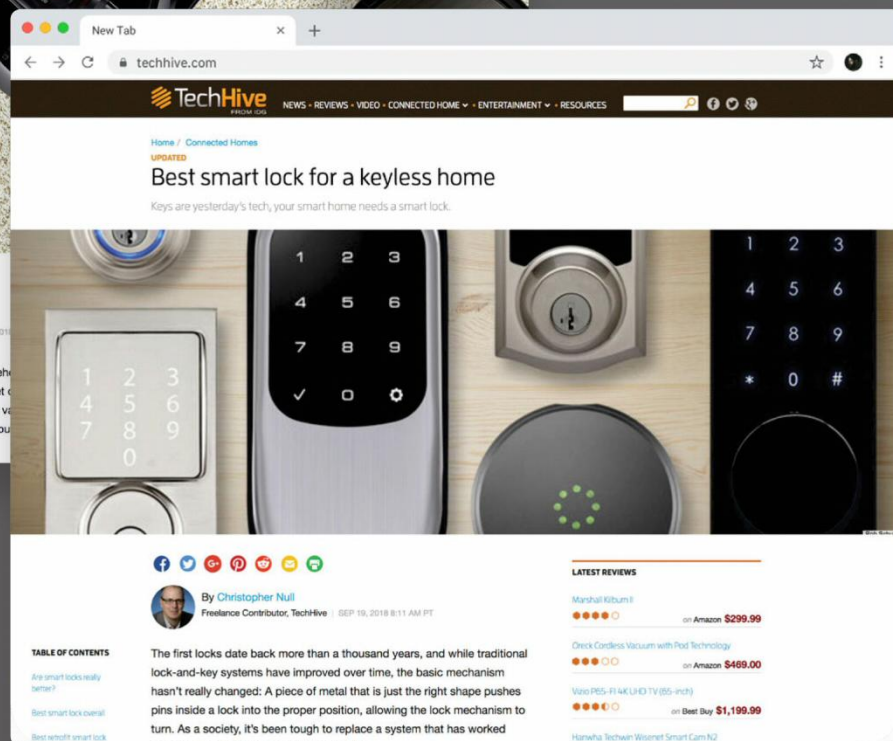
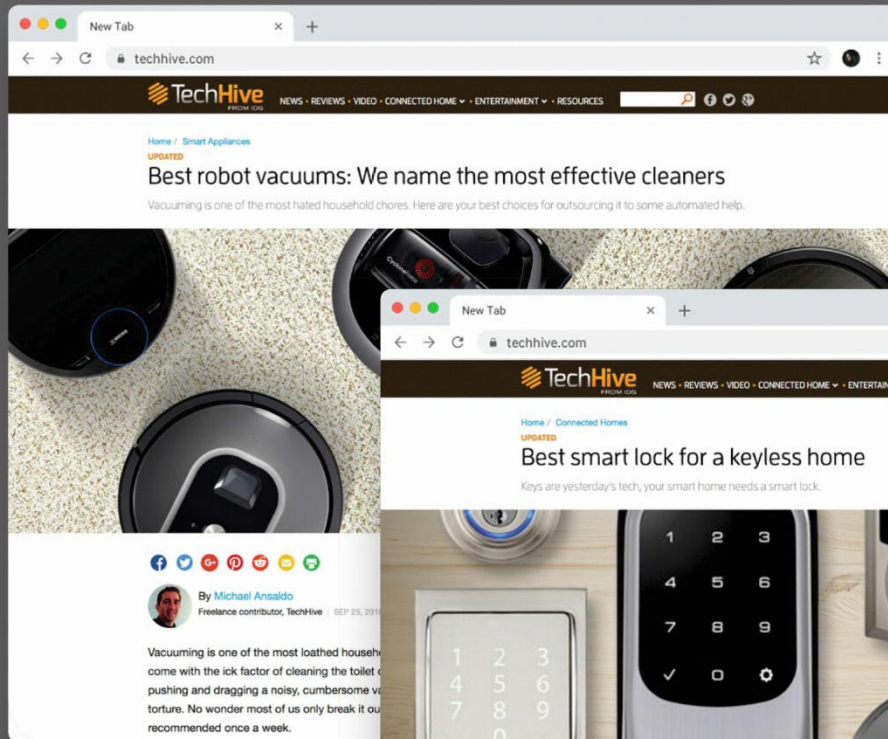


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AUGMENTED REALITY: 10 iOS APPS YOU HAVE TO TRY

Macworld

SEPTEMBER 2019

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NEW!

APPLE'S 13-INCH MACBOOK PRO REVIEWED

UPDATES MAKE THE NEW
ENTRY-LEVEL MODELS
WORTHY OF THE PRO NAME



A young boy with short dark hair, wearing a grey t-shirt and blue jeans, stands on a black plastic crate in a cluttered garage. He is looking back over his right shoulder towards the camera. The garage is filled with metal shelving units holding various items like boxes, tools, and paint cans. A broom is leaning against the shelves on the left.

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FAMILY FIRE is a shooting involving an improperly stored gun, often found in the home.

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How a 16-inch MacBook Pro sets the table for ARM MacBooks

A \$3,000 Apple laptop isn't surprising, given how Apple prices its Pro products.

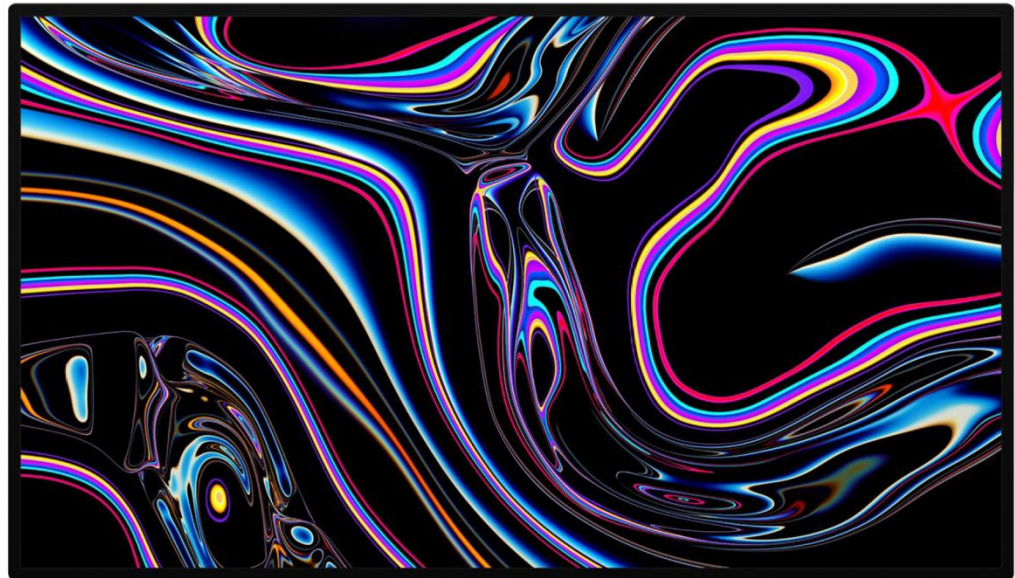
BY JASON SNELL

A 16-inch MacBook Pro with reduced bezels and possibly a new keyboard design is coming in October, according to a report in the Economic Daily News relayed by 9to5Mac (go.macworld.com/16mp).

Most notable in this latest suggestion of Apple's next-generation laptop is the price—EDN suggests a starting price around an eye-watering \$3,000.

Should we be surprised? Apple has

never been focused on being the low-price leader, and at the top end of its product range, it has been unafraid to charge a whole lot of money... especially for products bearing the name *pro*.



FROM POWER USERS TO PROS

Long after the arrival of the iMac as a low-cost consumer computer, most Mac power users still bought Power Macs. But during the Intel switch, Apple turned the Power Mac into the Mac Pro—and that was more than just a marketing change. If the Power Mac was used by power users (and yes, its name also signified that it had a PowerPC processor inside), the Mac Pro was meant to be used by pros and is priced accordingly.

Look at the Mac desktop landscape today: The iMac is so powerful (and the iMac Pro and Mac Pro so expensive) that it has absorbed most of the users who once would've turned their noses up at it. Apple has redefined its desktop line so that its most powerful devices are also so expensive that they don't make sense for most users.



Apple Pro Display XDR.

Consider what we all learned when Apple introduced the Pro Display XDR (go.macworld.com/prds), namely that professional markets bear no resemblance to the world inhabited by consumers (or professionals in other areas). What looks like a ridiculously expensive display to us looks like a great value to buyers in specific professional markets.

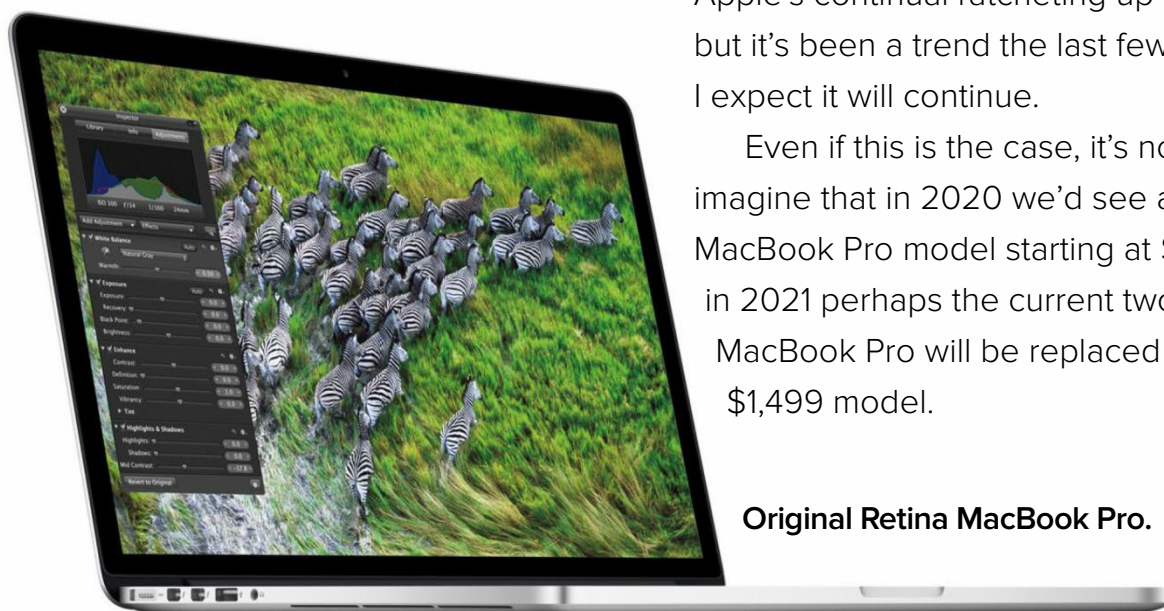
The message is that at the high end, Apple is the maker of products built for the needs of professionals—and priced accordingly. In the old days, a power user could pretend they were a “pro,” but these days if you fancy yourself a pro you will pay dearly for it.

The same story seems to be repeating itself in Apple's laptop line now. A \$3,000 laptop? Many of us will look at that price and flee to the \$1,099 embrace of the MacBook Air, a really solid laptop that—let's be honest with ourselves—offers enough power for maybe 95 percent of Mac buyers.

And many of the people in that other five percent will wince at the price, but immediately place an order for one.

IT ALL ROLLS DOWN

Now the good news: The shock and outrage (you know there will be outrage) when Apple dares to introduce a \$3,000 laptop will die down and Apple will do what it always does. It will roll the improvements introduced in the 16-inch MacBook Pro down to the rest of its product line, slowly making them available at lower prices.



Original Retina MacBook Pro.

Consider the original Retina MacBook Pro (go.macworld.com/oret), which was priced at \$2,199, quite a lot more than the non-Retina models that were available at the same time. People paid a premium for that first model, but seven years later all of Apple's laptops are Retina and you can buy one for as low as \$1,099.

It's also not quite as big a jump as you might think. The top-of-the-line 15-inch MacBook Pro model currently sells for \$2,799. A base model 16-inch model at \$2,999 would be a modest price increase for the first model in a brand-new Apple hardware generation.

It also suggests that perhaps Apple's overall plan is to eventually roll out replacements for the 13-inch MacBook Pro (a 14-inch reduced-bezel model, maybe?)—but keeping prices \$200 or so above the price of current models. I don't love Apple's continual ratcheting up of prices, but it's been a trend the last few years and I expect it will continue.

Even if this is the case, it's not hard to imagine that in 2020 we'd see a 14-inch MacBook Pro model starting at \$1,699, and in 2021 perhaps the current two-port MacBook Pro will be replaced with a \$1,499 model.



2019 MacBook Air.

ARM FOR THE REST OF US?

The problem with this scenario is not that Apple apparently wants to make higher-end laptops and charge higher prices for them. It's more that Apple's consumer-friendly laptop line currently lacks variety, and that's putting it mildly.

As much as I love the current-model MacBook Air, it is literally the only consumer-grade laptop Apple sells today. Apple seems to have spent the last couple of years cleaning up the mess it made (go.macworld.com/ardi) in miscalculating the appeal of the 12-inch MacBook and the 13-inch MacBook Pro, which is admirable—but right now, if you don't want to pay for a MacBook Pro, all you're left with is the Air.

If Apple's really going to ratchet up the price and specs of the MacBook Pro, it's incumbent on the company to provide

non-pro users with more options. All the rumors of Apple soon making a transition to Apple-designed ARM processors on the Mac actually follow from this—after all, laptops would benefit the most from the improved power efficiency of ARM processors.

Maybe the future of Mac laptops really is two-fold: A set of pricey MacBook Pros powered by Intel processors, and (ideally) more than one ARM-based laptop that will fit the budget and needs of the general buying public.

It might work, but Apple is going to need to provide more variety on the consumer side of the product line before MacBook Pro users feel comfortable in migrating en masse to the MacBook Air. As with so much of Apple's laptop line in the last few years, this still feels like a work in progress. ■



Does Apple's simplified Mac lineup have a hole in it?

Apple's recent tweaks to its portable Mac lineup puts the company in an unusual position.

BY DAN MOREN

When Steve Jobs came back to Apple, one of his early moves was to vastly simplify what had become a bloated lineup of Mac hardware. Jobs famously showed off a two-by-two product grid: pro and consumer, desktop and portable. Filling the grid were four products—iMac, Power Mac, iBook, PowerBook—each addressing one of

those combinations.

The two-by-two grid lasted for several years, until the debut of the category-busting Mac mini in 2005. Since then, there's been an almost magnetic impulse to cite the grid as the holy grail of Apple product design aspirations. Every time Apple releases a new Mac, pundits try desperately to figure out how to shove that latest addition into

the already bulging grid.

With the company's recent rearrangement of its portable lineup (go.macworld.com/shke), Apple has gotten both closer to and farther away from that product grid ideal—if indeed it's even an ideal that Apple should be striving for anymore. But what the new lineup does point out is that there's a puzzling imbalance in the company's Mac offerings.

HOME AND AWAY

At the end of last year, Apple announced that it would no longer report unit sales on its products, depriving both financial analysts and us poor tech writers of hard data on which to base our speculation. But look back further and you'll find Apple actually used to break out its portable versus desktop sales. The last filing to report those, in the last quarter of 2012, shows that the company sold about a million desktops, compared to 3 million portables.

Since then, Apple has given occasional breakdowns on the percentage of desktop versus laptop sales, though even those occasional breakdowns have become fewer and farther between. But in general, Apple's laptop sales are



A vast majority of Macs sold by Apple are laptops.

understood to outpace those of its desktops.

Of course, some of that could be attributed to pent-up demand: Apple's lackluster 2013 Mac Pro stifled sales for high-end desktop Macs; the same could be said on the low end for the Mac mini, which went several years without a significant upgrade. But the overall trend in the market has been undeniably toward mobile computing, driven in part by Mac laptops, but also by the phenomenal success of iOS devices.

LAPTOP OF LUXURY

Given the high demand for Mac laptops, it makes sense that Apple would be aggressive about its products. Hence the recent rejiggering of the MacBook lineup, which saw cheaper entry-level prices for the MacBook Air and MacBook

Pro, as well as the latter getting a more streamlined selection of models. (For the moment, we'll set aside the frustrations about Apple laptops voiced from certain corners, including keyboard woes.)

The simultaneous discontinuation of the 12-inch MacBook, Apple's smallest and most lightweight offering, seemingly brings the laptop lineup back into the territory of that two-by-two product grid: the MacBook Air is Apple's consumer portable; the MacBook Pro is its professional model.

But this also means that, for the first time in a long time, Apple's desktop lineup provides a broader range of options than its laptop bench. You have the Mac mini, the iMac, the iMac Pro, and the forthcoming Mac Pro. Even if you jammed the iMac and the iMac Pro into the same product box, your grid would still be straining at the seams. In fact, you can pretty much move the desktops into their own two-by-two product grid: all-in-one consumer (iMac) and professional (iMac Pro) models versus modular consumer (Mac mini) and

professional (Mac Pro) models.

Even that analogy is imperfect: while the Mac Pro and iMac Pro are clearly professional-level machines, the iMac and Mac mini are hardly slouches.

THE MISSING LINK

So, what gives? Is Apple all in on desktops over laptops now? One interpretation might be that Apple has realized mobile computing has shifted toward iOS devices, especially for the kind of lightweight category that the 12-inch MacBook used to fill.

Still, the MacBook lineup seems to be missing something. Since the MacBook Air's introduction back in 2008, Apple's always had a thin, light laptop in the mix, usually representing the puck toward which the company is skating with its



RIP, MacBook. (For now, maybe?)



portable offerings. But with the 12-inch MacBook, the consensus often seemed to be that the company had skated too far too fast, made too many trade-offs. It didn't help that the revamped MacBook Air seemed to address much the same market, and provided better bang for the buck.

But that doesn't mean there isn't room for an ultralight MacBook in the mix. I've been banging the ARM-based MacBook drum for a while now, in the hopes that I'll eventually be that stopped clock that's right twice a day. Such a device could theoretically provide much better power efficiency in a package that's lighter and smaller than a MacBook Air—and perhaps has more acceptable trade-offs. And if a newer device is in the works, it potentially explains why Apple might choose to discontinue the 12-inch MacBook now rather than simply updating it at a later date.

GOODBYE, GRID

That said, what Apple's overall Mac lineup makes clear is that the two-by-two product grid of yesteryear isn't an ideal we'll be getting back to anytime soon. For one, as much as the lines between consumer and professional have blurred, the types of devices have gotten fuzzy as well. Where do iPads fall in that theoretical grid? Are they part of the company's portable strategy, or an entirely separate row in the grid? What about iPhones, for that matter?

