

D I G I T A L M A G A Z I N E E X C L U S I V E :

THE ULTIMATE GUIDE TO APPLE ARCADE

# Macworld

JULY 2020

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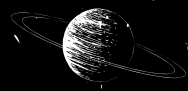
## THE NEW MACBOOK PRO

THE MAGIC KEYBOARD FINALLY COMES  
TO APPLE'S 13-INCH LAPTOP

**iPAD PRO:** A MODEST IMPROVEMENT ON A GREAT TABLET



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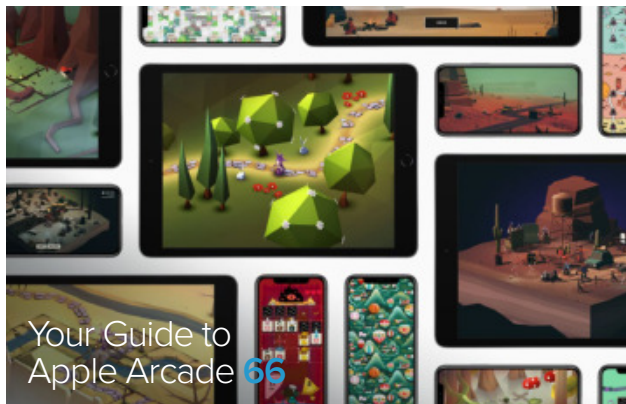


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GET IDEAS. LIKE ASKING  
EVERYONE INSIDE THE TACO  
TRUCK WHAT **DRIVING**  
AROUND IN A KITCHEN **IS**  
LIKE AND THEN ORDERING  
22 TACOS WITH EXTRA  
GUACAMOLE AND ALL THE  
CHEESE FOR EVERY **DRUNK**  
PERSON IN LINE. BAD IDEA  
FOR YOUR WALLET, BUT  
NOT AS BAD AS **DRIVING**  
HOME BUZZED.



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## What will the ARM Mac lineup look like when it's released?

Chip transitions give Apple an opportunity to make major changes, like a redesigned iMac and more consumer laptops.

BY JASON SNELL

For a company with a reputation for sudden bursts of industry-shaking creativity, Apple's pretty conservative most of the time. The company has a years-long product

pipeline, and while we're beginning to anticipate the 2020 iPhone, its hardware engineers are finishing work on the 2021 model while its component designers are pondering the chips and sensors that will

power the device into the mid-2020s.

For so many of Apple's product choices, a decision now is likely to be a decision that sticks for years to come. Think of how many years it took for the company to backtrack on the butterfly keyboard in the MacBook line, even after it was obvious that it had made a mistake. More to the point, consider the continued existence of the low-end, two-port version of the 13-inch MacBook Pro, which is largely the consequence of a failed attempt to replace the MacBook Air ([go. macworld.com/fai1](https://go.macworld.com/fai1)) with the 12-inch MacBook and the low-end MacBook Pro.

Some fairly strong news reports suggest that in 2021, Apple's going to being a major reset of the Mac product line, thanks to its transition from Intel processors to its own ARM chips ([go. macworld.com/arma](https://go.macworld.com/arma)). After a decade and a half in which Mac product designs were

often constrained by the Intel processor types that were available, Apple's got a chance to build a Mac product line exactly as it envisions it—right down to the right chips for the right computers. It's not an exaggeration to suggest that this will affect the shape of the Mac for the next five years, if not more.

What is Apple likely to do? I've got some ideas, informed by my observations of the last two transitions, a sense of where the Mac is today, and maybe a little bit of wishcasting.

## THE COMFORT OF THE iMAC

I don't expect Apple to sweep away all familiar Mac models in 2021 just because it's changing the processors that power them. Done right, the transition to Apple-designed processors should be barely a blip on the radar screen of the general public.



iMac Pro (left) and iMac.

When Apple transitioned to Intel from PowerPC, the first product to make the transition was the iMac. The new Intel iMac looked more or less identical to the G5 iMac that it replaced. If you weren't aware that there was a chip transition underway, you might have missed it entirely. It took three years for Apple to truly redesign the iMac case, taking it from white plastic to silver aluminum.

What's different this time is that the iMac hasn't had a major design change in a long time, which suggests to me that this might be the perfect moment for Apple to change both the inside and outside of its iconic desktop Mac. It's possible that there will be an ARM iMac in the same case as today's models, but I don't think I would bet on it.

What does seem sure, though, is the continued existence of the iMac. It's been a core part of the Mac for more than two decades. The iMac changes with the times, but it stays with us.

## STABILITY OF THE PROFESSIONAL MAC

It would stand to reason that the high end of the Mac product line will be the hardest spot for Apple's new chips to reach. Conventional wisdom is that Apple will start the transition with consumer tech and only spread to pro models later on. I'm inclined to agree with that assessment, at



**Mac Pro.**

least for the first wave of new Macs. Keeping Intel compatibility and stability available to Apple's most demanding pro customers seems like a good idea.

The iMac Pro is getting a bit long in the tooth and could use a speed boost, but not a rethink. The Mac Pro just came out and seems to be built for the long haul. It's hard to see these models jumping to ARM soon. I'll throw the Mac mini in this category, too. While I'd love to see a reimagined Mac mini that's tiny and powerful and cheap, I suspect that the 2018 revision of the Mac mini will have to hold us for a few years to come.

## MYSTERY OF THE MACBOOKS

That brings us to the big question: Once it's free from the constraints of Intel's various mobile processor lines, will Apple rejigger its laptops?

I have to think that Apple will take the opportunity to do just that. It hardly needs three different 13-inch laptops. (Four, if you count the 12.9-inch iPad Pro when connected to a Magic Keyboard.)

So let's draw a four-square grid, Steve Jobs-style ([go.macworld.com/jbst](http://go.macworld.com/jbst)), with smaller and larger laptops for consumers and professionals. (Both groups could use some variety in terms of size, don't you think?)

	Consumer	Pro
Little	12-in.	14-in.
Big	13-in.	16-in.

**Steve Jobs I'm not, but imagine a simpler Mac laptop lineup.**

On the consumer end, let's consider two new forms of MacBook or MacBook Air. A smaller 12-inch model takes the form of the old MacBook, but this time it's much more capable of running well without any fan. A larger model, perhaps a version of

the 13-inch Air currently on sale, offers more robust cooling and a larger screen.

The A13 Bionic chip that powers Apple's current line of iPhones has six processor cores—two optimized for power and four optimized for energy efficiency. A chip with a similar configuration would instantly become the first six-core consumer Mac laptop ever. (Let's also not forget Apple's built-in GPUs, which will probably put Intel's built-in graphics to shame.) In low-energy operation, these chips would sip power and maintain battery life, but when called upon, they could crank up those two "performance cores." It's hard to imagine that these laptops wouldn't be faster than the current MacBook Air, and with dramatically better battery life.

Then there's the MacBook Pro. As with Apple's pro desktops, I suspect that Apple's pro laptops will not make the move as quickly as the consumer models. But the path forward is pretty clear: a 14-inch laptop that's redesigned in the same way that the 16-inch model replaced the 15-inch last fall. And then, ultimately, a new 16-inch model that's powered by a next-generation A-series chip that is truly capable of handling professional workloads. If the iPhone can have a six-core processor, what's to stop the MacBook Pro from having four or even six performance cores to go with four or six





**2021 might be the perfect time to retire the MacBook Air (pictured) and MacBook Pro brand names.**

efficiency cores?

I've got no rumors or media reports to back up this particular supposition. I'm just looking at the imbalance in Apple's laptop line—one consumer laptop and three pro models. But while I'm dealing in pure speculation, I'll throw out one final bit before I go.

Every time Apple has made a Mac processor transition, it's taken the opportunity to rename a portion of its product line. The PowerPC transition ushered in the Power Macintosh, replacing the Quadra. The Intel transition converted all Power Macs into Mac Pros and

PowerBooks and iBooks into MacBooks.

So I'd like to suggest that 2021 might be the perfect time to retire the MacBook Air and MacBook Pro brand names and replace them with something simpler. How about MacBook and PowerBook? (We can reserve iBook for the iPadOS-based laptop.)

Perhaps that's a bridge too far. But chip transitions are funny things. They're an opportunity for Apple to take stock...and change course. I can't guarantee that anything I've written here will come to pass in 2021, but I can guarantee that change is coming, and some of it will take us all by surprise. ■



# Apple requires masks and temperature checks as U.S. stores begin to reopen

Few people, more masks.

BY MICHAEL SIMON

If the Apple Store near you has reopened, it won't be business as usual. Apple has implemented a series of guidelines ([go.macworld.com/gdln](https://go.macworld.com/gdln)) to keep customers and employees safe as it navigates a world still reeling from the effects of the coronavirus.

First and foremost, Apple is requiring face coverings “for all of our teams and customers,” which will be provided if needed. Additionally, temperature checks will be conducted at the entrance and “posted health questions will screen for those with symptoms—like cough or

fever—or who have had recent exposure to someone infected with COVID-19.”

Apple will also be following social distancing guidelines, so the stores will be a lot less crowded than they usually are. Apple will be limiting occupancy and giving everybody lots of room, while adhering to strict “one-on-one, personalized service at the Genius Bar and throughout the store.”

For those who don’t want to enter the store, Apple will be expanding its store pick-up options to include curb-side pick-up and drop off. And finally, it will be

“conducting enhanced deep cleanings that place special emphasis on all surfaces, display products, and highly trafficked areas.”

Apple has been taking a central role in the coronavirus pandemic, developing a screening app with Google and donating millions to support communities and health workers. Furthermore, Apple has sourced “more than 30 million masks and 10 million custom-built face shields for doctors and nurses,” and partnered with health manufacturers to deploy “more than a million testing kits per week.” ■



**Apple will be following social distancing guidelines in its stores.**

# Apple's 'biggest update' to Logic Pro X in years brings Live Loops

Live Loops finally comes to Logic Pro X.

BY MICHAEL SIMON



Recently, Apple unveiled what it's calling "the biggest update to Logic since the launch of Logic Pro X" in 2013, bringing it more in line with GarageBand while also adding powerful sampling, sequencing, and editing tools.

Most notably, the X.5 update ([go.macworld.com/x5up](https://go.macworld.com/x5up)) brings "a professional version" of GarageBand's Live Loops that debuted in January 2016.

As one of GarageBand's most popular features, Live Loops ([go.macworld.com/lvp](https://go.macworld.com/lvp)) let musicians "play, edit, and arrange musical ideas in real-time" by either selecting from a library of instruments and pre-recorded cells or creating their own sounds. Live Loops works the same on Logic Pro X as it does on GarageBand, though tracks can be "further refined using all of the professional production features in Logic."



**Apple has also updated Logic Remote, the free iOS companion app that lets iPhone and iPad users trigger certain Logic features on their devices.**

To complement Live Loops, Apple is also rolling out a feature called Remix FM, which “enhances Live Loops with an exciting collection of electronic effects like Bitcrusher, filter, gater, and repeater that can be performed in real-time over individual tracks or the entire song mix.” Furthermore, new sampling tools let sound designers “turn any individual sound into a playable instrument,” while a new step sequencer and drum synthesizer provide precise control over “note velocity, repeat, gate, skip, playback direction, and randomization.”

In addition to optimizations for “the latest Mac hardware and the power of macOS,”

Logic Pro X.5 also brings “a major update” to Logic Remote, the free iOS companion app that lets iPhone and iPad users trigger certain Logic features and instruments using the touch-screen on their mobile devices. The update includes the ability to fully control Live Loops and remix FM.

However, for iPad Pro users, that won’t be enough. While Apple has been slowly adding features and capabilities to the iPad to bring it more in line with the Mac—most recently with the addition of trackpad support (see page 55)—it still lags Apple’s PC environment with support for so-called “pro” apps, namely Logic Pro X, Final Cut Pro X, and Xcode. ■

# Having problems with Bluetooth audio quality on a Mac? Here are ways to fix it.

Some Bluetooth devices use a lower-quality audio method when acting as both a mic and a speaker or headphones.

BY GLENN FLEISHMAN



**A**udio quality via a Bluetooth device can be a great mystery, partly because Bluetooth only mandates in its basic audio standard, A2DP (Advanced Audio

Distribution Profile), a low-quality audio encoding algorithm. An audio encoder takes a data stream and transforms it into whatever the best or agreed-upon quality both sides can take, often limited by the



particular chips on each device and bandwidth available. That means that the lowest-common denominator may prevail, even when both the sending and receiving devices have a variety of higher-quality options available that don't match up or aren't correctly invoked.

Depending on a host of factors, both a Bluetooth streaming device (sending or receiving audio) and a Mac may agree on an encoder that makes music sound like it's playing over a landline telephone call.

That shouldn't happen, because iPhones, iPads, and Macs have offered high-quality encoders for many years that are compatible with a wide range of Bluetooth audio equipment from third parties, as well as Apple and Beats hardware. But we've heard from readers and found discussed repeatedly online problems getting the best results on a Mac. This happened in my house just the other day, when my trombone-playing older kid was having a Bluetooth mic peak out—the sound overwhelmed the mic—when he was trying to record himself.

The answer is complex. So much so that someone with the handle ValdikSS had to devote thousands of words in a well-illustrated article at Habr ([go.macworld.com/wlii](https://go.macworld.com/wlii)) to do justice to the details.

The long and the short is that some integrated devices that couple a mic with a speaker or earphones—as in earbuds,



**Macs are compatible with a wide range of Bluetooth audio equipment, such as Beats' Solo3 headphones ([go.macworld.com/bts3](https://go.macworld.com/bts3)).**

headphones with mic input, a headset with a projecting mic, or a speakerphone—can force audio quality way down when paired with a Mac and with some other hosts.

As ValdikSS notes, this duplex mode of sending and transmitting simultaneously is a problem. “When this mode is used, both the voice from the microphone and the audio are transmitted to the headphones with the same quality..Unfortunately, as of 2019, the quality of voice transmission via Bluetooth is still poor, and it is not clear why Bluetooth SIG is not doing anything about it.” (The SIG is the trade organization that sets standards and runs certification programs.)

Not all Bluetooth audio in/out combinations drop in quality, though. So you may not have encountered this with a device you use. Or you may not know, as the sound you hear from others could be higher quality than the compressed sound they hear from your mic. You might need to record sound from your device or have someone record it on their end to see how good or bad it sounds.

Unfortunately, the only solution in most cases is to switch to a USB-based headset or USB mic and headphone combination. That ensures the best quality audio is used on your Mac. Some devices may have both Bluetooth and USB options, in which case you can use the USB connection when you need to get higher-quality audio input. That's what my kid did: the same mic input connected via Bluetooth captured the whole dynamic range of his trombone piece.

If you're having trouble with the quality when playing sound back, whether your Bluetooth device

has a mic or not, you can try these tricks.

- > Select a different audio input device in the Sound preference pane's Input tab and in any software you may be using that lets you select audio input. This may prevent a poorer audio encoder from being used.

- > Check whether your device, when connected, is using a lower-quality encoder by pressing Option while selecting the Bluetooth menu in the system menu bar and viewing the menu for that device. This article at How-To Geek ([go.macworld.com/hw2g](http://go.macworld.com/hw2g)) provides the extensive steps to use a developer app from Apple to force a higher-quality encoder. ■

**The only solution in most cases is to switch to a USB-based headset, such as Beyerdynamic's Amiron home headphones ([go.macworld.com/bydn](http://go.macworld.com/bydn)).**





# Major security flaw found in Thunderbolt Macs and PCs: Should you be worried?

A series of vulnerabilities in Thunderbolt 2 and 3, collectively called ‘Thunderspy,’ can leave your Mac open to hacking.

BY JASON CROSS

**S**ecurity researcher Björn Ruytenberg with the Eindhoven University of Technology recently published a report ([go.macworld.com/bjry](https://go.macworld.com/bjry)) detailing a series of serious security vulnerabilities in

Thunderbolt 2 and Thunderbolt 3, collectively called “Thunderspy.”

They affect every single computer with a Thunderbolt 2 or Thunderbolt 3 port, including old-style port connectors and new Type-C connectors, whether the

computers are running Windows, Linux, or macOS. How badly does this security flaw impact Mac users? Should you freak out about someone hacking into your MacBook the next time you get up from your desk to refill your coffee?

## SEVEN THUNDERSPY VULNERABILITIES

Ruytenberg describes seven vulnerabilities in his paper ([go.macworld.com/7vln](https://go.macworld.com/7vln)). They are as follows.

1. Inadequate firmware verification schemes.
2. Weak device authentication scheme.
3. Use of unauthenticated device metadata.
4. Backwards compatibility.
5. Use of unauthenticated controller configurations.
6. SPI flash interface deficiencies.
7. No Thunderbolt security on Boot Camp.

It's beyond the scope of this article to get into exactly what each of these mean and how they can be exploited to breach systems with Thunderbolt ports.

Just know this: Macs are only susceptible to vulnerabilities 2 and 3 when running macOS, and even then only partially so. Running Windows or Linux on your Mac using Boot Camp ([go.macworld.com/bcmp](https://go.macworld.com/bcmp)) makes you vulnerable to all of them.

## HOW YOU COULD BE HACKED

The good news is that it would not necessarily be easy for a hacker to break into your Mac with these exploits. They have to have physical access to your computer and a prepared Thunderbolt hacking device.

These sorts of vulnerabilities are often called “evil maid” threats. They require the attacker to have unimpeded and undetected access to your computer for at least a few minutes. It's highly unlikely someone would be able to take advantage of these exploits if you closed the lid of your MacBook and stepped away from it for a minute in a coffee shop.

The worst of these vulnerabilities can happen while your Mac is in sleep mode, but not while it is powered off.

Intel has issued a statement ([go.macworld.com/istt](https://go.macworld.com/istt)) about these threats.

*In 2019, major operating systems implemented Kernel Direct Memory Access (DMA) protection to mitigate against attacks such as these. This includes Windows (Windows 10 1803 RS4 and later), Linux (kernel 5.x and later), and MacOS (MacOS 10.12.4 and later). The researchers did not demonstrate successful DMA attacks against systems with these mitigations enabled. Please check with your system manufacturer ([go.macworld.com/system](https://go.macworld.com/system))*

*to determine if your system has these mitigations incorporated. For all systems, we recommend following standard security practices, including the use of only trusted peripherals and preventing unauthorized physical access to computers.*



**Apple has the Thunderbolt controller set to security level “none” (SLO) in Boot Camp, which is a real concern.**

The real worry here is for Boot Camp users. When in Boot Camp, Apple has the Thunderbolt controller set to security level “none” (SLO), which means a hacker with access to your computer running Boot Camp could easily access the contents of RAM or your hard drive, bypassing the lock screen.

For those running macOS, make sure you have updated to at least macOS 10.12.4. If you have, the practical dangers of the Thunderspy vulnerability are pretty narrow. If your version of macOS is older, a hacker with physical access to your Thunderbolt port could potentially copy contents of RAM or storage.

Even with a fully up-to-date macOS, a hacker could make a Thunderbolt device that copies the legitimate security ID of an

officially supported device, and then use it to execute some port-based attacks similar to what hackers can do on USB ports. Those tend to be slow and limited in scope compared to directly accessing the contents of your RAM or storage.

## WHAT YOU SHOULD DO

Ruytenberg has suggested a number of things Mac users can do to help protect themselves:

- > Connect only your own Thunderbolt peripherals. Never lend them to anybody.
- > Avoid leaving your system unattended while powered on, even when screen locked.
- > Avoid leaving your Thunderbolt peripherals unattended.
- > Ensure appropriate physical security

when storing your system and any Thunderbolt devices, including Thunderbolt-powered displays.

> Consider using hibernation (Suspend-to-Disk) or powering off the system completely. Specifically, avoid using sleep mode (Suspend-to-RAM).

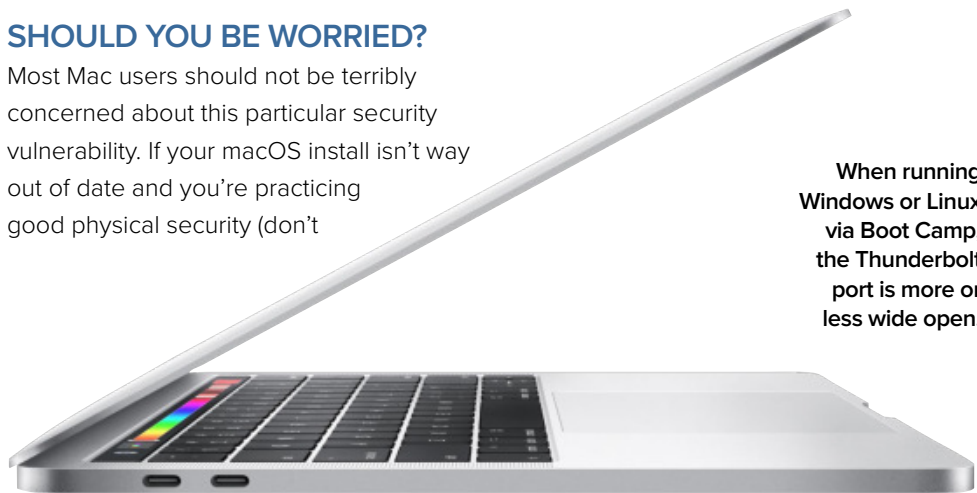
If you use Boot Camp to run Windows or Linux on your Mac, make sure it is powered down whenever it's unattended. If you're just running macOS, make sure you have updated to the latest version of macOS, and exercise the same precautions about Thunderbolt devices as you should about USB devices. If you don't know where a Thunderbolt device has been, don't plug it into your Mac, and don't leave your Mac turned on (even if locked) and unattended where people can access it.

## SHOULD YOU BE WORRIED?

Most Mac users should not be terribly concerned about this particular security vulnerability. If your macOS install isn't way out of date and you're practicing good physical security (don't

leave your Mac turned on and unattended, don't plug in devices if you don't know where they've been) you don't have a lot to fear from this avenue of attack. Remote attacks that use Wi-Fi or Bluetooth, or attempt to infect your computer with software downloaded over the internet, are *vastly* more common than attacks like these that require physical access to your computer.

Users who run Boot Camp, especially in public places, should be particularly careful. When running Windows or Linux via Boot Camp, the Thunderbolt port on a Mac is more or less wide open. We can probably expect Apple to issue a software update to make Boot Camp more secure in the near future. If you have to use Boot Camp, you should fully shut down your Mac whenever you leave it unattended. ■



**When running Windows or Linux via Boot Camp, the Thunderbolt port is more or less wide open.**





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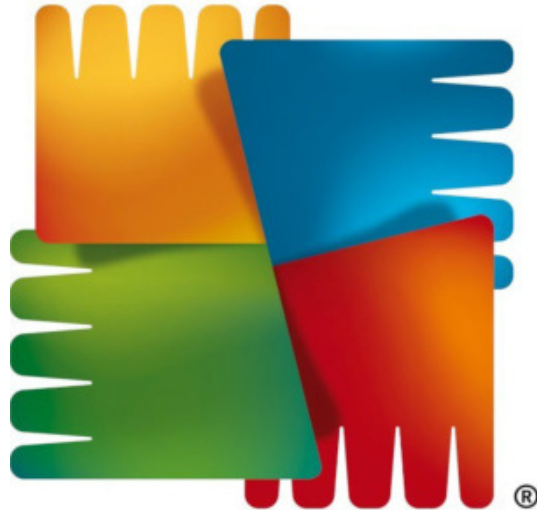


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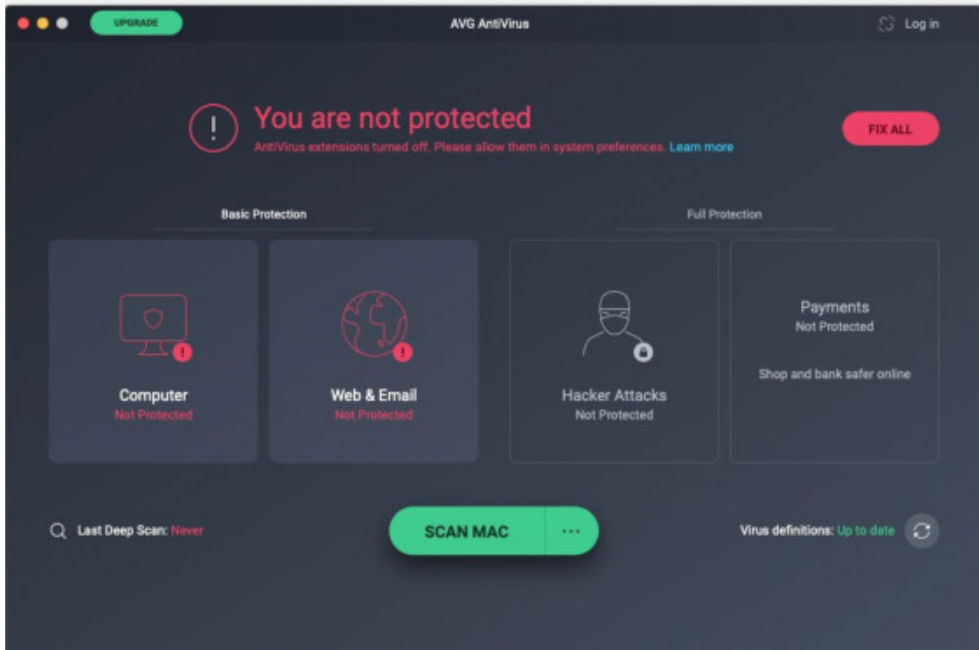
## AVG ANTIVIRUS FOR MAC: A GOOD FREE OPTION

BY IAN PAUL

Free third-party antivirus software often involves a trade-off. You receive only basic protection—a term that means different things to different companies—as well as semi-regular “encouragement” to upgrade to a paid suite.

