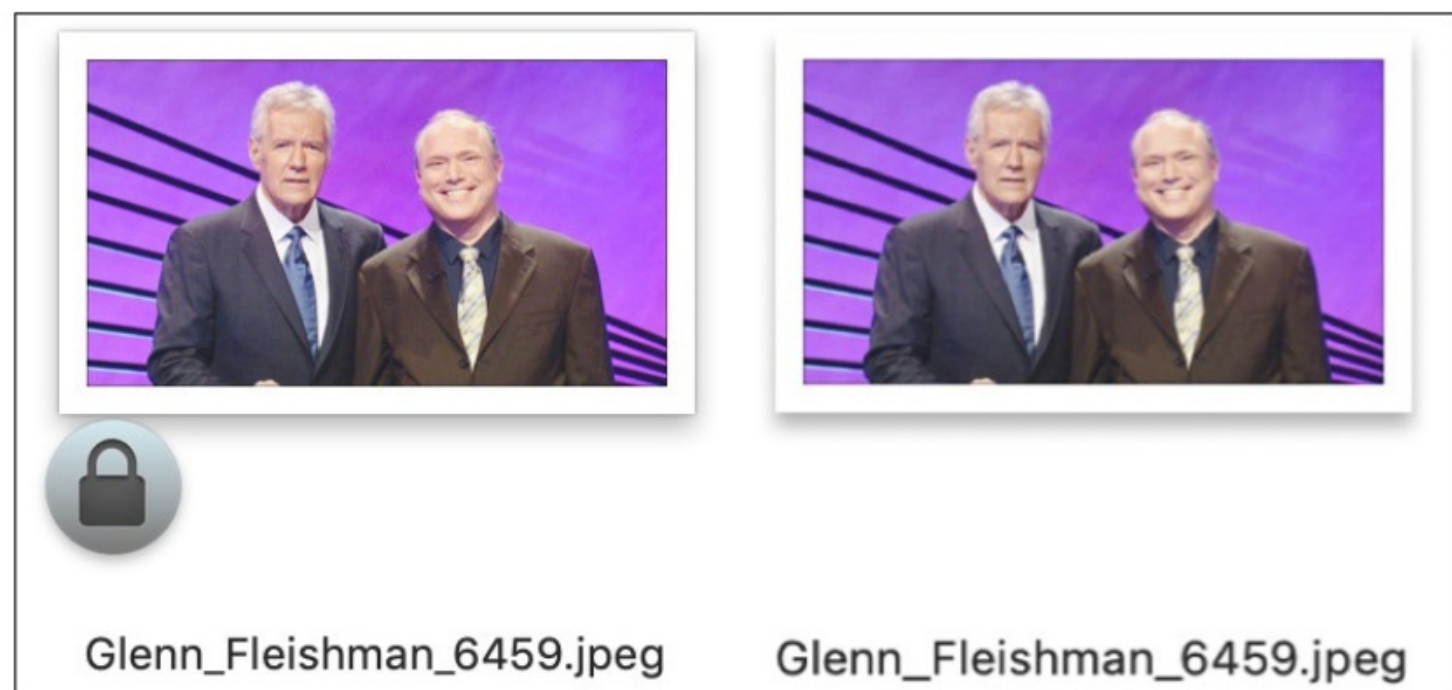
File locking has a long tradition in computing: you or independently running software wants to make sure that a file isn't modified or deleted when it's needed or in use. Because macOS is Unix based, it

offers file-level permissions flags that control how a file can be manipulated and by whom.

But macOS has long had a separate way to lock a file from the Finder that

also prevents it from being modified, deleted, or rename from the Terminal or other apps. Lock, unlock and status commands are also available via the command line in Terminal.