As comforting as the two-by-two product grid is, it's ultimately a pipe-dream in this day and age. Most of us don't have just one or two devices anymore: we have a panoply of gadgets that fill a variety of purposes, from Apple Watches on our wrists to Apple TVs or HomePods in our houses. The product grid was a useful tool, once upon a time, but perhaps it's outlived its usefulness in a day and age where it seems we all live inside a grid all the time. ■



Messages and Maps: Two apps Apple should port from iOS to Mac

The Mac versions of these apps are way behind their iOS counterparts. Catalyst could help fix that.

BY JASON CROSS

With macOS Catalina ([go. macworld.com/ctlm](https://go.macworld.com/ctlm)), Apple is providing a tool for developers (called Catalyst) that makes it really easy to take an existing iPad app over to the Mac. Apple started testing the technology in macOS Mojave last year, by porting over some of its own iOS apps—News, Home, Voice Memos, and Stocks.

This year, Apple expands its list of iOS

apps on Mac with Music, Podcasts, TV, Screen Time, and the new Find My app. Those first four apps introduced last year are getting an upgrade, too. While these are welcome changes, I can't help but think Apple is missing a huge opportunity. Two of macOS's most important apps—Maps and Messages—are so far behind their iOS counterparts that we would all be better-served by Apple just porting the iOS app in the same fashion.

MACOS MESSAGES IS BARE-BONES

While Apple has done a good job of syncing messages between the Mac and iOS, the experience of creating new messages on macOS is a skimpy shell of the iOS experience. You don't get integrated GIF search, stickers, Animoji and Memoji, nor any of the add-on iMessage apps. If you want to send money with Apple Pay through Messages, you can use your iPhone, iPad, or even your Apple Watch...but not your Mac.

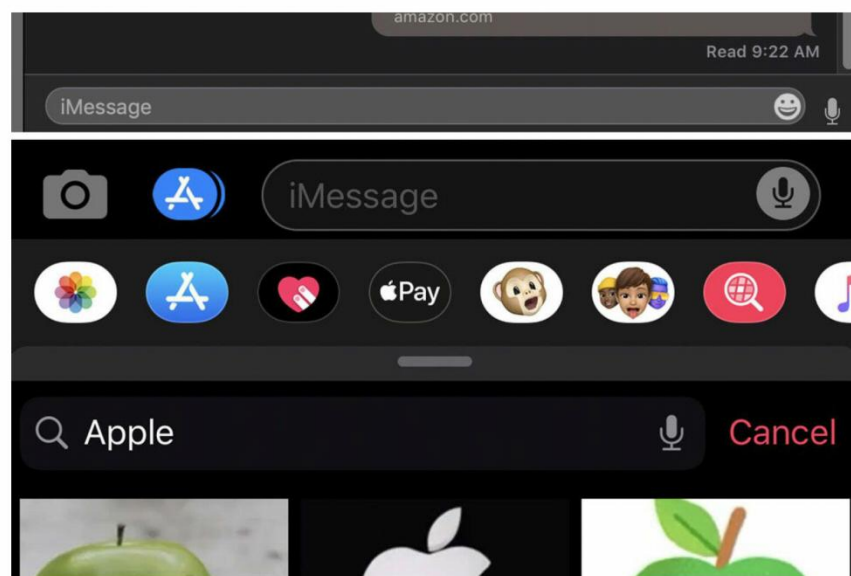
The new features of Messages in iOS 13, like the excellent new real-time search and Memoji-based emoji stickers, widen the gap even further.

Some functions exist on both platforms, but are much easier on iOS. For example, you can send a photo on iOS by tapping

the Photos app icon. On a Mac, you have to open the Photos app and copy/paste or drag the image you want in there.

Of course, some iOS Messages features probably wouldn't be able to make the jump to Mac—at least not right away. Those iMessage apps are not really a feature of the Mac App Store, and even with Catalyst it's not really clear if the right hooks exist to allow apps to integrate with Messages.

Similarly, Animoji and Memoji would be abbreviated on the Mac. With no TrueDepth sensor available, you wouldn't be able to send animated messages with them. But, the new emoji stickers using your own Memoji character could easily sync over the cloud from iOS to Mac. And there's no reason the Mac can't be used to create and edit a Memoji, just as iPhones that don't have TrueDepth sensors will be able to with iOS 13.



On iOS you get GIFs, Apple Pay, Animoji, Memoji, Photos, Digital Touch, and more. On macOS (top) you get...emoji.

MAPS FEELS OLD AND CLUNKY

Maps on macOS isn't as far behind as Messages is. You get nearly all the features of the iOS 12 version. It's the interface that feels old and clunky, as if it sprung out of a five-year-old time capsule. It's all pop-up cards and large, colorless, wide text-labeled buttons instead of icons and

sidebars. At least it pulls from the same dataset as the iOS app, so it will show the improved map detail as it rolls out this year.

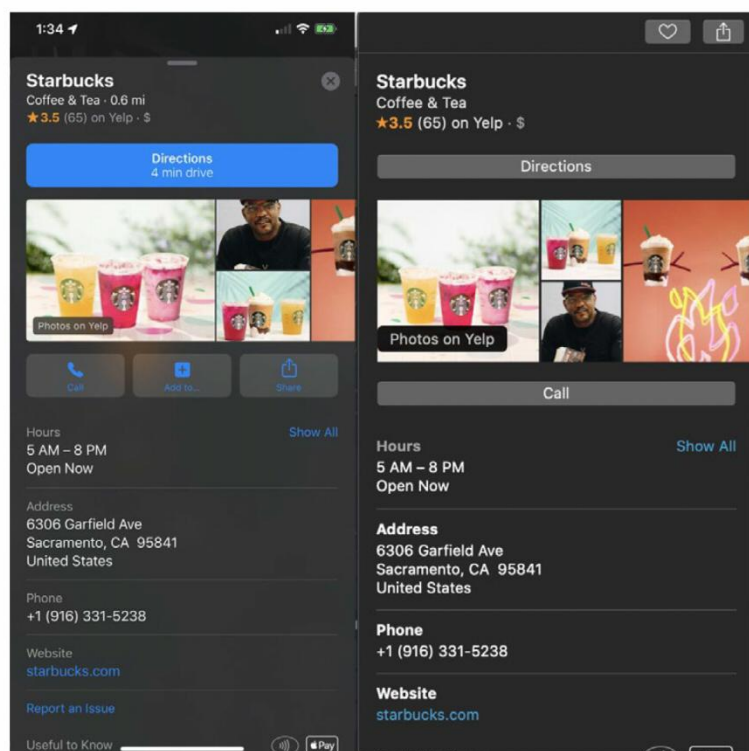
And iOS 13 adds significant new Maps features (go.macworld.com/mp13) that you won't find on macOS Catalina. There are no Collections, no real-time flight and transit info, and the hot new Look Around feature is M.I.A.

The new Share ETA feature isn't there either, but that's a function of real-time navigation, which is (rightly) only on the mobile platforms.

SOFTWARE THAT'S STUCK IN THE PAST

Messages and Maps on macOS feel like a relic of Apple before it tried to bring iOS and macOS closer together. They feel almost obligatory, while the iPhone versions feel like labors of love. Apple was smart to recognize that iTunes had become an unwelcome relic and to break it up into Music, Podcasts, and TV apps that bring more of the modern design and functionality of iOS to the Mac.

It's time to do the same with Maps and Messages. Ideally, these apps would look, feel, and function as much like their iOS counterparts as possible, with obvious desktop-style interface conventions in place (sidebars, title bars, menu bars, keyboard shortcuts, scroll bars where



Maps on macOS (right) uses the same data as on iOS (left), but the design feels lost in time.

appropriate, and so on).

The iOS versions of these apps are so far ahead of their macOS counterparts that it would benefit all of us if Apple simply ported them over. In addition, maintaining a single app version for all platforms helps ensure that the Mac and iPhone stay in lockstep over the following years, with features and design changes coming to both platforms at once.

Apple hasn't given any indication that either of these apps are getting the Catalyst treatment in macOS Catalina, but with any luck, it's already in the works and we won't have to wait until next fall's macOS update to get them. ■



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SOFTWARE

GO64: FREE UTILITY PREPS MAC USERS FOR 64-BIT CATALINA APP-OCALYPSE

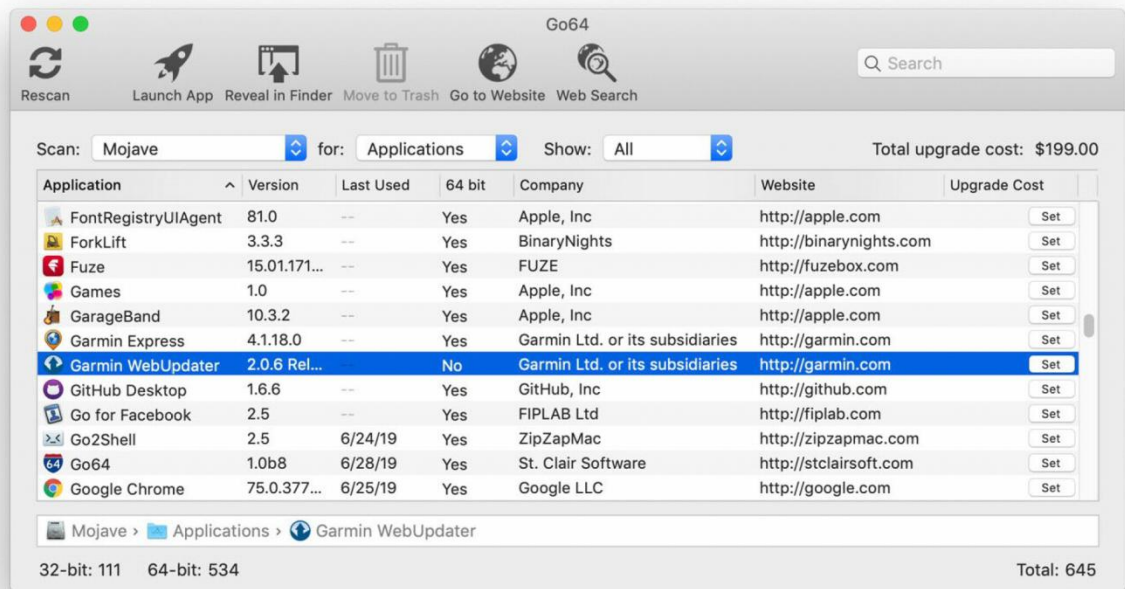
BY J.R. BOOKWALTER



As you've probably heard, Apple is finally eliminating support for 32-bit Mac applications this fall (go.macworld.com/32bt). That means older software which hasn't moved to 64-bit code won't work on the latest macOS Catalina and although Cupertino has provided guidance on the impending "app-ocalypse," identifying and taking action on affected apps is a hassle.

A free (donations accepted) Mac utility called Go64 (go.macworld.com/go64) aims to ease the 64-bit transition by performing a quick scan of your applications and

Go64 provides a more detailed look at which apps need to be updated or deleted before installing macOS Catalina.



creating an inventory of those where 32-bit code is still present. It's fast and painless—Go64 took less than 45 seconds to scan 1,586 apps (!) on my iMac Retina 5K startup disk.

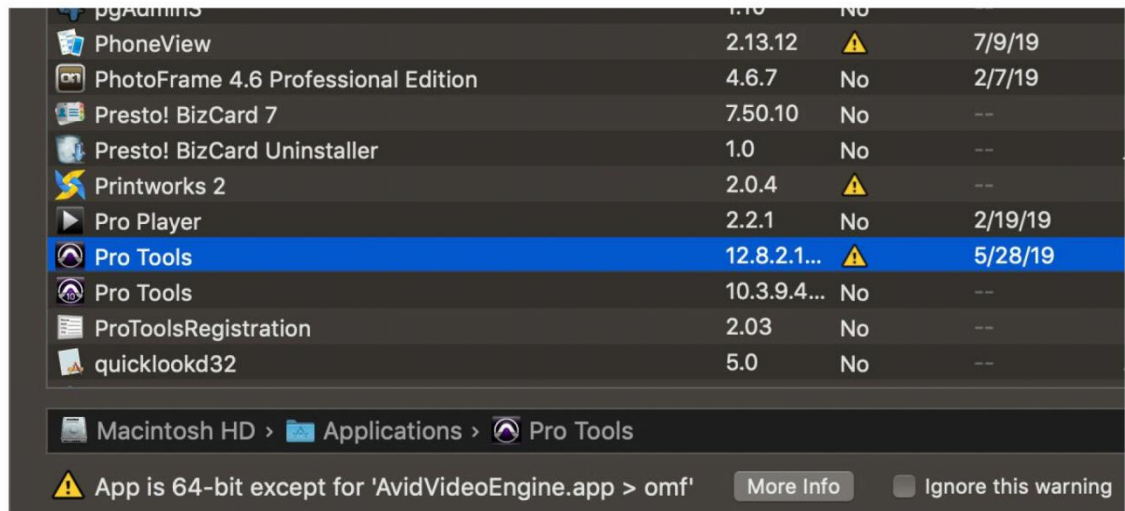
SCANNING CODE

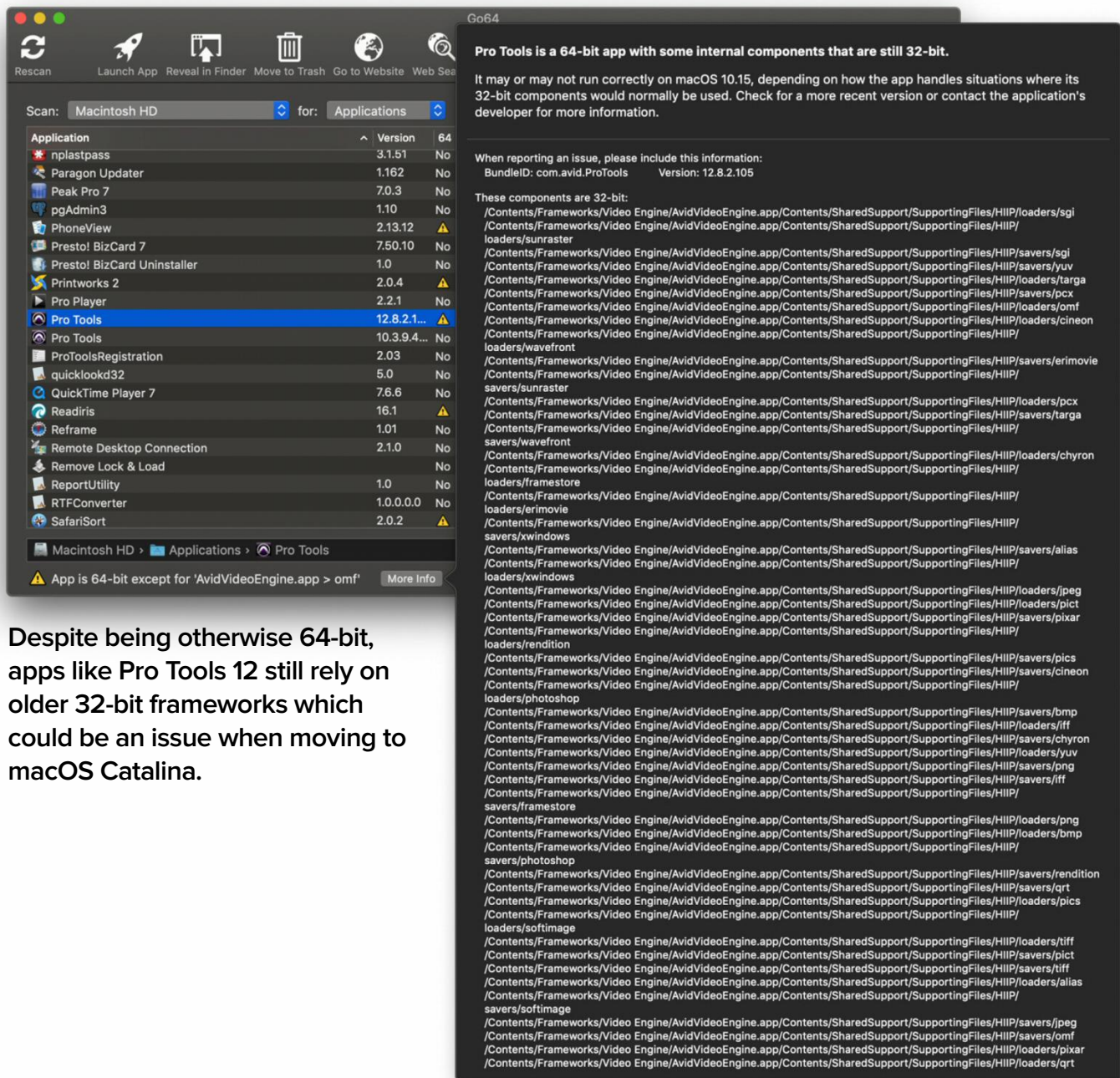
Of those, about 150 apps were 32-bit only, many support apps from older Adobe Creative Suite installations. The remaining

45 were technically 64-bit, with minor dependencies on older 32-bit code. Such apps appear with a yellow warning in the 64-bit column and should work fine under Catalina. (That includes Apple's Final Cut Pro X and Compressor 4, which are expected to be fully compatible by the time Catalina is released.)

Selecting an app with this warning displays additional information at the

Many 64-bit apps include legacy 32-bit code, so Go64 displays a warning so there are no surprises.