AVG AntiVirus Free for Mac ([go.macworld.com/avgm](http://go.macworld.com/avgm)) offers very basic protection, but isn't too terrible about encouraging upgrades. The suite protects against viruses, secures your desktop email, your web browsing, and that's it. Those are the essentials, however, which go a long way toward keeping your computer safe.

AVG's protection is top notch. AV-Test looked at it in December, and it had a 100



**AVG AntiVirus Free for Mac when you first start the app.**

percent protection rate from 145 samples. AVG for Windows had the same score from AV-Test's 0-day, web and email threats, as well as the widespread and prevalent malware test.

AV Comparatives' most recent Mac test was in June 2019. AVG for Mac also got 100 percent among 585 Mac samples, and 100 percent against 500 Windows samples in the same test.

In our own spot tests, AVG did fine. It had no trouble blocking web-based threats, as well as a number of malware samples from the Objective See library.

## INTERFACE AND FEATURES

When you first start up AVG Free for Mac you get a window with four tiles, two of which are labeled Basic Protection and the other two are Full Protection. The latter are for paid subscribers only and include ransomware protection, phishing protection, and a Wi-Fi inspector for monitoring all the devices on your home network.

Under the basic protection the two tiles are labeled Computer and Web & Email. Computer includes a file shield that automatically scans any new files added to your computer, and then the quarantine

shows any detected malicious files. Web protection includes the ability to block web-based attacks and unsafe downloads, and then there's the email shield for desktop email programs that scans for unsafe attachments.

The tiles interface isn't really necessary for just the basic features. When you go into each section all you see are sliders that turn the aforementioned features on or off.

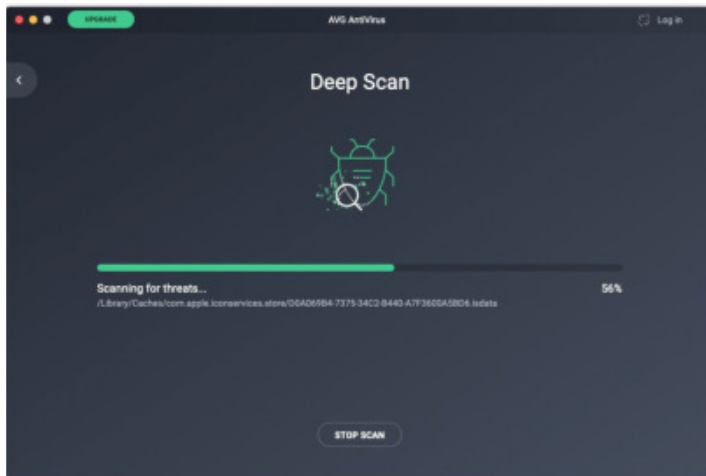
The top of the main dashboard includes the typical green, yellow, and red warning system. When something's wrong with your system or something needs your attention, you'll see it easily here. If everything's all good, the dashboard reads "You have basic protection" lest you forget you haven't yet upgraded to AVG's premium features.

The lower part of the primary screen is reserved for scanning. The lower left indicates when your last scan happened, the lower right indicates if the virus definitions are up to date, and in the center is the Scan Mac button. There are also three dots, which show the three types of scans you can do: Mac Scan, Deep Scan, and File Scan. The Mac Scan is just

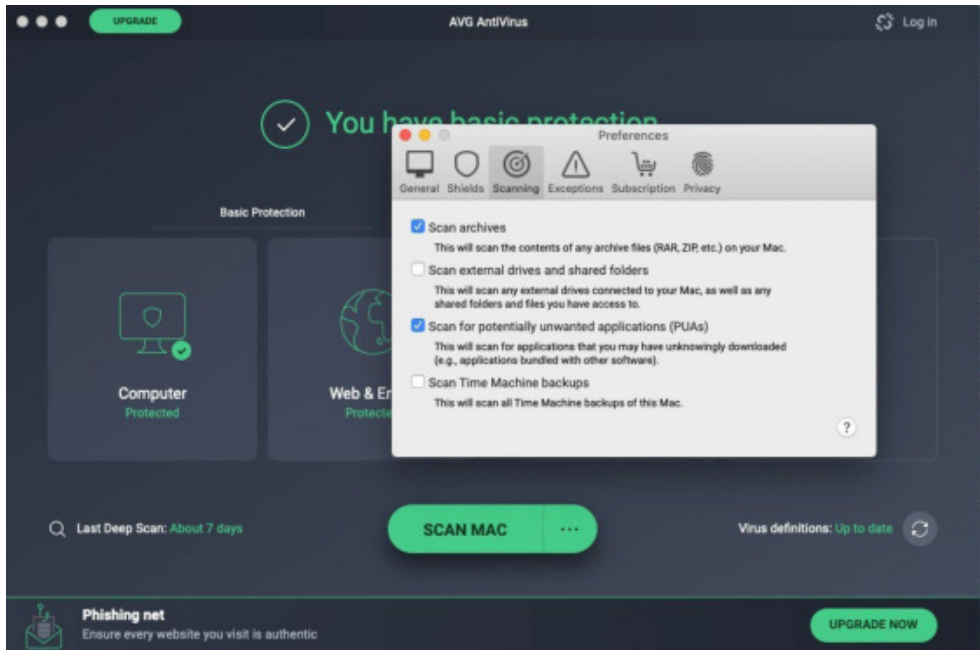
another name for a quick scan and looks at the most common places where malware hides. The Deep Scan is just that, and File Scan lets you pick specific files or folders to scan. There's no option to drag and drop a file or folder for scanning, though you can right-click any file and choose Scan With AVG from the context menu.

Within the Preferences window there isn't much to tweak, but the Scanning tab is worth looking at. Here, you can set AVG to automatically scan external drives and shared folders, as well as automatically scan Time Machine backups.

For anyone who needs it, Preferences → Exceptions tells AVG not to scan specific files or folders, which is handy if you deal with large media files that have little chance of being corrupted.



**AVG's Deep Scan for Mac.**



### AVG's scanning settings for Mac.

## BOTTOM LINE

It costs nothing and protection is top notch, what more could you ask for? Well, you might want ransomware protection, and the phishing protection is also important—especially if you're prone to click on links you shouldn't in email, social media, or a chat window. Upgrading to AVG Internet Security costs \$30 for a year, \$57.36 for two years, or \$82.44 for three. Those

are new customer prices that will

inevitably go up once you reach the end of your first subscription period.

For those who don't want to pay extra, AVG isn't too bothersome with its upgrade offers, though you can't miss them when you look at the primary window. If you're looking for solid protection with basic antivirus features, then AVG AntiVirus for Mac is a good choice. ■



### AVG AntiVirus for Mac

#### PROS

- Very good antivirus protection.
- Protects against web-based threats.

#### CONS

- No ransomware or phishing protection.

#### PRICE

Free

#### COMPANY

AVG





TRASH MANAGER

## **THE BIN: ALTERNATIVE MACOS TRASH MANAGER MAKES PURGING FILES MORE FUN**

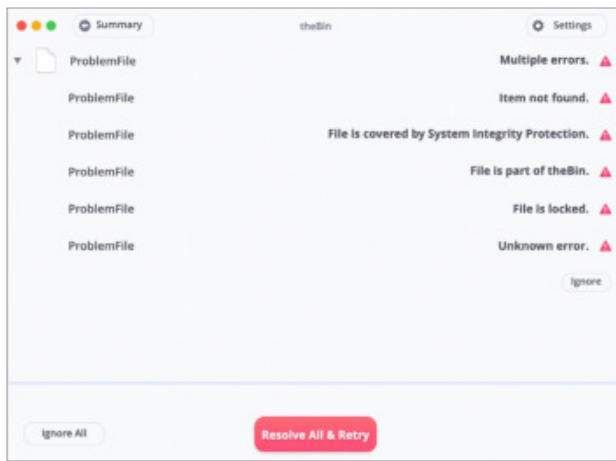
BY IAN PAUL

After first being introduced as the “Wastebasket” in 1982 with the Lisa, Apple forever cemented the concept in the hearts of personal computer users by porting it onto the Macintosh two years later. Renamed as simply Trash, this unassuming file directory has helped users with file deletion for nearly four decades.

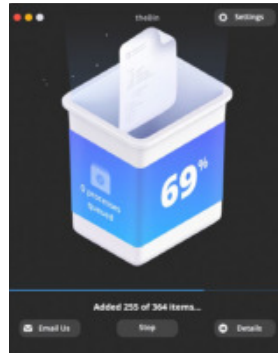
But for such an important feature, relatively little has changed over the years—most notably, a Finder preference introduced with macOS Sierra gives the option of automatically deleting Trash after 30 days. Should that not go quite far enough, there’s now a third-party app to answer the call.

Semibits's theBin ([go.macworld.com/tbin](http://go.macworld.com/tbin)) can be configured to automatically take over managing your Trash. Instead of temporarily moving files to the invisible .Trashes folder in macOS, theBin intervenes, migrating unwanted content to its own storage space where the app can handle such files more efficiently.

After installing the app with default auto-migration settings enabled, files dragged and dropped into Trash will be seamlessly moved to theBin without further user intervention. Personally, I can't stand that overstuffed Trash icon in the Dock, begging to be emptied all the time, and I suspect many of you feel the same way. This feature alone will be enough to entice many users to download the app, which has a free seven-day trial.



**There are rarely problems when trashing files, but theBin does a better job of resolving issues than macOS alone.**



**By default, Trash files are automatically migrated to theBin, where they can be compressed and managed more efficiently.**

Opening theBin displays a small window with a visually pleasing look at how many items are waiting to be discarded, and how much space they're taking up on your Mac. At first launch, a tutorial walks users through setting everything up, and nice user interface touches abound, including fun animation as files are added or removed.

Click the red Empty button to purge files immediately; you'll first be prompted to confirm this action, although the default behavior can be changed by unticking the Ask Before Emptying option in settings. Otherwise, click the Details button in the lower right corner to call up a summary of what's been spared prior to kicking those files off your system for good.

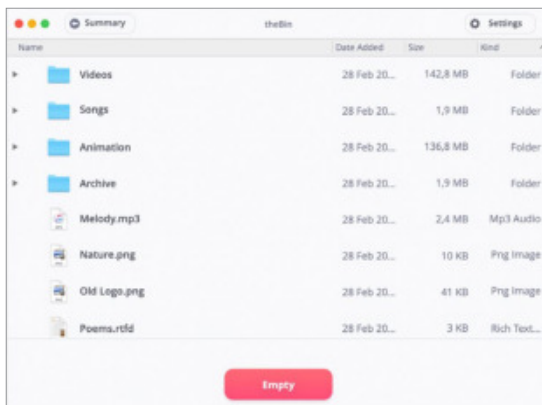
## TRASH BETTER

In addition to good looks, gorgeous UI animation, and native support for Dark Mode, theBin has two significant improvements over Trash: the ability to automatically compress discarded content to take up less space, and optionally purge files on a more frequent schedule than the 30-day option already built into macOS.

When enabled, auto-compression happens seamlessly in the background as deleted items are migrated into theBin. The default setting provides a good balance between speed and disk space, but there are other options, including the ability to disable compression altogether. Slowest offers the most effective space savings, while Fastest gets the job done sooner at the expense of larger file sizes.

Last but not least, theBin can be configured to automatically clean out all files after a day, a week, or a month. While these options are a good start, I'd love to see other intervals added in future updates, or even a completely customizable setting for maximum control on specific days and times of the week.

On the plus side, theBin automatically resolves duplicate files to save space



**The details view shows a comprehensive list of deleted files, but offers no way to selectively remove the ones you no longer want.**

(preserving filenames when they conflict), along with issues that occasionally arise when deleting stubborn content. There are also a couple features that keep theBin from being the perfect Trash

companion, such as the ability to selectively empty files from the Detail view, and a Dock shortcut to manually empty without opening the app window at all.

## BOTTOM LINE

Although it doesn't yet check off everything on our ultimate alternative macOS Trash wishlist, theBin gets high marks for ease of use and a fun, polished UI. ■



### theBin

#### PROS

- Deleted files seamlessly migrate from Trash to app storage.
- Automatic cleanup intervals (day, week, month).

#### CONS

- Can't selectively empty files from Details view.
- No Dock shortcut for purging files.

#### PRICE

\$10

#### COMPANY

Semibits LLC

# Hot Stuff

What We're Raving About This Month



## WYZE BULB

[wyze.com](http://wyze.com)

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The Wyze Bulb is a tunable-white (no color here) bulb that connects to your network via Wi-Fi, so it doesn't need a smart home hub. Rated at 800 lumens of brightness, the bulb draws 9.5 watts of power and offers a respectable color temperature range of 2700K to 6500K. The Wyze mobile app can be used to turn the bulb on or off, provides access to a dimmer slider and a color temperature slider, and control A timer. There's also a vacation mode to turn the bulb on and off when you're away. —CHRISTOPHER NULL

# SIMCAM 1S

[simcam.ai](http://simcam.ai)

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The SimCam 1S is a relative rarity: a home security camera chockablock with advanced AI features, no cloud subscription requirement for them to work, and a modest price tag. The camera body rotates 360 degrees and tilts 22 degrees on its base when you pan it or enable the automatic tracking feature. Enabling the various detection features is as simple as toggling a switch in the iOS app for each of them. The camera also supports facial recognition and object monitoring. —MICHAEL ANSALDO



# Hot Stuff

## LEVEL LOCK

[level.co](http://level.co)

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Smart locks are ugly, but by truly becoming completely invisible, Level Lock is about to change the smart lock industry as we know it. The Level wedges the hardware completely inside the hole that's cut out for your existing hardware. It replaces the interior deadbolt assembly, but you keep the exterior and interior escutcheons you already have, ensuring your door looks the same when you finish as when you started: no monstrous keypads, no giant chrome handles. The iOS app can be used to open or close the lock, tell you the lock's current status, and track who came and went, and how they opened or closed the lock —**CHRISTOPHER NULL**





**STAYING HOME  
SAVES LIVES.**

**CORONAVIRUS.GOV**

ARTWORK BY THOMAS WIMBERLY / AMPLIFIER.ORG





**We can help  
slow the spread  
together**

**when we  
take these  
steps:**

- ✓ **Avoiding close contact**
- ✓ **Staying home**
- ✓ **Handwashing for 20+ seconds**
- ✓ **Disinfecting frequently touched surfaces**
- ✓ **Wearing a cloth face covering in public**

**Learn ways to protect yourself  
and others at [coronavirus.gov](https://www.cdc.gov/coronavirus)**



## iPadOS 14 wish list: Plenty of room for improvement

The iPad is Apple's platform with the most room to grow. Let's hope WWDC shows it continuing to move forward.

BY JASON SNELL

It's been a big few months for the iPad. Apple didn't just release a (mildly updated) iPad Pro (see page 89), but a whole new accessory, the Magic Keyboard (see page 55). And surprise—tossed into a minor mid-cycle software update, iPadOS was updated to support pointer support, an upgrade many iPad users have been wanting for years.

But as Apple's annual developer conference looms, what's next for the

iPad? Last year ([go.macworld.com/lsyr](https://go.macworld.com/lsyr)), Apple introduced the concept of iPadOS as a separate variation of iOS devoted just to the iPad. This year at WWDC, that bill comes due: Apple could once hide a lack of iPad updates inside a larger iOS release, but this year we'll all be wondering what's new in iPadOS.

With the pointing device stuff taken care of, what are the biggest gaps left in iPadOS, and what's likely to be announced

next month at WWDC? Here's a list of some of the most glaring deficiencies in Apple's tablet operating system.

## A FOCUS ON THE KEYBOARD

While iPadOS 13.4 ([go.macworld.com/i134](https://go.macworld.com/i134)) introduced pointer support, an even more important optional input device on iPad is the keyboard. And the iPad's keyboard support deserves an upgrade.

Neither of Apple's iPad keyboards—the Magic Keyboard and Smart Keyboard—offer a row of function keys above the number row. Which, fair enough. Years ago, Apple cleverly remapped those keys to be dedicated to media and device control by default—and if you use an iPad with a keyboard that has function keys, they'll work to play and pause media, raise

and lower volume, move between audio tracks, and adjust screen brightness.

Since Apple can't add a row of function keys in a software update, it should do the next best thing and provide keyboard shortcuts that work with its current keyboard. (One possibility might be to allow users to set a modifier key to act as a Function modifier, so that pressing Globe-1 would be the equivalent of F1.)

Even better, though, would be for Apple to supply users with a host of configurable systemwide shortcuts. Apple can set the defaults, but I'd like the ability to re-map those shortcuts to serve my own needs. I've used Command-Option Space as a play/pause shortcut, and Command-Option arrow keys for volume and track control on my Mac since the '90s. I'd love to import that functionality to my iPad.

Once that's done, of course, it's a short step to bind other commands to keyboard shortcuts, most importantly Apple's own Shortcuts user-automation system. I'd love to be able to set a keyboard shortcut and know that it will fire off the same shortcut, wherever I am.

It's high time that iPad multitasking was given a rethink, but even if Apple's not prepared to completely overhaul the



**iPad Pro  
and Magic  
Keyboard.**

system, it at least should make it clearer which side of a Split View is accepting input from the keyboard, and provide keyboard shortcuts to toggle between them.

Finally, I'll point you to Guilherme Rambo's recent Twitter demonstration ([go.macworld.com/guil](https://go.macworld.com/guil)) of what a more interactive emoji picker would look like on iPadOS. A keyboard shortcut that brings up a floating search bar to let you search for and insert the right emoji in the right place? Yes, please.

## SHORTCUTS COMES INTO ITS OWN

The Shortcuts app, when it was introduced in iOS 12, was largely the same app as Workflow, the third-party app Apple bought. It was given a solid boost last year, but the work is not yet done.

Shortcuts needs to add organizational structure to its current free-form interface. Once you make more than a handful of shortcuts, it's a mess, and there are no folders or tags or any way to filter your shortcuts.

There also need to be more tools to make building Shortcuts easier. You can't currently select multiple commands within a shortcut for copying and pasting—making it brutal if you want to reuse a series of commands in another shortcut. Sharing shortcuts should be less opaque than it currently is—you have to flip a scary-sounding switch in the Settings app



### Apple Shortcuts.

in order to download shared automations.

And in most contexts, when Shortcuts runs, it shows you the commands that it's executing, step by step. (Imagine if every app you ran scrolled through its source code as it worked!) Users should have the option of a cleaner, simpler approach that only shows a progress bar—or maybe even nothing at all—when a shortcut runs.

## ENABLE MORE POWERFUL APPS

A device is only as powerful as the apps that run on it. And the iPad still lags behind my Mac in numerous areas. iPadOS 14 needs to take steps to enable more ambitious apps.

Take iPad audio, which is so primitive that I still can't really record a podcast from



### How 'bout a Terminal app for iPadOS? Why not?

my iPad without hacks and hardware add-ons ([go.macworld.com/hkhd](https://go.macworld.com/hkhd)). I'd like apps to be able to record system audio, multiple audio inputs, and more, while other apps are also running. I want the equivalent of Rogue Amoeba's Audio Hijack for iPad ([go.macworld.com/adio](https://go.macworld.com/adio)).

Or consider the Health app, a cornerstone of Apple's strategy for Apple Watch and iPhone. It doesn't exist on the iPad (or the Mac, for that matter), and for the life of me I can't figure out a good reason why. Sometimes I want to view my health data on my iPad. I also want to pair some Bluetooth-based health devices to my iPad rather than my iPhone, too.

And there are professional apps that still are absent on iPadOS. Does Apple

need to make changes in iPadOS 14 in order to finally bring Logic Pro, Final Cut Pro, and xCode to the iPad? If so, let's get on it. While we're at it, I'd like to see a Terminal app on the iPad. You heard me. Apple should give programmers (and builders of Workflows) access to the power of the command line that Mac users have had for two decades. Make it secure, sure—but let us run unix scripts and compile from source without having to resort to clever workarounds ([go.macworld.com/clwk](https://go.macworld.com/clwk)) or add-on hardware ([go.macworld.com/ahrd](https://go.macworld.com/ahrd)).

## GIVE ME MORE

My iPadOS wish list is far longer than any of my lists for Apple's other platforms. That's not just because I use my iPad Pro a lot—it's also because the iPad has the most room for growth and improvement.

I accept that most, if not all of my wish-list items will probably not be fulfilled by iPadOS 14. The most important thing I want to see Apple announce at WWDC is continued change and improvement of the iPad. Apple needs to prove that iPadOS isn't just a name—it's a commitment to making the iPad better at every opportunity. If Apple does that, I'll be happy, even if I don't get everything I want. ■



# Three ways the iPad beats the Mac

The Mac is still capable, but sometimes the iPad is better at solving certain problems.

BY JASON SNELL



In the argument between people who embrace the iPad to get work done and people who stick to their Macs, I'm firmly Team Both ([go.macworld.com/tbth](http://go.macworld.com/tbth)). For a few years now, I've used an iMac at my desk and an iPad Pro everywhere else.

Committing to the iPad to get work done has always involved some compromise. There are moments when I'm working away on my iPad and I realize that there's something I need to do that would be done far more easily on my Mac. Those moments are a lot less frequent than they were even a couple of years ago, but they do exist.

What's funny is that in the last year or

so, I've noticed an increasing number of incidents when I find myself sitting at my desk, staring at my iMac, realizing that the task I need to perform would be done far more easily on my iPad.

## FIXING UP PHOTOS

I've been using Photoshop for decades. I wrote an entire book about Apple's Photos app. And yet when I want to touch up a photo before displaying it on my website, on social media, or on my walls as a print, I end up going to my iPad and using Pixelmator Photo ([go.macworld.com/pxlp](http://go.macworld.com/pxlp)).

Pixelmator Photo is a \$5 iPad-

exclusive app that offers machine-learning-based tools for adjusting image settings, cropping, and color matching. It's got a very large suite of image adjustment tools. But the feature that sets it apart is its Repair tool, which intelligently fixes flaws in photos.

I can't really say enough about the Repair tool. It's a delight to use. To remove dust from a product shot or a skin blemish from a portrait, I just tap on the area with my finger, and it's gone instantly. I don't need to sample from some other part of the photo, as I would do with other tools—Pixelmator Photo is smart enough to figure out the right thing to do without any intervention. It even works well to remove people from backgrounds, something that used to

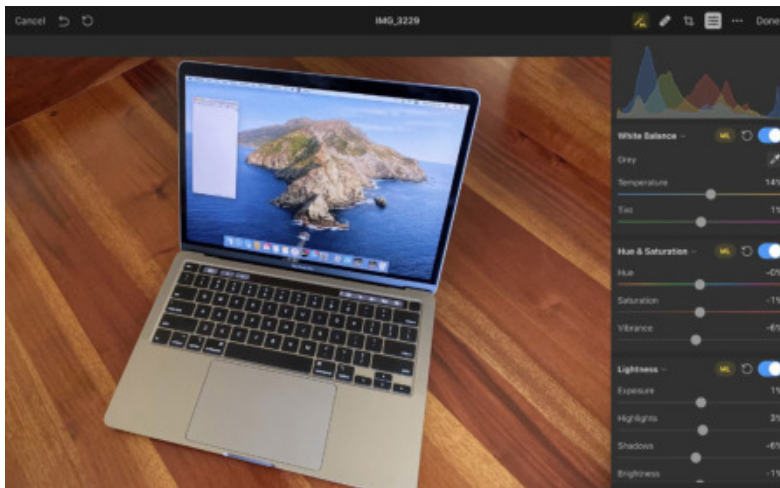
take me ages to accomplish in Photoshop.

## 1. PRODUCTIVITY-BOOSTING SHORTCUTS

The Mac is supremely flexible, with a library of native apps, Unix underpinnings, and a user automation system that's been around for decades. I am constantly amazed at what I can automate on my Mac. That said, the Mac's user-automation tools are harder to use than those on iOS. And while iOS apps have rushed to support Shortcuts, Apple's user-automation app, Mac apps are no longer making any real effort to add support for AppleScript and Automator.

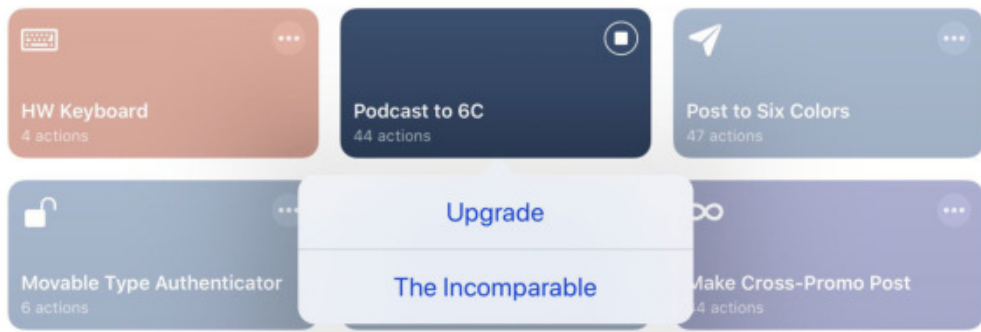
As a result, I've been able to build some slick, easy-to-use automations on my

iPad that I haven't been able to replicate on my Mac—or at least, not replicate in a satisfying way. My iPad's got a shortcut that queries my home weather station for the current weather and



**Pixelmator Pro makes it easy to remove dust and blemishes from photos.**





**This shortcut makes a blog post based on the latest item in a podcast's RSS feed.**

places the result on the clipboard, for me to use to taunt my friends on particularly nice days. With the help of the new app Charty ([go.macworld.com/chry](https://go.macworld.com/chry)), I was able to build a shortcut that scrapes the content of a webpage and generates detailed charts automatically.