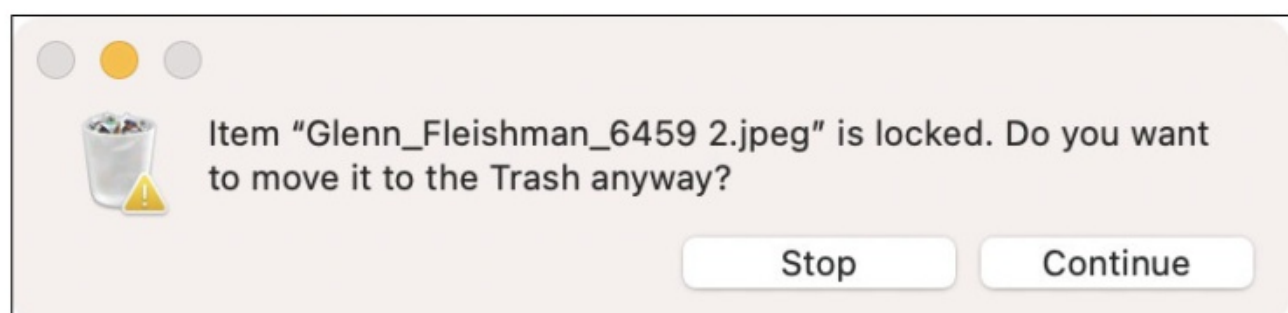
(Note that Finder-oriented locking is entirely different from setting a file to read-only permission either in the Finder or via the Terminal, which involves changing Unix permissions. I recommend not using read-only status for files and folder you work with in the Finder and via apps, as the Finder doesn't honor those permissions for files that are assigned to you in macOS via Unix permissions, which typically includes everything in your home directory.)



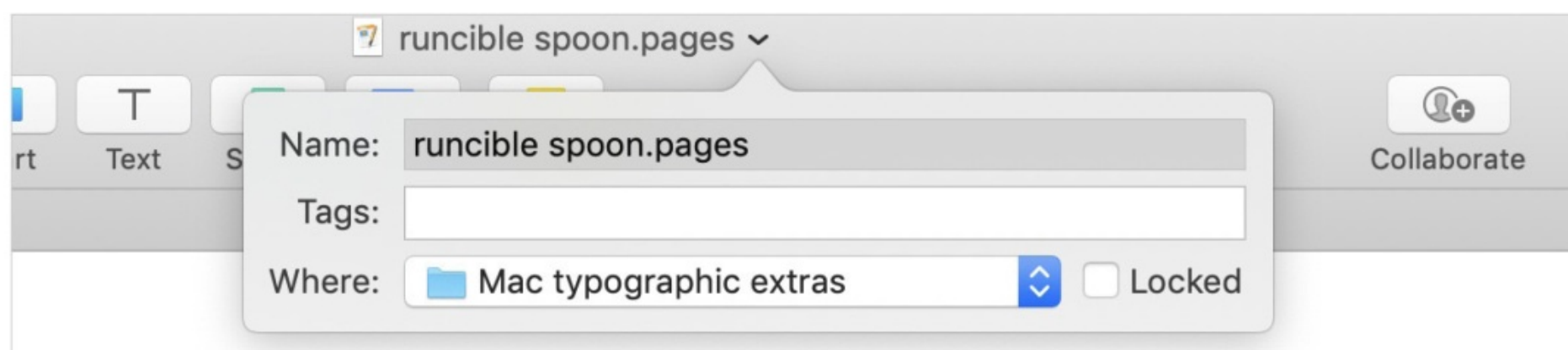
macOS used to show an overlaid lock icon as at left in Mojave; in Big Sur, at right, it no longer provides this indicator in the Finder.

### Lock and unlock via the Finder in macOS Big Sur

Turning the lock on and off in the Finder is incredibly simple. Select one file or folder and choose File > Get Info; or select multiple files or folders and hold down Option while choosing File > Show Inspector – the Option key opens a single Get Info window for the multiple items called Multiple Items Info. A Locked checkbox can be selected or deselected. It shows a – (dash) if the items selected are in a mixed state of being locked and unlocked; clicking will lock all the files.



Big Sur prompts you to confirm removing a locked file.



macOS used to show an overlaid lock icon as at left in Mojave; in Big Sur, at right, it no longer provides this indicator in the Finder.

Prior to Big Sur, locked files would have a lock image overlaid on its icon in the Finder. Big Sur only shows that lock overlay in the Get Info dialog box.

Once the file is locked, it can be moved around in the Finder, but not renamed or modified via apps. It can be deleted, but only if you confirm the operation.

Apple's apps and those of third parties that support the convention also let you lock and unlock documents from the title bar: click the downward-pointing arrow to the right of the file name and then select or deselect the Locked checkbox.

## Using the Terminal

If you like to poke at macOS's internals via Terminal, launch Applications > Utilities > Terminal and navigate to a folder that you've locked an item in. If your file is on the Desktop, you can type this to get there:

**cd ~/Desktop**

macOS reveals the lock status with a special flag on the Unix file-listing command, `ls`. Enter this:

**ls -lO front\_door.jpeg**

(That's a capital letter O there.)