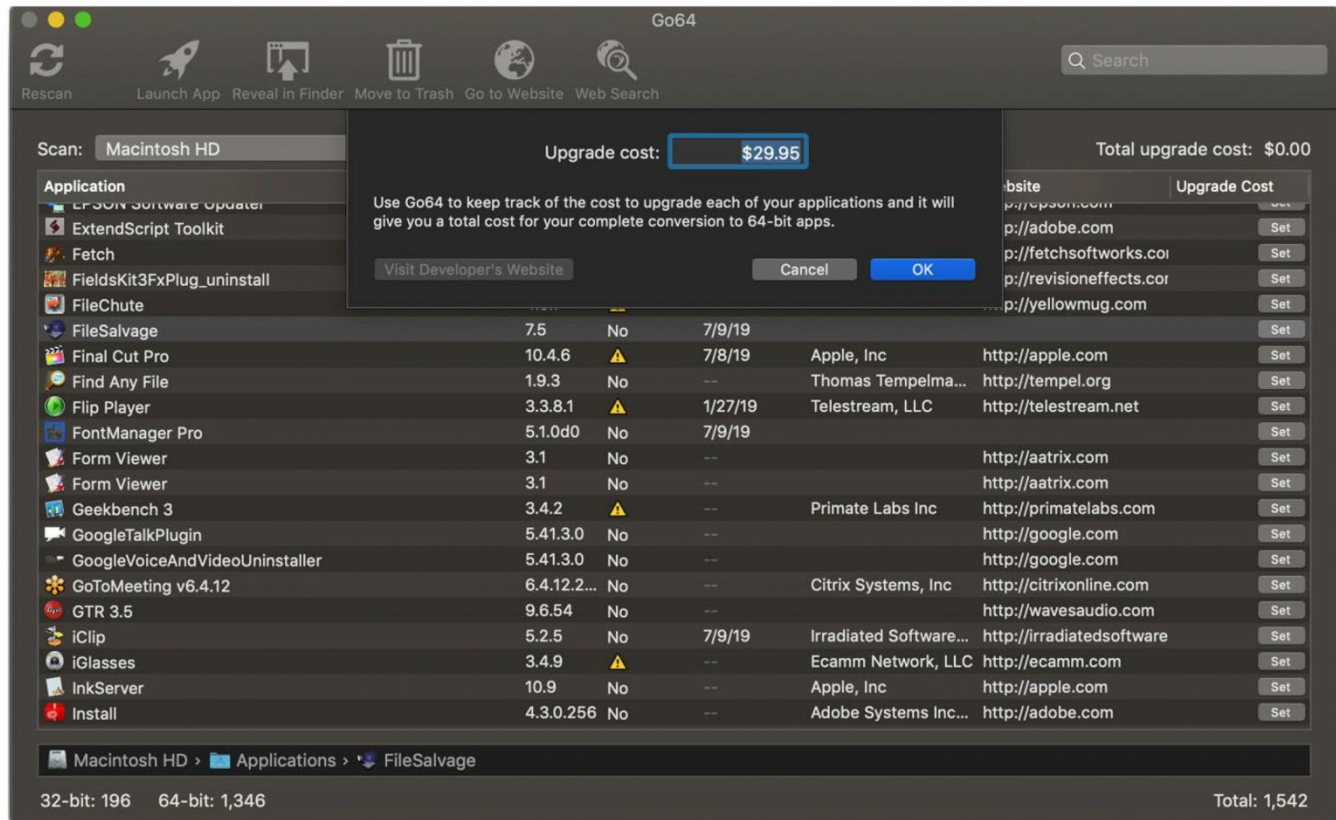


Despite being otherwise 64-bit, apps like Pro Tools 12 still rely on older 32-bit frameworks which could be an issue when moving to macOS Catalina.

bottom, while clicking More Info shows a complete list of outdated components. In the case of an otherwise 64-bit Pro Tools 12, the AvidVideoEngine.app frameworks are still 32-bit code; the older Pro Tools 10 is entirely 32-bit, and therefore incompatible.

GETTING UP-TO-DATE

Finding 32-bit apps is only half the battle—Go64 is designed to also help upgrade or purge older software. Although not an automated process, most software identified by Go64 includes a company name and website, available in the toolbar.



Go64 lets you log upgrade costs for future reference.

After researching potential upgrades from the developer, costs can be manually logged for future reference; it's also possible to save reports, but there's no way to print or export as PDF. For many unwanted or abandoned apps, a click of the Move To Trash button purges them from your hard drive; others have to be manually deleted.

Thanks to Go64, we've gotten a jump on cleanup ahead of Catalina. Aside from a



Go64

PROS

- Free utility identifies 32-bit apps before upgrading to macOS Catalina.
- More detailed report than Apple's own System Information.
- One-click link for researching upgrades on developer website.

CONS

- Reports can't be printed or exported as PDF.
- Upgrade cost must be entered manually.

COMPANY

St. Claire Software

splash screen when quitting the app (which can be turned off after the first time) promoting other St. Clair Software utilities like the excellent Default Folder X, there are no intrusive ads or personal data requests.

BOTTOM LINE

Go64 is a fast, free way to get a comprehensive look at your 64-bit app compatibility and avoid surprises before installing macOS Catalina. ■



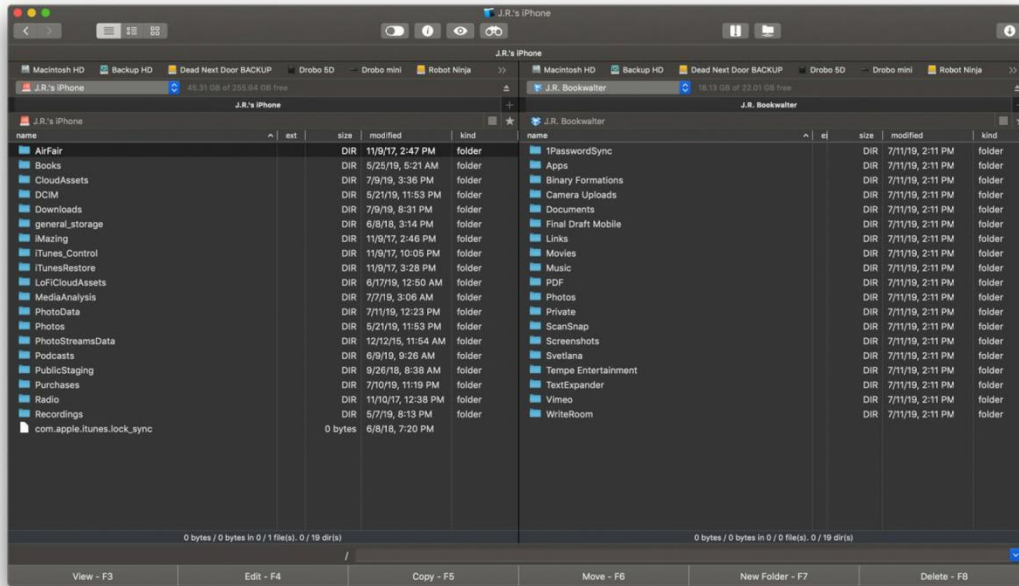
SOFTWARE

COMMANDER ONE 2.1: MAC FILE MANAGER NOW WORKS WITH IOS DEVICES

BY J.R. BOOKWALTER

For average Mac users, the concept of a separate application just to manage files and folders probably sounds like overkill. After all, the Finder is free, baked right into macOS, and does just about everything one could ever want. But file manager apps are no longer just for power users, and once you've gone dual-pane, it's hard to go back.

Transmit (go.macworld.com/trmt) and Forklift (go.macworld.com/fklf) are among the most recognizable names in the Finder alternative subgenre, but the folks at Eltima Software have also been busy cultivating their own solution in recent



With support for macOS Mojave Dark Mode, Commander One 2.1 is a great way to manage files on your iOS devices, in Dropbox, and more.

years, and if you can deal with the less-refined Windows-style UI, has a few unique tricks up its sleeve.

MASTER AND COMMANDER

Featuring a dual-pane user interface with support for tabbed windows, Commander One 2.1 (go.macworld.com/cmd1) doesn't look all that different from its predecessor. The first thing macOS Mojave users will notice is the app now supports system-wide Dark Mode, a welcome addition that gives the otherwise button-heavy UI a more streamlined appearance.

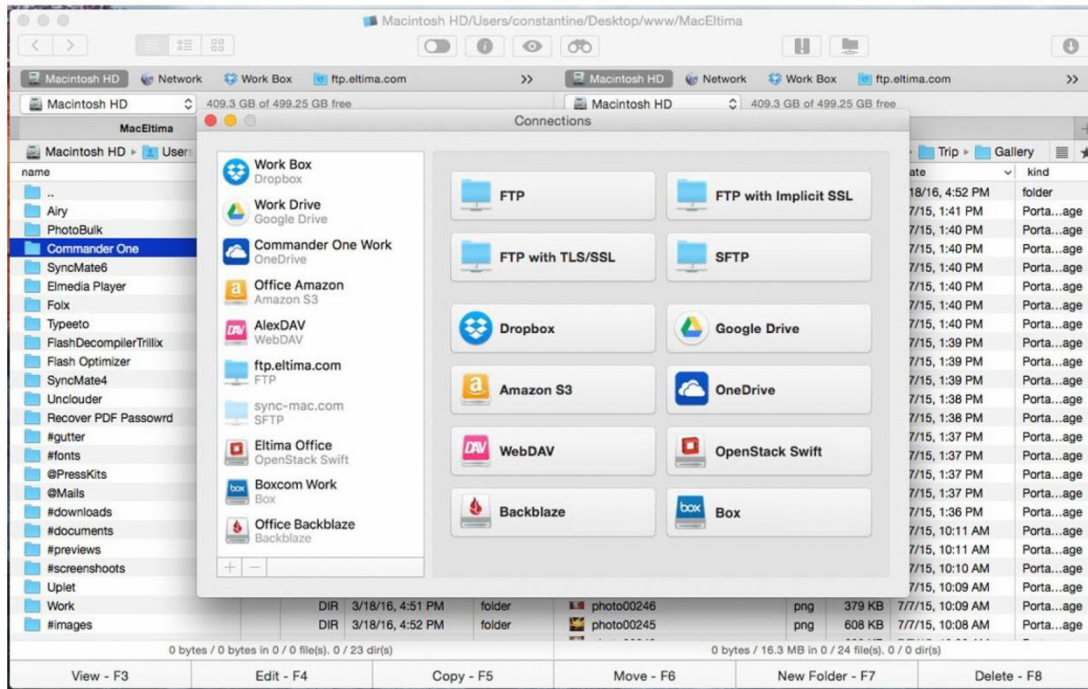
Dark Mode support alone doesn't go quite far enough however, since the background of the dual file browser panes remain bright white by default. Thankfully, Commander One's own color settings

come to the rescue—switching to the Unpositive preset paints the entire user interface with the same level of eye-pleasing darkness.

The only catch is that, after a 15-day trial period, you'll have to pony up

\$30 for the Pro Pack upgrade to use themes, but that purchase unlocks a long list of other features too. In addition to browsing local and network-attached volumes, the Pro version works with FTP and WebDAV servers as well as cloud services, adding Box and Backblaze to the original lineup (Dropbox, Google Drive, OneDrive, Amazon S3).

Another new Pro feature is the ability to mount iOS or MTP devices in addition to Android, although in the case of iOS, an administrator password is required every time Commander One is launched due to Apple's restrictions. The only way around this limitation is to disable the iOS extension altogether, which can be done from the launch prompt or Preferences → Extensions panel.

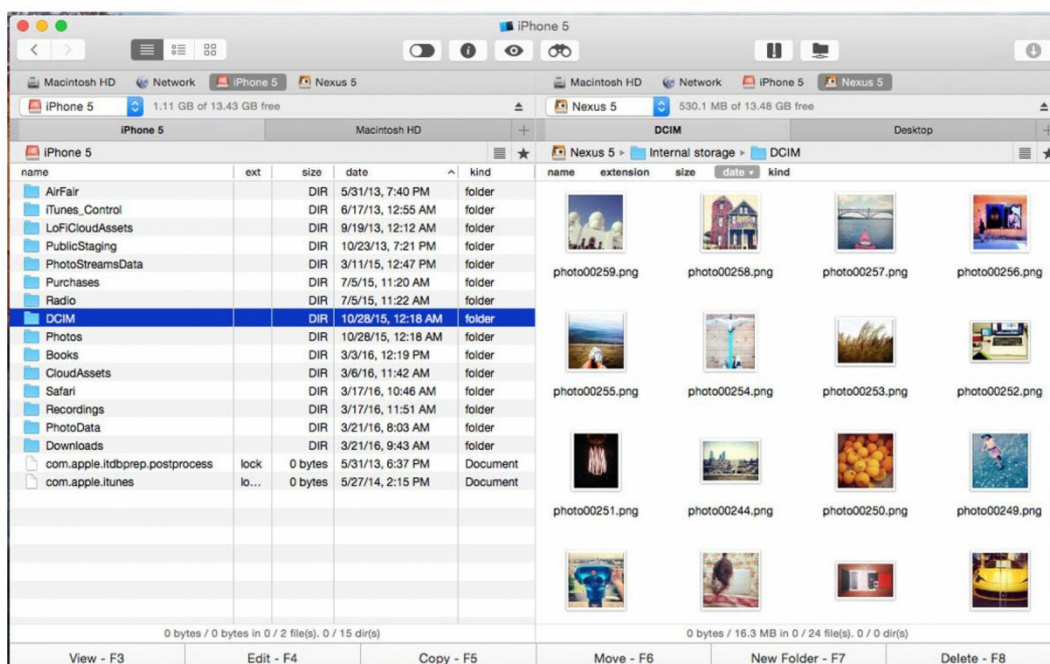


The Pro Pack upgrade allows Commander One to access FTP or WebDAV servers and cloud services in addition to local and network-attached volumes.

LESS FINESSE

Although a welcome addition to its arsenal, Commander One's implementation of iOS device support is no substitute for dedicated utilities like

iMazing (go.macworld.com/imzg) or PhoneView (go.macworld.com/fnvw), both of which present mobile data in a more elegant, user-friendly way. By comparison, the extension is a down and dirty, low-

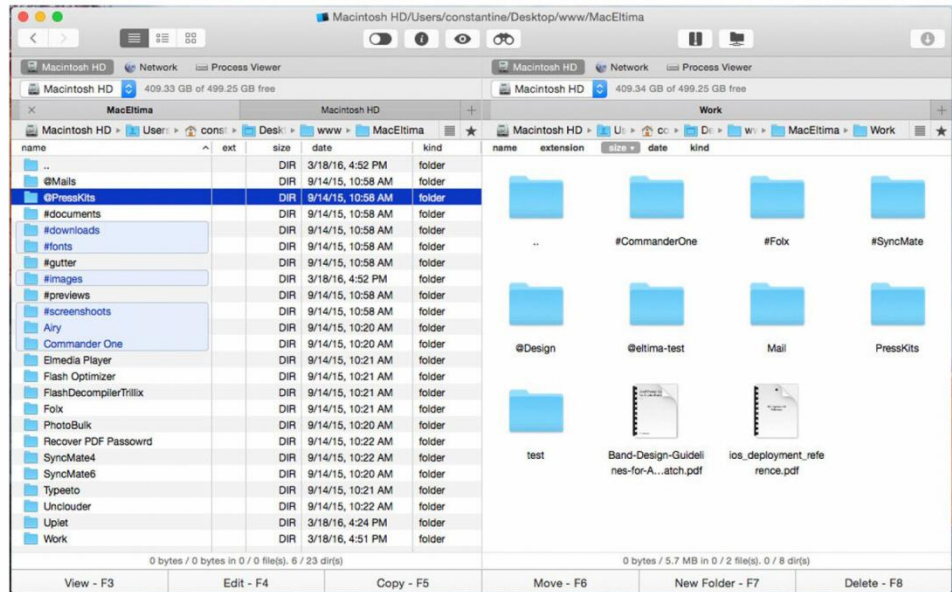


Commander One can now directly access iOS devices via Wi-Fi or wired connections, but it's not quite as intuitive as dedicated software like iMazing.

level approach to accessing iOS data, but one better suited to advanced users who know what they're doing.

Such power comes with an overall lack of polish—although Quick Look is built into Commander One, pressing the spacebar doesn't preview a file or folder, but rather selects or deselects it instead. Worse yet, selecting multiple non-contiguous items requires holding down the Command key the entire time—that takes some getting used to, since it's the opposite of how Finder works, where the first click needs no modifier. Unselecting all files also requires a nonstandard Command-hyphen keyboard shortcut.

On the plus side, WebDAV connections are now super-fast, and Commander One supports Finder tags and extensions, making it easier to color-code or manually add files to connected Dropbox or Google Backup & Sync



Commander One handles multiple selections just fine, but it's not quite as intuitive as using the Finder.



Commander One 2.1

PROS

- Powerful dual-pane alternative to macOS Finder.
- Supports Mojave Dark Mode, Finder tags, extensions.
- Configure appearance of built-in Terminal.

CONS

- Pro Pack upgrade required for advanced functionality.
- iOS device support barebones at best.
- Clunky item selection, Quick Look preview.

PRICE

\$30

COMPANY

Eltima Software

accounts, for example. The built-in Terminal has also been enhanced with the ability to change text size, color, background, and cursor type, which will have power users jumping for joy.

BOTTOM LINE

Although lacking the refinement of competitors Transmit and Forklift, Commander One 2.1 delivers a handful of welcome new features and under-the-hood improvements that make it worth checking out, but only if you're willing to shell out for the Pro upgrade. ■

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Jacob Sanchez
Diagnosed with autism

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Hot Stuff

What We're
Raving About
This Month

iLIFE SHINEBOT W400

iliferobot.com

The iLife Shinebot W400 is a welcome departure from the typical robotic floor mop. It diligently scrubs floors, providing the agitation needed to lift up stubborn stains and leave the surface spotless. The Shinebot W400 uses a rapidly rotating microfiber brush and a scraper to scrub and remove dirt. Inside the robot, a pair of tanks with individual inlets and outlets keeps clean and dirty water separated. Its four-step scrubbing system is extremely effective, and it comes pretty close to replicating the results of a push mop. Its ability to navigate independently and without requiring much hands-on intervention is also a big plus. —MICHAEL ANSALDO



Hot Stuff

AWAIR GLOW C

getawair.com

The Awair Glow C is a small air-quality monitor that also acts as a smart plug to automate “dumb” appliances in response to changes in air quality. The Glow C uses a color-coded system to rate your overall air quality, allowing you to get an at-a-glance status. What sets Awair’s device apart is its ability to automate an assortment of conventional appliances, including fans, heaters, and humidifiers. You need only plug the appliance into the front of the Glow C, select that type of device in the iOS app, and choose whether you want the appliance powered up based on air-quality changes, a schedule, or motion. —MICHAEL ANSALDO



YAMAHA YAS-207

usa.yamaha.com

Yamaha's YAS-207 is the first soundbar to add DTS Virtual:X technology. DTS Virtual:X, a significant and impressive feature. The movie theater-like sensation DTS Virtual:X delivers is nothing short of astounding—it's the best simulated surround sound technology in a soundbar. The audio sound stage expanded significantly in height, width, and depth. Dynamics came to life. If you want to get an immersive audio sensation, but can't afford the space or cost associated with DTS:X or Dolby Atmos, then DTS Virtual:X is an amazing alternative. —**THEO NICOLAKIS**



I SHOULD
~~PROBABLY~~
GET A
RIDE
HOME.