I use a shortcut to post stories to my blog with a couple of taps, using an ancient API ([go.macworld.com/anpi](https://go.macworld.com/anpi)). Another one lets me grab text from an article and place it in a new document, ready to be quoted in a blog post. And when a new episode of my podcast goes live, a one-tap shortcut I built creates a promotional post and puts it on my blog.

Can I do all of these things on the Mac? Probably, with some degree of extra work. But it was easier to build them on my iPad, and now I turn to that device when I want to perform any of those tasks.

## 2. EDITING PODCASTS WITH EASE

After years of editing my podcasts with GarageBand and then Logic Pro, the bulk of my editing work these days is in Ferrite Recording Studio ([go.macworld.com/frcd](https://go.macworld.com/frcd)) on my iPad. Logic is a remarkably powerful app, but using it involves sitting in a chair for hours and making very detailed edits by moving a cursor precisely with my trackpad. My wrists get sore, my back hurts, my eyes glaze over—and I accepted all of that until I tried editing a podcast on my iPad with an Apple Pencil ([go.macworld.com/edpd](https://go.macworld.com/edpd)), at which point I began to question everything ([go.macworld.com/qsev](https://go.macworld.com/qsev)).

Ferrite is an app that, at first glance, is just a simpler version of Logic. There's truth to that. I didn't move to Ferrite on the iPad because it offered a feature that Logic was lacking. Instead, I moved to Ferrite because



**Ferrite Recording Studio is a full-featured iPadOS audio editor that works with the keyboard, by touch, or with the Apple Pencil.**

it allowed me to edit away from my desk, in a more comfortable position. The Pencil reduced the stress of making precise mouse movements—because making those precision movements with a stylus is a more natural motion. Gradually editing on my iPad went from being a novelty, to a solid option, to my preferred choice. It's more about the ergonomics than anything, but providing different ergonomic options is one area where the iPad destroys the Mac.

### 3. I'M STILL TEAM BOTH

It's undoubtedly true that I find myself being pulled to the iPad for some kinds of work in a way I hadn't been before the last couple of years. That said, there continue

to be aspects of working that the iPad just doesn't do as well as the Mac, if it does it at all.

As rich as the App Store ecosystem is, the iPad suffers from not allowing users to tap into the Unix subsystem to use powerful command-line tools. (I've built new Finder commands that I use every day using shell scripting [[go.macworld.com/scrp](https://go.macworld.com/scrp)])—and the iPad just can't match up.)

While the iPad's Magic Keyboard finally lets the iPad become a no-compromises laptop, many iPad apps are still lagging behind the times, failing to offer the richness of their Mac counterparts. And of course, some apps don't exist at all on iPadOS, because Apple doesn't offer access to useful portions of the operating system that it does on the Mac. If I had a single request for iPadOS 14, it would be for Apple to enable the existence of an app like Audio Hijack, so I could use the iPad as a full-fledged podcasting rig without the need for jury-rigged hardware and weird compromises.

No, my iPad can't do everything my Mac does. But much to my surprise, my Mac also can't do everything my iPad can. ■

# With iOS 14, it's time for Apple to improve its messaging

iOS 14 is a good time to give it a boost.

BY DAN MOREN



We spend more time than ever communicating via our devices and, given the current state of world affairs, that's only likely to increase. And while some of that happens via email, social media, or—heaven forbid!—even the phone, the bulk of that communication probably happens in messaging apps.

So it only makes sense that Apple may

be considering updates to its Messages app in iOS 14, especially given that the last statistic we heard about iMessage volume was that 200,000 were sent every second—and that was four years ago. (Not much has changed since then, right?)

A report this past week, which originated at MacRumors ([go.macworld.com/atst](https://go.macworld.com/atst)), mentioned several new and updated Messages features that could

appear in iOS 14, many of which seem to borrow ideas from other communication apps. And as welcome as some of those enhancements would be, they leave the door open for plenty of other aspects of Messages that could still be improved.

## PICKING UP THE SLACK

Several of the features mentioned in the report seem to take a page from the playbook of Slack, the current team-based chat/productivity/time-wasting darling. For example, Messages may allow for more granular notifications, such as tagging specific people in a group chat—@Dan, for example—letting them turn off alerts for each individual message, while still providing a means for getting their attention. Messages on iOS may also get access to the /me feature, which lets people share status updates, which originated from IRC and has actually been part of the macOS version of Messages since its very earliest days.

But there are a lot of other great Slack features that Apple could see fit to borrow here. Threading, for example, is a handy way to manage conversations, especially in group chats that can easily get out of hand. Likewise the /collapse command in Slack is a quick way to hide link previews and images, which is a huge help, especially to those on smaller-screen devices.

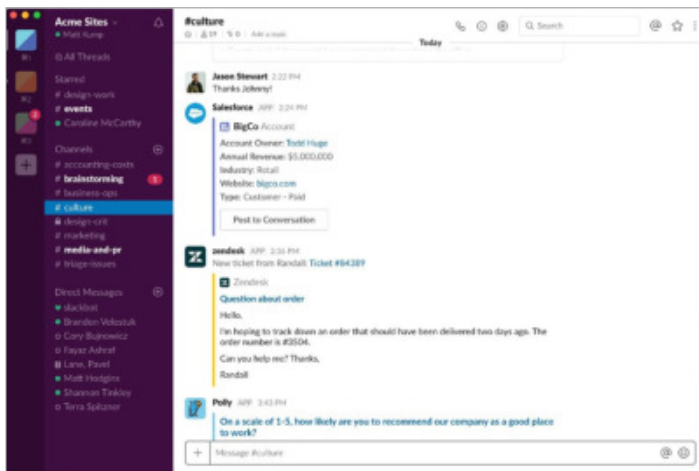
And, finally, let's not forget the fun! Slack has also popularized the idea of an emoji reaction, which is displayed in an unobtrusive location beneath the original message. Apple has done something similar with Tapbacks in Messages, but they remain limited to just a handful of options when they should really allow any emoji. Come on, Apple: it's 2020. Time to let the emoji run wild.

## SHARE WITH THE GROUP

While group iMessage chats have become increasingly popular, they lag behind their one-to-one compatriots in a few different ways, which hopefully iOS 14 can begin to remedy. The above report suggests that group messages may finally support typing indicators, so you can finally feel anxious about waiting for multiple people to respond to a message. (In Slack, we call this the “several people are typing” effect.)

But group messages should also support read receipts, those handy messages that can tell you if your iMessage has been delivered or read by the recipients. For this, take a page from Skype, which puts a mini version of the person's profile icon below some of the messages, so you can tell at a glance whose actually seen it.

Moreover, Apple should open up the ability to send Apple Pay Cash to group conversations, making it easier for, say,



Slack has lots of great features that Apple could borrow.

one person to pay a bill and then request payment from several different people, rather than having to message them one by one by one.

## PLAY A LITTLE ONE-ON-ONE

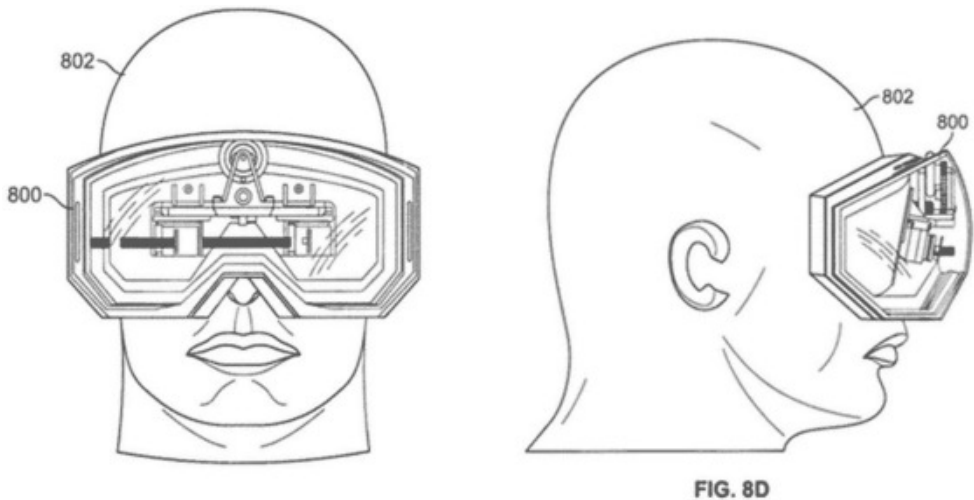
Alongside improvements to group chats, there are no shortage of ways to make one-on-one chats better as well. The report indicates that Apple may add the ability both to leave the last message in a conversation marked as unread as well as to retract an iMessage (which I'm sure we've all wanted to do at some point), though the retraction would be noted in the chat.

Personally, I'd like to see the company improve the transparency of different contact methods, so that I can more easily

avoid texting my wife on her work phone by accident ([go. macworld.com/acci](http://go.macworld.com/acci)). Frankly, iMessage's contact address system could stand a thorough overhaul, as it's often been confusing to figure out whether you should text a phone number or email address, leaving some people puzzled over the

difference and occasionally leading to duplicate conversations. At the very least, Messages should offer ways to manage those types of problems by merging or otherwise reconciling those multiple conversations—better yet, though, would be stemming the problem at its source.

And it would be nice to see better support in Messages for file transfers. Right now, sending a file via iMessage is possible, but you generally have to paste it in or send it from another app. Giving access to the Files browser inside the app, as Apple has done in Mail, would make the process much easier. Because hey, messaging isn't just about text, or even pictures anymore—and chances are in the near future, we're going to be relying on it for even more. ■



## Looking at Apple's AR glasses with more clarity

What exactly would such a device do and what are the challenges it would face?

BY DAN MOREN

Rumors of an Apple augmented reality headset have been around for years, but recently speculation has rapidly begun to ramp up, alongside suggestions ([go.macworld.com/sg21](https://go.macworld.com/sg21)) that the product could be shown off as early as this year, and might even ship as early as next year.

On the one hand, maintaining skepticism is still healthy. Though Apple has had its share of product leaks over the years, it's still a company that plays things

extremely close to its chest—especially when it comes to prototype hardware. (Unsurprisingly, after the infamous incident [[go.macworld.com/incd](https://go.macworld.com/incd)] in which a pre-release iPhone 4 was left in a bar nearly a decade ago, it's been extra cautious.)

But the sheer number of rumors and amount of speculation are probably based on something, so it's not a bad time to take a look at what a pair of Apple smart glasses could be, and the challenges that they have to overcome.

## AR, MATEY

Apple's been talking up augmented reality for what seems like forever, with Tim Cook frequently calling it out as a specific area of interest. What seems like hours of interminable AR demos have graced the stage at Apple events, with people pointing iPads and iPhones at blank tables to show how they can interact with virtual objects. And the company recently rolled out the new iPad Pro (see page 89), its first device with LiDAR, which is a technology that has a lot of potential for AR.

But all of it has seemed lacking. Because, fundamentally, when you're using an iPhone or iPad to peer into a virtual environment, it's like peeking through the windows of a fancy house—hardly the kind of immersion that you're aiming for when you're pitching something as an improvement on reality.

Hence the potential of a device you wear on your face, where you don't have to hold up a rectangle to see the melding of the real world and the

digital. It certainly seems precisely what a company like Apple would be building to, after all this time of laying the groundwork. But Cupertino's not the first to try it.

## IN YOUR FACE

Real, compelling AR devices are, if not quite the Holy Grail, then at least one of those products that tech companies have been trying to nail for years. Google Glass was the most prominent example when it launched back in 2013, and while it garnered a lot of attention, it never really caught on with the public. In some cases, it even earned a negative reputation, as its built-in camera raised many a privacy concern. Since then, companies from Microsoft to Snapchat



**Using AR on an iPad lacks a sense of immersion into the environment.**



have tried their hands at smart glasses or head-mounted displays, with varying levels of commitment and success.

But Apple's no stranger to entering markets late. It gets the benefit of seeing where those earlier

projects have misstepped, which is one reason I'm guessing that we haven't heard, say, specific rumors about outward-facing cameras in the Apple glasses. As with the Apple Watch, iPhone, iPod, and even the Mac, Apple is no doubt biding its time to produce a highly polished product that will seem like the natural expression of such a technology.

Another key factor that has hurt adoption of previous smart glasses is something tech isn't always great at: style. After all, smart glasses have to be something that you choose to wear on your face, not a piece of tech that can be hidden under a sleeve or tucked into a pocket. But Apple has always



### Can Apple learn from the failures of Google Glass?

focused on making its devices beautiful and, with the Apple Watch, it spent some energy into trying to make them fashionable too. Apple glasses are going to have to take that idea and put it at the forefront.

*(Editor's note: The graphic at the top of this article is from a patent [[go.macworld.com/aptn](http://go.macworld.com/aptn)] Apple filed several years ago. Presumably, the company has moved beyond the design depicted in the image and patent.)*

## IF APPS COULD KILL

Looks and potential pitfalls aside, one big question remains: What exactly is this device for?

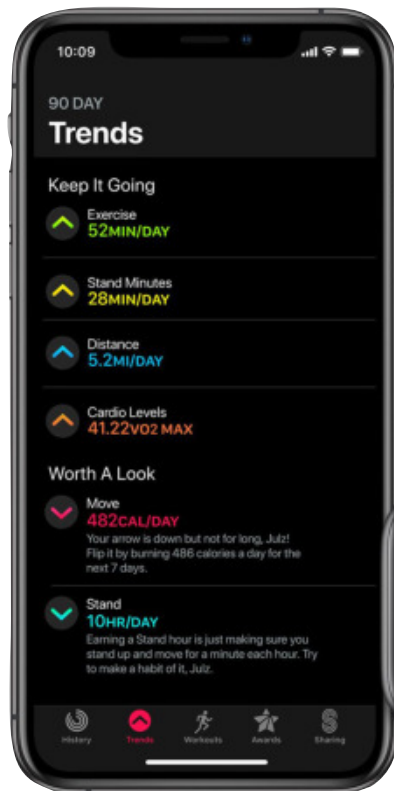
Apple has showed off a lot of things that augmented reality can do, from letting you play games that interact with the real world to apps that allow you to, say, measure a person's movement to help them treat an injury. That's a huge range of applications, and it certainly speaks to the potential of AR.

But rumor has it that the glasses will at first act as a satellite device, much like early versions of the Apple Watch, which makes the smart watch an apt precedent to look toward. What's needed with AR is a narrowing of focus, the same way that the Apple Watch at first attempted to be everything to everyone, but found more purchase once it ended up primarily dealing with fitness and notification.

As with the Apple Watch, I think unobtrusiveness is a key part of the device. I can't think of anything worse than a barrage of notifications floating in front of my eyes. Mapping and directions have always seemed a natural fit for AR, especially with Apple's recent re-building of its maps infrastructure, though in the current world environment, it may not be as compelling a

use case as it once was.

But ultimately, it comes down to vision—if you'll pardon the expression. One thing Apple stresses whenever it introduces a new device or feature is the story of that technology. It helps transform something from a mere gadget into something that we look and say “Oh, *that's* what it's for.” So while we might think we know what Apple's AR glasses are for, we're still missing the whole story. ■



**Rumor has it that the glasses will at first act as a satellite device, much like early versions of the Apple Watch.**



# Enable or disable Deep Fusion and Smart HDR on the iPhone 11

Between the two features, you have three options for how they're available.

BY DAN MOREN



The iPhone 11 models feature unprecedented hardware for capturing and processing better photos and videos. But you may want to opt out or control two of those features: Deep Fusion and Smart HDR. (HDR stands for high dynamic range.)

The two features both attempt to use many images captured continuously over very short periods to synthesize a photo with a large dynamic range, especially to avoid blown-out highlights and muddy shadow detail, while also preserving fine

detail, like hair, fur, or textile textures.

Smart HDR is an improvement on previous HDR approaches built into iOS for years. It requires more processing power than previous forms, and can be used on all iPhone 11 models as well as the previous generation: iPhone XR, iPhone XS, and iPhone XS Max. Smart HDR kicks in on more photos than previous flavors of HDR.

Deep Fusion relies heavily on machine learning to work at the pixel level, rather than providing more of a region-based

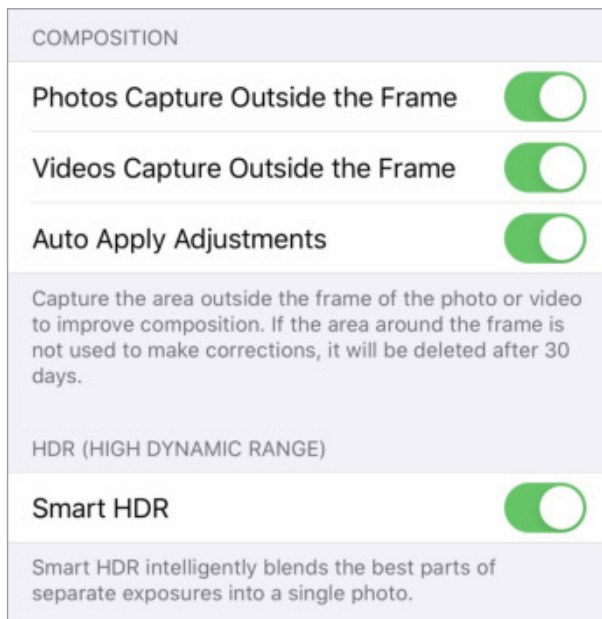
improvement. It also can manage adding detail and dynamic differentiation on photos that largely have midtone values, which HDR traditionally performs worse at or doesn't help with. Deep Fusion requires the A13 Bionic processor present only in iPhone 11 models. Photography with Deep Fusion was added in iOS 13.2.

You can disable Smart HDR with a switch on all supported phone models at Settings → Camera → Smart HDR.

Deep Fusion, however, lacks a switch. But because of what it requires from cameras, it won't function if the ultra-wide-angle lens is in use in an iPhone 11 model. Turning on Settings → Camera → Photos Capture Outside The Frame will disable Deep Fusion, as a result, because that over-capture mode ([go.macworld.com/ovmd](https://go.macworld.com/ovmd)) requires use of the ultra lens.

Here's how you can figure out or choose which photographic-enhancement algorithm will kick in.

**Photos over-capture off, Smart HDR on.** Deep Fusion will kick in for capturing images in low- to medium-light conditions in most cases; Smart HDR will pick up other shots in which the analysis shows it




**Smart HDR is an explicit switch, but Deep Fusion can be disabled by turning on Photos Capture Outside The Frame.**

will improve them. In a small number of cases, iOS will invoke neither Deep Fusion nor Smart HDR.

**Photos over-capture on, Smart HDR on.** Smart HDR will engage where appropriate, often for low-light and very bright photos.

**Photos over-capture off, Smart HDR off.** While Apple still uses some mojo to pick the best image when you signal the shutter—the camera is essentially always capturing temporary images—it doesn't combine multiple exposures or elements of images to produce a better shot. ■





PICTURE SOMEONE STRUGGLING WITH  
HUNGER. WHAT DO THEY LOOK LIKE? DO  
YOU IMAGINE A CERTAIN AGE, ETHNICITY  
OR PART OF THE COUNTRY? TRUTH IS,  
HUNGER CAN BE HARD TO RECOGNIZE.  
BECAUSE THE 1 IN 8 AMERICANS FACING  
IT CAN LOOK LIKE ANYONE. ESPECIALLY  
ME. I WAS CREATED BY ARTIFICIAL  
INTELLIGENCE FROM PHOTOS OF THE  
40 MILLION PEOPLE STRUGGLING  
WITH HUNGER IN THIS COUNTRY. A  
FACE THAT CHALLENGES YOU TO SEE  
HUNGER IN A DIFFERENT LIGHT. I AM  
WHAT HUNGER LOOKS LIKE IN AMERICA.  
LEARN MORE AT [IAMHUNGERINAMERICA.ORG](http://IAMHUNGERINAMERICA.ORG)

Based on USDA food security data released in 2018





iPAD KEYBOARD

## APPLE MAGIC KEYBOARD FOR iPAD PRO: FINALLY, A GOOD iPAD KEYBOARD

BY LEIF JOHNSON

**Macworld**  
**EDITORS'**  
**CHOICE**

Apple's keyboard cases for the iPad tend to emphasize protection. The keyboard itself often feels like an afterthought. Even in the best cases, it comes off as a grudging concession to those of us who really don't want to use the digital keyboard for long typing sessions.

But Apple's new Magic Keyboard for iPad Pro ([go.macworld.com/magk](https://go.macworld.com/magk)) is the first one that actually feels as though you

were meant to work on it. The backlit keys have great key travel, and they're wide enough to recall the ones you'll find on a MacBook. These features would have been impressive on their own, but Apple went a step further and included a trackpad and a dedicated charging port that greatly enriches the experience.

Taken together, these are signs that Apple is not only changing its ideas of what constitutes a good iPad keyboard case, but also in how it views the purpose for the iPad itself. For those of us who want to use Apple's tablet in a workplace setting, that's good news—although, as we'll see, it comes with a hefty price.

As with the Smart Keyboard Folio ([go.macworld.com/smtf](https://go.macworld.com/smtf)) before it, “installing”



**The Magic Keyboard case (left) next to the Smart Keyboard Folio. Both tablets are 12.9-inch iPad Pros.**



### VIDEO: MAGIC KEYBOARD FOR IPAD PRO

Watch now at [go.macworld.com/mgk](https://go.macworld.com/mgk)

the Magic Keyboard case involves nothing more than slapping the iPad Pro on the strong magnets inside the case. It pairs instantly just by touching the Smart Connector, so—unlike with a Bluetooth keyboard—you can already use it when you're, say, entering your Wi-Fi password while setting up a brand-new iPad Pro.

The real improvements, though, appear once you open the case all the way. With the Smart Keyboard Folio, you simply propped the iPad into one of two grooves, which didn't allow for a lot of options for viewing angles. The Magic Keyboard, though, features a system of two hinges

that makes the iPad “float” about an inch above the keyboard, allowing you to tilt the screen until it settles into the perfect viewing angle. It's quite sturdy. Apple released an ad depicting a hummingbird tilting the display backward just by



**I like how you'd barely know the passthrough charging port was there unless you were looking for it.**

tapping it, but in my experience it's going to take a bit more force than that.

I'd go so far as to say that I like this kind of display arrangement more than the traditional laptop layout option, were it not for the fact that my fingers sometimes bump into the underside of the iPad while I'm typing. If you have big hands, it's something you'll want to watch out for.

Nor does Apple limit the hinge to one job, as you can also charge the iPad itself through the USB-C/Thunderbolt 3 port on the left end of the largest one. You can't use this port for anything else, but fortunately it frees up the USB-C port on the tablet itself so you can hook up all the external drives, cameras, and other devices now

supported with iPadOS.

This is all great news for anyone who's been wanting to use their iPad Pro more like a laptop. It's not an ideal case, though, if you're an artist or frequent Apple Pencil notetaker. Because of the hinges and the need for balance, the Magic Keyboard case only opens to a specific angle, as the other hinge handles the actual tilting. As a result, there's technically no

"drawing board" orientation for this case, although you can find a few examples of users sort of making it work online. It looks dorky, to be sure, but at least it's an option.



**See? Dorky. This isn't really all that feasible, either, since the hinge starts moving with only a slight bit of pressure.**



At the very least, you can easily take it out of the case.

## KEYS TO SUCCESS

But most people are more likely to be excited by the keyboard itself—aside, that is, from the lack of any kind of “function” keys above the number keys. Such keys are all but standard on most third-party iPad keyboards as they’re handy for dimming the backlit keys (which is a massive pain here that involves a trip into the Settings app), and it’s odd to see this extra row missing on a device from the same company that gave us the Touch Bar. I would have imagined that if any company would understand the conveniences of that extra row, it’d be Apple.



**It’s beautifully responsive, too.**

The actual keys go a long way toward making up for it. They’re big, backlit, and they feel a lot like the keys on a MacBook, which is a welcome switch from the strange, nearly flat canvas-covered keys on the iPad Pro. Without exaggeration, it’s the best typing experience I’ve ever experienced on an iPad keyboard from Apple—or any other company, for that matter. I like it so much that I find myself wishing Apple’s normal, standalone Bluetooth Magic Keyboard was a bit more like this.

The real star of the Magic Keyboard is the small, two by four-inch clickable trackpad perched below the keyboard, which greatly improves the experience of using an iPad in its “laptop” orientation.

Want to head back to the home screen at any time? Just swipe up with three of your fingers and you’re done. Want to scroll through all of your apps from the home screen? Swipe left or right with two of your fingertips.

Because a trackpad so neatly allows for the re-creation of many of iPadOS's core gestures, I already find it more useful than I do on my Mac. (This may be controversial, but I also prefer the smaller size of the Magic Keyboard trackpad.) Most surprisingly of all, it works so well that I haven't felt the urge to hook up a mouse. Its chief appeal lies in the way it removes the need to keep reaching up to poke the iPad screen in the middle of a task, as you can now perform a similar gesture without worrying about moving your hands too far from a typing position. Over time, the seconds you save become minutes. It's also simply less distracting when you're zoned in on your work.

The Magic Keyboard is beautifully designed for a keyboard case. And if it cost about \$50 less than it does right now, then I'd be telling everyone to go and get it right now. But even considering its USB-C port, even considering its grippy and sufficiently tough exterior, the Magic Keyboard is still basically just a keyboard with a trackpad. The presentation might be innovative, but the individual parts are nothing new.