You can replace **front\_door.**

**jpeg** with **\*** to list everything in the directory, use another specific filename or enter a wild card pattern, like **license\***, which matches all files and folders starting with 'license'. The same is true for the file name example in all the below cases.

Terminal will show you the term **uchg** as a 'flag' for any locked file, as in:

```
-rw-r--r--@ 1 gif staff uchg  
150293 Mar 8 2020 front_door.  
jpeg
```

To lock and unlock a file in the



Finder, you can directly modify that **uchg** flag:

To lock a file: **chflags uchg front\_door.jpeg**

To unlock a file: **chflags nouchg front\_door.jpeg**

If you want yet another method, you can use SetFile, which lets you change attributes on a file:

To lock a file: **SetFile -a L front\_door.jpeg** (capital L)

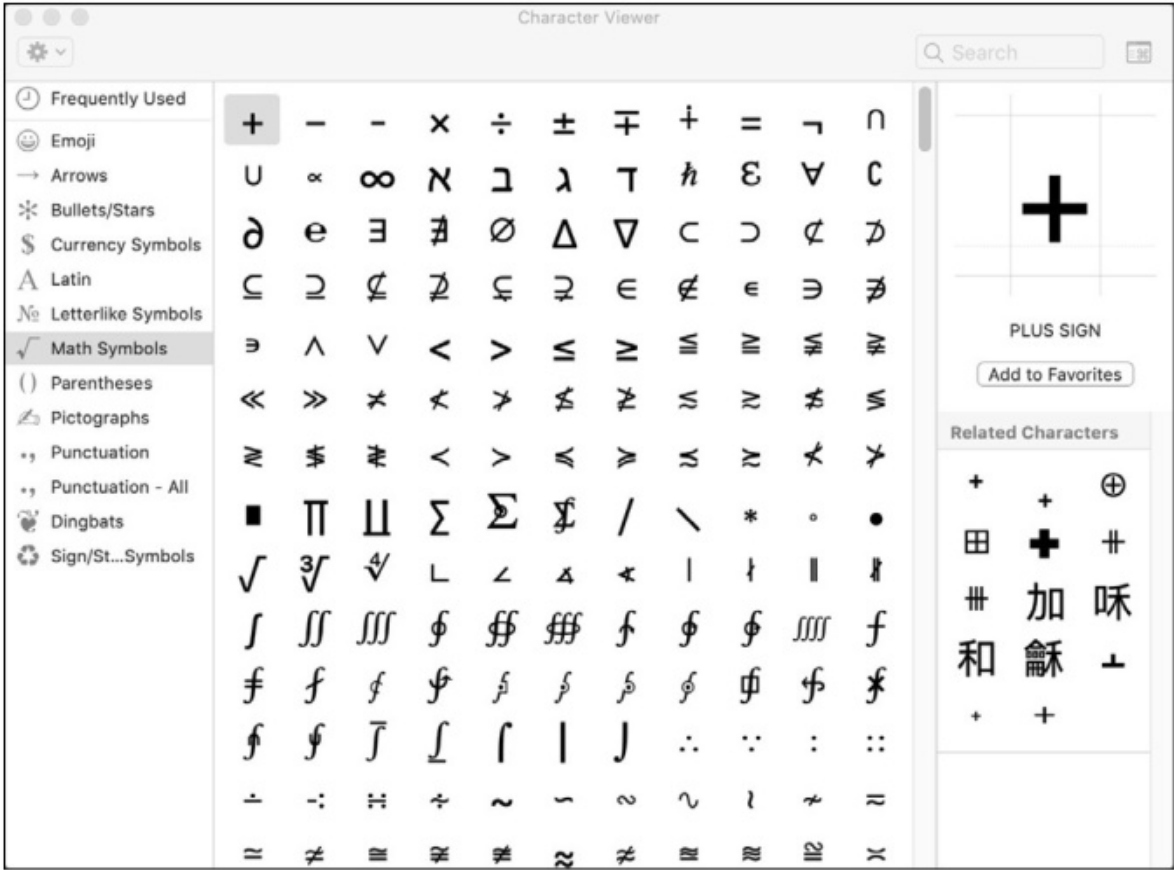
To unlock a file: **SetFile -a l front\_door.jpeg** (lower-case l)