**BUZZED DRIVING
IS DRUNK DRIVING**





Apple is poised to lose iPhone users if it keeps ignoring the middle

Fewer people are buying premium phones, so why is Apple putting its eggs in one basket?

BY MICHAEL SIMON

We've been hearing for months that longtime customers are souring on the iPhone upgrade cycle, and now there may be some evidence to back that up. According to a study

conducted by BankMyCell (go.macworld.com/bkcl) of some 38,000 people, iPhone owners are 15 percent less loyal to their handset than they were last year, with 73 percent of responders claiming that they were sticking with Apple. Those are still

strong numbers, but it's the lowest retention rate since the company started tracking in 2011.

You can quibble with BankMyCell's methodology all you want, but the numbers are significant. According to its tally, 24.5 percent of users trading in their iPhone during the fourth quarter of 2018 (when the iPhone XR, XS, and XS Max launched), did so because they moved to a new brand of smartphone, overwhelmingly Samsung and LG. (I'm willing to bet it wasn't the Galaxy Note or V40 ThinQ.)

It's no secret that the iPhone's average selling price has crept up over the past several years. Since the launch of the thousand-dollar iPhone X, Apple has been covering up a slow decline in sales with much higher prices. The cheapest current X-model iPhone, the iPhone XR, starts at \$749, and if you want the flagship XS model, you're paying no less than \$999. That's not going to change.

Of course, Apple isn't alone in this space. The Galaxy Note 9 and S10+ both start at \$1,000, and phones like the LG V40 and G8, and the Google Pixel 3 XL are pretty close. But that portion of the



The \$749 iPhone XR (right) is what passes as “cheap” in the iPhone ecosystem.

market is becoming increasingly niche, while the midrange explodes with handsets from Samsung, Google, and One Plus that all feature what once were high-end specs, such as dual cameras and fast charging.

But not Apple. While it made a big deal out of how the iPhone XR has many of the same features as the iPhone XS at a 25 percent lower price, the fact of the matter is it's only a bargain when compared to the other iPhones and premium Android handsets. There are trade-ins and payment plans to soften the blow, but if you want an iPhone that's actually affordable, Apple expects you to buy a iPhone 7.

While BankMyCell's report might not be alarming for Tim Cook & Co. at the

moment, if the trend continues, it could get real ugly real fast. Because let's face it, no one's going to get excited about an iPhone 8 in 2020.

MEET ME IN THE MIDDLE

It's funny, but Apple was actually ahead of the midrange curve. Back in 2016, it launched the iPhone SE between the iPhone 6s and iPhone 7. It had the body of an iPhone 5S with the guts of an iPhone 6s for nearly half the price. It was strictly a response to customers who wanted a smaller, cheaper phone. Cook said as much during the launch event: "Many, many customers have asked for this. And I think they're going to love it."

For a time they did. But Apple never paid it the attention it deserved. Rather than continue to update it—like Google will presumably do with the Pixel 3a (go.macworld.com/px3a)—it was left to languish for years on end, only receiving the most obligatory of updates. Where the Pixel 3a expands the platform to a segment of users that couldn't otherwise afford it, the iPhone SE always seemed like the phone Apple didn't really want you to buy.

Basically, premium

smartphone specs peaked in 2017. Sure, displays may be slightly higher and pack slightly more pixels, and processors are way faster than they were, but the premium sweet spot has already been achieved: between 5.5 inches and 6.5 inches, a Quad HD display, two or more cameras, and wireless charging. We don't need any more pixels and we don't need any more speed. The A12 processor is incredibly fast, but the A9X chip in my 12.9-inch iPad Pro has no problem keeping up, either. What I want is a \$450 iPhone with a capable processor, retina-quality LCD screen, and plastic body that looks like I paid \$900 for it. That's what Google delivered with the Pixel 3a.

Google's Pixel 3a is basically a masterclass in how to deliver a midrange alternative to a premium smartphone, but



The iPhone SE was the original midrange premium phone, but Apple gave up on it.

the market is still plenty ripe for disruption. The \$399 Pixel 3a has a killer camera, great screen, and excellent battery life, but it's more prefatory than revolutionary, basically raising the midrange bar to where it should be. It looks like a Pixel and it acts like a Pixel, and that's enough for a \$399 phone. Google is going to own the midrange space with a phone that isn't wildly innovative or even all that interesting. It's just priced right and has the right stuff inside.

But it doesn't have to be a one-phone show. Apple could revive the spirit of the iPhone SE with a new midrange iPhone that brings the full iOS experience at a lower price. It doesn't even need to have a headphone jack. Something with an A10 chip, 64GB of storage, polycarbonate shell, and an iPhone XR-style camera would be a nice start, but the big breakthrough would be Face ID. No other phone in this range includes anything close to somethings as secure as Apple's 3D face scanning, and a midrange phone with Face ID would prove that Apple is serious about privacy and security.

As it stands, Apple has completely stopped listening to the din. It's not that people don't want an iPhone. They do. But



You might think the \$399 Pixel 3a is actually a \$799 Pixel 3—and that's the point.

while iPhone users might not be fleeing in huge numbers now, as more phones like the Pixel 3a or Samsung's triple-camera A50 arrive, bringing premium-like experiences for a fraction of the cost, the iPhone is going to look more and more overpriced. Google played it perfectly: The Pixel 3 makes the Pixel 3a look like an even greater value than it is, much like the iPhone XS enhances the value of the XR.

There's a lot to be excited about when it comes to future iPhone releases—triple cameras and reverse wireless charging in September; 5G, and time-of-flight sensors in 2020—but until Apple starts paying attention to the middle, more and more people are going to start banking their iPhones for something that doesn't have an Apple logo on the back. ■



3 reasons why Apple spent a billion bucks on Intel's smartphone modem business

Other than the iPhone, that is.

BY MICHAEL SIMON

The race to 5G just added a new lane. Following a report in the *Wall Street Journal* (go.macworld.com/wsjn) in late July, Apple announced (go.macworld.com/byin) that it will be acquiring the majority of Intel's smartphone modem chip business,

which went belly-up earlier this year. The transaction is valued at \$1 billion and is expected to close in the fourth quarter of this year, Apple said in a press release (go.macworld.com/smb).

Intellectual property exchanging hands between industry giants isn't exactly

earth-shattering news, but this deal has significant ramifications. Just three months ago, Apple and Intel were partners on the development of the iPhone's 5G modem, but that abruptly ended in one fell swoop (go.macworld.com/exit) when Apple and Qualcomm settled their longtime court case and Intel "announced its intention to exit the 5G smartphone modem business and complete an assessment of the opportunities for 4G and 5G modems in PCs, internet of things devices and other data-centric devices."

That assessment apparently led to a sale, which in turn led to Apple's purchase. While it's not entirely clear why Intel decided to exit the mobile modem business, conventional wisdom suggests

that its chip development hadn't advanced far or fast enough.

So on the surface, it would seem like there's nothing to buy, especially for the presumed price of a billion-plus. But Apple wouldn't be buying Intel's modem scraps. Rather, it would be investing in years of work (and patents) by one of the largest semiconductor manufacturers as it looks to develop an in-house 5G chip for future iPhones that can rival Qualcomm's. It's not going to happen anytime soon, since Apple and Qualcomm inked a six-year licensing agreement with a multi-year chipset deal in April, but Apple's playing a long game here.

But while the iPhone is clearly the main impetus behind this deal, I don't think



The iPhone is important, but it's not the only reason why Apple would want to buy Intel's smartphone modem chip business.

Apple's motivations are limited to the handset. 5G looks to impact every sector of Apple's product lines, and acquiring Intel's smartphone modem chip business—even unfinished—could have far-reaching implications within both Apple and the industry. Here are three ways the Intel

purchase could seriously impact Apple and the industry at large:

1. APPLE WATCH

Perhaps even more important than the engineering work would be the people behind the work. The Journal's report specifies that in addition to Intel's portfolio of patents, Apple would also be acquiring an infusion of talent from the team

responsible for the development of the chip. That alone could be worth billions. It's no secret that tech companies' most prized assets are the engineers who work for them, and bringing a ready-made team of chip designers into Apple Park for work on the A14 chip and beyond would save Apple years of hires and reorganization.

But it's not the iPhone that could stand to benefit the most from an integrated 5G modem. A more efficient S chip, which powers the Apple Watch, is key to the future generations of Apple's wearable, especially as power-hungry 5G arrives. With an integrated 5G modem, chips will be smaller and more power efficient, two areas of intense focus for Apple. As it stands, the modem and main processor are separate entities and will continue in the vein as long



Integration will be key to the development of thinner, faster, and more power-efficient chips.

as it continues to buy its modems from Qualcomm. Integration is one of Intel's strongest suits, and it will be even more important when 5G starts taking off.

2. PATENT TROLLS

As 5G phones and devices proliferate over the next few years, there is also sure to be an uptick in lawsuits. Apple, Samsung, Intel, and any other tech giant are all susceptible to so-called patent trolls, companies that scoop up patents with the sole intention of using them to sue other companies that may infringe on them. It's impossible to say what patents are included in this deal, but you can bet that they would be used for frivolous lawsuits in the wrong hands. It's probably not the primary motivation for Apple's

purchase, but it wouldn't be the first time someone snatched up a bunch of patents to keep them out of the wrong hands.

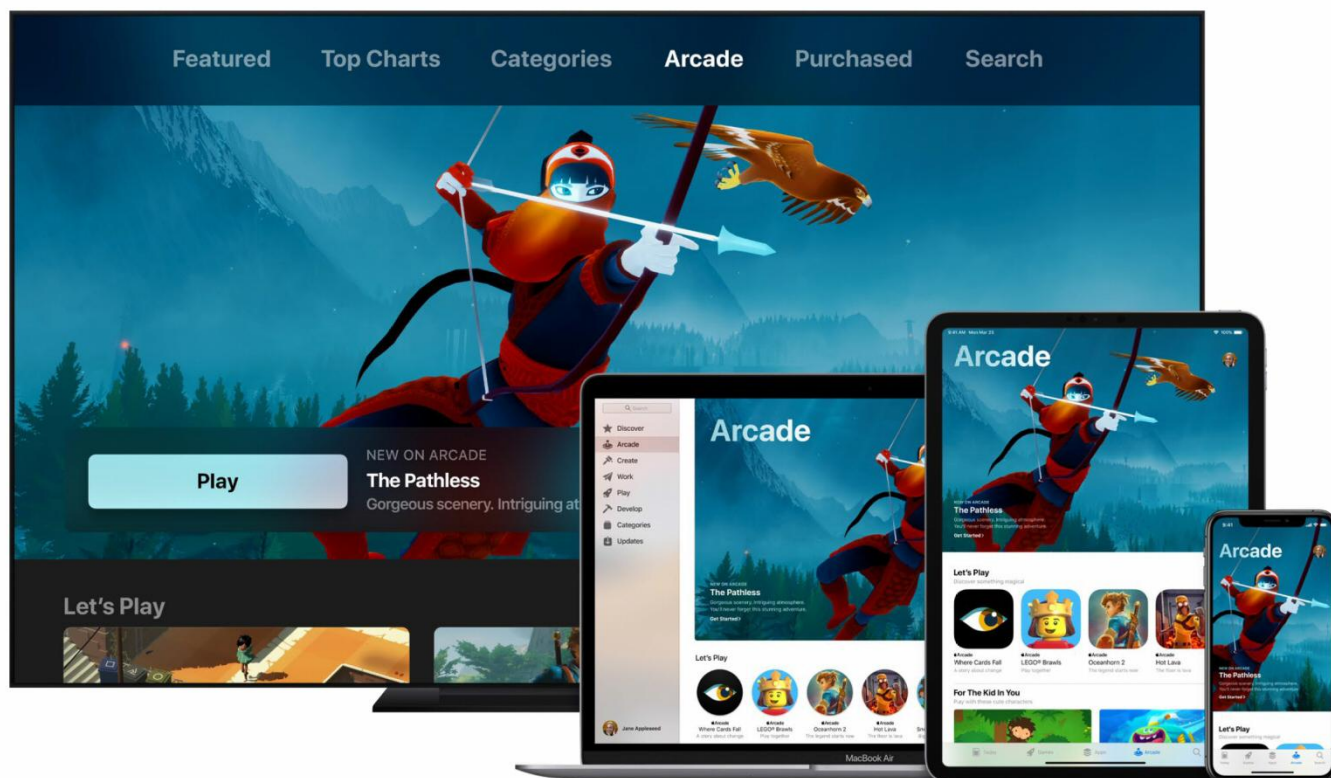
3. THE NEXT MACBOOK

While Apple has yet to release a notebook with LTE connectivity, that's probably going to change with the advent of 5G. It's not just the speed—as iPadOS gains more Mac features, a new device is likely on the horizon that sits between the iPad Pro and MacBook Air. We don't know what this device would look like, but I'm willing to bet on two things: it will be powered by an Apple chip and it feature 5G connectivity.

We're likely years away from such a device, and I don't think it's a coincidence that the reported Intel deal and the retirement of the MacBook are coinciding. Sometime within the next three to five years, I think we're going to see a brand-new device from Apple that solves two longstanding problems: the iPad's inability to replace the Mac, and the Mac's lack of a touch screen. With a 5G modem, the next MacBook will be the ultimate road machine, combining the power of a Mac with the portability of the Mac in a thin and light package, and Intel's modem business could be the thing to get the ball rolling. ■



New chips could make future MacBooks thinner, faster, and more power efficient than ever.



Apple Arcade won't save us from the scourge of freemium gaming, but it's a start

Apple's subscription gaming service won't make free-to-play games obsolete, but it will give us lots of high-quality alternatives.

BY JASON CROSS

Games have been the top app category since the App Store's inception. They're so popular that, in iOS 11, Apple actually split Games off into its own tab, separate from other apps.

But, with few exceptions, the top games today are of a single type:

freemium, or free-to-play (F2P) titles that cost nothing to start, but will suck your money away a few dollars at a time, seemingly forever.

We don't know exactly what games will be included in the Apple Arcade subscription service (go.macworld.com/subs) when it launches this fall, nor what it

will cost. But with the weight of Apple behind it, its own tab in iOS 13's App Store, and plenty of top-tier developers on board, it may finally save us from freemium gaming hell.

(A clarification: A game that is free to download but has a one-time purchase to "unlock" the full experience is not a F2P or freemium game for the purposes of this article. That's just a way to get around Apple's lack of a proper demo feature in the App Store.)

THE PROBLEM WITH FREEMIUM GAMES

The advantage of freemium games is that it costs nothing to download and try them. With millions of players, some fraction will spend money, and some tiny fraction of those will spend lots of money. With few exceptions, this has become the only way for games to make money on mobile. It's almost impossible for a game to charge money up front and compete against all those big-name games that appear "free."

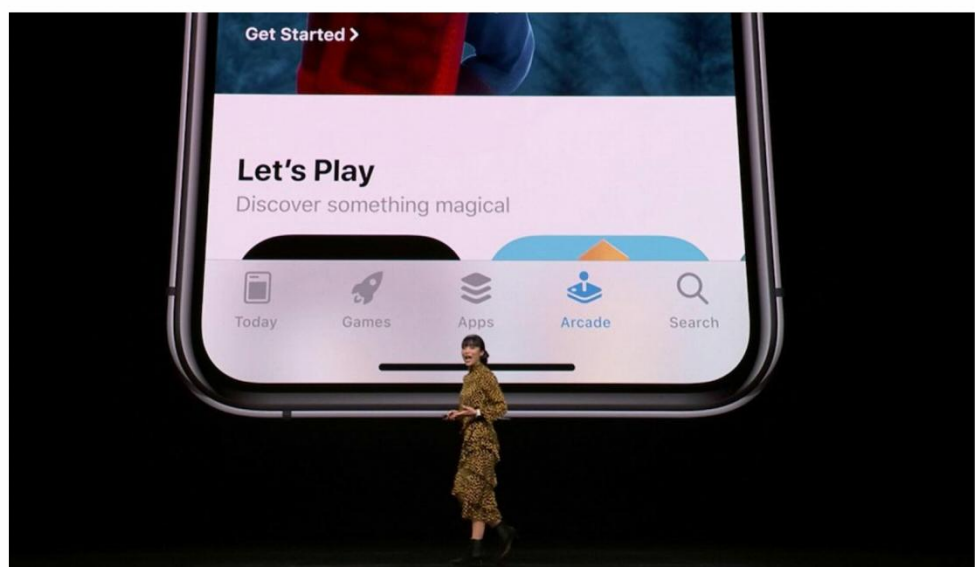
Many F2P games are initially quite fun, but nearly every

single one shares a common problem: in order to make any money, they have to be designed to frustrate you.

In traditional games, you typically need more skill or better strategy to keep progressing as the game goes on. You may become frustrated and get stuck, but that's because you lack the skill or strategy. Freemium games aren't built like that.

Skill and strategy may play a part in them, but they're designed never to let skill or strategy prevent you from progressing. Instead, they'll throw up other roadblocks: arbitrary timers, limited inventory space, difficult-to-acquire gear or bonuses, and so on.

Of course you can eventually get past any of these roadblocks without paying. You can wait out the timer. You can



With its own tab in the App Store, Apple will be pushing Apple Arcade games hard. That's good for developers who participate in it.

eventually earn enough premium currency to buy that gear, or get more inventory space, or unlock that powerful character. But the limit has now become your patience, not your skill or strategy.



Sonic Racing is one of the games due to appear on Apple Arcade.

What's more, F2P games subsist on what the industry calls "whales," the rare players who will throw down \$50 or \$100 for some big huge premium package. Those offers have to give them a leg up on other players, otherwise the big spenders wouldn't bother. As a result, people who spend a buck or two are left feeling like they can never catch up.

In a very real way, freemium games are nearly all designed to get you hooked on simple repetitive gameplay, then steadily, deliberately become less fun until you give up and buy something. And that cycle is, by design, made to repeat itself forever.

HOW APPLE ARCADE MAY IMPROVE GAMING ON IOS

Here's what we know about Apple Arcade: It's coming with iOS 13 this fall, and will

have its own tab in the App Store. That's prime real-estate for promoting games. You'll pay a monthly fee (unknown at this time, but we bet it's \$9.99) to get access to over 100 games. They'll work on the iPhone, iPad, Apple TV, and Mac.