And that's why it's hard to stomach the fact that Apple is charging \$349 for the



**Just to be clear, this is as far as the Magic Keyboard opens if you don't move the second hinge. In other words, you won't be flipping the keyboard behind the iPad with this model.**

12.9-inch model I'm using, and \$299 for the smaller 11-inch model. To put that price in some perspective, Apple's baseline but capable 10.2-inch iPad starts at \$329. Yes, if that didn't click, this keyboard case costs more than an iPad. And once you saddle this thing on the least-expensive 12.9-inch iPad Pro, you're looking at a minimum price of \$1,349. For more perspective, you could buy a 512GB MacBook Air and it'd still cost less money. The catch, of course, is that you can't just take off the keyboard on a MacBook Air. That's possible here.

Then there are other considerations to keep in mind, too. With the iPad Pro attached, it weighs a whopping three



The Magic Keyboard on top of the Smart Keyboard Folio. You won't notice much difference in thickness, but the Magic Keyboard is considerably heavier because of the hinge.

pounds, for one thing. It's good for protection, but only to an extent—as with the Smart Folio Keyboard, there's no protection around the edges, so too bad if your iPad Pro plummets to the cement on its side. On the bright side, I do like that it's still compatible with the 2018 iPad Pro. The Magic Keyboard paired fine with that unit, and the only real downside is the slightly larger hole for the camera array since the 2018 model had a smaller lens.

## BOTTOM LINE

The Magic Keyboard for iPad Pro is the best keyboard case for the iPad that Apple has

made to date. Its backlit keys make typing feel more fun than forced, and its

adjustable display makes it easier to find a comfortable viewing angle—so long, that is, as you don't want it tilted too far back. Already after a few days I find it really hard to recommend the Smart Folio Keyboard in place of this.

The only real exceptions I can think of are if you're an artist or if you work in a gritty environment where sand and other particles could slip under the keys—but in that case, you probably shouldn't be carrying a tablet as expensive as the iPad Pro there in the first place. ■



### Magic Keyboard for 12.9-inch iPad Pro (4th Generation)

#### PROS

- Compact, responsive trackpad improves navigation.
- Backlit keys with satisfying key travel.
- Passthrough charging port frees up port on iPad itself.

#### CONS

- Expensive.
- No function key row for adjusting brightness and other tasks.

#### PRICE

\$349

#### COMPANY

Apple



NEWS AGGREGATION APP

## **NETNEWSWIRE 5 FOR iOS: VENERABLE RSS READER APP EVEN BETTER ON MOBILE**

BY J.R. BOOKWALTER

RSS reader apps have come and gone, but few have experienced such a bumpy roller-coaster ride as NetNewsWire. Making a splash in 2002 from developer Brent Simmons, the popular Mac version was ultimately acquired by not one but two different companies before finally finding its way back home in 2019.

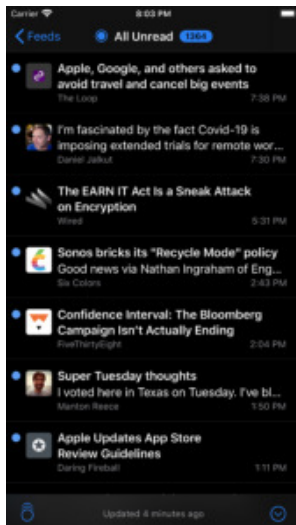
Along the way, NetNewsWire found its way onto iOS—and even Apple TV for a brief time—but the marriage never quite flourished. Thankfully, Simmons has rectified this situation with an all-new universal iOS version that faithfully mirrors the desktop experience I reviewed last year ([go](#)).

macworld.com/nt19), and even bests it in some ways.

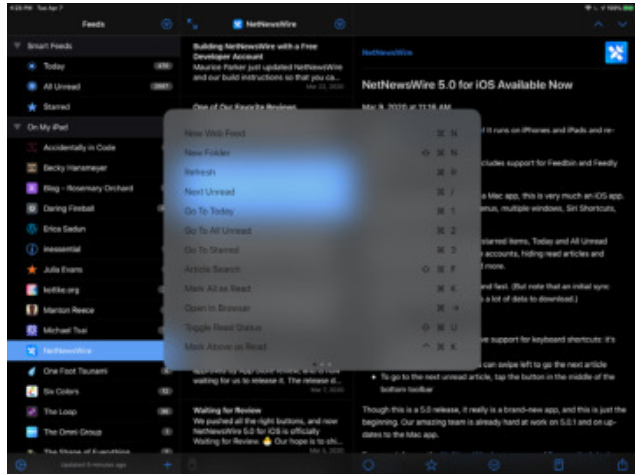
## OLD FAITHFUL

Those who use NetNewsWire 5 for Mac to stay current with the news already know what to expect from the new iOS and iPadOS version. The words “stable” and “fast” are frequently used to describe this free app, and the same applies here.

Rather than reinvent the wheel, Simmons and his small team did a remarkable job porting the macOS edition to iPhone and iPad. On the tablet, for example, there’s a familiar



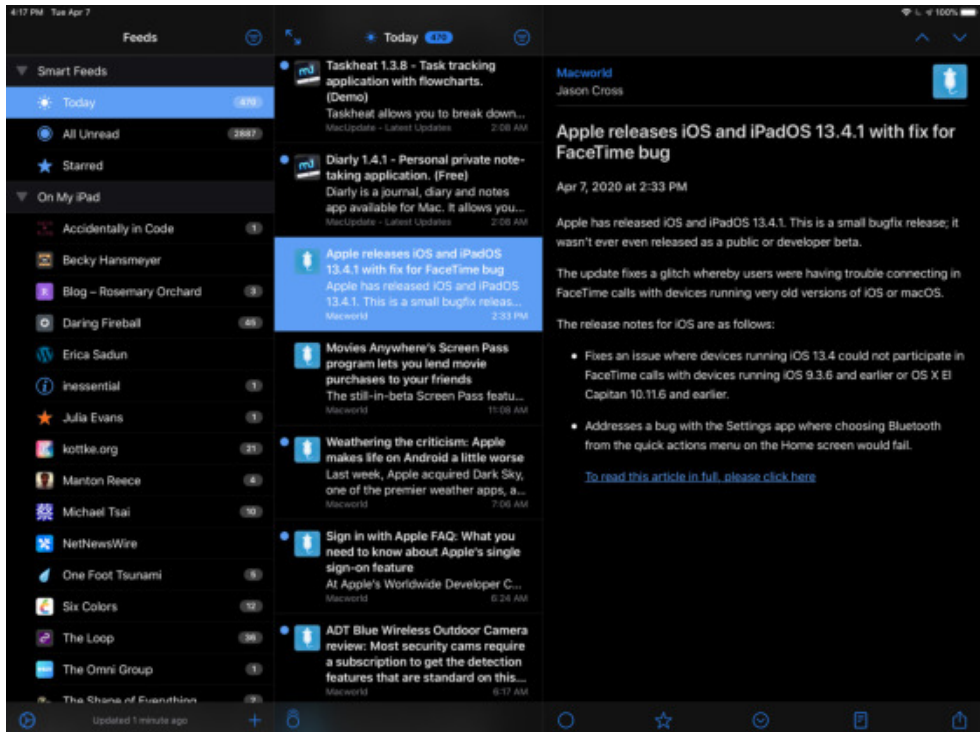
**Buttons at the bottom of the article list (iPhone version shown here) allow readers to quickly mark all as read or jump to the next unread entry.**



**On the iPad, there are nearly thirty keyboard shortcuts available to make the tablet version more like the Mac’s.**

three-panel layout, with sources on the left, list of articles from a selected feed at center, with the remaining space reserved for reading the chosen article. Nothing remarkable on the surface, especially when other RSS reader apps like Reeder and ReadKit do pretty much the same.

Where competing apps frequently get bogged down with complexity and feature bloat, NetNewsWire 5 for iOS remains lean and most importantly, free of the pesky bugs which increasingly seem to infect modern apps. (It’s a testament to Simmons’ coding prowess that not a single “hot fix” update has been necessary during the first month of availability.) One downside to being so nimble is there’s not much in the way of custom display options. If you like



Smart feeds help filter out some of the noise, but there's currently no way to customize or add to the three available options.

to tweak text size or font style, for example, this is not the news reader for you.

Despite remaining faithful to the macOS aesthetic, NNW 5 takes full advantage of iOS, with excellent support for Siri Shortcuts and systemwide Dark Mode (a manual toggle switch for the latter would be welcome, however). On iPad, there's additional support for multiple windows and—with the right accessory attached—nearly 30 keyboard shortcuts,

which make the app feel more like the desktop version.

## GET IN SYNC

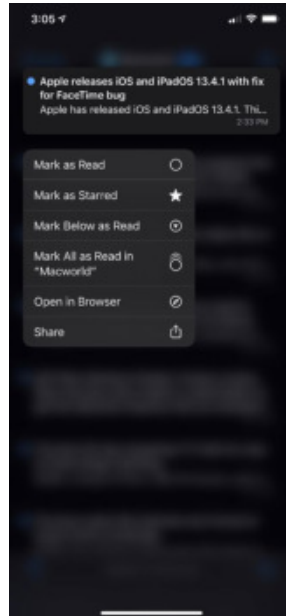
Although there was little reason to sync RSS feeds with other devices prior to smartphones and tablets, it would be inconceivable to release an app without it today. Although NetNewsWire 5 for Mac remains stubbornly limited to Feedbin and locally imported feeds, the mobile edition

adds sync with my preferred service Feedly to the mix. Like macOS, NNW 5 for iOS comes with 16 popular local sources ready to read.

Also in the source list are a trio of “smart feeds,” essentially automatic filters for reading feeds published on the current day, all unread, or articles marked as favorites. Such options definitely help cut down on the noise factor with a volume of busy feeds, but they don’t go quite far enough. I’d love to be able to create our own custom smart feeds, for example.

Navigation is fluid and intuitive. With an article open, it’s easy to jump to the next by swiping left. There’s even a shortcut for jumping to the next unread article by tapping the downward triangle on the bottom toolbar. NNW 5 features a button at the top of the article list to filter out already read feeds, as well as a “mark all as read” option along the bottom, with a preference to confirm this action first should you want it.

Many options are available from the article list by holding your finger down until a contextual menu pops up, including handy shortcuts for copying feed or homepage URLs. While reading articles, options are conveniently



Press and hold to reveal contextual menus with shortcuts for quickly copying, sharing, or marking articles as read. (iPhone version shown here.)



### NetNewsWire 5 for iOS

#### PROS

- Free, intuitive RSS reader app for iPhone, iPad.
- Excellent keyboard shortcuts, contextual menu support.
- Support for local feeds or Feedly, Feedbin sync.

#### CONS

- No custom smart feeds.
- No manual toggle switch for Dark Mode.
- Custom display options are limited.

#### PRICE

Free

#### COMPANY

Brent Simmons

placed in a toolbar across the bottom to leave an article unread, mark favorites with a star, switch to an uncluttered “reader” view, or share using any service installed on your iOS device including Instapaper, a feature still missing on the Mac version.

## BOTTOM LINE

Venerable RSS reader Net NewsWire makes a triumphant return to iOS with a slick universal app that’s even better than it currently is on macOS. ■

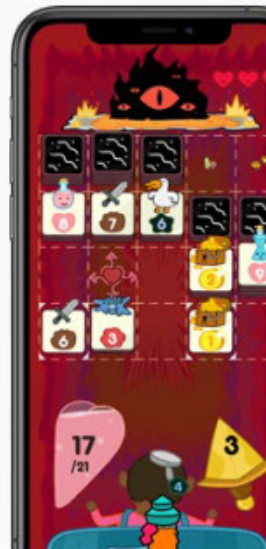
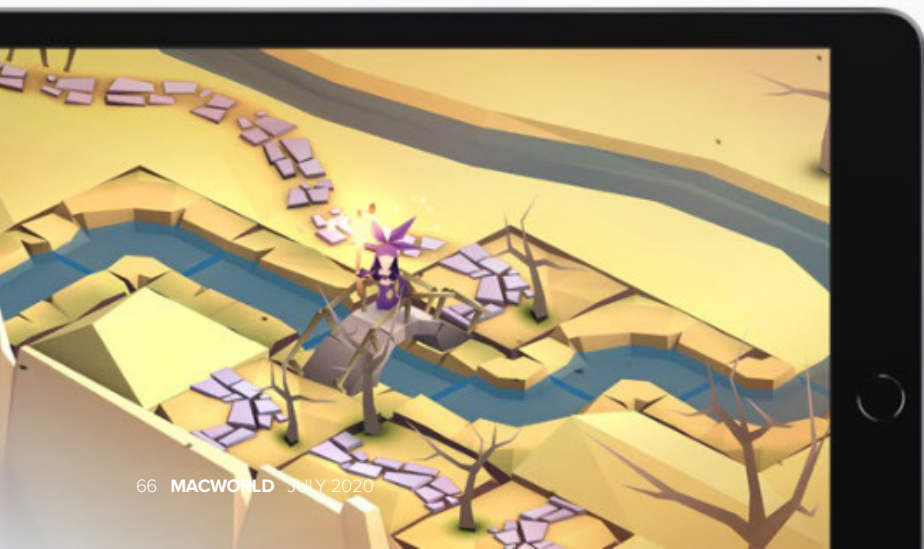
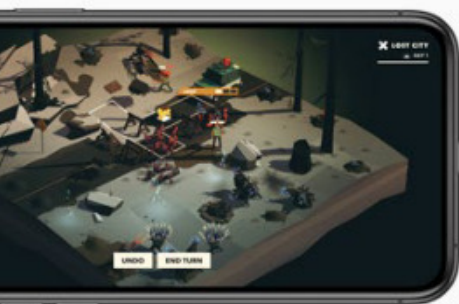
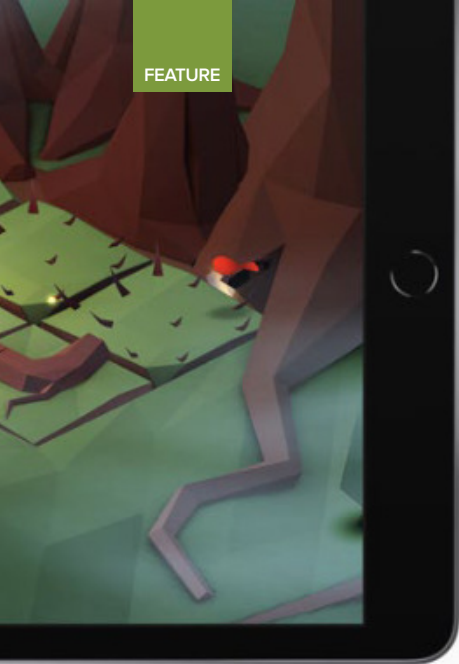


**Allison was bawling, she turned to me and said, ‘Mom, I got a D.’ It was the first time she called me ‘Mom.’**

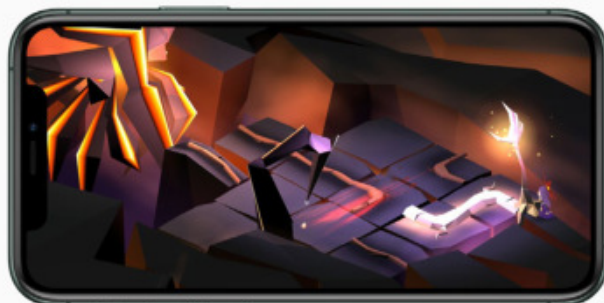
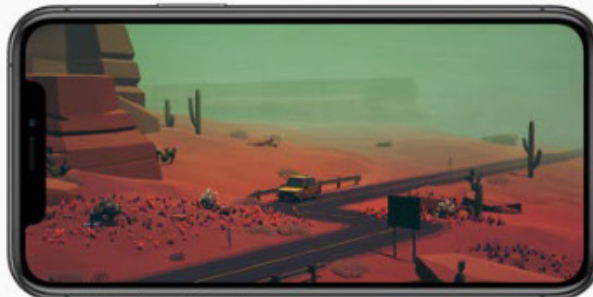
Lisa, adopted 16-year-old Allison



FEATURE



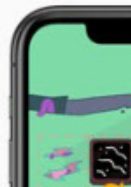
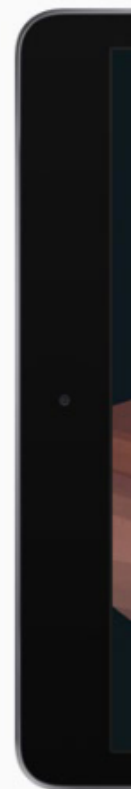
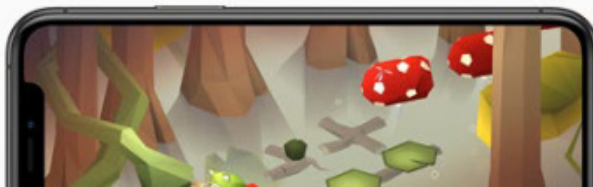
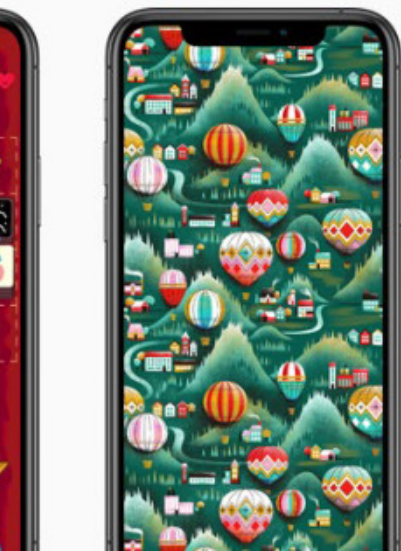




IT'S TIME TO GET YOUR GAME ON  
WITH APPLE'S GAMING SERVICE

# MACWORLD'S GUIDE TO APPLE ARCADE

BY MACWORLD STAFF IMAGE COURTESY OF APPLE



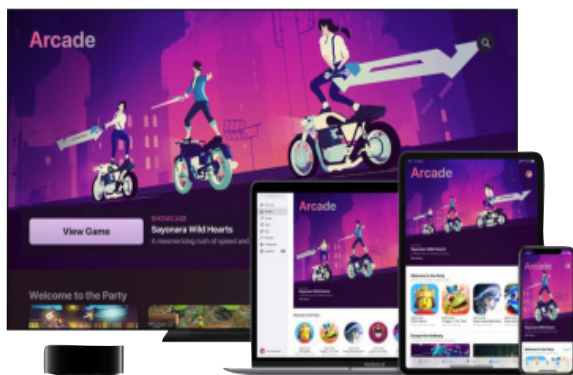


Apple Arcade is a gaming subscription service for iOS, iPadOS, macOS, and tvOS that features over 100 games.

Apple handpicks the games that you get with the service and works with highly regarded game developers such as Hironobu Sakaguchi and Ken Wong. Apple Arcade games have no in-app purchases, are downloadable for offline play, and can be played across the iPhone, iPad, Mac, and Apple TV.

If you like playing games on a regular basis, you should definitely look into Apple Arcade.

In this guide, we answer the most common questions people have about the service. And once you decide to sign up, we have a few game reviews you can read to get started.



# WHAT DOES APPLE ARCADE RUN ON?

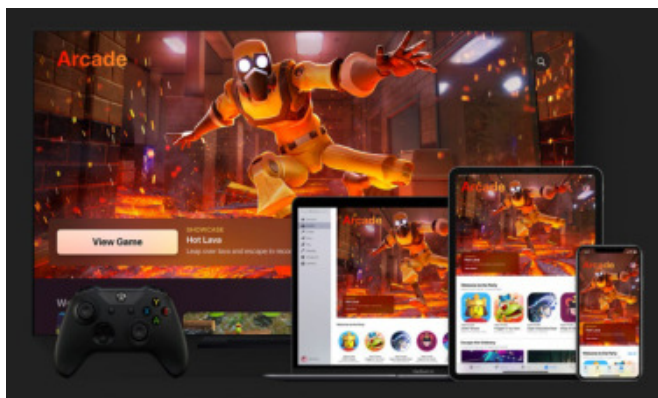
BY MACWORLD STAFF

Apple Arcade offers games that you can play on your iPhone, iPad, Mac, or Apple TV. Not all of the games are available on all platforms. Some games are iPhone-only, while other are available on multiple platforms. On games that are on multiple platforms, Apple says that you can pick up where you left off when you switch to another Apple device.

Apple says that Apple Arcade games *“will not be available on any other mobile platform or in any other subscription service”* (emphasis ours). So while you won’t see an Apple Arcade game on Android, you might see it on, say, the PlayStation 4 or the Nintendo Switch. *Shantae 5* is one example of a game that’s available on Apple Arcade in addition to non-mobile platforms like PS4, Xbox One, Nintendo Switch, and PC.

## How do I sign up for Apple Arcade?

In iOS, iPad OS, and macOS, you access it through the App Store app. Look for the Arcade button at the bottom of the App



**Apple Arcade is available on a range of platforms.**

Store app (or in the left column on macOS). A sign-up screen with a Try It Free button will appear. Tap the button to sign up.

You’ll need to enter your Apple ID password. And you’ll have to confirm your subscription purchase a few times.

Once you’re done with the sign-up, the Arcade section of the App Store shows what games are available to you. To access a game, tap on it in the App Store, then tap the Get button. When the game is done installing on your device, the Get button turns into a Play button, and you can tap it to launch the game. The game app icon will also appear on your device’s home page.

On the Apple TV, you’ll see a separate



Apple is focusing on “handpicked” games for Apple Arcade, such as *Projection: First Light*.

tab for Apple Arcade on your home screen. It's pink and has a joystick icon. Press it, and you'll go through much the same process.

### **How much does Apple Arcade cost?**

Apple Arcade costs \$4.99 per month, and you'll also get a one-month free trial. You can also sign up for the annual plan, which is \$49.99. If you're currently on the \$4.99 month-to-month plan and want to switch to the annual plan, you can do so on your iPhone or iPad. Open the App Store app, then tap your account icon in the upper right. Tap Subscriptions, then tap the entry for Apple Arcade. Here, you can switch to the annual plan.

### **Do games have ads, in-app purchases, or microtransactions?**

No ads or ad tracking. As for microtransactions and in-app purchases, Apple says that, “every game includes access to the full experience, including all game features, content, and future updates, no additional purchases will be required.”

### **Will I still be able to buy games on the App Store without an Apple Arcade subscription?**

Yes. The traditional game model is still there, as it works fine for freemium games like *Idle Heroes* or *Toon Blast*. Keep in mind that inclusion in Apple Arcade comes

with mobile exclusivity, so games that are also available on Android will still be found on the regular App Store. Apple is focusing on “handpicked” games for Apple Arcade, so there’s little doubt that the library will be much smaller than the wider App Store.

### **Can I use controllers with Apple Arcade games?**

Yes. In addition to traditional MFi (Made for iOS) controllers, you can pair some specific Bluetooth controllers for both the PlayStation 4 and Xbox One with either your iPhone, iPad, or Apple TV. Since many Apple Arcade games are playable on Mac and Apple TV (where controller support is more common), it’s possible that the majority of games will support them.

### **Does Apple plan to release more games for Apple Arcade?**

Apple says, “new games will be added to the service on a regular basis.” Apple has been adding games mostly on Fridays, although the number of games varies; usually it’s only one game, but at times it’s been as many as six.

### **How do I cancel Apple Arcade?**

If you cancel Apple Arcade before your one-month free trial is up, you won’t be

able to keep playing the games unless you resubscribe. If you’re okay with that, you can use the same process you use to cancel any other subscription service on iOS.

Here’s the easiest way to do it on the iPhone and iPad:

1. Open the App Store app and press on your profile photo in the upper right-hand corner.
2. In the screen that pops up, press Subscriptions near the top of the page.



**You can pair some Bluetooth gamepads, such as Sony’s PlayStation DualShock 4 Controller, with either your iPhone, iPad, or Apple TV.**





***Neversong* is one of Apple Arcade's latest releases.**

You'll then see a list of active subscriptions, and Apple Arcade should be listed there. Press it.

**3.** You'll either see Cancel Free Trial or Cancel Subscription toward the middle of the page that appears. Press whatever option is available.

**4.** You'll then see a prompt that says Confirm Cancellation, and when this pops up, press Confirm.

Here's how to cancel Apple Arcade on the Mac:

**1.** Open the App Store app and then press the icon with your profile photo in the lower left-hand corner.

**2.** The Account window will appear, and you should then press View

Information in the upper right. Enter your password when/if prompted.

**3.** When your Account Information appears, scroll down to the Manage section and press Manage to the right of Subscriptions.

**4.** When the list of your active subscriptions appears, press Edit to the right of Apple Arcade.

**5.** Toward the middle of the page that appears, you'll see a button that says either Cancel Free Trial or Cancel Subscription. Press the option that shows up.

You'll then see a prompt that says Confirm Cancellation, and when this pops up, press Confirm.

# APPLE ARCADE: GAME REVIEWS

BY LEIF JOHNSON

Apple has over 100 games that are accessible through Apple Arcade. You can download and play as many of them as you'd like, and you'll pay just \$4.99 per month. But with so many games available, where should you start?

Here we have review summaries of a few games available in Apple Arcade. You can start with the games listed here, and then branch out on your own. The only limitation you'll have to deal with is the amount of storage available on your device. You may need to uninstall other games to make way for new ones.

## Butter Royale

This game is a battle royale shooter in the vein of *Fortnite*, but it's simplified down to twin-stick shooting that works fine with either a touchscreen or a gamepad. Familiar *Fortnite* concepts are reimagined: Good gear drops in refrigerators instead of



***Butter Royale* is a child-friendly alternative to *Fortnite*.**

crates, and the weapons consist of innocuous toys like icing-dispenser sniper rifles or popcorn shooters. The really big difference, though, is the only currency you have to spend in *Butter Royale* consists of the cookies and tickets you get from ordinary play. That makes *Butter Royale* a decent alternative for parents who don't want their kids draining their bank accounts to, say, buy a Ninja skin.