PUT EMOJI, MATH, AND OTHER SYMBOLS AT YOUR FINGERTIPS

Podcasters and sound engineers often put together what’s called a ‘soundboard’, which is a collection of frequently used short audio clips that they can trigger with a click. Sometimes these are used for humorous purposes, such as on radio shows, but you find them used in aural game shows (for right/wrong answers), and for quick access to

transition music, too. Some people need the equivalent of a ‘soundboard’ for keyboard symbols. Modern fonts can contain tens of thousands of unique characters (or glyphs). A large portion correspond to glyphs used in scripts (like the Latin script for most of western Europe and the Americas, and Devanagari used in a large number of southeast Asian languages). But there are piles of specialized symbols for maths, phonetics, currency, and, yes, there are emoji.

I’ve written before about Character Viewer (fave.co/36bMXE3), a macOS floating palette that provides easy access to individual symbols,



The Character Viewer gives you easy yet tedious access to symbols and other characters.



A custom keyboard created in Ukelele can be installed in macOS with a couple of clicks.

including a search option. But what if you routinely use a set of symbols, such as for math or logic? The viewer requires a lot of scrolling and clicking.

The answer is a free third-party tool, Ukelele ([fave.co/2TFQvMd](https://fave.co/2TFQvMd)), from SIL International, a global organization devoted to preserving ethnolinguistic diversity – to helping groups of all sizes keep languages and scripts that were suppressed by governments or are used by relatively few living speakers vibrant with support from technology.

Ukelele is one of those tools, as it allows the creation of custom keyboard layouts. These can be used for onscreen entry via the Keyboard Viewer (System Preferences >

Keyboard > Show Keyboard and Emoji Viewers in Menu bar), or typed directly if you know which keys are supposed to correspond to which – or attach labels to those keys. macOS allows quick switching

among keyboard layouts from the same menu that offers the keyboard and symbols viewer.

Ukulele lets you just drag characters from the Character Viewer or other parts of macOS and drop them onto the appropriate keys, including the use of modifiers like Control and Option. Once arranged, you can install a macOS-compatible layout file for your macOS account or all users of the Mac, and use it as just another keyboard layout selecting via the Keyboard preference pane's Input Sources tab.

The software is fairly easy to learn to use, as it has few controls. One important note: when you create a new keyboard layout and install it, you

need to log out of your current session and back in to avoid input problems and ensure it's recognized.