They'll also be somewhat exclusive. Apple says you won't find them on any other subscription service or mobile platform. That means we may see games that are individually sold on consoles or PC, but nothing you'd find on Android or Xbox Game Pass, for example.

Importantly, Apple Arcade games will have no in-app purchases and no ads. Your subscription includes all content and all future updates. Subscribers get a complete game, ad-free.

It's not clear how Apple will share revenue from Apple Arcade with game

makers, but one has to assume it would be similar to Apple Music. Instead of “plays” Apple might give creators revenue based on how many times their game was started in a period of time, or how many minutes players spent with it.

However it’s structured, Apple Arcade can provide a way for games to “feel” free while still earning revenue. If the service gets tens of millions of subscribers (a real possibility given the scale of Apple’s global reach), popular games could even earn a lot of money from it.

Importantly, since Apple Arcade games will not even be able to charge money or show ads, their entire design will change. No more arbitrary timers to encourage you to pay just for the privilege of not waiting. No more loot chests with “random” gear that you can buy with real money. No more feeling like other players have an advantage over you just because they were willing to spend more money.

WHY APPLE ARCADE WON’T FULLY FIX THE PROBLEM

Let’s face it, no matter how popular Apple Arcade is, it’s not going to make freemium games disappear. For starters, the semi-exclusivity agreement means that any game that wants to tap into the Android market is going to have to use the traditional cost structure, which means it’s likely to be freemium.

Freemium games like Wizards Unite aren’t going anywhere. They’ll just have better competition.



Games built on big media franchises, like the Harry Potter: Wizards Unite (go.macworld.com/hpwz), are almost certainly going to remain F2P. It’s just too tempting to tap into that big user base of eager fans, in the hopes of “landing a whale” that will spend an absurd amount of money on a mobile game.

But what Apple Arcade will do is give us meaningful alternatives to the flood of F2P games. Dozens of premium games with good production values and design, some destined for consoles and PC, and none of them designed to steadily become less fun until you pay up again, and again, and again. Those are few and far between today. ■



Got 1.5GB to spare? Apple's Texas Hold'em is back on iOS

It's been gone for eight years, but now it's free and boasts better graphics.

BY LEIF JOHNSON

It's been a year of big software-related surprises in the Appleverse, and we've got another one for you: Apple's own Texas Hold'em (go.macworld.com/texas) card game has finally made its way back to the iOS App Store after an eight-year absence. For that matter, we've got another surprise—this “simple” card game

weighs in at 1.5GB. Yikes. When we originally reviewed it in 2008 (go.macworld.com/tx08), we warned you about the “huge 128MB download size.”

Apple restored the game to the App Store using the same listing, so it's kind of funny to see reviews that were written 10 years ago, as though the game had

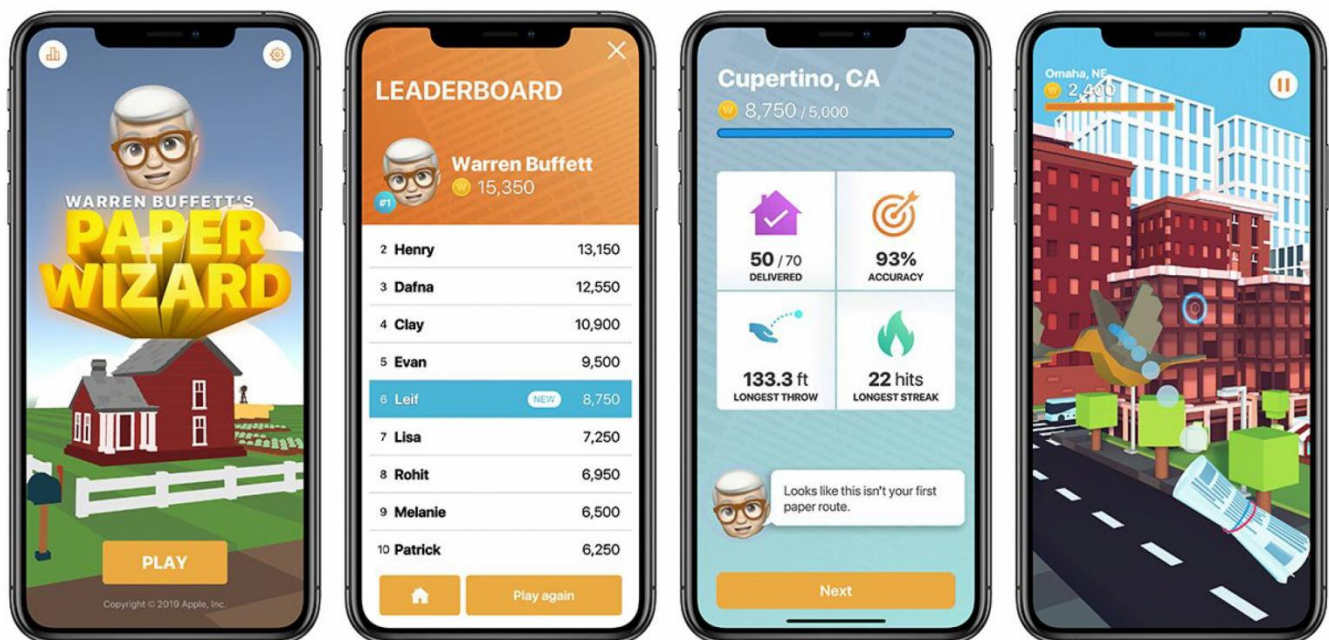
vanished and reappeared thanks to a Thanos-style snap (go.macworld.com/thns). Texas Hold'em looks about the same, but sports improved graphics—which probably have a lot to do with the massive file size—and you can play at 10 locations ranging from Vegas to a “garage” with posters for the iMac G3 hanging from the wall.

It's so similar to the original game, in fact, that our original review from 11 years ago largely holds up. The differences include new characters to play against as well as “more challenging gameplay,” which presumably refers to improvements to the A.I. As before, the new version supports both single-player and multiplayer play.

And another thing changed: the price.

You can lose a lot of fake money in Texas Hold'em if you play as poorly as I do, but since the app itself is free and has no in-app purchases, you won't have to worry about it draining your real-world bank account. (It originally sold for \$4.99.) That makes for a welcome departure from many of the other “free” poker-style card games on the App Store.

The news of Texas Hold'em's return drops during a year in which we've seen Apple play more nicely with games than it has in years. Earlier this year, Apple released its “second” game ever in the form of a Paperboy-styled tribute (go.macworld.com/wbuf) to investor Warren Buffet, and fall will bring the release of Apple Arcade, Apple's subscription-based gaming service (go.macworld.com/flrl). ■



Warren Buffet Paper Wizard.

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AT MY CHILD'S
SCHOOL, BUT STILL
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PUT FOOD ON OUR
TABLE.**

Melissa, Michigan

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STORY
WE CAN
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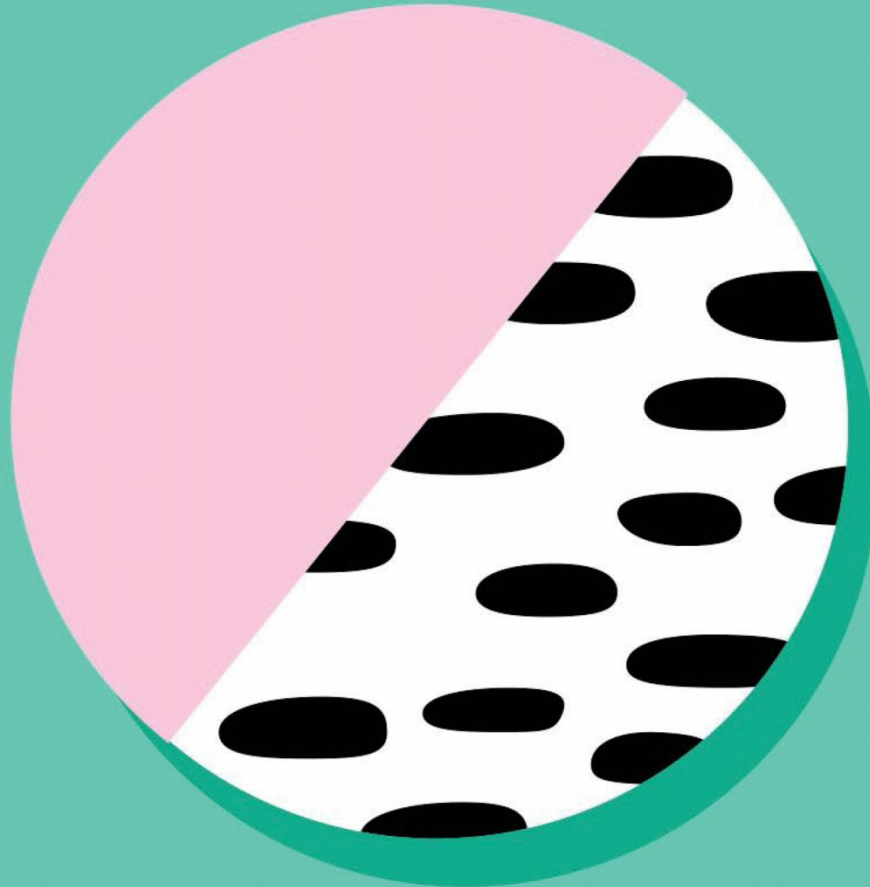
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NOTE-TAKING IOS APP

MAGPIE: VISUAL NOTE-TAKING IOS APP FOR SHARING WITH FAMILY AND FRIENDS

BY J.R. BOOKWALTER

My wife uses her iPhone camera to create reminders for clothes she might buy, interesting household decorations, and what have you. The problem is, over time her Photos library fills up with so many shots, it becomes impossible to find anything among pictures of our kids, pets, and family events.

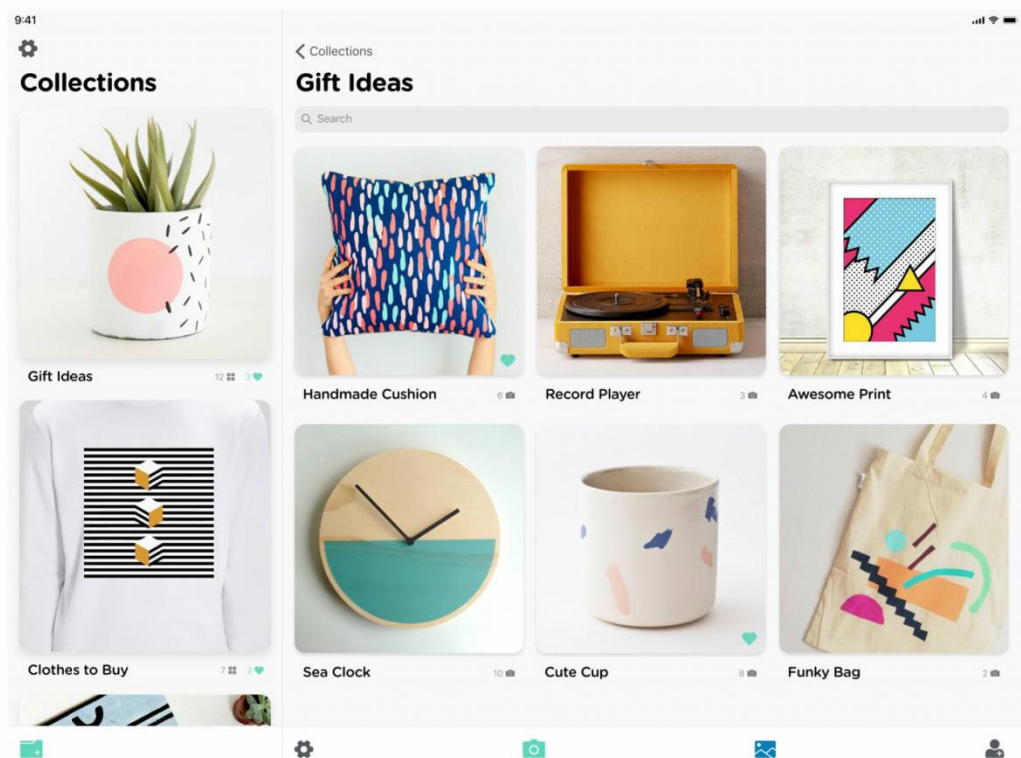
A more narrowly focused version of services like Evernote or Pinterest, Super Useful's Magpie (go.macworld.com/mgpi) fuses photos with notes, maps, prices, and

links so you can not only find them in the future, but easily share with others. It's a great way to save gift ideas, clothes, home décor, and most anything else you might normally snap with your iPhone or iPad.

PHOTOS, MEET NOTES

Using Magpie is simple: Create a list, then add one or more images to a new entry using the in-app camera or by importing existing photos. Next, assign a required title, followed by optional notes, the price of an item, web link, and location. The UI is streamlined so multiple entries are created quickly, with the option to add further details later on. Items can be rearranged via drag and drop, with the first image used as a thumbnail.

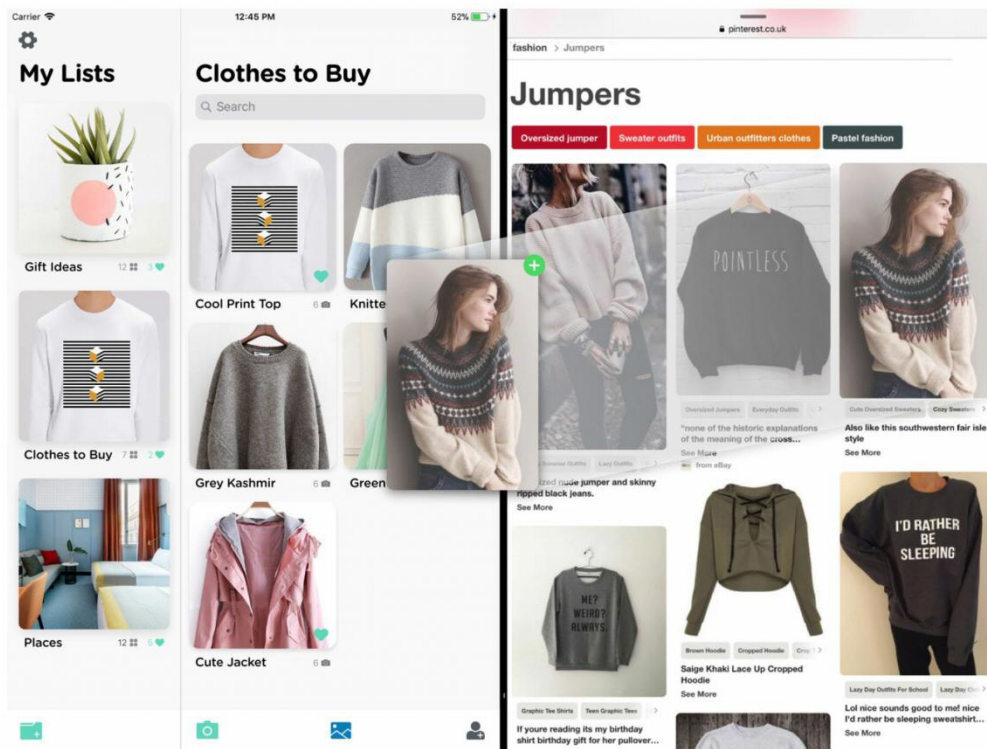
Lists can be created for any purpose: To remember shopping trips, gift ideas, or collaborate on ideas with others.



One minor disappointment is that pictures taken with Magpie are also saved to your camera roll. I'd prefer storing new images exclusively inside the app, since the current method exacerbates the problem of cluttering up Photos, a key motivation for using this in the first place. You can manually delete unwanted shots from Photos without losing them in Magpie.

SHARE AND SHARE ALIKE

By default, Magpie saves data locally, but enabling iCloud backup allows syncing lists and entries across all your devices. Lists (but not individual entries) can also be easily shared with multiple family members or friends by sending an invitation through Messages, Mail, or another app. This



On the iPad, you can quickly add new items to Magpie by dragging and dropping images from other apps like Safari.

allows loved ones to collaborate on specific lists while keeping other data private.

Whenever a new item is added, members of the shared list receive a push notification, and a small green dot appears in the lower left corner of the image thumbnail to denote what's changed. iCloud sync was fast but occasionally unreliable, especially when deleting entries. On the plus side, there's no signup or social media login required.

The developer also



Magpie

PROS

- Simple, elegant user interface.
- Easily share lists with family or friends.
- Unique trial subscription eschews automatic billing.

CONS

- Occasional iCloud sync bugs, particularly when deleting items.
- In-app camera saves images to Photos library.
- Doesn't import geolocation data from photos.

PRICE

Free

COMPANY

Super Useful

deserves kudos for a unique approach to in-app subscriptions. All users start with a free, fully-functional seven-day trial, but unlike every other app on the App Store, aren't automatically billed when your time's up. Should you choose not to voluntarily subscribe (only a buck per month, with a one-time

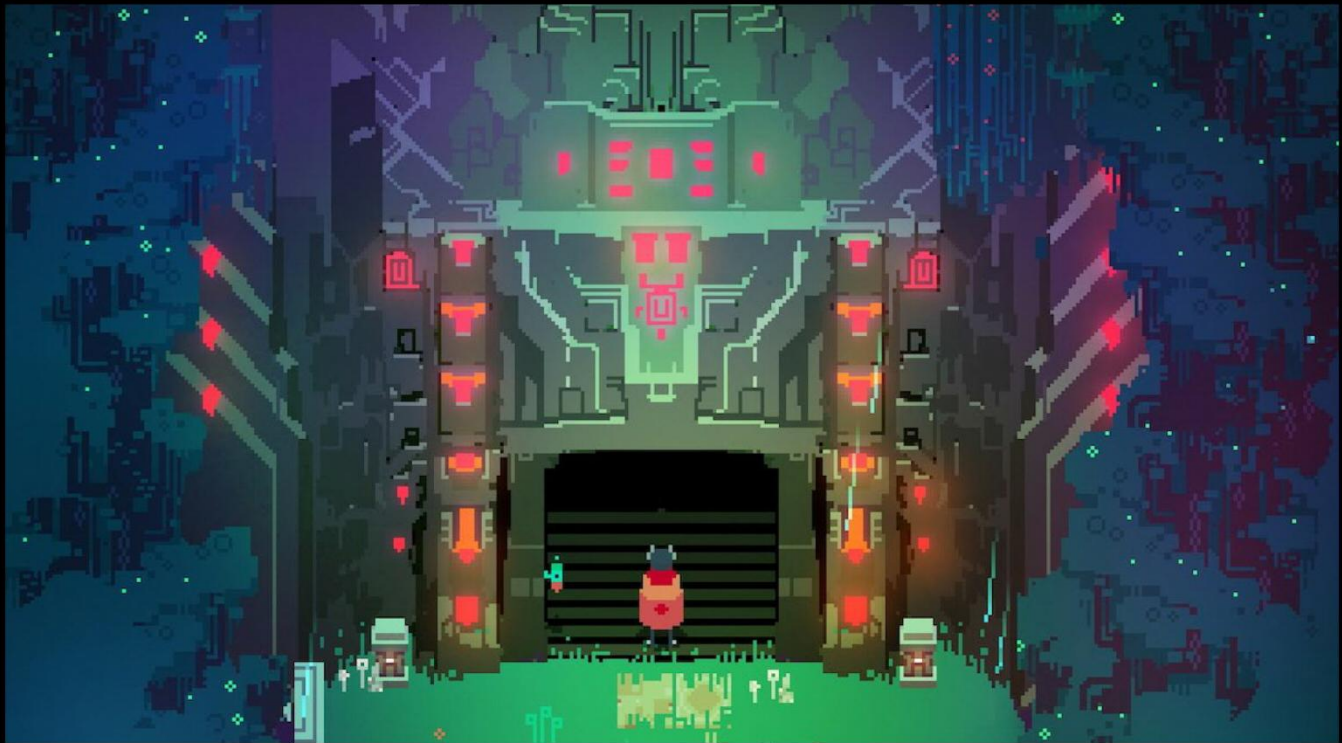
Lifetime Purchase option available), the app remains functional with the exception of adding new lists or items. However, you'll still have access to any shared lists, which works great for families, since only one person needs to pay for a subscription anyway.