You can read our full review at [go. macworld.com/btro](https://www.macworld.com/btro).

## Charrua Soccer

This is soccer without the slow bits while



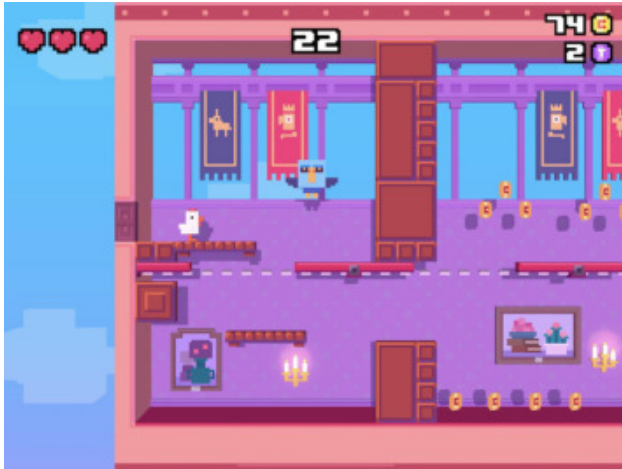
You can play *Charrua Soccer* solo or with a friend.

still allowing for the nuances of specific playstyles and tournaments, whether it's the Italian Catenaccio style or the 1930 World Cup. It's wonderfully easy to play and pick up with either the touchscreen controls or a gamepad. You can play solo or you can hop into two-player local matches with other real people. There's even a party mode that lets multiple people partake in a tournament of sorts, and you even have the options of playing games with either a "friendly" mode or one with penalties.

Read our full review at [go.macworld.com/chsc](https://go.macworld.com/chsc).

### Crossy Road Castle

This is a followup game to 2014's wildly popular *Crossy Road*, and it wears much the same pixelated aesthetic. This time, though, developer Hipster Whale has delivered a platformer that unfolds in a procedurally generated tower with floors that change every time you bounce through it. You spend each level jumping from ledge to ledge with a member of a cast of unlockable characters that includes



**You'll need to jump from ledge to ledge, solving puzzles along the way, in *Crossy Road Castle*.**

everything from a chicken to a “Big Fat Pig,” bouncing on the heads of blocky birds and solving puzzles along the way.

It's designed for local co-op for up to four players who can play either on the same device with multiple controllers or through Wi-Fi.

You can read our full review at [go.macworld.com/crcs](http://go.macworld.com/crcs).

### **Doomsday Vault**

*Doomsday Vault* draws inspiration

from Norway's real-life Svalbard Global Seed Vault, which houses “backup” seeds for agriculture in case life as we know it on this planet ends up going down the can. This game is a puzzler, so you spend time scrounging through the sad ruins of a flooded city, a “complex,” and a spaceport for the few remaining plants. You have to find one or more seeds and store them back in your vault. The game manages to combine both

entertainment and education in a manner few developers ever achieve. Maybe it'll encourage us to cherish and preserve



**You'll spend your time searching for seeds in *Doomsday Vault*.**

what we have before we end up in the situation that Doomsday Vault depicts.

You can read our full review at [go. macworld.com/doom](https://www.macworld.com/doom).

### Kings of the Castle

In this game, a dragon named Zantorian has locked away the poor Prince Rupert in a castle and she won't let him go unless the princess (you) manages to pony up around 250 gems. You'll run into some spiky mushrooms, some plants that spew ink, and a few grumpy bumblebees. Flame traps occasionally pose a problem, but those are never so challenging as the big gems floating out on the lily pads. Miss them and fall in the water and you'll lose

all the powerups you've amassed while barreling through bubbles with question marks in your speedy hunt for shiny rocks. One bubble might give you a shield, while another might pull all the neighboring gems toward you.

You can read our full review at [go. macworld.com/kncs](https://www.macworld.com/kncs).

### No Way Home

Creativity is great, but sometimes you just want to blast some aliens—and that's pretty much what you do here. Your little craft can fire in a circular direction, either to hit big space rocks or to riddle the hulls of pirate ships that pursue you. You can collect materials to craft more than 50 types of

guns to use on roughly 60 different enemies, and you can use warp gates to jump among the various procedurally generated asteroid-strewn passages. Sometimes you'll have to fight off waves of enemies in order to grab



**You'll need to rescue poor Prince Rupert from the dragon Zantorian in *Kings of the Castle*.**





**You'll spend most of your time blasting aliens in *No Way Home*.**

artifacts from forgotten alien civilizations, all while being careful not to overheat your gun or deplete your ship's shields.

You can read our full review at [go. macworld.com/nway](https://www.macworld.com/nway).

### **Secret Oops!**

In this multiplayer augmented reality game, you're "the guys in the van," so to speak—the Simon Pegg character in *Mission: Impossible* or Penny in *Inspector Gadget*—and you're guiding Charles, a not-so-bright spy,

through a 3D digital model. Charles tiptoes through every facility he infiltrates, fully confident that you'll use your "Spymatic 3000" to open the sealed doors and turn off the laser walls and security lights that threaten to thwart him from nabbing the goods. This is the first game that seriously entertains Apple's AR

vision, and also the first AR game that feels like it'd be fun to recommend at a party.

You can read our full review at [go. macworld.com/oops](https://www.macworld.com/oops). ■



***Secret Oops!* is the first game to seriously entertain Apple's AR vision.**



>> How a silver lining forms

>> It starts at sea.  
>> Tropical waters heat up.  
>> Warm air soars skyward.  
>> Cold air rushes to the void.  
>> Cold air warms up.  
>> Cycle repeats.  
>> Faster and faster—a 50,000 foot engine of air.  
>> At seventy four miles per hour it earns a name.  
>> Harvey, Irma, Katrina.  
>> Then landfall.  
>> Roads rendered useless.  
>> Buildings destroyed.  
>> Families stranded.  
>> But for a brief moment,  
>> A silver lining appears.  
>> People see neighbors instead of strangers.  
>> And labels that divide are forgotten.

>> But when rains ease,  
>> when clouds part,  
>> silver linings need not fade.

>> Let's embrace our shared humanity.  
>> Let's connect with one another.  
>> Let's find our love for each other.  
>> Every single day.

>> Come together at [lovehasnolabels.com](http://lovehasnolabels.com)





13-INCH MACBOOK PRO (MID 2020) REVIEW:

# \$1,799 MODEL DELIVERS MODEST CPU AND BIG GRAPHICS BOOST



APPLE'S LATEST  
PRO LAPTOP  
HAS ENOUGH  
TO SATISFY  
PROFESSIONAL  
USERS WHO  
NEED EVERY  
OUNCE OF SPEED

BY ROMAN LOYOLA



We hoped that when the 16-inch MacBook Pro was released, an upgrade to the 13-inch MacBook Pro ([go.macworld.com/mc16](https://go.macworld.com/mc16)) would shortly follow. But it didn't. Then Apple upgraded the MacBook Air ([go.macworld.com/20ai](https://go.macworld.com/20ai)), and then we thought that surely a new 13-inch MacBook Pro was imminent.

Over a month after the MacBook Air update, the much-anticipated new 13-inch MacBook Pro finally dropped. The new models feature new CPUs, faster RAM, and new GPUs to boost its speed, and the new Magic Keyboard will bring back customers who decided to stay away from the version of the laptop with a butterfly keyboard.

If you currently have a high-end 13-inch MacBook Pro that you bought within the past four years, you might consider sticking with that laptop a little while longer. While you'll see nice speed gains with the new MacBook Pro, it may be hard to justify the cost right now. Unless you really, really want to get rid of the laptop

because of the butterfly keyboard and replace a painful typing experience with a more pleasant one.

This review takes a look at the \$1,799 standard configuration of the 13-inch MacBook Pro, which has a 2.0GHz quad-core Core i5 processor, 16GB of memory, Intel Iris Pro Graphics, and a 512GB SSD. The \$1,999 model is the same except with a 1TB SSD. Apple's \$1,299 and \$1,499 versions have the same eighth-generation 1.4GHz quad-core Core i5 processors as they did when they were released last year, but they now have the Magic Keyboard and double the SSD capacity.

## RIP, BUTTERFLY KEYBOARD

With the release of the 16-inch MacBook Pro back in November of 2019, Apple started phasing out its much-maligned butterfly-mechanism keyboard in favor of its new Magic Keyboard, which uses a



**VIDEO: 13" MACBOOK PRO (MID 2020) REVIEW**

Watch now at [go.macworld.com/mpr](https://go.macworld.com/mpr)

scissor-switch mechanism. The MacBook Air followed suit when it was updated in March 2020, leaving the 13-inch MacBook Pro as the only laptop left with the butterfly keyboard.

With this update, the butterfly keyboard farewell tour is now complete. It's now wholly gone from Apple's laptop lineup and it won't be missed (though Apple does insist that the butterfly keyboard had its fans). Our preference for the new Magic Keyboard was documented in our reviews of the 16-inch MacBook Pro and the latest MacBook Air, and the implementation in the 13-inch MacBook Pro just reinforces what we like about it.

The butterfly keyboard was hard on the fingers, loud, and so unreliable that Apple had to start a Keyboard Service Program ([go. \[macworld.com/svpr\]\(https://go.macworld.com/svpr\)](https://go.macworld.com/svpr)) for it. The new Magic Keyboard is much easier on the fingers and the ears—it has a softer, more comfortable feel, and isn't as noisy. Time will tell in regard to its reliability, but we haven't had problems with this laptop, the 16-inch MacBook Pro,

and the new MacBook Air so far. That's a good sign.

Apple's Touch Bar is alive and well on the 13-inch MacBook Pro. For the unfamiliar, the Touch Bar is a touchscreen strip at the top of the keyboard, replacing the Function keys you might be used to seeing. The keys that appear on the Touch Bar depend on the app you're using. For example, if you are in Maps, buttons can appear for getting directions, searching for a location, marking a location as a favorite, and more.

The Touch Bar can be a useful way to use your Mac, but after years of using Touch Bar-equipped laptops (Touch Bar was introduced in 2016), I still can't get myself to use it on a regular basis. The



**Goodbye, butterfly keyboard. Hello, Magic Keyboard, as well as dedicated ESC and Touch ID keys along the sides of the Touch Bar, and half-height arrow keys.**

Touch Bar can be customized for your use, so it doesn't always have to display app-based options, but even with that I can't develop a habit of using it. I hesitate to say it's unnecessary, because I don't think it's poorly implemented. I just can't get myself to remember that it's there to use for more than just F-key functions.

## FASTER CPU AND MEMORY, BOOSTED GRAPHICS

The new \$1,799 and \$1,999 13-inch MacBook Pros feature 10th-generation Intel Core processors, and they replace eighth-generation processors in their predecessors. The \$1,799 and \$1,999 laptops both have a 2.0GHz quad-core Core i5 CPU with Turbo Boost up to 3.8GHz and 6MB L3 cache. The previous processor was a 2.4GHz quad-core Core i5, but the new processor is based on

Intel's Ice Lake microarchitecture ([go.macworld.com/ilmc](https://go.macworld.com/ilmc)) that provides better performance, so the older CPU's higher clock speed doesn't mean much. For an additional \$200, you can upgrade to a 2.3GHz quad-core Core i7 processor, which has Turbo Boost up to 4.1GHz.

Apple also provides faster memory in the new 13-inch MacBook Pro. The 2133MHz LPDDR3 RAM in the previous laptop has been upgraded to 3733MHz LPDDR4X, which should help boost performance. Standard configurations now start at 16GB of memory; it used to be 8GB. And Apple now offers a 32GB upgrade, which is an additional \$400.

Pro users should especially take note of the Intel Iris Plus Graphics in the new laptop. You can now connect one 6K display (which you couldn't do before), such as Apple's Pro Display XDR ([go.](https://go.macworld.com/dxdr)

[macworld.com/dxdr](https://go.macworld.com/dxdr)), or one 5K display. Or you can connect up to two 4K displays. It's still an integrated GPU, and it shares its graphics memory with the Mac's main memory. According to Apple, the Iris Plus has 33 percent more

execution units than its predecessor (64 instead of 48), so



Pro users will appreciate the Intel Iris Plus Graphics in the new laptop.

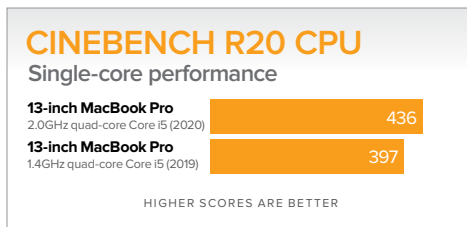
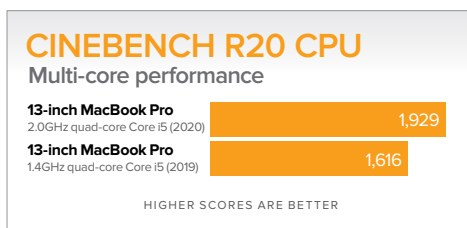
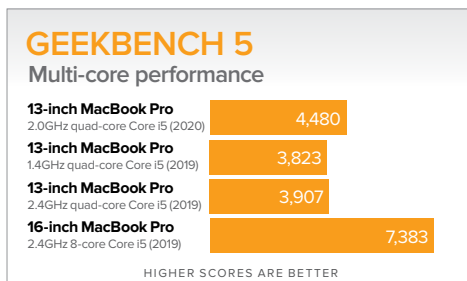
you should see a noticeable graphics performance improvement.

## PERFORMANCE

We recently posted our Geekbench 5 results ([go.macworld.com/g5rs](https://go.macworld.com/g5rs)) and found a 24 percent increase in single-core performance over the previous \$1,799 2.4GHz quad-core Core i5 MacBook Pro and the \$1,299 1.4GHz quad-core Core i5 model. In multi-core testing, the boost was 14 percent. The new MacBook Pro's results in the Metal graphics test were the most impressive, with a 30 percent increase by the Iris Plus over the Iris Plus Graphics 645, and more than double the performance of the Intel UHD 630, which can be found in Apple's 16-inch MacBook Pro. Check out our article to get more details on those results ([go.macworld.com/mrtdt](https://go.macworld.com/mrtdt)).

### Geekbench 5 multi-core results

We ran a few other benchmarks to gauge the new laptop's performance. In this section of testing, we looked at the new \$1,799 MacBook Pro and the most affordable 13-inch MacBook Pro priced at \$1,299 with a 1.4GHz quad-core eighth-generation Core i5. In addition to two more Thunderbolt 3/USB-C ports, the extra \$500 you'd spend gets you an up-to-date processor, more and faster RAM, double the SSD storage, and more robust

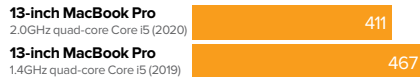


graphics. That should add up to better performance. We wanted a sense of how much more performance you can get.

### Cinebench R20 CPU

The Cinebench R20 benchmark is a CPU multi-thread benchmark that is more intensive than Geekbench 5's Multi-Core CPU test. The 2.0GHz quad-core Core i5 is a bit over 16 percent faster than the 1.4GHz quad-core Core i5. Cinebench is a

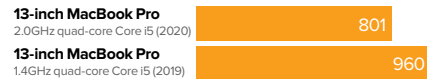
## BLENDER BMW



HIGHER SCORES ARE BETTER

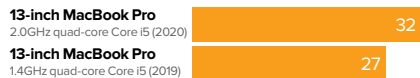
## HANDBRAKE

4K to 1080p video encode



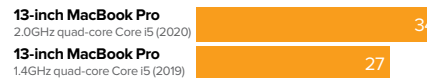
HIGHER SCORES ARE BETTER

## UNIGINE HEAVEN



HIGHER SCORES ARE BETTER

## UNIGINE VALLEY



HIGHER SCORES ARE BETTER

rendering test, so this result is of particular interest for graphics professionals.

### Blender BMW

This is another rendering test. Here we see a 12 percent improvement by the 2.0GHz quad-core Core i5.

### Unigine Heaven and Valley

The Unigine Heaven and Valley benchmarks are real-time graphics tests that focus on GPU performance. The newer MacBook Pro was 16 percent faster in Heaven, and 20 percent faster in Valley.

### HandBrake 4K to 1080p video encode

We took the 4K video Tears of Steel ([go.macworld.com/trst](http://go.macworld.com/trst)) and converted it using the Fast 1080p30 preset in HandBrake.

The 2.0GHz quad-core Core i5 is about 17 percent faster than the 1.4GHz quad-core Core i5.

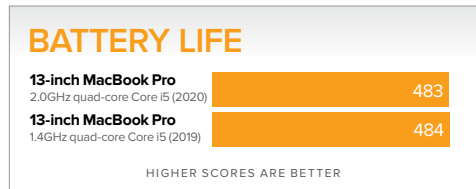
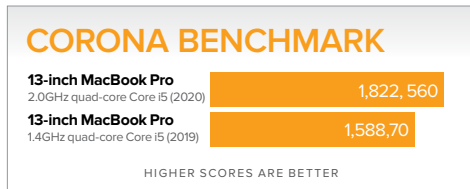
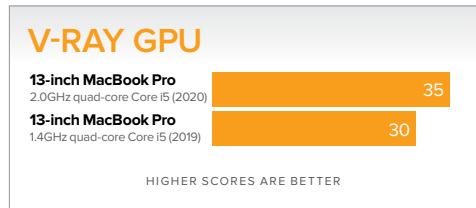
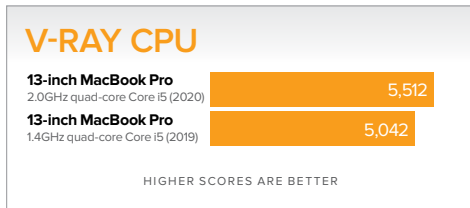
We ran several other benchmark tests—V-Ray CPU, V-Ray GPU, and Corona Benchmark—also shown here.

### Battery life

Rated at 58-watt hours, the battery in the \$1,799 and \$1,999 MacBook Pros are a little bit smaller than the one in the lower-cost models, which are rated at 58.2 watt-hours. Apple's says the battery will last for "up to 10 hours wireless web, up to 10 hours Apple TV app movie playback."

To test the battery life, we looped a video until the battery ran out. (We should note that in this situation, instead of setting the display brightness at 150 nits as we usually do, we set the brightness slider in





system preferences to about 90 percent.) We tested both the new laptop and the \$1,299 model, and both laptops lasted just over 8 hours. The new laptop had no problem making through a regular workday, which involved using different business apps, internet access, and the occasional viewing of an internet video.

## 13.3-INCH DISPLAY, NOT 14 INCHES

Apple's MacBook Pro lineup saw a significant shift when the company released the 16-inch MacBook Pro, whose predecessor was a 15-inch model. The bigger display was accomplished mostly by reducing the black bezel surrounding it. So naturally, when rumors about the successor to the 2019 13-inch MacBook Pro started to appear, it included speculation that the same bezel treatment

would be used, creating a new 14-inch MacBook Pro.

That didn't happen. The display is the same as before, with the same thick black bezels. It's still a 500-nit Retina display, with a 2560x1600 resolution and support for the P3 wide color gamut ([go.macworld.com/p3ga](http://go.macworld.com/p3ga)) and True Tone. And it still looks excellent, with even backlighting, sharp text, and nice color.

But it's disappointing that the 14-inch display didn't happen. My personal preference is for larger screens, but besides that, there's an aesthetic with the bezel that didn't really catch my eye until the 16-inch MacBook Pro was released, and it's emphasized even more if you also use an iPhone that doesn't have a Home button. The bigger bezel looks dated, on the brink of looking old, even. The design of the MacBook Pro lineup has been in





**The new MacBook Pro (left) has the same 500-nit, 2560-by-1600 backlit Retina display as its predecessor (right). Including the big bezel.**

place for years, so looking dated is an eventuality, but the reduced bezel on the 16-inch model was enough to give the design a bit of a refreshed, modern look.

Obviously, Apple made a design decision to not change the bezel. We can only speculate as to why. There have been rumors that Apple will be releasing a ARM-based Mac laptop, maybe even as soon as 2021 ([go.macworld.com/arm1](https://go.macworld.com/arm1)), and perhaps there's some line of thinking that ties significant design changes to that. Or maybe there's a more practical reason: maybe there are performance and heat issues with using a larger display in this

small of a form factor. At this point, it's all purely conjecture.

## STORAGE AND OTHER FEATURES

Apple also took this opportunity to adjust the standard SSD configurations of the 13-inch MacBook Pro. Gone is the 128GB SSD configuration—thank goodness.

Apple's lineup now starts at 256GB and tops off at 1TB, with two 512GB models in-between. You can adjust the amount of storage, all the way up to 2TB, if you want to pay more.

The \$1,299 and \$1,499 models each

have two Thunderbolt 3/USB-3 ports, while the \$1,799 and \$1,999 models have four. If you haven't already, you might want to consider buying a USB-C hub, especially if you have external devices that use a USB-A connector. You can check our guide to see what adapters you might need ([go.macworld.com/th3g](https://go.macworld.com/th3g)).

Apple introduced a new 6-speaker system in the 16-inch MacBook Pro that sounds pretty powerful. The new 13-inch MacBook Pro didn't get the same treatment, however. It still has the same wide stereo speaker system as before. And it sounds fine, but it's clearly not in the same league as the 16-inch model.

In this time of sheltering in place and working remotely, new attention has been brought upon the FaceTime camera in Apple's laptops. It's still a 720p camera, and its image quality is very disappointing, especially when you compare it to the front-facing cameras on modern iPhones. It's gone too long without being upgraded.

## BOTTOM LINE

Apple users have been waiting for an upgrade to the 13-inch MacBook Pro. The question here is, is there enough in the new laptop to be worth the

investment? There's certainly enough here for professionals to consider, especially if the MacBook Pro you're using is more than two years old. While the CPU boost is noticeable, you'll especially like the increase in graphics performance.

For the general consumer, if you aren't spending most of your time in pro apps that can take advantage of the faster graphics, and you have a 13-inch MacBook Pro that was bought within the past four years, you're probably fine for now. However, there is that new Magic Keyboard, and if you're absolutely tired of the butterfly keyboard, make the switch. Your hands will thank you.

After testing the 16-inch MacBook Pro last November and now this model, one thing is clear to me: I'm ready for some drastic changes to the MacBook lineup. The rumors of Apple making an ARM-based laptop persist, and it could happen next year, starting with a consumer-level machine. That would mean the MacBook Pro would remain unchanged (at that moment), but a new ARM-based laptop would show where Apple is headed with the technology and design. It could bring back some much-needed excitement to Apple's laptop lineup. ■



### 13-inch MacBook Pro 512GB / 1TB storage

#### PROS

- Scissor keyboard more comfortable than previous butterfly keyboard.
- Impressive graphics upgrade.
- Standard configuration now has 16GB of RAM.

#### CONS

- Reliance on USB-C/Thunderbolt 3 ports will require adapters for many external devices.
- No bezel reduction, like that of the 16-inch MacBook Pro.

#### PRICE

\$1,799 / \$1,999

#### COMPANY

Apple



## 1 in 7 children faces hunger.

There's more than enough food in America for every child who struggles with hunger. Help get kids the food they need by supporting Feeding America, the nationwide network of food banks. Together, we can solve hunger™.

Join us at [FeedingAmerica.org](https://www.FeedingAmerica.org)



i P A D P R O ( 2 0 2 0 ) R E V I E W :

# A MODEST IMPROVEMENT ON A GREAT TABLET



APPLE AUGMENTED A FEW KEY SPECS FOR THIS MODEL, BUT ITS AUGMENTED REALITY-FOCUSED LIDAR SCANNER SEEMS LIKE A POOR FIT FOR THE iPad.

BY LEIF JOHNSON

**Macworld**  
**EDITORS'**  
**CHOICE**

In 2018 the new iPad Pro was bold and sleek, and just what Apple needed to shake up a product line that was starting to show its age. Unlike its predecessors, it featured Face ID, a new and improved Apple Pencil, a USB-C port, thin bezels, and a blazing fast processor.

The 2020 model looks and performs much the same, but now much of the initial excitement has settled. Instead of going for a new design, Apple used this updated model to test-drive some

technology that may become more important to other Apple products down the line, although it's not particularly exciting or even well-suited for this particular device. This is unquestionably the best iPad ever made, but the real question is whether all of its flashy features make it the best iPad for you.

## AUGMENTED SPECS

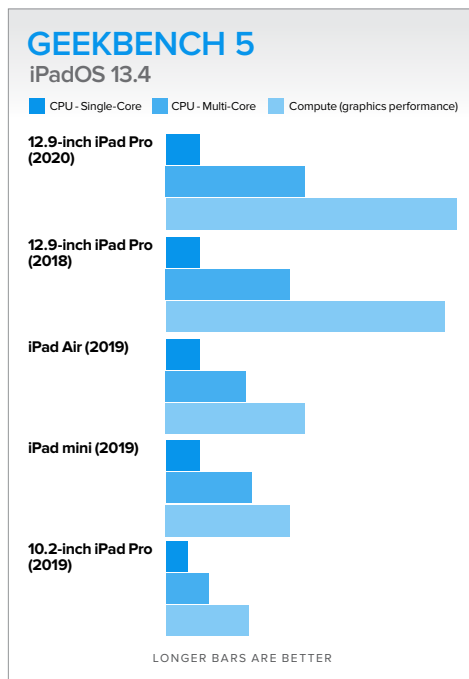
This review is based on the 12.9-inch model, which is identical to the 11-inch model in virtually every respect aside

from screen size and weight. (The 12.9-inch model with cellular weighs 1.42 pounds; its 11-inch counterpart weighs just over a pound.)