## SHARE YOUR MAC'S SCREEN THE QUICK AND EASY WAY IN MESSAGES

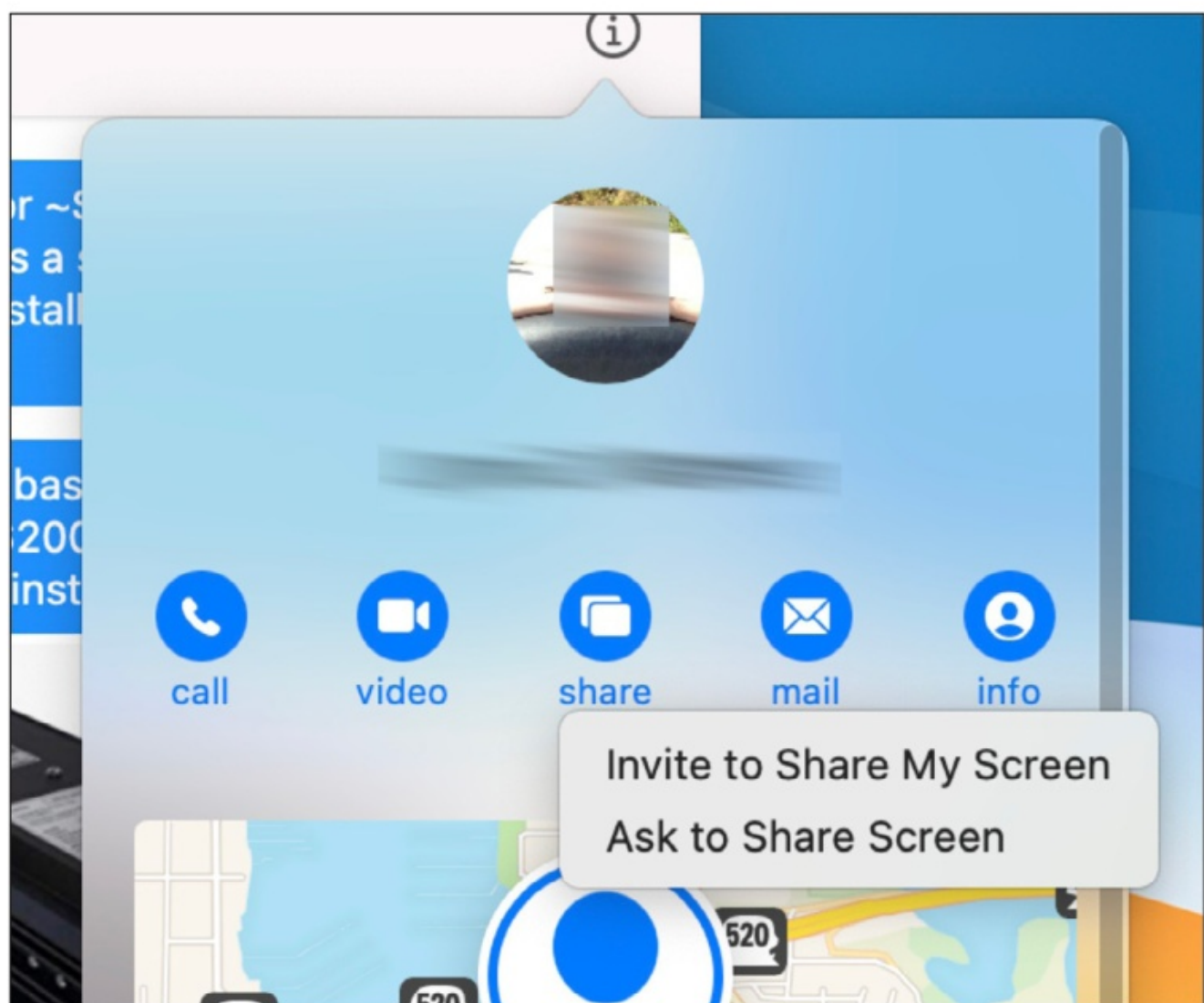
For nearly 20 years, Apple has offered screen sharing as a basic feature in what was once OS X and is now macOS. This has included a way to share your screen remotely with other people and let them share yours. (At one point, it was easy to reach your Mac while outside your local network and access your screen, but then Apple removed Back to My Mac from macOS.)

The feature has changed and migrated over time – it was once part of AOL Instant Messenger – so you may not know that it's tucked away in Messages. It also works only with people who use their iCloud account with Messages, which

allows you communicate through Apple's iMessage system.

You can check that iMessages is in use by either looking at a conversation and seeing blue bubbles for text messages. Or, when starting a new conversation, the person whose name you select as you type in a recipient is in blue text. If their name or the messages are green, it's regular SMS text messaging and screen sharing isn't available. It's also available only for one-to-one conversations.

Big Sur made additional changes



Messages requires a little navigation to get to the screen-sharing feature, which is quite useful when someone else needs visual help – or you do. (Big Sur shown. Portions of image blurred for privacy.)



to its appearance, but it's not far off from its location in macOS Mojave and Catalina. Here's how to use it:

1. Open Messages.
2. Select a conversation or start a new one, and make sure iMessage is in use, per above.
3. Click the circled-i info button in the upper-right corner.
4. Click the overlapping rectangles – the screen sharing icon. (This icon will be greyed out or absent if screen sharing isn't available with this other account.)
5. Select either Invite to Share My Screen or Ask to Share Screen as the case may be.
6. If you invite someone, they receive an alert in Messages and can click to start; if you request someone else's, you have to wait for them to approve the request.

When the session starts, both you and they see an indicator in the system menu bar that screen sharing is underway. You can use the Screen Sharing menu (also two overlapping rectangles) to choose Disconnect and end the session on either side.

One reader asked recently about a problem they had when someone sent them an Ask to Share Screen

request. They have two Macs logged into the same Apple ID account with Messages. The 'wrong' machine received the request. The reader put that Mac to sleep, and their counterpart tried again. It still didn't work.

Apple sometimes has a problem with presence, which is figuring out where you currently are among multiple devices connected to the same account. This is certainly one of those problems, and person-to-person screen sharing doesn't let you target another person's devices, only their account.

The answer in that situation is to select Invite to Share My Screen from the appropriate Mac that you want to share from. The service is essentially always symmetrical, so if someone can request access, you can offer it, too.