BOTTOM LINE

Occasional iCloud sync bugs aside, Magpie is an excellent way to marry notes and photos without the feature bloat of apps like Evernote. ■

5 GREAT iOS GAMES FROM THE PAST MONTH

This month was one of the most interesting months for iOS games in 2019 so far. *Thatgamecompany* released its first game in ages—and on iOS first, no less—and Nintendo revived Dr. Mario and packaged it for the tastes of players accustomed to Candy Crush Saga. The App Store also gave us a port of one of the best recent action RPGs from consoles, and the surprise return of Apple's own Texas Hold'em after years of absence. (And it looks like it's barely aged.) **By Leif Johnson**



HYPER LIGHT DRIFTER

go.macworld.com/hld

Hyper Light Drifter (\$4.99) is an action RPG that's only three years old, although its pixel art style makes it look like a relic from my childhood. It's almost as timeless as those digital '80s adventures, and it combines artful minimalist storytelling about a "drifter" suffering from a mysterious illness with gameplay that was pulled straight from *The Legend of Zelda: A Link to the Past*. It's also famously intense, but the touch controls translate well (aside from some annoyances such as having to reach too far to trigger health boosts).

SKY: CHILDREN OF THE LIGHT

go.macworld.com/scl

Sky: Children of the Light (free) is a visually striking game about empathy, cooperation with other players, and lightweight puzzle solving that's framed as a tale about restoring spirits to their rightful place among the constellations. As with developer Thatgamecompany's previous games *Flower* and *Journey*, its appeal springs from the intensity of emotions you feel while playing rather than competition or combat prowess. I initially worried the in-app purchases would smother the intensity of that experience, but happily they're benign.



DR. MARIO WORLD

go.macworld.com/dmw

If you've played other *Dr. Mario* games, you probably think you know what to expect after looking at a screenshot of *Dr. Mario World*. As in 1990, you can see the world's most recognizable plumber is still cosplaying in a doctor's coat and that he's still solving puzzles by matching pills with viruses—but once it's in motion, it's clearly a different game. It's slower and more thoughtful, as you can stop the pills and toss out multiple pills at once. And since it's a free-to-play game, you'll find variations on the familiar in-app purchases from similar puzzle games like *Candy Crush Saga* and *Toon Blast*.





THE KREATOR

go.macworld.com/tkr

The Kreator (free) is at once relaxing and a nail biter: You're a ball of light that bounces and floats over the curved surface of a sidescrolling planet while collecting globules of light. Should you miss one, those neglected blobs morph into spiteful dark creatures that chase you until they eat you or you find a light cluster that dispels them into oblivion. This gets increasingly intense as the planet changes, but it's never entirely unmanageable, and you could while away long minutes in a trance once you find your rhythm.



TEXAS HOLD'EM

go.macworld.com/tex

I readily admit that *Texas Hold'em* (free) may not be too deserving of a place on this list as there were more good new games this month. If you're an Apple fan, though, Apple's only "real" game on iOS certainly counts as something "you must play." It's back on the App Store for the first time since 2012, and not much has changed aside from updated graphics, new locations, and some improvements to the AI. It's *Texas Hold'em*. You have a good idea of what to expect. Unless, that is, you expect it to be saddled with microtransactions—and I wouldn't blame you, considering what's on the App Store.

A young woman wearing a black graduation cap with a gold tassel and a blue graduation gown is smiling and hugging someone. Her eyes are closed, and she has a joyful expression. The background is blurred, suggesting an indoor setting like a graduation ceremony.

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DO IT
ALONE.”**

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REVIEW

APPLE 13-INCH MACBOOK PRO



THE ENTRY-LEVEL
MACBOOK PRO
FINALLY MATCHES THE
REST OF THE LINEUP.

BY ROMAN LOYOLA

Apple's recent revamp of its MacBook lineup (go.macworld.com/rvmp) makes it a lot easier to understand the target audiences for Apple's laptops. And with the release of the new 13-inch 1.4GHz Core i5 MacBook Pro, Apple also made it easier to pick a 13-inch model.

It's easier now because you don't have to decide if you're willing to sacrifice any features when picking an entry-level model over the higher-end ones. Before the newly-updated base model was released, there was a division within the four 13-inch models. Apple offered two entry-level models without the Touch Bar, and two high-end models with it. (The entry-level models were missing some other features, as well, but the main

missing feature was the Touch Bar). So when it came down to picking a 13-inch MacBook Pro, you had to consider whether you were willing to give up some features for the lower price.

The Touch Bar-less models are no more—they now have the Touch Bar and those other missing features at the same prices as before. Now, it basically comes down to processor speed, storage capacity, and price.

Apple last updated the entry-level 13-inch MacBook Pro in 2017. If you have an older MacBook and have been holding out on an upgrade because you've been waiting to see what Apple does with these models, you won't be disappointed—unless you don't care for the Touch Bar.

The new 13-inch 1.4GHz Core i5 MacBook

Pro offers an attractive performance boost over its predecessor, especially with software that takes advantage of multiple processor cores. Combine the performance and the new features, and you have a laptop that now feels like a true member of the MacBook Pro family.



INTRODUCING THE TOUCH BAR

Apple introduced the world to the Touch Bar in the 2016 MacBook Pro (go.macworld.com/mptb), but left it off the two most affordable 13-inch models. In case you're not familiar with the Touch Bar, it's a strip of touchscreen that replaces the top row of Function keys you find on a typical keyboard.

The interface options that appear on the Touch Bar change based on what you're using on your Mac. If you're in Safari, for example, you may see buttons of your Favorites, and pressing a button will take you to that particular website. If you have several Safari tabs open, they'll appear in the Touch Bar, and you can switch between them by pressing each one. The Finder, Mail, Maps, other Apple apps, and third-party apps show interface options on the Touch Bar. It can be a useful way to navigate your Mac.

Or you may find the Touch Bar excessive. Many users would rather have the Function keys than the Touch Bar, because those keys are important to their daily use. With this in mind, Apple made it so you can customize the Touch Bar so it shows the keys you want in the apps you use. You can also go into the Keyboard

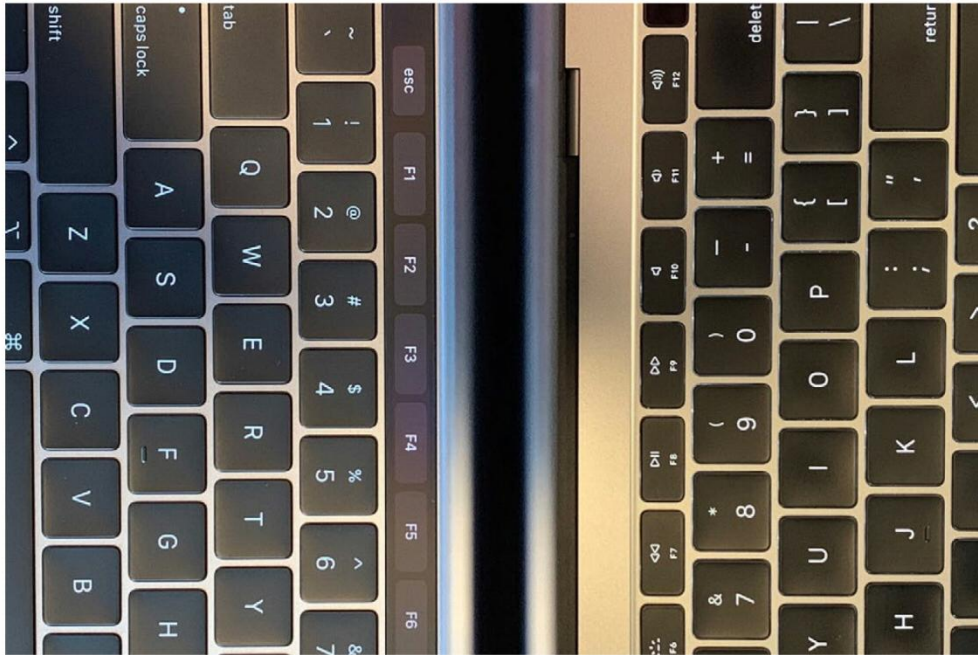


The Touch Bar is new to the entry-level 13-inch MacBook Pro, so now all of the MacBook Pro models have it.

System Preferences and adjust the Touch Bar so that it always shows, for example, Function keys. Apple even has a support document to show you how you can customize the Touch Bar (go.macworld.com/cstb).

I hesitate to declare the Touch Bar either very useful or useless, because each person has a different way of using the Mac. I can say that it's not a part of my regular Mac usage, which involves touch typing while I look at the screen almost all the time. I can't make myself look down at the Touch Bar and use its interface when the same options are available through keyboard shortcuts or a few mouse clicks. Developers, in particular, lament that the Esc key is a little out of place and has no tactile feel.

I don't find the Touch Bar to be the UI



One of the differences between Apple's two laptop lines: the MacBook Pro (left) has the Touch Bar, while the Air (right) has Function keys.

innovation it's touted to be. But perhaps the opposite is true for you; maybe you love it, or if you haven't used the Touch Bar before, will discover that you love it.

TOUCH ID AND T2

Besides the Touch Bar, the entry-level 13-inch MacBook Pro now has Touch ID, a fingerprint sensor located on the right end of the Touch Bar. It was already available on the other MacBook Pro models, even the MacBook Air (go.macworld.com/mcar).

If you've used Touch ID on the iPhone or iPad, then you'll be right at home with Touch ID on the Mac. You can use it whenever you need to enter a password, like when you're logging back in to your Mac after putting it to sleep, when you're

shopping online, or when your Mac asks you to authorize a change. (When you first log in to your Mac after turning it on, you're required to type in your password. After that, you can use Touch ID for the rest of that use cycle, until you shut down your Mac.)

When Touch ID first became

available on the Mac, I didn't think much of it. I use a password manager and quickly access it through a menu-bar icon. Most of the time, this is a fast, easy way to access and enter passwords when needed. But the more I used Touch ID on the Mac, the more I came to appreciate it. For example, when logging in to a website, clicking on the username box triggers a pop-up that shows the recorded usernames that are logged in to Keychain. If there's a fingerprint icon, you can use Touch ID. Press the Touch ID button, and you're in. It's a more efficient way than using my password manager—it's only saving a few seconds, sure, but it's very satisfying.

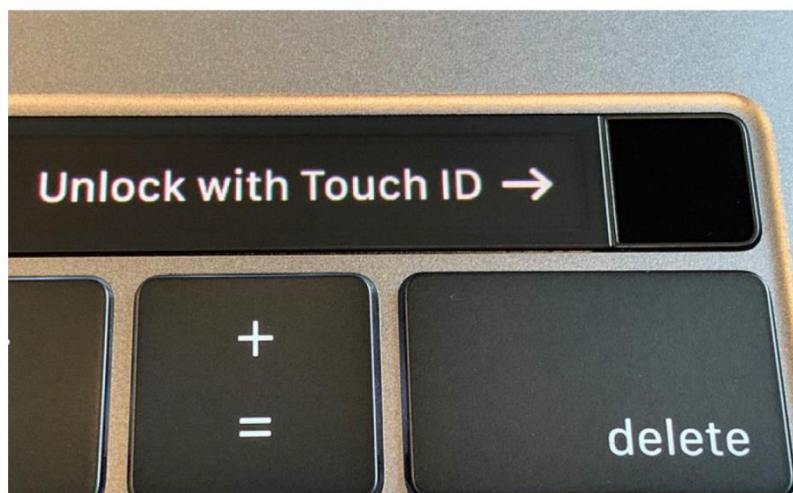
Touch ID is managed by the T2 coprocessor, which provides a secure

enclave for your fingerprint data, and also handles several other security features. The T2 handles disk encryption (go.macworld.com/chip), and support's Apple's Secure Boot (go.macworld.com/scr) feature, which checks to make sure you are running a legitimate, trusted Mac or Microsoft Windows operating system. The T2 also handles the image processing of the MacBook Pro's built-in FaceTime HD camera, which is still at a disappointing 720p resolution.

KEYBOARD AND THUNDERBOLT 3

The new MacBook Pro sports the third-generation butterfly-switch keyboard that's found in the other MacBook Pros and the MacBook Air. This version of the keyboard has a silicone membrane to help keep dust out and to help dampen the sound the keys make as you type.

The third-generation version is an improvement, at least when it comes to noise suppression. It's not as loud as the previous keyboard—but it's still very loud, which tells you the previous keyboard was really loud. I never had mechanical problems with the previous keyboard, so I can't definitively say that the third-generation is better in this regard.



Touch ID makes it much easier to log in to places where a password is required.

But there have been numerous reports of keyboard problems, and while Apple has said that a vast majority of its customers enjoy the butterfly keyboard, the company does have a Keyboard Service Program (go.macworld.com/kypr) that will replace the keyboard for free if a laptop is eligible. (Yes, the new 13-inch MacBook Pro is included in the eligibility list.)

My main problem with the keyboard (besides the noise) is that it's uncomfortable to type on. There's not enough key travel for my liking and it feels like I'm banging my fingers on a hard table. Sometimes my knuckles are a little sore after extended use. There's something about the key spacing that doesn't work for me, either. I make more typos using this keyboard than I do with other keyboards.

Rumors have been floating around that Apple may be developing a new scissor-

switch keyboard (go.macworld.com/scsr) or MacBooks in the near future. So if you want to take a wait-and-see approach toward a new laptop with a keyboard change, you'll have to wait a while.

A key differentiator between the entry-level models and the two high-end 13-inch laptops is the number of ports. The \$1,299 and \$1,499 MacBook Pros have two Thunderbolt 3 ports on the same side, while the \$1,799 and \$1,999 models have four (two on each side). Having only two Thunderbolt 3 ports could be a problem if you're using the laptop in a production environment and you need to connect external storage, a display, a power cord, and other devices. The only other port on the laptop is a headphone jack.

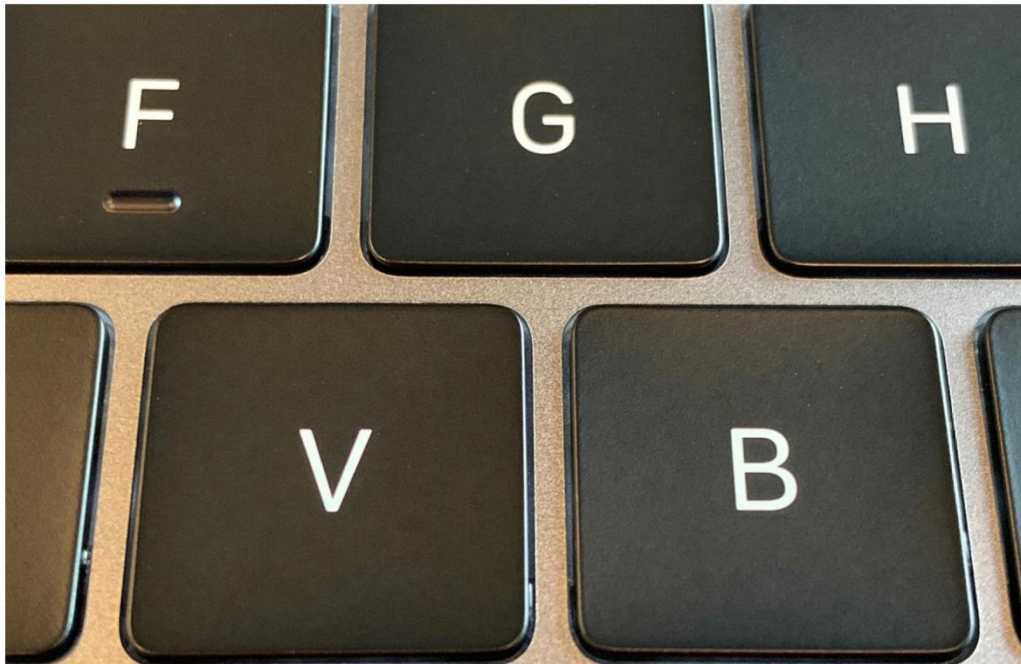
If you think \$1,799 is a steep price to

pay just because you need the additional ports, remember that the \$1,799 model also has a faster processor and a slightly better graphics processor. You could also consider buying a Thunderbolt 3 dock.

INSIDE THE \$1,499 13-INCH MACBOOK PRO

The entry-level 13-inch MacBook Pro has an eighth-generation 1.4GHz Core i5 processor. Its predecessor has a 2.3GHz Core i5, but keep in mind that that is not only an older processor, it also had only two cores. The new 1.4GHz processor now offers four cores. And as we'll see in a bit, the lower base clock speed doesn't mean slower performance, as boost speeds are similar.