From the front, the 2020 iPad Pro could pass for a clone of the 2018 model. The 11.05-by-8.46-inch dimensions for the 12.9-inch model are the same, it still has a USB-C/Thunderbolt 3 port, and it still charges the second-generation Apple Pencil ([go.macworld.com/apg2](https://go.macworld.com/apg2)) through a magnetic strip on the side. Were it not for the new square camera bump accommodating the extra lenses in this model, even the backside would look identical. Unfortunately, because of that bump, you won't be able to reuse a 2018 Smart Keyboard Folio with this case, unless you don't mind the back cover awkwardly jutting out because of the poor fit.

Things get a little more interesting on the inside. Some features remain the same, such as Apple's TrueTone display and the ProMotion 120Hz display refresh rate that makes actions such as scrolling noticeably smoother than they are on non-Pro iPads. The display still has an upper brightness limit of 600 nits, the resolution for the 12.9-inch model remains at 2732x2048 pixels at 264ppi, and the active battery life still clocks in at around 10 hours.

Elsewhere, you'll find the spec bumps



you'd expect to see after more than a year without a new release. All configurations now have 6GB of RAM, for example—in 2018, only the 1TB model had that much. Storage got a welcome boost for such a pricey product, too, so the entry-level units start at a roomier 128GB rather than 64GB, with the next three options remaining the same at 256GB, 512GB, and 1TB. There's also a "new" chip called the A12Z which Apple likes to say makes the iPad Pro "faster and more powerful than most Windows PC laptops," much as it said in the context of the A12X chip that came before it. As you can see in the





**The new trackpad allows you to perform Mac-like gestures without having to reach up and poke your screen.**

benchmarks, it's barely a boost at all in terms of CPU usage, but the A12Z chip pulls a bit ahead in graphical performance because its GPU has eight cores instead of seven. They're both powerful tablets. If you already have a 2018 iPad Pro, in other words, you're going to be fine.

These are the kinds of upgrades you'd expect to see in a device that's specifically aimed at people who'd like to use an iPad over a traditional laptop, and Apple hammered home that association with the release of the optional new Magic Keyboard case. Finally, we

have an Apple-made keyboard case with a properly adjustable display, backlit keys, and—wonder of wonders—a built-in trackpad. It makes the iPad work so much like a laptop, in fact, that it actually makes the iPad more difficult to use with an Apple Pencil. It's great, if pricey—the \$349 12.9-inch model costs more than a 10.2-inch

iPad. Read the review for the Magic Keyboard (see page 55) if you'd like to know more.

Considering how much the Magic Keyboard is aimed at users who don't



**The 2020 iPad Pro on top of the 2018 model.**

often take their iPads out of their cases, it's a little shocking that nothing sets this iPad Pro apart from its predecessor quite like its camera. Its new square camera bump recalls the one we see on the iPhone 11 Pro, but it boasts a few tricks of its own.

The iPad Pro now has a 12-megapixel, *f*/1.8 camera and a 7-megapixel, *f*/2.2 front camera, and in addition to the 4K video

you can film at 60 fps, you can now shoot in 1080p at 240 fps, up from the 720 in 2018. You also get a 10 megapixel, *f*/2.4 ultra-wide lens that captures photos with a 125-degree field of view. (Alas, there's no night mode.) You can get an idea of what to expect in the photo above. It's a nice feature to have, especially if you are fond of taking landscape photos, but it's a little bizarre to find it on a tablet.

## AUGMENTING REALITY, BUT NOT APPEAL

But wait! It gets stranger still. Apple equipped this model with a LiDAR time-of-flight sensor, which is aimed at boosting the effectiveness and accuracy (and, Apple no doubt hopes, the popularity) of augmented reality. Before, augmented



**An unedited photo looking toward San Francisco Bay, taken with the new iPad Pro's ultra-wide lens.**

reality in the iPad and iPhone relied mainly on machine learning, which interpreted data delivered by the camera and made as much sense out of it as it could. The process was slow, battery-devouring, and prone to inaccuracy, especially when you made the camera deal with similarly colored surfaces or low lighting.

With LiDAR, the device is specifically “mapping out” the space by shooting out low-powered lasers and calculating the time it takes for them to return to the sensor. Compared to the old method, hopping into AR feels almost instantaneous.

It doesn't work too well in the dark (like Apple's TrueDepth sensors on the front camera do), but it represents a phenomenal improvement in quality and

accuracy with even a little ambient light. This was most apparent in a series of tests I ran with Apple's own AR-based Measure app. When I tried measuring a tape measure to test its accuracy, the 2018 iPad Pro struggled to even start the measurement at the right point, and when I moved away, the measuring line I made would easily lose its anchor on the tape measure. It also took a few seconds to determine what was an actual surface.

The 2020 iPad instantly recognized the surfaces. And not only was the measurement dead-on accurate with the 2020 iPad Pro, but the measurement

*stayed* accurate and roughly anchored even when I walked several feet away from the tape measure. And when I walked back, the AR measurement line stayed attached to the top of the tape measure as though it had been painted on there.

This is impressive, and it does make Apple's efforts in augmented reality worth paying attention to. But I see it as a poor fit for the iPad, particularly for the 1TB 12.9-inch model with Wi-Fi and cellular, which costs \$1,649. The whole time I was experimenting with it, I was afraid I was going to drop the thing. It's also certainly not impressive enough to be a chief



**After moving around 10 feet away from the original measurement, the measurement marker moved “off” the tape measure only a little. When I walked back over, it was “painted” right where I’d drawn it before. That was far less likely to happen with the 2018 model.**

consideration for buying this device because of the tiny library of worthwhile AR apps ([go.macworld.com/10ar](https://go.macworld.com/10ar)), and I can all but guarantee that the novelty will wear off quickly. It's best to think of it as a sneak peek of whatever Apple has in mind for its long-rumored AR glasses or headset (see page 48). I'd love to see this

kind of technology at work in a hands-free device.

Consider AR more of a bonus if you need a new iPad Pro and you didn't pick one up in 2018. You'll be glad you waited. The prices are better now, as the \$799 starting price for the 11-inch model with

Wi-Fi gets you 128GB of space, up from 64GB in 2018. I might balk at how a 1TB 12.9-inch iPad with Wi-Fi costs \$1,499, but its counterpart in 2018 would have set you back \$1,549.

There are other features worth considering as well, even if, strictly speaking, they have little to do with this specific model. With iPadOS 13, Apple recently improved the user experience across many other contemporary iPads, whether by including long-wanted features like proper mouse or trackpad support or allowing us to use thumb drives with our tablets. Apple's new Magic Keyboard caters to these new features and will enhance your experience on a daily basis in a way the new LiDAR scanner probably won't.

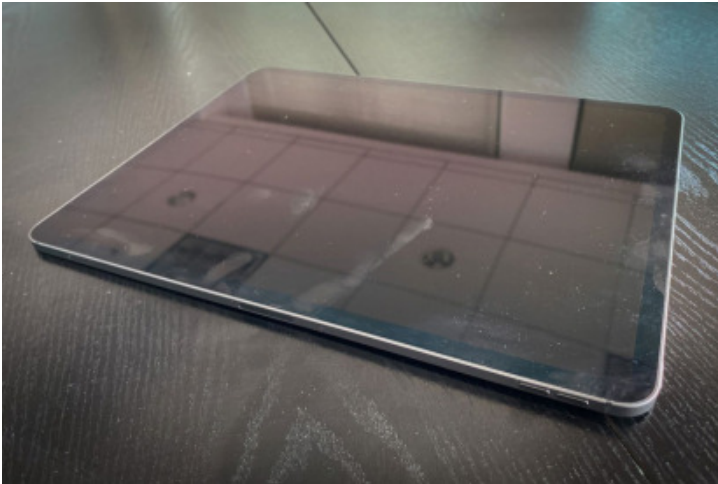
But that leads to an important point.



**The iPad Pro's four-speaker setup still sounds fantastic. Along with the excellent video quality, this makes it a great device for watching movies and TV shows.**

The iPad is now a decent—though not perfect—device for some types of work. In my 2018 review ([go.macworld.com/18rv](https://go.macworld.com/18rv)), a few months before the reveal of iPadOS, I said that the new iPad Pro was “a fantastic tablet, if not a fantastic laptop.” With mouse and trackpad support, with the improved multitasking in iPadOS, with a wider range of supported devices, those lines are more blurred now. If your work chiefly involved writing, you could make this tablet work.

But on the other hand, keep in mind that you can get a perfectly capable 256GB 13-inch MacBook Air for just \$999. If you buy the 12.9-inch iPad Pro, you'll pay \$999—but then you'll have to fork out \$349 for the Magic Keyboard, leading you to a \$1,348 price tag. Sure, the screen will



**This is nothing new, but the iPad Pro's laminated display is ridiculously prone to finger smudges. This is how mine looked after touching it one time to pull it out of the Magic Keyboard case for a photo.**

be smoother and brighter than on the MacBook Air, but you'll still be stuck with a device that can't do as much, and for that matter, you'll only have 128GB of storage on your tablet at that price.

## BOTTOM LINE

This is the best iPad Apple has ever made, and peripherals like the new Magic Keyboard make Apple's tablet more appealing as a work machine. The fact remains, though, that unless you're heavily involved in video editing or professional artwork,

most people will be served just fine with the \$499 iPad Air—although it currently doesn't come with that spiffy keyboard. If you do need the power of a Pro, though, it's still worth considering getting the 2018 model. On the low end, at least, you'll almost certainly be able to find one for a lower price, and

Apple's new Magic Keyboard is even compatible with it.

As for this iPad Pro's AR capabilities? Maybe Apple will surprise us with some mind-blowing new software at WWDC, but for now it's just a pricey peek at what Apple is rumored to have in mind for future products.

If you missed out on the 2018 iPad Pro, this year's model should come off as a more appealing purchase—and in that case, the new camera capabilities come off as nice side perks. Just don't make them the main reason to get buy one. ■



### iPad Pro (2020)

#### PROS

- Fast A12Z processor, although it's not a huge improvement on the A12X.
- LiDAR sensor greatly improves augmented reality, but will you use it?
- Satisfying ultra-wide lens.

#### CONS

- Expensive.
- AR not yet robust enough to get a lot out of the LiDAR sensor.

#### PRICE

\$998

#### COMPANY

Apple

**MY SHELTER PETS ARE**

**MY BEST FRIENDS**

*#AdoptPureLove*



**OLIVIA MUNN WITH FRANKIE AND CHANCE: ADOPTED 2016 AND 2014.**

They're a little bit of a lot of things, but they're all pure love.



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[Coronavirus.org](https://www.coronavirus.org)

Artwork by Shepard Fairey | Amplifier.org



# Fantastical 3: Premium calendar app worthy of a paid subscription

Award-winning calendar app Fantastical offers powerful features beyond those already built into macOS.

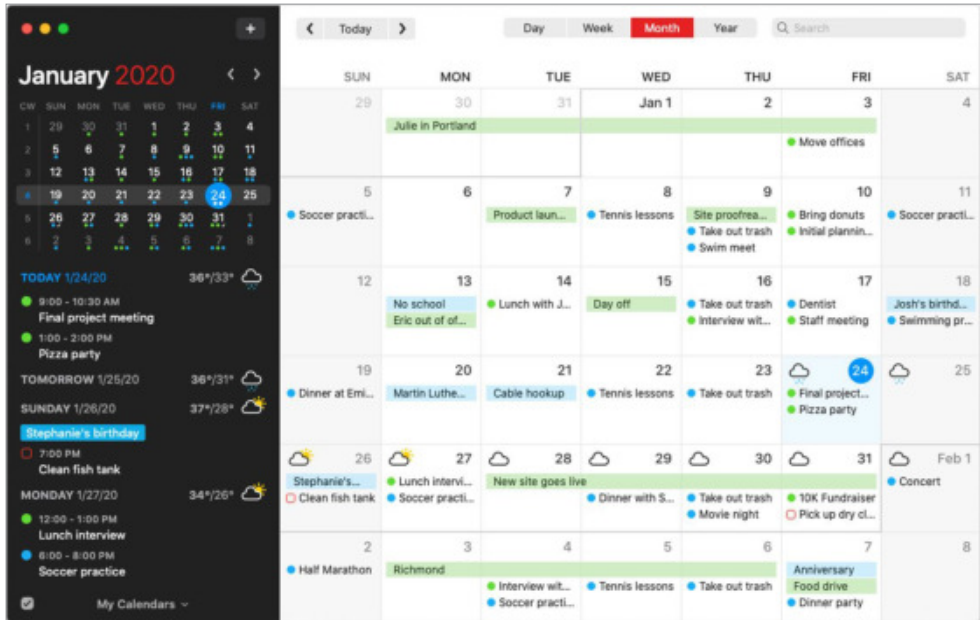
BY J.R. BOOKWALTER



**Macworld**  
**EDITORS'**  
**CHOICE**

When it comes to software, five years between major releases can feel like an eternity. But that's precisely how long it's taken Flexibits to unleash a third version of popular macOS calendar app Fantastical, which is also available for iPhone, iPad, and Apple Watch. (Read the

Fantastical for iOS review [[go.macworld.com/f3io](https://go.macworld.com/f3io)].) Given there was already much to love ([go.macworld.com/2lve](https://go.macworld.com/2lve)) about Fantastical 2, the logical question would be, "Is the third time a charm, or is this an unnecessary cash-grab sequel?" The answer ultimately depends on how you feel about paying a subscription for apps.



Apple’s built-in Calendar app can’t hold a candle to Fantastical 3 for macOS, but you’ll need a premium subscription to see the big picture, like the full-screen Month view.

## ALL TOGETHER NOW

The big news with Fantastical 3 is that you no longer have to purchase separate versions for macOS, iPhone, and iPad. The previous business model was always frustrating and a little confusing, because how many people want to own a favorite app on only one platform?

Now there’s effectively a single app across four platforms, and basic features like adding or deleting events from accounts and receiving notifications are absolutely free. That includes Fantastical’s legendary natural language parser, which

converts phrases like “Brunch with Aunt Marcia at 9:30AM next Tuesday at Scramblers” into new events with a single tap, and is now smarter with repeating events. Syncing data between devices requires signing up for a free Flexibits account, which helps eliminate issues like the occasional duplicate event from different services.

But unity comes at a price—in this case, \$5 per month or \$40 annually for a Premium subscription, required to unlock all features including full access to the mobile app. I think the cost is fair and

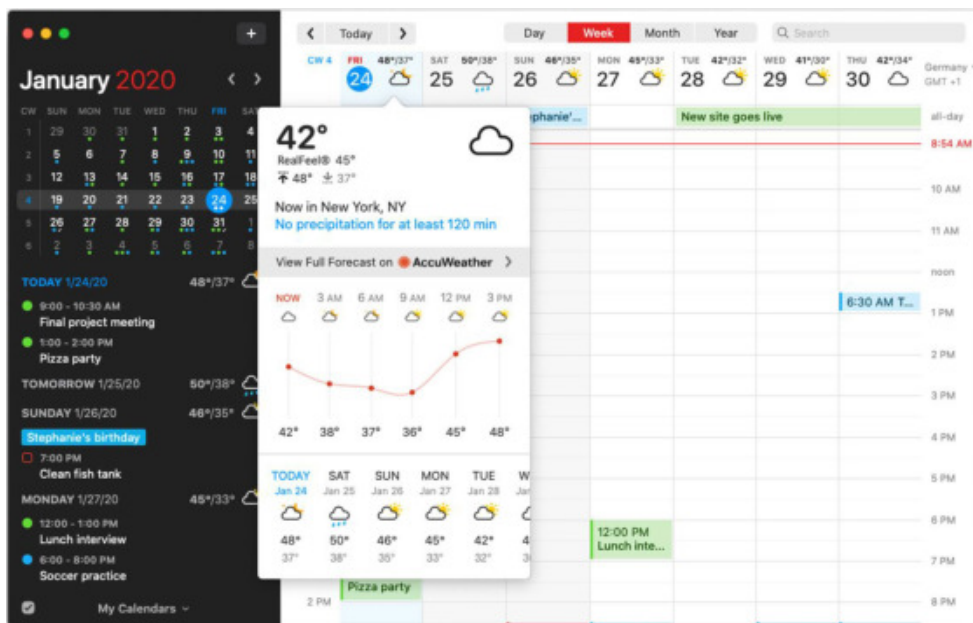
totally worth it, but considering the previous standalone macOS app worked for five years on a one-time payment of \$50, the cost of subscribing is sure to alienate some users.

The good news is that existing Fantastical 2 users won't miss a beat. Simply install Fantastical 3 and the new app detects the previous version, unlocking everything you already own. For Mac users, that means having access to crucial features like full-screen view, but it's also one heck of a bargain, because that initial investment

will keep paying dividends like UI refinements and compatibility updates for years to come.

## NEW DEAL

For those willing to hop aboard the Premium bandwagon, Fantastical includes plenty of new goodies worthy of the investment. A favorite is unlimited synced calendar sets. The ability to create calendars with only events and tasks from specific accounts and quickly switch between them has always been super convenient, but at long last, sets



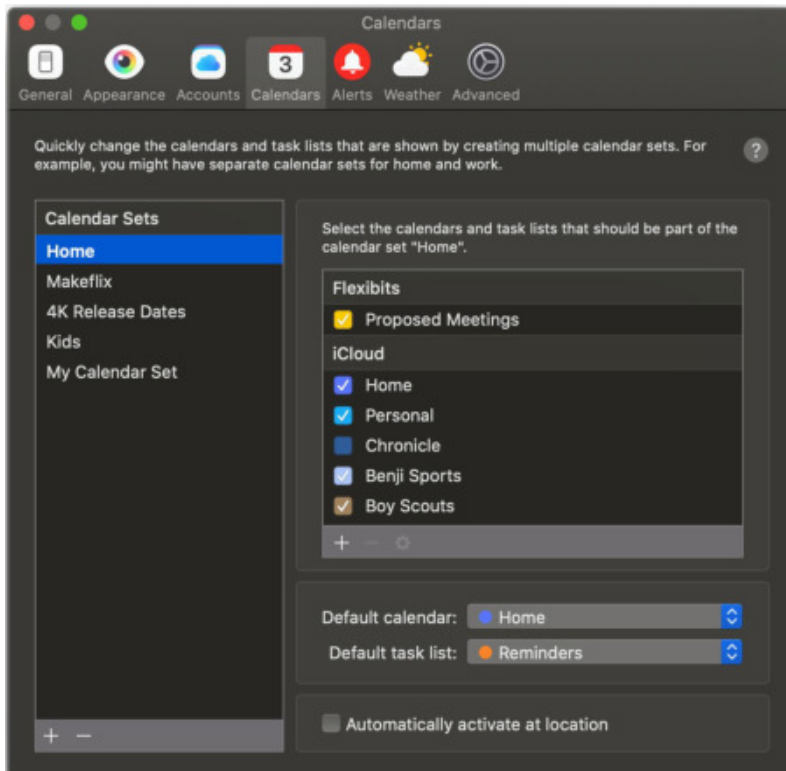
Fantastical 3 displays a 10-day weather forecast (three days for the free version) powered by AccuWeather.

created on the Mac sync to mobile devices as well, and vice-versa. (Free users are limited to a single non-syncing calendar set.)

There's a new way to subscribe to events called Interesting Calendars. Powered by SchedJoules, this feature makes it easy to search for items of interest across five categories: Holidays, Sports, Regular, TV, and Finance. Not being a fan of sports or the stock market, this feature wasn't very handy in my

case, but it's a neat addition and hopefully more diverse content will be added over time.

Another new feature worthy of applause is AccuWeather forecast, which shows the expected high and low temperatures for the next 10 days (three in the free version), as well as an icon displaying any anticipated sun, clouds, rain, or snow. This is a feature competitors like BusyCal ([go.macworld.com/b scl](http://go.macworld.com/b scl)) have had for a few years, but it's great to see



Calendar sets can finally be synced from Fantastical for macOS to the iPhone, Apple Watch, and iPad, or vice-versa.

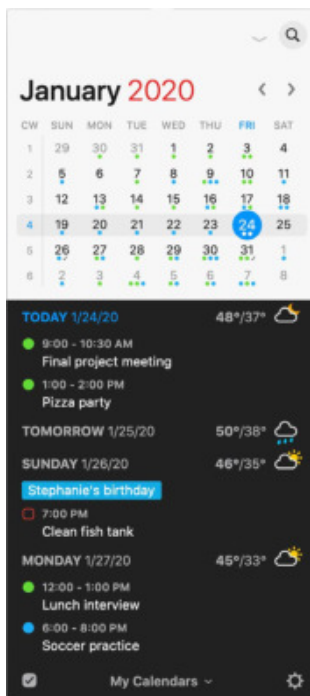
Fantastical finally catch up, even though the latter lacks niceties like moon phases.

## TASK MASTER

From the beginning, Fantastical's menu-bar app was a distinct advantage over rivals, so much so that one rarely needed to open the full user interface. In version 3.0, this mini-window is now entirely standalone. Tick the "run in background" option under Preferences > General and the menu-bar app will sync and show notifications in the background at all times, launching the main application only when using the full window.

Fantastical 3 also offers more comprehensive support for tasks and reminders, including those from iCloud, Todoist, and Google Tasks. Dated tasks appear grouped with events in the main lists, and you can create time-saving templates from existing tasks or events to quickly reuse in the future.

Last but certainly not least, Fantastical makes it easier than ever to collaborate with others. When scheduling a meeting, you can now propose multiple times so recipients can choose a date and time that fits their schedule—even if they don't use the same app. Once everyone responds and is on the same page, an



Fantastical's mini-window now works independently of the core app for background sync and receiving notifications.



### Fantastical 3 (Mac)

#### PROS

- Gorgeous user interface overhaul.
- Fantastical 2 users retain existing features.

#### CONS

- Interesting Calendars aren't all that interesting.
- Requires free Flexibits account.

#### PRICE

Free

#### COMPANY

Flexibit

event will be added without the usual back and forth calls or emails. This alone makes it worth signing up for a free Flexibits account, which makes such forward-thinking features possible.

## BOTTOM LINE

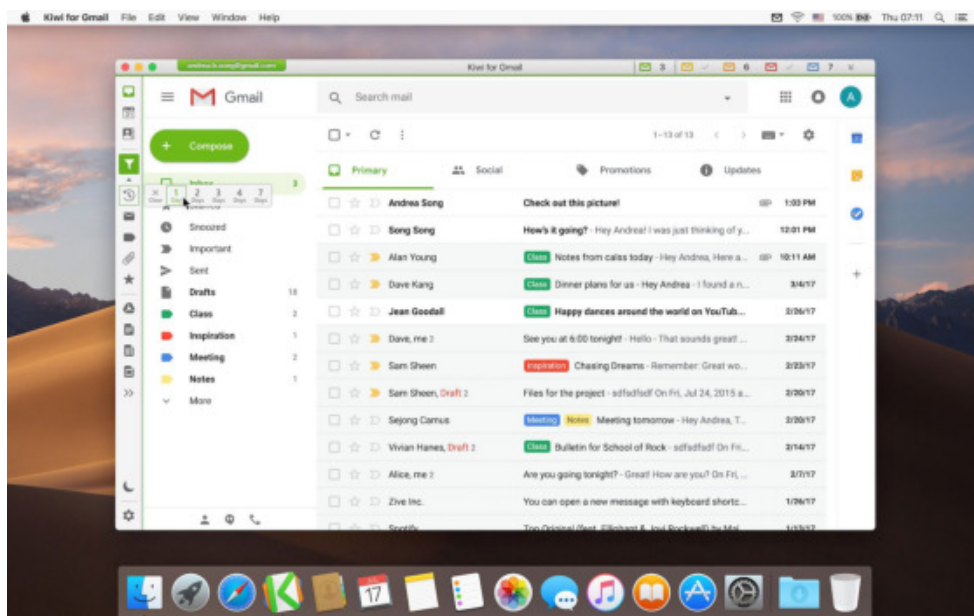
After embracing the subscription model, you won't be able to live without Fantastical 3 for macOS, especially when the switch is a win-win for existing users. ■



# Kiwi for Gmail 2: A better way to experience G Suite on your Mac

Transforms Gmail and all of the G Suite apps into a full-powered desktop client.

BY J.R. BOOKWALTER

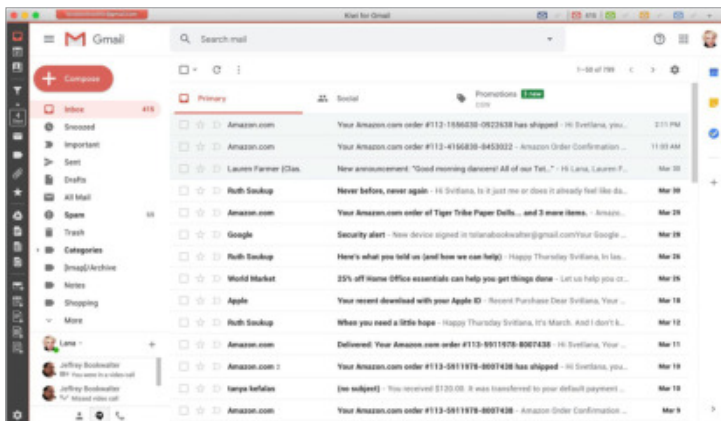


Kiwi's Focus Filter Inbox view displays only incoming messages from the last one, two, three, four, or seven days.

As an iCloud user, Gmail isn't my primary email service, but millions of others faithfully depend on it. Although Google created a capable mobile app for smartphone and tablet users, the search giant has long neglected the desktop,

where Gmail fans must settle for the inherent limitations of traditional IMAP client software or a second-class, web-based experience. Or do they?

What do you get when you extract the Google experience from a web browser and integrate it into a standalone app? Kiwi



**Kiwi delivers the Gmail experience you know and love without the inherent limitations of a web browser.**

for Gmail 2.0 ([go.macworld.com/kwg2](http://go.macworld.com/kwg2)), the closest we'll likely ever come to a native Gmail client for macOS. At first glance, Kiwi looks like little more than the web-based G Suite disguised as an application—which it technically is—but small details make a big difference.

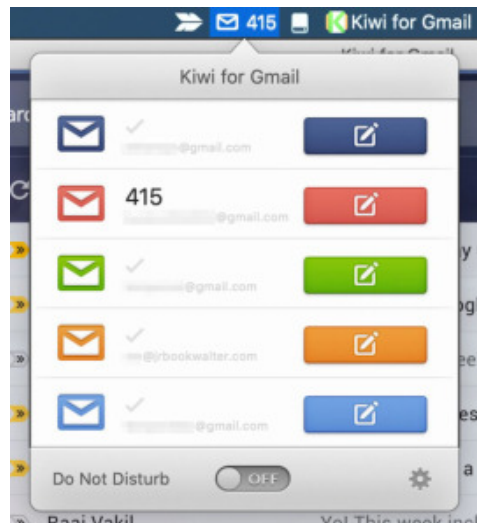
## GOODBYE WEB BROWSER

For starters, Kiwi manages up to six different accounts, each with its own color theme from 10 available choices. And not just Gmail: G Suite accounts are supported too, with one-click access to Google Drive, Docs, Sheets, and Slides from separate windows. Because Kiwi logins are persistent, you can quickly hop between accounts using shortcut icons across the top of the main window, or via an optional menu bar, which provides one-click access

for composing messages in a new window like a real email client, plus a convenient Do Not Disturb toggle when it's time to get work done.

New messages or calendar events can also be created via custom global keyboard shortcuts, which work anytime

Kiwi is open, even when using other apps. You can drag and drop attachments into



**The optional menu bar in Kiwi for Gmail makes it easy to compose a new message from any account, or toggle on Do Not Disturb mode when it's time to get some work done.**

the compose window, with file sizes up to 25MB each, and even larger (1TB) with Google Drive integration. But the pièce de résistance is that you can configure Kiwi to launch at startup as the default mail client, a nice touch since Apple Mail provides a bare-bones Gmail experience.

## THE LITTLE THINGS

Kiwi for Gmail's thoughtful integration with macOS doesn't end there. The app features a sidebar along the left side of the window for quickly switching between Gmail, Google Calendar, or Contacts, as well as shortcuts to create a new message, event, document, spreadsheet, or slideshow.

Once your Gmail account becomes overrun with new messages, it's Kiwi to the rescue with Focus Filtered Inbox. In a single click, users can view only messages received during the last one, two, three, four, or seven days; everything else remains hidden until this option is disabled. However, Kiwi never lets you forget the number of unread messages; they're displayed along the top of the main window, and optionally the menu bar and dock icon, as well. Kiwi sends push notifications for

incoming messages flagged as Important, with an option to set discrete alert sounds for each account. (Sadly, notifications aren't color-coded by account, but clicking one does open that message in the correct window.)

Kiwi 2.0 introduces support for Gmail plug-ins starting with Boomerang, a popular productivity tool for scheduling

messages to be sent at a later date, tracking responses, or hitting the pause button on incoming emails. Boomerang includes an AI-powered feature called Responsible to help Gmail users

compose better messages and improve their odds of getting a response. (A host of other plug-ins are also in the pipeline.)

There are a few limitations: Kiwi integrates with Google Contacts rather than those in macOS, and—not surprisingly—there is no support for rival email services like Outlook, iCloud, or Yahoo. Otherwise, this affordable app makes Gmail a lot more bearable for Mac owners.

## BOTTOM LINE

Break Gmail free of the web browser with Kiwi, the closest thing there is to a native desktop macOS app. ■



### Kiwi for Gmail 2.0

#### PROS

- Use Gmail, G Suite as a native macOS application.
- Supports up to six color-coded accounts with Focus Filtered Inbox.
- Global custom keyboard shortcuts, default email client option.

#### CONS

- Requires active internet connection, no offline mode.
- No integration with macOS Contacts.
- Notifications don't reflect per-account color theme.
- No support for other email services.

#### PRICE

\$30

#### COMPANY

Zive



# Got a 32-bit app in Catalina? You don't have to delete it.

They won't work, but you can choose to leave them in place.

BY GLENN FLEISHMAN

Catalina marked the end of 32-bit apps for macOS, something Apple had provided over a decade of transition help with and two years of warnings about for consumers. Nonetheless, people with older apps they hadn't launched in a long while were still

taken by surprise, judging by email from readers and forum posts.

*Macworld* offers a guide ([go.macworld.com/mwgd](https://go.macworld.com/mwgd)) on how to find outdated apps to figure out what to get (if anything) to replace them, both before you update to Catalina and afterwards.

However, if you no longer need an app

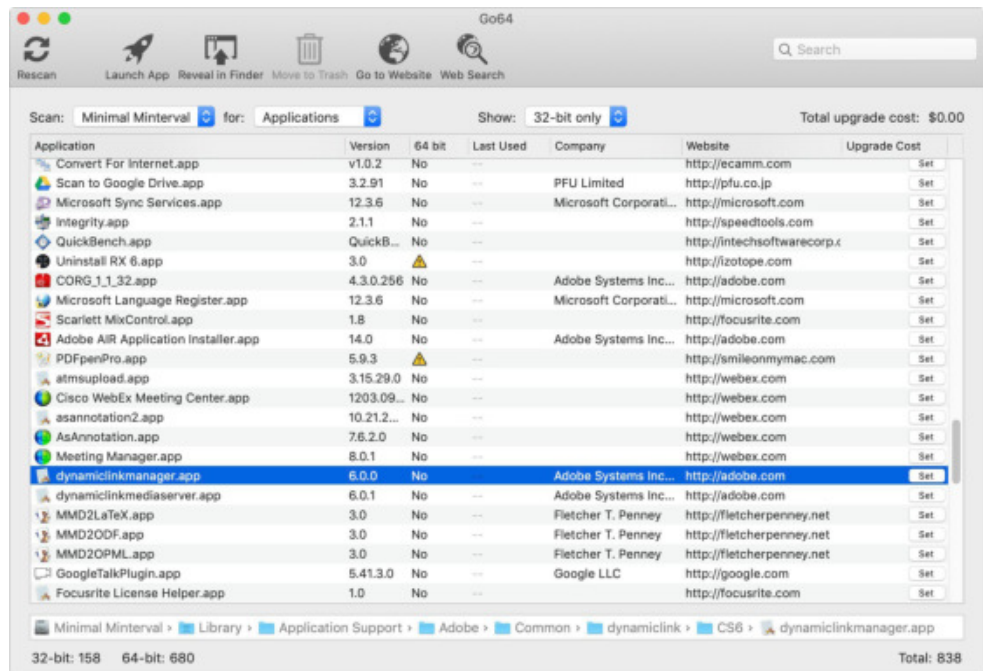
that can't launch in Catalina, you're not obliged to get rid of it. Apps, launch agents, daemons, helpers, and other components no longer work, but they won't do harm. And it might be a mistake to delete apps that only have modules that aren't yet 64-bit-compatible.

As we note in the guide, you can use the free donationware app Go64 ([go.macworld.com/g064](http://go.macworld.com/g064)) to identify outdated programs. It will also let you select and delete apps that can be thrown in the trash without a problem. The Trash icon is grayed out for apps that are nested deeply

within other folders or only have some 32-bit code.

For instance, GraphicConverter 10 ([go.macworld.com/11gc](http://go.macworld.com/11gc)), which is perfectly usable, contains one image-conversion route (PCDtoRAW) that isn't compiled as 64-bit code. There's no reason to throw it out! (Version 11 of GraphicConverter has updated or removed this lingering fragment of old code.)

If you need the storage space or prefer the cleanliness of only retaining apps that work, delete your 32-bit apps. But don't feel compelled to. ■



Go64 lets you select and delete 32-bit apps.

# You're not imagining things: Apple did remove the column option from macOS Mail

It's an odd change that breaks with many years of tradition.

BY GLENN FLEISHMAN



Apple changed long-standing display options in macOS Mail with the release of 10.15 Catalina. This no-longer-new version dropped the ability in Mail's column view (via View → Use Column

Layout) to manage columns widths, click to sort by characteristics (like sender, subject, and size), and to retain your preferred ascending or descending first order when you switch among sorting options.

Unfortunately, despite the passage of





### In Catalina, you can't change the columns viewed in Mail.

time and many complaints in Apple's forums, this remains in place. But never say never.

The first release of iTunes's successor in Catalina, the Music app, omitted the three-column view that some iTunes users loved and had relied on for many years. It was one of the most complained about features, and apparently Apple listened. In December 2019, with the release of 10.15.2, the iTunes Columns Browser returned ([go.macworld.com/clbw](http://go.macworld.com/clbw)) in Music.

While Apple doesn't respond directly in its user forums, there's no reason to believe employees don't examine them based on changes that are made to Apple software. You can add your voice to an existing conversation on the topic ([go.macworld.com/xist](http://go.macworld.com/xist)) or start a new thread.

Catalina may have

shipped six months ago, but Mac users have seemingly updated in more of a rolling fashion to macOS 10.15 than previous releases based on the Mac 911 inbox. Typically, we rarely see few new questions about an operating system this late, but Catalina ones keep appearing as people make the shift—and find themselves perplexed at an expected feature they can't find or one that's outright missing. ■



**The first release of iTunes's successor in Catalina, the Music app, omitted the three-column view.**

#DanceLikeaDad

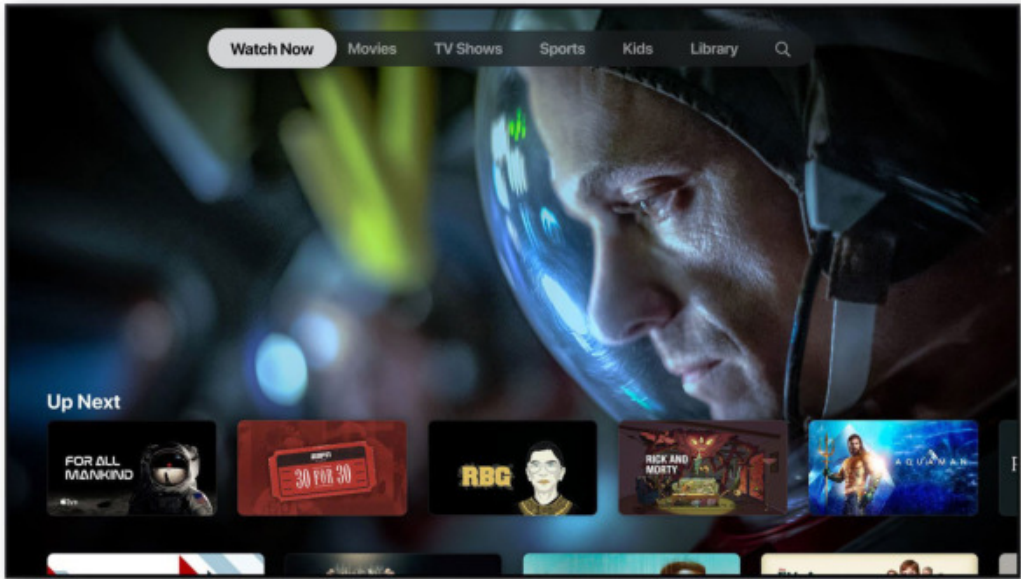


[fatherhood.gov](http://fatherhood.gov)



# PREVENT WILDFIRES, FOR THE LOVE OF THE OUTDOORS.





## Apple TV+ six months later: How does Apple's streaming service hold up?

It has been half a year since Apple launched its premium video streaming service. Consider this a midterm report card.

BY JASON CROSS

Last spring, Apple officially took the wraps off the service we all knew was coming: Apple TV+ ([go.macworld.com/ap1t](https://go.macworld.com/ap1t)). The premium streaming service clearly had designs on competing with Netflix, Hulu, Disney+, and the rest of an increasingly crowded

market. The first handful of shows were available on November 1, 2019, and a new show or movie has been released every few weeks since then.

So how is Apple doing? Half a year in, is Apple TV+ a must-have streaming service, or can you ignore it without

missing much? So far, Apple has landed somewhere in-between. If we were giving Apple a letter grade, it would get a “C” with a special teacher’s note: “shows potential.” Apple is doing as well with overall content quality as any of its competitors, has expanded the TV app to more devices, and is priced competitively at \$4.99 a month. But content *volume* is severely lacking, and the service hasn’t found its break-out hit yet.

## THE BEST SHOWS ARRIVED EARLY

The milquetoast early marketing for Apple TV+ shows had us worried. They looked slick, but tame. It appeared as though Apple would spend a ton of money to make shows that slavishly avoided sex, violence, and profanity to the point where

they had no edge at all.

Fortunately, the opening salvo of shows proved us wrong. While Apple TV+ shows seem to go out of their way to avoid nudity, there’s no lack of foul language, violence, sexual situations, or adult themes in the shows where such things are warranted.

The shows that premiered on November 1 are some of the service’s best: *For All Mankind*, *The Morning Show*, *See*, and *Dickinson* are all worth your time. They’re creative and engaging and not at all safe and boring. The kids’ shows have been a little more lackluster, but I admit I’m not the target audience.

We had hoped Apple would keep the quality up, but the releases since November have been hit-or-miss. The *Little America* anthology and *Mythic Quest: Raven’s Banquet* are more

enjoyable than we would have expected, and *The Banker* is a snappy, well-paced film with good performances all around.

But just as many big shows have fallen flat. *Servant*, *Truth Be Told*, and *Home Before Dark* landed with a thud. Even *Amazing Stories*, a tentpole Spielberg production, feels decades behind our expectations for



**Apple TV+ debut shows, like *The Morning Show*, are still some of the best on the service.**



**We enjoyed *Mythic Quest: Raven's Banquet* more than we expected.**

prestige TV today. The recent limited series *Defending Jacob* is well-made, but overstays its welcome and its positive buzz has worn off quickly.

Perhaps our favorite aspect of Apple TV+ shows is the way they are usually released. The Netflix “whole season at once” approach is great for bingeing, but gives you little to look forward to and takes a show out of the limelight too fast. The Hulu and Disney+ “one show a week” makes you wait too long, but keeps people talking—one season of *The Mandalorian* dominates Twitter for a couple months.

Apple’s approach is a smart hybrid of the two where the first three episodes are

released on the first day with the rest coming weekly. It lets you binge just enough to get invested, but still keeps you coming back and talking about it for weeks.

## **BREAKOUT HITS TAKE TIME**

Netflix may have struck gold with its first original series *House of Cards*, but it spent years as a first-mover streaming other content to build up to that point. Hulu took a lot of shots at original series before *The Handmaid’s Tale* took off. Amazon’s didn’t exactly launch Prime Video with *The Man in the High Castle*, *Transparent*, and *The Marvelous Mrs. Maisel* out of the gate. Disney+ launched hot with *The Mandalorian* (a.k.a. The Baby Yoda Show),





***Defending Jacob* is one of the better new releases on Apple TV+.**

but we're talking about one of the world's biggest media empires with dozens of deep franchises. And Disney didn't exactly follow that up with a similar watercooler show.

The Apple brand carries sky-high expectations, deservedly so. Yet it's probably unreasonable to think this company would enter the premium streaming market and immediately deliver a slate of hits that sets the internet on fire, month after month, overtaking incumbents with years of content behind them.

Apple's biggest challenge is that it needs big hits in the way other streaming services don't. Apple TV+ is comprised solely of original shows and movies ([go. macworld.com/orsh](https://go.macworld.com/orsh)). There's no licensed content at all.

Netflix, Hulu, Peacock, Disney+, CBS All

Access...the streaming market is increasingly crowded, and every one of Apple's competitors has many thousands of hours of non-original programming to fall back on. Decades of

proven hit TV and film content gives subscribers plenty to watch while they wait for the next big exclusive original. Apple TV+ has exactly none of that.

## LOOK AHEAD TO YEAR TWO

A high-level look at the overall quality of Apple TV+ is positive. Certainly its mix of great, middling, and poor original content is no worse than rivals like Netflix or Disney+. Apple even has a couple shows that could break out into the broader internet zeitgeist if the service grows just a little more popular.

But there's just not enough there, yet. With only original shows to lean on, Apple needs to kick out a new series or season every week to land enough "must-watch" hits to keep subscribers coming back. Apple has a lot of irons in the fire, but the

release schedule is just too slow when there's no licensed content to fall back on.

Fortunately, Apple seems to recognize that this first year is all about priming the pump. The company made a bold move in offering any customer who buys an iPhone, iPad, Mac, or Apple TV box a free year of Apple TV+. Family sharing included! That offer still stands, in fact.

This holiday season, Apple TV+ will enter its second year. Its opening lineup will return for a second season, bolstered by more than a dozen other series and movies Apple has released during its first year. Just as the first of the free subscription years wears off, Apple TV+

should hit its stride.

Apple's \$4.99 per month price is aggressive, but it's currently a tough sell when Disney+ is only a couple bucks more and has a massive wealth of content, and competitors like Hulu or Peacock have similarly-priced plans.

The current slate of Apple TV+ originals alone are not enough to justify a subscription, even at just \$4.99. The competition is too fierce and subscription fatigue is setting in. But Apple doesn't need you to pay for Apple TV+ just yet. It just has to build up steam for a bigger second year, just when all those free subscriptions start to expire. ■



Apple has a lot of shows in the works for its second year, including a *Ted Lasso* comedy series (pictured), *Foundation* sci-fi series, and *Time Bandits*.



## Tribit StormBox Micro BTS10 review: The more affordable micro Bluetooth speaker

A surprising amount of sound and thump emanates from this palm-sized speaker, modeled after the Bose SoundLink Micro and JBL Clip.

BY JON L. JACOBI

The Tribit StormBox Micro BTS10 is a Bluetooth speaker modeled after and competing directly with the Bose SoundLink Micro ([go.macworld.com/slmc](https://go.macworld.com/slmc)). When I say *competes*, I mean *undercuts* to the tune of \$56, substantially less than the

competition. That raised a red flag for me, but my hands-on experience revealed a speaker with all the same niceties, the latest technology, and arguably similar audio performance as its pricier competitor. I'm struggling to see a downside.

## DESIGN AND FEATURES

The StormBox Micro BTS10 fits in the palm of my mid-sized mitt and I can still wrap my fingers around to the back. By the numbers, it's about 3.8-inches by 3.8-inches in the X/Y, and 1.4-inches in the Z. It weighs a mere 10.2 ounces, sports a 9-watt amp, and the latest Bluetooth 5.0 for extended range. If indeed you need that with a speaker that's meant to remain close at hand.

The BTS10 is rendered in black with a bass port on the back that's largely responsible to the unit's thump. Also on the back are four rubber feet to elevate the unit and let said thump radiate, as well as a tightly bound strap that allows you to lash the speaker to a handle-bar, backpack strap, or what have you.

Controls consist of plus/minus and multi-function buttons on the faux fabric top; with power and Bluetooth pairing buttons, plus six status LED indicators, on the side.

The multi-function button, depending on how many times and how long you press it, will move to the next or previous track, stop, activate Siri, reject or switch calls, and so on. I'd go on if Tribit hadn't actually included a decent manual with the product. The docs are exceptionally well done, meaning you'll have no trouble understanding it. Such is not always the case.

Tribit hasn't missed a trick in the



**That tightly bound band you see allows you to lash the BTS10 to a backpack strap, bicycle handle bar or whatever you have handy as a mount point.**

design, and the USB-C port is a nice perk. Battery life from the 2600mAh battery is said to be approximately eight hours, and charge time is about half that. The unit is tested for both particulate and liquid intrusion to the tune of an IP67 rating. That's about as good as it gets in portable speakers. Not a lot of vendors go to the expense of particulate testing. You can read more about IP codes in this explainer ([go.macworld.com/ipco](https://go.macworld.com/ipco)).

## SOUND

If you've shopped micro Bluetooth speakers, your first question is likely to be how the StormBox Micro BTS10 stacks up

sonically compared to the Bose SoundLink Micro and JBL Clip. Very well. I'd say it sounds largely the same with perhaps just a bit muddier mid-range, though the differences between all three are subtle. No speaker this small is going to be superior in the grand scheme of things, but given the amount of air in use—the sound is quite remarkable. Especially the bass. There's actually enough of it, which was a surprise.

The thing with micro Bluetooth speakers is that they're largely intended to reside on or near your person as you gad about, and where they're placed has a lot to do with how they'll sound—and feel. Yes, feel. Lay that bass port against your chest and feel the beat. Think of it as old-school, over-sized chest-bling with an audio bent, said bent being to impart low-



**The Tribit StormBox Micro is small enough to be strapped to a bicycle's handlebar, and its IP67 rating means it can withstand the elements.**

end vibrations through your ribs. Try finding this kind of info in other reviews!

To reiterate, the sound is quite good given the BTS10's physical constraints. Strapped to your bicycle, or your person as you travel about, you'll be pleased with the sound.

## BOTTOM LINE

As the BTS10 passed muster sonically, and the feature set lacks for nothing, price weighs heavily in its favor. Especially in the current increasingly challenging economic environment. Good job, Tribit. ■



### Tribit StormBox Micro Bluetooth speaker

#### PROS

- Highly portable and IP67 rated.
- Good sound for a small speaker.
- A lot cheaper than the competition.

#### CONS

- Mid-range could use a bit more definition.

#### PRICE

\$56

#### COMPANY

Tribit

# Cleer Enduro 100 headphones: Great sound, fantastic battery life, and all the right features

Bluetooth 5.0 with aptX HD, Google Fast Pair, Siri invocation, and USB-C connectivity put these headphones comfortably into state-of-the-art category.

BY JON L. JACOBI



I liked the Cleer Enduro 100 headphones the moment they emerged from their slightly complicated, but classy packaging. The styling and colors

are unique and attractive, and more importantly, they sound very, very good. The feature set is also state of the art.

My one caveat is that one tester—the one with the big head, aka me—found





**Cleer's Enduro 100 are state-of-the-art technically, style-wise, and in terms of features.**

them somewhat uncomfortable to wear for very long listening sessions.

## DESIGN AND SPECS

The Cleer Enduro 100 are packed with the latest tech features, including Bluetooth 5 with its longer range, greater bandwidth, and native handling of Apple's AAC codec; aptX HD codec support for high-resolution and low-latency audio playback; and Google Fast Pair 2.0 for quick connections

with Android devices. You can also invoke Siri on iOS devices with the push of a button.

Throw in a Type-C USB port and NFC pairing, and I can't think of anything—apart from active noise cancellation, which would put these cans in a different category—that the company missed. I'm sure I'll hear from you if there is.

Style is in keeping with the best of the times as well. Cleer opted for two unusual but elegantly attractive color schemes: slate and putty, and putty and tan. The headphones are decently light at around 10 ounces, a 10-minute charge via the USB-C port promises 13 hours of playback, and a three-hour charge will supposedly see you though 100 hours. I can tell you they got darn close to that just sitting around switched on without me listening to them; in fact, after two weeks under light use, they were still running on the charge they had right out of the box.

As far as the actual sound-producing devices, the speakers are a 40mm non-ferrite design. For more on that, and the hysteresis not using iron supposedly prevents, read my Dali Rubicon 6 loudspeaker review ([go.macworld.com/rbn6](https://go.macworld.com/rbn6)).

Cleer outfits the Enduro 100 with three

control buttons and a power button. The outer two are used to increase and lower volume, while the center multi-purpose button is used to switch to the next track in your playlist (double-click), the previous track (triple-click), and to invoke Siri on an iOS device (press and hold). There's also a status LED, and while the unit will pair automatically for the most part, you can also force pairing by holding the power button, or use the NFC surface on the back of the left ear cup.

While the Enduro 100 don't have a dedicated 3.5mm jack for a cable, they do

offer wired listening via the USB-C port, and Cleer puts a Type-C-to-3.5mm cable in the box. There's also a USB-Type-A-to-Type-C cable for charging. Cables might seem quaint, but they're a must for airplane entertainment systems and for listening to uncompressed audio—be it in the studio or elsewhere. You also get a drawstring pouch to carry the headphones and cables in.

Speaking of airplanes, the Enduro 100 don't offer active noise cancellation, as I mentioned earlier, and they don't block as much ambient sound as in-ear



**Depending on the size and shape of your head, you might find the Enduro to be uncomfortable for long listening sessions.**

headphones will. I personally consider active noise cancellation, which tends to negatively affect overall frequency response, low on the features totem pole. I've done just fine with regular headphones on planes. If that's a must-have feature for you, cross these off your list.

## SOUND AND COMFORT

I already described the Enduro 100 as sonically pleasing, but to take it a bit further: There's an ear-saving dip in the mid-range, solid if not spectacular definition in that same range, good top end, and pleasantly exaggerated bass. Pleasant as in not imitating a subwoofer, but bumping tastefully to the level that I, and most of the world, enjoy. That said, the other tester did point out the lack of an "extra bass" switch. Kids.

To me, the Enduro 100 sound as good as anything in their price range, and they're arguably as good as more than a few much more expensive competitors. I have a lot of capable headsets at this point, and there are none that I'd rank as supremely better for casual listening.