Apple also upgraded the graphics in



This is the third iteration of the butterfly keyboard. Could it be the last?

the new laptop that drives the new True Tone display. Apple is going with an integrated Intel Iris Plus Graphics 645 subsystem, which replaces an Intel Iris Plus Graphics 640. The 645 uses a 128MB cache, a boost over its predecessor's



The 13-inch MacBook Pro (bottom) and MacBook Air (top) are practically the same size, except that the Air tapers in thickness.

64MB, though that is shared with the main memory.

The model in this review is the laptop outfitted with a 256GB SSD, which sells for \$1,499, \$200 more than the baseline model that has the same processor but comes with a 128GB SSD. If you can afford the increase in storage, I recommend it. You can fill 128GB quickly, plus, a teardown of the laptop by the folks at iFixit (go.macworld.com/lptd) shows that the storage module is fixed and can't be upgraded later.

Another thing iFixit points out in its teardown is that Apple seems to have trimmed a heat pipe inside the new laptop in order to fit in the new Touch Bar and T2. Could there be issues with the new laptop running hotter than usual? During testing, I didn't encounter any heat-related

performance issues and didn't notice anything unusual during regular daily use. But it's something to keep an eye on in the long term.

According to Apple's specifications, the battery in the new laptop is slightly bigger than the one in the \$1,799 and \$1,999 13-inch MacBook Pro. The battery in the \$1,299 and \$1,499 models is rated at 58.2 watt-hours, a 0.2 increase over its pricier brethren. Apple's runtime estimations for all of the 13-inch MacBook Pro models are the same, though: 10 hours of wireless web or iTunes movie playback, and 30 days of standby time.

PERFORMANCE

The dual-core Core i5-7360U (go.macworld.com/736u) processor that was in the older entry-level 13-inch MacBook Pro

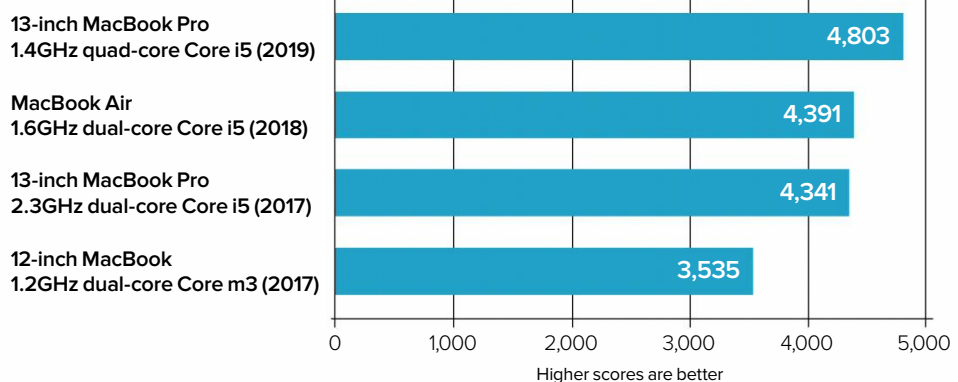
has been replaced by the quad-core Core i5-8257U (go.macworld.com/8257). For reference, the current MacBook Air uses a 1.6GHz dual-core Core i5-8210Y (go.macworld.com/821y), and the now-discontinued \$1,299 12-inch MacBook used a 1.2GHz dual-core Core m3-7Y32 (go.macworld.com/7y32).

In single-core performance, the new MacBook Pro is about 10 percent faster than its predecessor. The results are similar when you compare the new MacBook Pro to the MacBook Air. One interesting note about the new MacBook's Core i5 processor: It has a 6MB cache, while the old MacBook and the current MacBook Air have a 4MB cache. That difference in

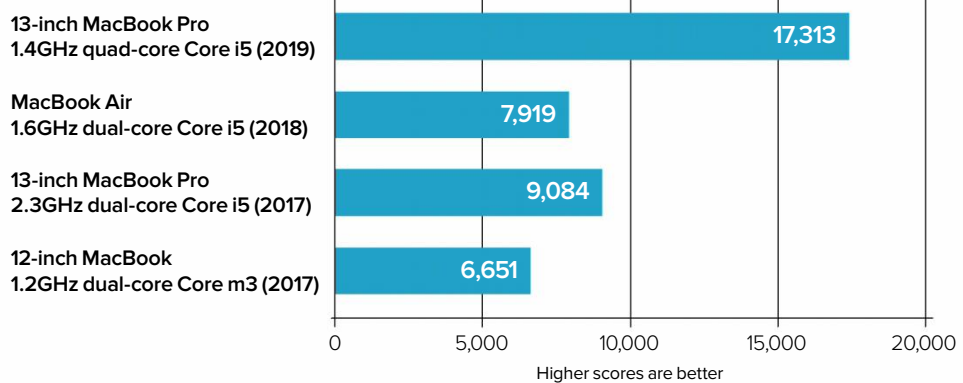
cache could be part of the reason why the new MacBook Pro is faster.

The difference is much bigger when you compare the new MacBook Pro to the 12-inch MacBook, though the Core

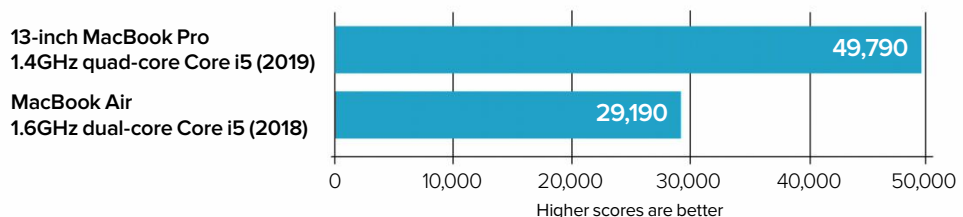
GEEKBENCH 4 SINGLE-CORE



GEEKBENCH 4 MULTI-CORE



GEEKBENCH 4 COMPUTE OPENCL



m3 in the MacBook was never known as a speedster, so the 30 percent difference isn't surprising.

Multi-core performance is where the new 1.4GHz Core i5 MacBook Pro stands out. It has twice the processing cores of its predecessor, and so it's not surprising to find that it nearly doubles performance. The new MacBook Pro also offers more than double the performance of the current MacBook Air, which has a dual-core processor.

We ran several other benchmark tests on the new MacBook Pro, and compared the results to the current MacBook Air. You can see those results opposite and below.



13-inch 1.4GHz Core i5 MacBook Pro 256GB storage

PROS

- Feature set for entry-level models now matches rest of the lineup.
- Boost in multi-core performance.
- Touch ID and T2 makes the laptop more secure.

CONS

- Only two Thunderbolt 3/USB-C ports.
- Keyboard is still noisy.

PRICE

\$1,499

COMPANY

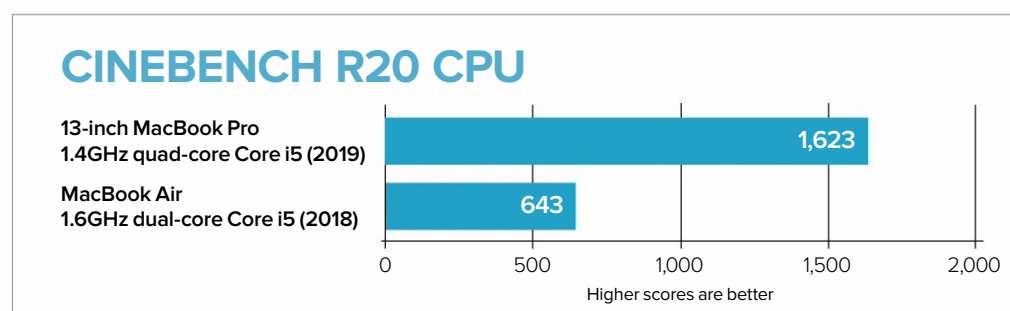
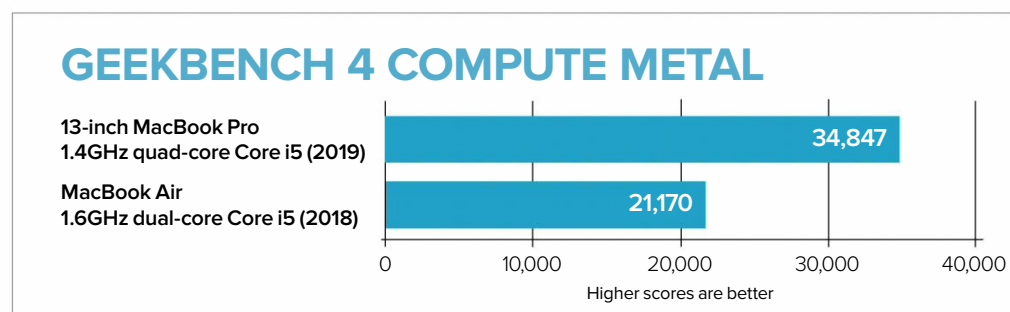
Apple

BOTTOM LINE

It's clear from the benchmark results that the people who will benefit the most from the update to the entry-level 13-inch MacBook Pro are those in a production environment who rely on apps that take advantage of multiple processing cores. The jump from two to four cores without a jump in price is significant and makes the new laptop an attractive investment.

The modest increase in single-core performance might make owners of more recent

vintage MacBooks decide to wait, especially if your daily use involves using productivity apps, internet access, and other office-type work.



Overall, it's good to see that the entry-level MacBook Pro now mirrors the features of the pricier models in the same line. It no longer feels like you're missing out on anything just because you need to save a few bucks. ■





AUGMENTED
REALITY IS STILL IN
ITS EARLY STAGES,
BUT THERE ARE
ALREADY PLENTY
OF COOL—AND
USEFUL—APPS ON
THE APP STORE

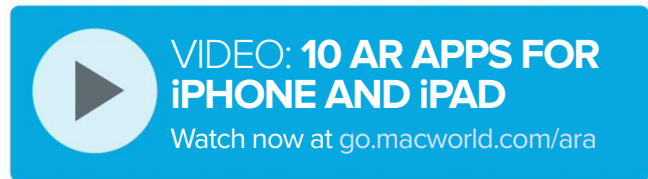
10 AUGMENTED REALITY APPS FOR iPhone AND iPad YOU SHOULD BE USING RIGHT NOW

BY LEIF JOHNSON

ILLUSTRATION BY TAYLOR CALLERY

Apple wants us to believe that augmented reality will be a transformative technology. I want to believe it. It sure as heck feels like it has better potential than virtual reality, which still strikes me as little more than a means of escaping the world by sticking your eyes to a sweaty box. AR, though, can add wonder to the mundane. It can provide information at a glance that we could otherwise only guess at (especially when Google Lens [[go.macworld.com/glns](https://www.google.com/lens/)] finally makes a full debut on the iPhone). And yes, in some cases, it can even make the world more fun.

But even in its flashiest keynotes, Apple struggles to show us any compelling reason why we should embrace AR technology now. With that in mind, here's a list of AR apps from the App Store that best show what AR technology is currently capable of, and how it's evolved from the simplistic days of Pokémon Go. Whether you want to



learn how to waltz or feed donuts to mythological creatures, you'll find something to like here.

1. SKY GUIDE

Price: \$2.99 at [go.macworld.com/skgsd](https://www.go.apple.com/skgsd).

I've admired Sky Guide for years for the ways it uses your iPhone's GPS to deliver star maps that reflect the way the sky looks above you at that precise moment. Recently, though, it introduced support for AR, and in the process, a great app became ever greater. Just press the camera button in the star map mode and it overlays the sky above you with a star chart.



1.

Wanna see a planet? You can...plan it.

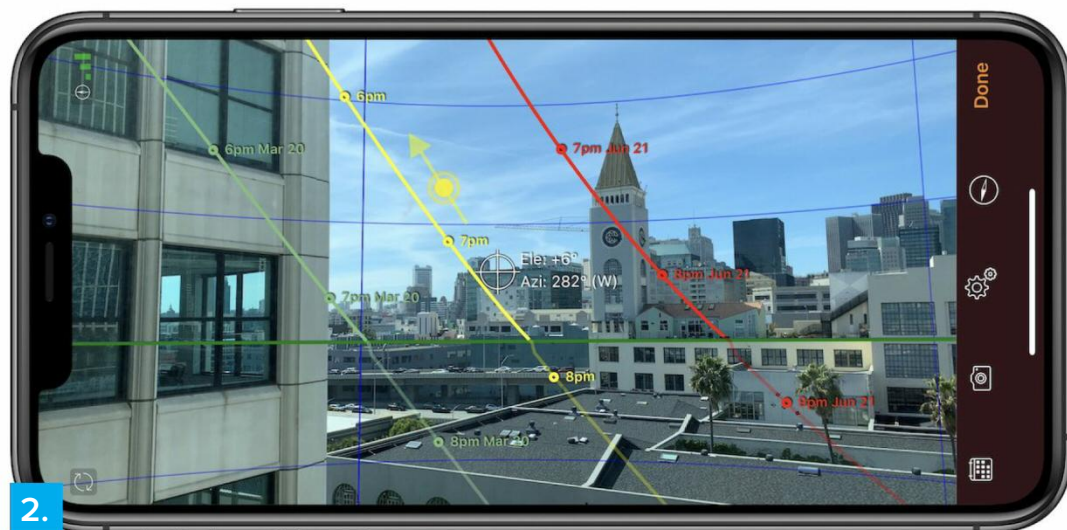
I find this even works with our office windows in the middle of the day, to the point that it even hides the areas of the map that are obscured by the building.

You can also change the sky to look the way it will at a certain point of the day. Since the AR mode allows you to align the digital stars with the real ones, it's an especially helpful way to assist with stargazing in light-polluted urban areas where it's hard to identify some stars from context.

2. SUN SEEKER SUN TRACKER COMPASS

Price: \$9.99 at go.macworld.com/snsk.

Sun Seeker Sun Tracker Compass has a lot in common with Sky Guide, but the big difference is that the focus here is entirely on the sun. Set it to 3D view, and the app shows you where the sun will be during various hours of the day and where it will be at both equinoxes and the solstices. (In other words, you'll see the full range of the sun's trajectory in the sky throughout the year.)



I once said my desk never gets direct sunlight, and this helped me prove it.

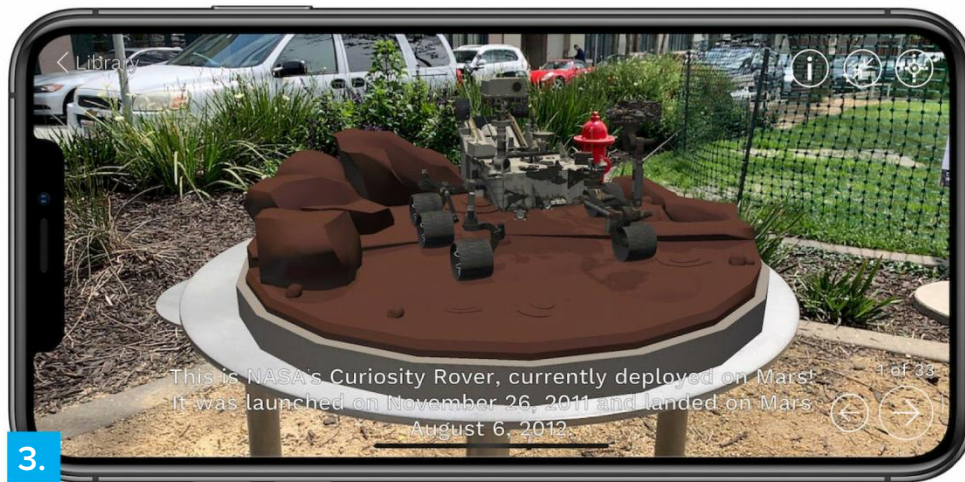
It's more useful than it probably sounds. When you're looking for an apartment, it gives you an idea of how much sunlight the place gets throughout the year. When camping, it helps you find a spot that stays in the shade. For photographers, it helps you prepare for a perfectly lined-up sunset shot.

It's pricey at \$9.99, but it justifies that price by including satellite maps that show how the sun will be shining on a particular point at a particular time of day and during a specific time of year.

3. JIGSPACE

Price: Free at go.macworld.com/jgsp.

As a person who learns best with hands-on experience, I found a lot to love about JigSpace. It's an educational app that plops 3D models of everything from the Gutenberg Press to lightsabers on



Sate your...Curiosity.

your desk through AR, allowing you to move each model around and see its various parts. Along the way, it also shows step-by-step explanations for how each device works, and you can zoom in or out for better detail.

It's a great way of explaining concepts that would be difficult to explain even with the clearest of texts, and with almost 60 "jigs" to choose from, both kids and adults can get a lot out of it. For a similar educational app, check out the BBC's Civilisations AR (go.macworld.com/cvar), which lets you inspect famous archaeological artifacts at scale

within the privacy of your home.

4. SMASH TANKS

Price: \$1.99 at go.macworld.com/sms.

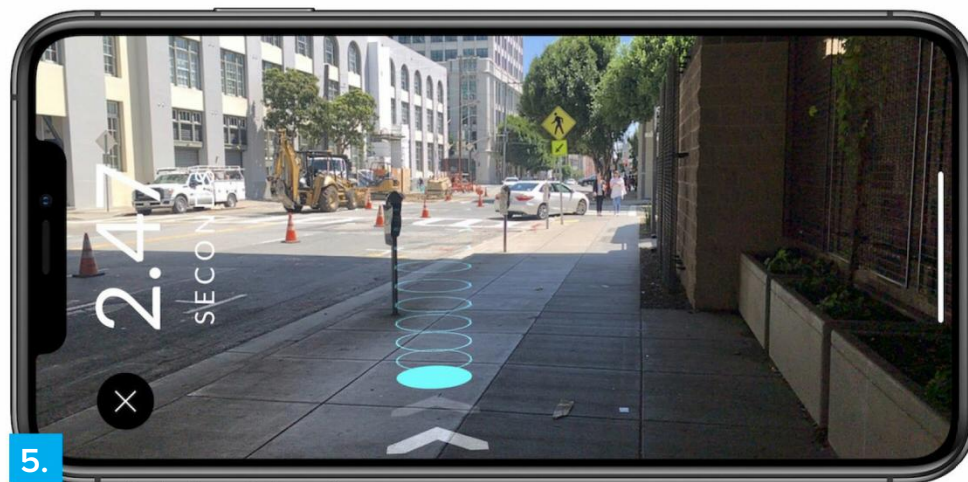
I admire many entirely AR games for their creativity, but calling them "fun"

often feels like a reach. Smash Tanks is a rare exception. It's all about setting up AR boards on tables or other surfaces where you aim tanks at various targets. Sometimes obstacles like buildings or rocky ledges get in the way, so you need to move around the table or counter in order to get a better shot.