My only slight issue with the phones was with the fit and overall comfort. The Enduro 100's stiff headband pressed the cups

against my head with a bit too much force for the amount of padding and ear well depth provided. My ears were touching the speaker grills in several spots from the get go. For 20 or so minutes, the sonic goodness reigned, but my outer ears and the top of my head slowly started to take notice.

By way of comparison, the Sony MDR-XB950's that I normally use sit on my ears like butter. The pressure from their band is mild, and the cushions are extra tall and soft, so my ears hardly ever make contact with speaker grill. Hear me, Cleer?

To be fair, the second tester that did a few days testing for me had no issue with the comfort, so humans with smaller heads—or perhaps just more hair—will no doubt find them perfectly comfortable.

## BOTTOM LINE

When it comes to style, sonic goodness, run time, technology, features, and price, Cleer absolutely nailed it. They stand out from the crowd, and you could pay a lot more for headphones that don't sound nearly as good or last nearly as long on a charge. My only mild caveat is the fit, which won't be an issue for everyone. Buy a pair from a retailer with a good return policy and give them a long listen to find out. ■



### Cleer Enduro 100 headphones

#### PROS

- Super stylish and lightweight.
- Excellent sound.
- Marathon battery life.

#### CONS

- Not as comfortable as they could be.
- No active noise cancellation (that could easily be a pro in my book).

#### PRICE

\$99

#### COMPANY

Cleer



# Anker Soundcore Liberty 2 Pro: Dual drivers deliver exceptional sound for a reasonable price

There's no active noise cancellation, but the dual drivers in these comfortable wireless earbuds sound exquisite given the \$150 price tag.

BY BEN PATTERSON

When I settle in for some quality headset time, a pair of wireless earbuds generally isn't the first thing I reach for. But Anker's Soundcore Liberty 2 Pro earbuds ([go.macworld.com/Int2](https://go.macworld.com/Int2)) are making me rethink my listening

preferences.

Armed with a unique coaxial configuration of dynamic and balanced armature drivers, the Liberty 2 Pro earbuds give you the best of both worlds: finely detailed treble and deep yet controlled bass, not to mention an impressively wide

soundstage. There's also a HearID feature that generates a custom EQ preset tailored to your ears, aptX support for CD-like sound, and plenty of extra eartips and ear wings help to ensure a comfortable fit.

That's all pretty impressive for a pair of \$150 earbuds, but there are some compromises you'll have to accept, including the lack of active noise cancellation (although there is uplink noise reduction for the four built-in mics), as well as a charging case that's a tad on the large side (albeit nicely designed).

## DESIGN

The Liberty 2 Pro earbuds themselves are small and oval-shaped, measuring slightly over an inch long, about 0.6 inches wide,



**The comfortable Soundcore Liberty 2 Pro earbuds come with plenty of extra eartips and ear wings, and they fly into the charging case with a satisfying magnetic snap.**

and (again) a little more than an inch when measuring from the tip of the earpiece to its oval base. The earbuds jut out of your ear a bit while you're wearing them, but not in an ungainly way, and you can use one of three included sets of ear wings to help keep them in place. Anker also includes a generous seven pairs of eartips in the box.

Once I settled on the best-fitting eartips, the Liberty 2 Pro earbuds felt quite comfy, and I was able to shake my head vigorously without fear that the earbuds would fly out. With its IPX4 rating for resistance to splashing water and sweat, the Liberty 2 Pro earbuds could make for an ideal workout companion.

I'm also a fan of the case that comes with the Liberty 2 Pro earbuds. While it's considerably larger than the pillbox-sized case that comes with the original Apple AirPods, the Liberty 2 Pro case comes with a flattened oval design that felt good in my hand.

The top of the case slides open and closes with a smooth, satisfying snap, and you get another nice snap when the earbuds fly into their magnetic seats. A three-LED battery status indicator sits on the front of the case, while a



**While the Soundcore Liberty 2 Pro's charging case is a tad large, I loved the smooth action of its sliding lid.**

USB-C charging port (protected by a rubber flap) and a Bluetooth pairing button are in back. If you'd rather not deal with charging cables, the case is compatible with Qi wireless chargers.

## FEATURES AND OPERATION

The killer feature that Anker is touting for its Liberty 2 Pro earbuds is its Astria Coaxial Acoustic Architecture (or ACAA), which essentially consists of an 11mm dynamic driver (for lower-end sound) that's coaxially aligned with a balanced armature driver (for the treble). The result, according to Anker, are the first truly wireless earbuds to deliver in-ear "studio" performance. That may sound like hype, but based on my real-world testing (and we'll get to audio performance in a

moment), Anker may be onto something here.

The earbuds also come with a HearID feature that customizes the audio based on a hearing test that you take using the Soundcore mobile app. The test involves tapping a button when you hear various high- and low-frequency beeps at different volumes, similar to a hearing test in a doctor's office.

Anker says HearID can help deliver sound that's "tailor-made" for your ears, but it's a claim that's difficult to test. At any rate, the Soundcore app offers 22 equalizer presets, including a Soundcore "Signature" mode. You can't fiddle with the EQ levels yourself, unfortunately.

A small button near the top edge of each earbud lets you handle calls as well as play and pause tunes, skip tracks, adjust the volume, and summon Apple's Siri or Google Assistant, and you can customize the controls via the Soundcore app. Nice, but the earbuds won't pause your tunes automatically when you take one out of your ear, like AirPods do.

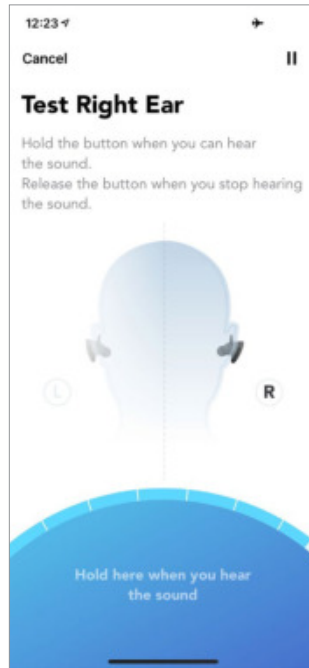
Speaking of calls, the Liberty 2 Pro earbuds come with a total of four microphones equipped with Qualcomm



cVc 8.0 uplink noise reduction, perfect for making calls while you're competing with honking cars or blustery winds. I tried making some calls on a busy Brooklyn sidewalk and the person on the other end said she could hear me loud and clear.

Designed for a frequency response of 20Hz-20kHz (typical for most headphones and earbuds), the Liberty 2 Pro earbuds support Bluetooth 5 and they can handle SBC, AAC, and Qualcomm's aptX audio codecs. The earbuds' support for aptX is great for audiophiles who want to hear CD-like (or compressed 16-bit/44.1kHz) sound via Bluetooth, but keep in mind that aptX only works if both the earbuds and the transmitting device support the codec. For example, many Android phones support both aptX (and some also support aptX HD, the lossless version of aptX), but the latest iPhone 11 and 11 Pro models don't.

Notably lacking from the Liberty 2 Pro's feature set is active noise cancelling, although that's not too surprising given the \$150 sticker price. Generally speaking, truly wireless earbuds with active noise cancelling cost north of \$200, such as Apple's \$250 AirPods Pro ([go.macworld.com/podr](https://go.macworld.com/podr)). That said, we've tested at least one set of relatively inexpensive noise-cancelling models, the \$150 Ausounds AU Stream ANC earbuds ([go.macworld.com/ausn](https://go.macworld.com/ausn)).



Similar to a hearing test in a doctor's office, the HearID feature can create a custom EQ profile tailored to your ears.

## AUDIO PERFORMANCE

While the Liberty 2 Pro's lack of ANC is a disappointment, I quickly got over it once I plugged them into my ears and sat back for some tunes. Indeed, Anker's decision to go with both dynamic and balanced armature drivers seems to have paid off, delivering some of the best audio I've ever heard from truly wireless earbuds in this price range.

First up was the title track from Bruce Springsteen's *The Ghost of Tom Joad*, and right off the bat I was struck by the fine detail of The Boss's acoustic guitar work, the reedy harmonica, the warm low-end

glow as the synthesizer kicked in, and the precise placement of the instruments in the wide soundstage. For a \$150 pair of truly wireless earbuds, that's pretty impressive.

Next, I queued up Vlado Perlemuter's performance of Maurice Ravel's solo piano works for Nimbus Records. Solo piano can be a tough benchmark for any pair of headphones, let alone sub-\$200 wireless earbuds, yet I was again impressed by the fine details in Perlemuter's keystrokes, the elegant timbre of the piano, and the atmospheric of the concert hall.

Finally, it was time for Ciara's "Level Up," and I got a kick out of the punchy (but not too punchy) bass, the crisp but never tinny vocals, and (again) the expansive soundstage and discreet instrument placement.

It's also worth noting that I did most of my listening using the custom HearID EQ setting. I switched around to some other equalizer presets too, including the recommended Soundcore "Signature" preset, yet I generally found myself gravitating back to the HearID setting, which (to my ears, anyway) did the best job of balancing fine treble with deep but not overpowering

bass. Your mileage may vary, of course.

In terms of Bluetooth performance, the Liberty 2 Pro earbuds never went out of sync during my testing, and their range was excellent. I was able to walk the entire length of my apartment (a good 45 feet), then head upstairs and even further back before the connection began to go spotty; well past Anker's rated Bluetooth range of 33 feet.

Anker claims that the Liberty 2 Pro earbuds will last for up to eight hours on a single charge, and that you can get a total of 32 hours of playback time using the charging case. That places it among the longest-lasting wireless earbuds. I used them for lengthy sessions and never got

close to draining the batteries, and the earbuds charged up quickly when I put them in the case.



### **Anker Soundcore Liberty 2 Pro**

#### **PROS**

- Comfortable design.
- aptX support.
- HearID features gives you a custom EQ preset for your ears.
- Dynamic and balanced armature drivers deliver rich, detailed sound

#### **CONS**

- No active noise cancellation.
- Charging case is a bit large.
- Can't fiddle with EQ levels yourself.

#### **PRICE**

\$129

#### **COMPANY**

Anker

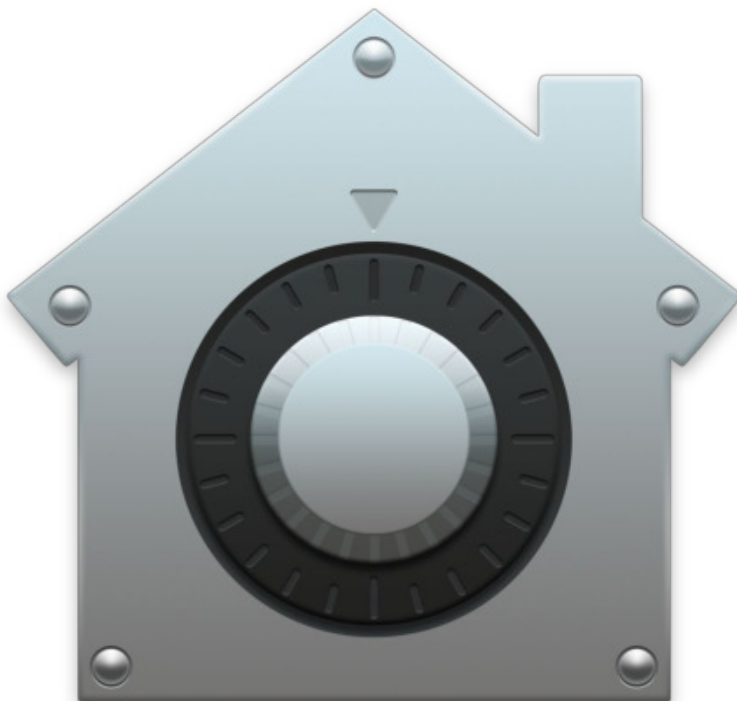
## **BOTTOM LINE**

Sure, there are other truly wireless earbuds that sound this good (or better), but good luck finding any with price tags in the \$150 range. Combine the Liberty 2 Pro's sound with its comfortable design, its custom HearID EQ preset, aptX support, and impressive battery life, and you're looking at quite the bargain, even considering the lack of active noise cancellation. ■

## Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN



### HOW TO COPE WITH A FILEVAULT RECOVERY KEY DISAPPEARING WHILE YOU WRITE IT DOWN

FileVault is an extraordinary bit of macOS technology. Introduced years ago, it encrypts the entire contents of your startup volume so that when the data is at rest—when your Mac is powered down—

the drive is effectively full of garbage nonsense to anyone who doesn't possess either the password to an account authorized to log in via FileVault or the special recovery key set when you turn FileVault on.

When you use the Security & Privacy preference pane's FileVault tab to enable this encryption, macOS prompts you with



The Security & Privacy preference pane's FileVault tab gives you two choices.

two choices ([go.macworld.com/2chc](https://go.macworld.com/2chc)):

- > Allow my iCloud account to unlock my disk
- > Create a recovery key and do not use my iCloud account

In both cases, a recovery key is set. However, if you use iCloud to store your key, you never see it, and Apple manages the recovery process. All you need is your iCloud password and, if you turned on two-factor authentication, a trusted device or access to a trusted phone number. But this introduces risk, as someone who obtained your computer and discovered your password could potentially unlock the drive, too.

I prefer the second choice, as it provides entirely “local” control. No secret is stored remotely. You only face a problem if you forget the passwords to all macOS accounts approved for FileVault-

based cold start (from a shutdown state) logins and you lose your recovery key. (I have heard of cases in which account information becomes corrupted, though, and the recovery key is the only way to start up a Mac.)

### No record of recovery key

What happens if, while you're trying to write down the recovery key, it disappears from the screen? While this seems unlikely it happened to one reader, who doesn't believe they clicked a button or otherwise caused the key message to dismiss. They wrote in to ask how they could recover the recovery key?

Unfortunately, there's no method to retrieve the key once it's been displayed and dismissed. The recovery key is generated and passed through a strong one-way encryption process; only the

result is used to further protect the keys used in FileVault encryption. The recovery key is displayed once. When you dismiss the dialog, macOS tosses this original version of it forever. (Entering the precise original recovery key, which is fed through the same one-way process, unlocks the data that it protects.)

If you weren't able to write the key down before it disappeared from view, you have to disable FileVault encryption and re-enable it to generate a new recovery key:

1. In the Security & Privacy system preference pane, click the FileVault tab.
2. Click the lock icon at the lower-left corner and enter an account name and password with administrative access.
3. Click the Turn Off FileVault button.
4. Confirm you want to disable FileVault by clicking Restart & Turn Off Encryption.
5. Your Mac now restarts. After you log back in using an account with FileVault permission, macOS begins decrypting the entire contents of the drive. This can take quite a while.
6. When decryption is complete, you can return to the FileVault tab and click Turn On FileVault.

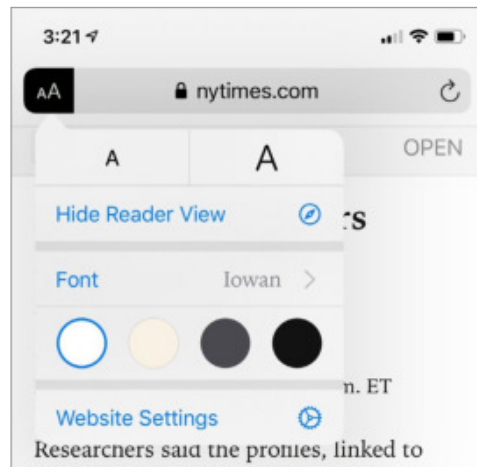
7. At the Recovery Key prompt, choose the Create A Recovery Key option and write the key down. You might even quickly take a picture of it as a backup. (But be sure to delete that photo and then permanently delete it from the Recently

Deleted album to avoid any chance of someone gaining access to it.)

8. Restart again and FileVault begins the slow process of encrypting the startup volume once more.

## HOW TO ENABLE READER VIEW AUTOMATICALLY FOR WEBSITES IN MOBILE AND DESKTOP SAFARI

Many websites (including Macworld.com) have sidebars, overlays, autoplaying video, and other distractions—as well as text in a size you may find too small to read. Reader View is Safari's way to override the parameters most sites have set to produce a simplified stream of text for which you can adjust the size.



iOS's Reader View button combines all the controls into one menu.

You can enable Reader View easily enough:

> In macOS, if Reader View is available, a paragraph icon appears at the far left of the Location Bar. Click it.

> In iOS and iPadOS, a little A/big A icon appears at the far left of the location bar. Long press it to enable Reader View.

But you can also configure Reader View as a choice for a website.

In macOS, right-click the Reader View icon, and then select Use Reader View Automatically On 'Site Name.' You can also select Reader Websites Preferences, which opens Safari's preferences dialog to the Websites tab and selects Reader in the left-hand features list. For any currently open or previously specified site, you can

change the Reader behavior via a pop-up menu. With any open sites, the pop-up menu choice immediately enables or disables Reader View in all tabs based on your selection.

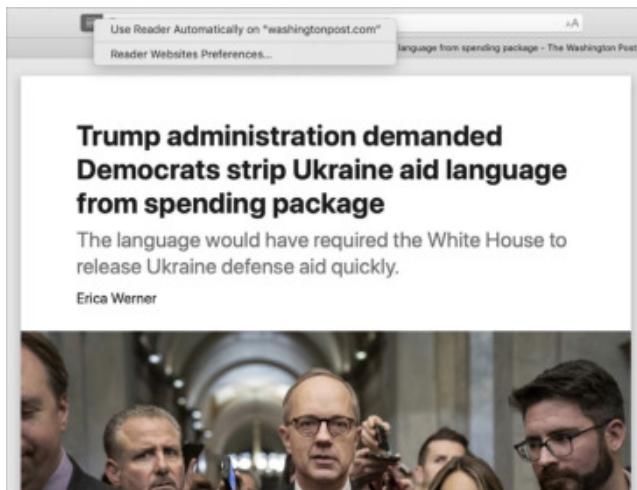
In iOS and iPadOS, tap the Reader View icon and then choose Website Settings. This site-specific menu lets you configure multiple settings for the website, including turning on Use Reader Automatically.

No matter how you engage Reader View, you can control the viewing size and other display parameters.

In macOS, with Reader View enabled, click the small A/large A icon at the far right of the Location bar to choose a background color and typefaces from

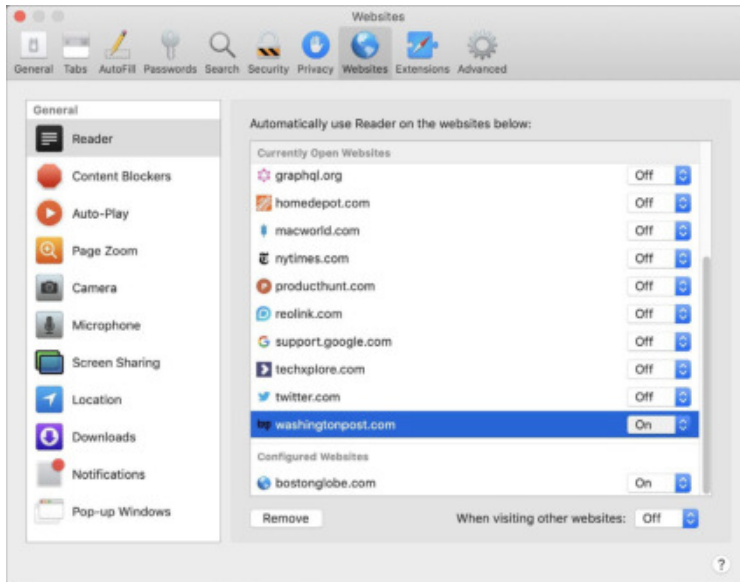
several options. (With Reader View disabled, you can use the normal Command-plus [+] and Command-minus [-] keystrokes to enlarge or reduce the type size proportionately along with graphics. Press Command-zero [0] to return to the default.)

In iOS and iPadOS, tap the Reader View icon and tap the small A or large A to vary type size. This works for normal page view and in



Safari for macOS let you select Reader View with a click and apply settings from the Location Bar.





You can change settings all at once for Reader View in Safari for macOS's Preferences.

Reader View. In Reader View, you can also choose among typefaces and background colors.

## HOW TO USE APPLE ID TO CREATE PASSWORDS FOR YOUR APPS

Apple upped its account security for Apple IDs years ago to prevent unwanted and unauthorized third-party access to all your information. Apple relies on Apple ID across all its software and services, but third-party software can only gain access to three kinds of data: email, contacts, and events.

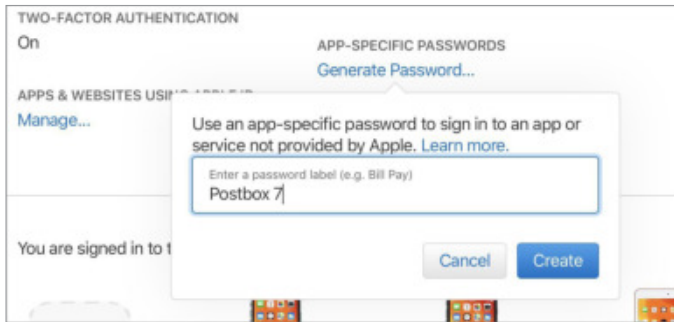
Apple requires web-connected and native mobile or desktop software—on iOS, Android, Windows, macOS, and others—that want to use any of those three kinds of data to use a special kind of access. You create a so-called app-specific password for each piece of software to

which you want to grant access.

Google and other ecosystems offer a similar approach to reduce the opportunity for exploitation. Apple lets this password be used for email, contacts, and events; some other systems require you lock it down to one of those three services, or even to a task as specific as “retrieving email.”

To create an app-specific password, follow these steps:

1. Log in to your Apple ID account in a web browser at [appleid.apple.com](https://appleid.apple.com) ([go.macworld.com/iapl](https://go.macworld.com/iapl)). (You can only create and manage these passwords at the



**Label your app-specific password so you can tell which one to revoke later, if you need to**

website.)

**2.** In the Security section, click Generate Password.

**3.** Enter a label to remind you on why you created the password and click Create.

**4.** The site creates a password that you can write down or select and copy. Click Done.

**5.** In the third-party software you're using, enter your Apple ID email address and this password. No additional steps are required.

You can create up to 25 app-specific passwords. While Apple recommends you create one for each service or site, you can re-use them.

The utility of app-specific passwords is that you can revoke them without resetting your account.

**1.** Log in at the Apple ID site.

**2.** Click Edit to the right of the Security label.

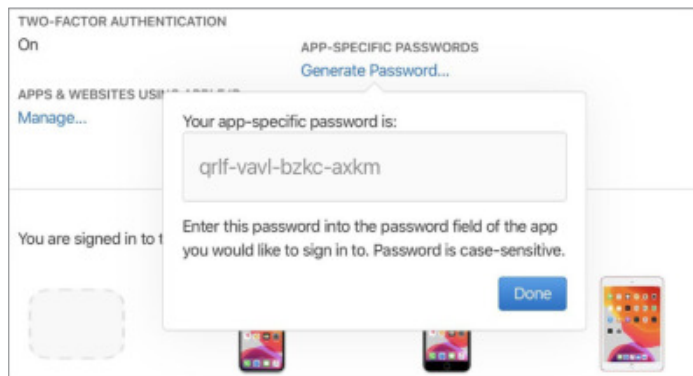
**3.** To the right of the app-specific password

generation link, click View History.

**4.** The site displays a list of passwords with labels and when they were created.

Click the X to the right of the listing and then click Revoke to remove it. You can also click Revoke All to deny access to all third-party apps if you believe something was compromised.

Treat these app-specific passwords with the same kind of care as you would



**I can show this password, because I later revoked it.**

your main iCloud password. Someone who gains access to your email can often use that as a scaffolding to access other parts of your life, such as sending password reset requests to the iCloud email address for other services, receiving second-factor login codes for financial institutions, or confirming transactions via email.

## HOW TO CHANGE YOUR KID'S ADULT APPLE ID ACCOUNT TO A CHILD ACCOUNT

Let's face it: a lot of people may have created Apple IDs for their kids for convenience while skirting Apple's rules about the age at which an account can be created. That's 13 in the U.S. ([go.macworld.com/13us](http://go.macworld.com/13us)) and many countries, unless you use the option within Apple's Family Sharing to create a Child Account.

If you weren't using Family Sharing, however, and—ahem—  
invented an earlier birth date for one or more child, you can still rewind the clock and gain the advantages for age-based control within Family Sharing.

For our family, that includes not just using Screen Time to limit and monitor access to all their Apple devices, but—and the kids actually like this—remotely disabling Screen Time if they are on a sleepover or away on a school trip and we are willing to let them use their screens past our household limits. (That was a selling point to at least one kid, along with access to a much larger pool of shared iCloud storage.)

First, add the child to Family Sharing. (See Apple's instructions on how to invite family members.)

Then, simply log in using the kid's Apple ID credentials at the Apple ID site ([go.macworld.com/iapl](http://go.macworld.com/iapl)), click Edit in the account section, and change the birth date. Click Done.

If you return to the Family Sharing view on any parental Mac, iPhone, or iPad, the correct age is now listed. ■



The screenshot shows the 'Account' page for an Apple ID. At the top, it displays the Apple ID as '.....@icloud.com' and a 'Done' button. Below this, there are two main sections: 'NAME' and 'BIRTHDAY'. The 'NAME' section has three input fields: 'First name' (containing 'John'), 'Middle name (optional)', and 'Last name' (containing 'Fleishman'). The 'BIRTHDAY' section has a 'Birthday' input field (containing '2004') and a note: 'Your correct birth date is required to enable some Apple services.'

**You can update the birth date for a child's account if they mysteriously grew younger over the years since you first created it.**