It's entertaining to do this alone, but I also like how Smash Tanks lets you play



It wouldn't be a hot idea to play both sides of the surface in this case.



5.

I don't recommend running into a construction zone, though.

local multiplayer matches either by passing the phone to a friend or inviting up to seven people on the same network. You can even customize the maps and make them more challenging by adding elements like friendly fire.

5. AR RUNNER

Price: \$0.99 at go.macworld.com/arun.

I like AR Runner because it provides one of the smartest ways of “augmenting our reality,” mainly by overlaying the world with portals and checkpoints to cross while jogging in races. You can place these portals on any open spaces in your

neighborhood, which means I can “race” against someone as far away as London while I’m still on the sidewalks on San Francisco.

It’s a great concept, but I think it’ll get a lot better when you can use it with glasses or—let’s

get weird—AR-enabled contact lenses. As it stands, you’re going to go through all these checkpoints while holding your phone in your hand. It’s cool, but it’s never not going to look weird.

6. AR DRAGON

Price: Free at go.macworld.com/drgn.

AR Dragon may be meant for kids, but I’m a fully grown dude whose apartment



6.

I wonder if she likes Apples.



That's an iPad in the upper left, but you can barely tell.

building doesn't allow dogs or cats and I have no shame in admitting I love this pet simulator. It's about raising a dragon from the moment it hatches, and every day you log in to find the beast has gotten a little bigger.

You can feed it donuts and play ball with it, all through an AR interface that makes it look as though the dragon is standing on your desk.

Some AR apps do similar things with people, some attempt to make you think your couch is weighed down with an Egyptian sarcophagus, but for my money, no other app does such a good job of convincing you that the digital beast wiggling on your screen actually lives and breathes.

7. ZOMBIE GUNSHIP REVENANT AR

Price: Free at go.macworld.com/zmbe.

In *Zombie Gunship Revenant AR*, you're piloting a military helicopter that's protecting a base that's being overrun with zombies. To get a better shot, you'll sometimes need to move around the table or desk or physically inch in closer to the action. Much like *Smash Tanks*, it's one of the few games that handle AR in a consistently entertaining fashion.

It's a bit different, though, in that you don't need to play with the visible background of the real world—although you do need to find a real surface with AR—and at any rate most real-world surroundings stay obscured by infrared-

scope aesthetic. My favorite part? The satisfying rattle of the iPhone as the guns pump bullets into the unyielding undead.

8. VUFORIA CHALK

Price: Free at

go.macworld.com/vchk.

Whenever I imagine AR becoming part of our everyday future lives, I think of something like Vuforia Chalk. It's a little like FaceTime in that it's basically a video call, but in this case you can "circle" items you're looking at through the camera and draw arrows, all the better to, say, point out faulty pieces of equipment or to show someone which buttons to press.

It's a little wonky sometimes, perhaps because the rear iPhone lenses still don't have proper TrueDepth sensors that can accurately map out a surface. Both of the people on the call need to have a Chalk account, so there's some setup involved. And then the free version only lets you use it for three minutes at a time. Still, it's fun to try out.

Once this kind of



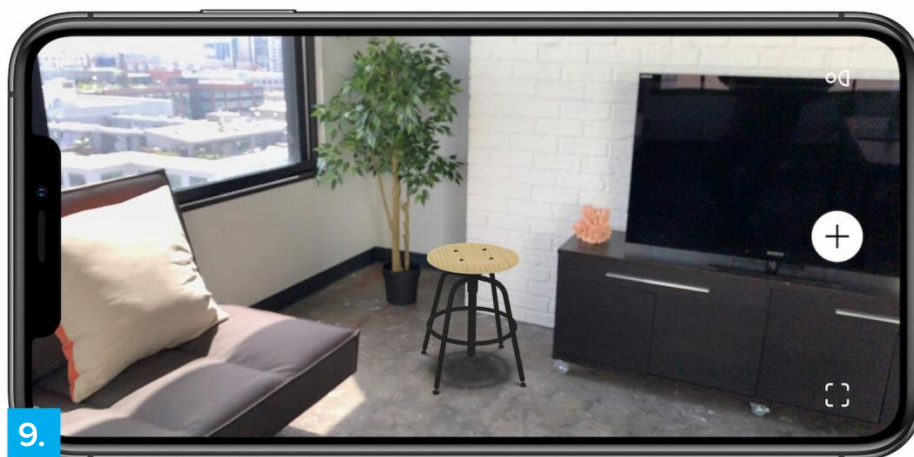
Good for helping find the right ports from 1,800 miles away.

technology gets built into FaceTime itself, I think we'll be taking a giant leap toward the AR-powered future that Apple wants us to get excited about.

9. IKEA PLACE

Price: Free at go.macworld.com/ikpl.

Look, I know this one is comparatively boring. IKEA Place is about moving furniture—IKEA furniture at that—around your house or apartment so you can have a better idea of whether that



There is no stool.

Flodafors beige Färlöv chair looks good by the fireplace. Yawn, right? Thing is, I believe this is one of the best ways to show how AR can save us from a lot of potentially embarrassing (and costly) guesswork.

The app puts an item in your room at scale, and you can move it around and see if it works for you before placing an order. And when Apple finally gets something like TrueDepth technology on the iPhone's rear camera, features like this should command a permanent slot in virtually any retail app.

10. DANCE REALITY

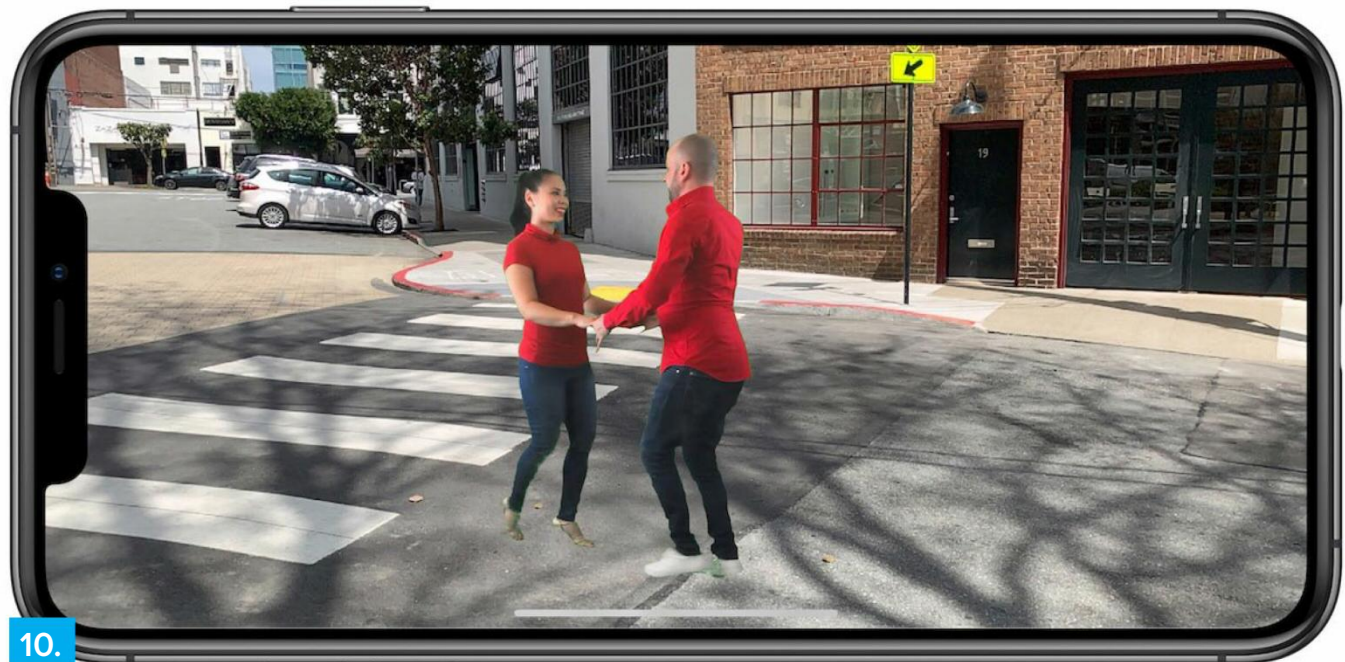
Price: Free at go.macworld.com/dnce.

Dancing is an activity best learned in the company of another person, and I'm not

convinced that AR is going to change that anytime soon. But Dance Reality at least gets you waltzing in the right direction. Here, you drop two dance instructors into the room of your choice and they show you the moves for everything from salsa to hip-hop, with the help of footprints that appear on your floor. (And, for that matter, some in-app purchases that top out at \$4.99.)

You can also just watch them dance, which I find more useful than a YouTube video because you can move around them.

The awkward, catch, of course, is that you have to hold your phone while you do all this. Once we get AR glasses, though, apps like this will give us plenty of reasons to dance. ■



10.

The safest way to dance in the street is to do it digitally.

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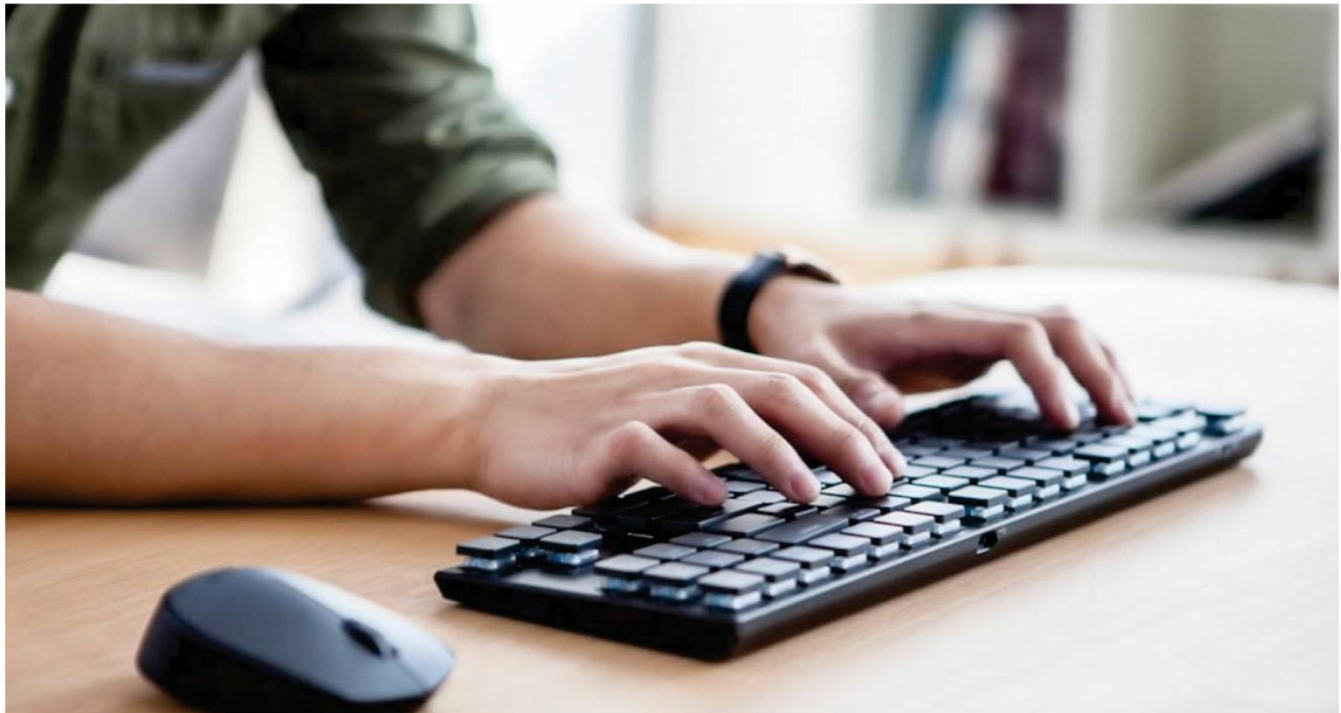


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Keychron K1 Wireless Keyboard: Mechanical RGB magic beats backlit butterfly

The MacBook Pro keyboard has met its match.

BY MICHAEL SIMON

The Keychron K1 Wireless Mechanical Keyboard may as well be the anti-butterfly keyboard. It's thicker than Apple's MacBook and Magic Keyboard. It has wild RGB lighting. It has an 87- or 104-key layout. And most importantly, its keys don't get stuck.

I've been using the Keychron K1 Mechanical Wireless Keyboard ([go. macworld.com/kyk1](http://go.macworld.com/kyk1)) with my MacBook Pro

for a couple of months and it's hard to switch back. I'm not generally a fan of the clickity-clack noise that mechanical keys make, but the Keychron K1 made me a believer in Blue switches. I imagine that in a quiet office I'd get a few dirty looks, but I actually grew to like the sound. Typing on it is way more pleasurable than it is on the cramped and noisy MacBook keyboard, and its function row is inherently more

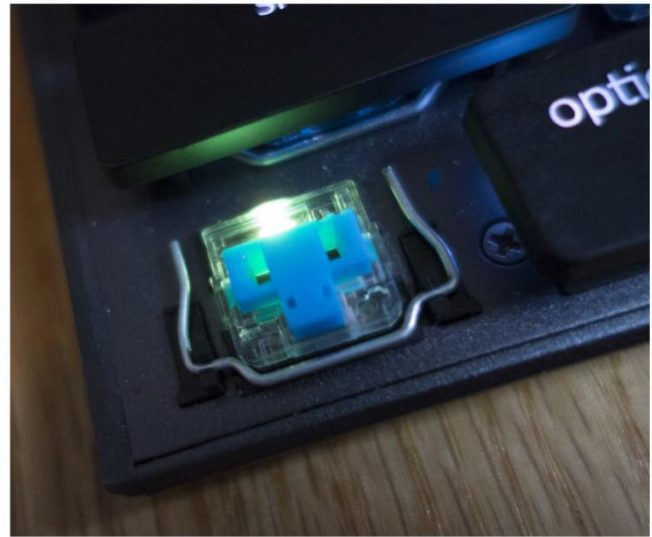
useful than the Touch Bar.

For less than \$100 (\$74 for the 87-key version that I tested and \$94 for the 104-key one with a full number pad), you'll be hard-pressed to find a better wireless mechanical keyboard with backlighting for your Mac or Windows PC. (While the version of the Keychron K1 was strictly for the Mac, version 2 of the keyboard, which is available now, includes keycaps for both Windows and Mac operating systems, so you can swap out the Command and Option keys for Alt and Windows ones.) It probably won't satisfy hard-core gamers devoted to Cherry MX keys, but it's a great option for writers or anyone else who uses a keyboard in a standard manner.

SLICK AND CLICK

The Keychron K1 has a very minimal design, with a space gray-like enclosure and black keys that are nicely fingerprint resistant, along with a nice angle for typing. There are two switches on the back to switch from Windows/Android to Mac/iOS and from Bluetooth to wired use, as well as a USB-C cable for charging. At 1.8 pounds, it's quite a bit heavier than the half-pound Magic Keyboard, but it wouldn't preclude someone from traveling with it.

Keychron describes the keys on the K1 as "ultra-thin low profile Blue mechanical switches (that are) 48-percent slimmer than conventional



The Keychron K1 uses “ultra-thin low profile Fray Blue mechanical switches.”

switches while still maintaining the same tactile responses.” For keyboard nerds, that means each key has a height of just 7.6mm with 3mm of travel and a 1mm actuation point. Your fingers don't need to go down that far to trigger a response from the key you're pressing.

While there won't be as much travel as there is on a keyboard such as the Logitech G513 (which has 3.2mm of travel), the Keychron is also a good deal thinner. All said, the Keychron has an 18mm profile, versus 35.6mm on the G513, which is actually one of the thinner mechanical keyboards. The Keychron's thinness is definitely notable.

The keys on the Keychron are somewhat louder than the MacBook's keyboard, but not in a totally unpleasant way. They sound something like a ballpoint pen click when pressed, and with way more

travel than Apple's butterfly keyboard, you don't have to pound the Keychron K1 to get into a groove. Over the weeks my fingers have learned to type quickly without needing to depress the keys all the way down. The speed of my typing on this keyboard is dramatically improved compared with my typing on Apple's butterfly keyboard.

I used version 1 of the K1, which has a few differences when compared to the second-generation that's now shipping. Most notably, the RGB switcher has been moved to the top and replaced with a second control key to prevent accidental presses. That means the dedicated dictation button has been jettisoned, which shouldn't matter for most people. Remaining are the Siri/Cortana button and the best key of all, the dedicated screenshot button. Hit it and it's as if you pressed Command-Shift-4, a handy shortcut.

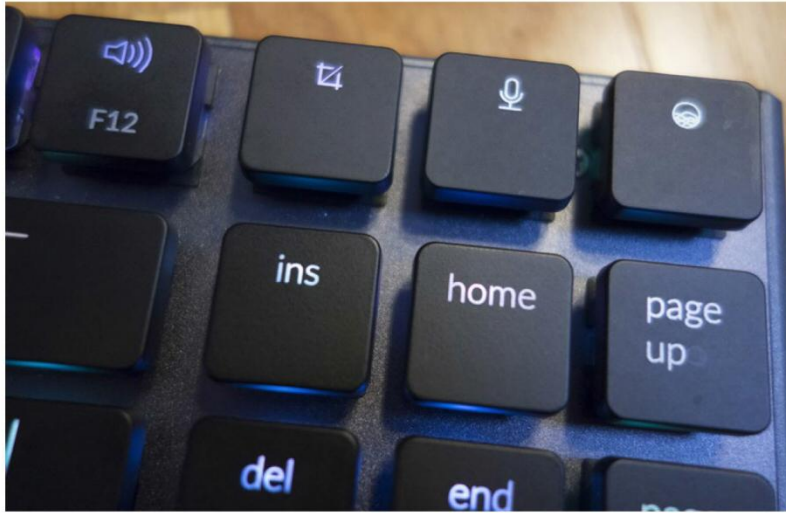
The Keychron K1 has about 20 different color effects and four levels of brightness. If you've never used an RGB keyboard before, they'll take some getting used to, and there are some settings that are so distracting I can't imagine why anyone would want to use them. I liked the colors, but would have welcomed an all-white option like the MacBook's backlit keys. Also, it's an on-or-not situation, and OS X's "Turn keyboard backlight off after inactivity" option has no effect on the K1.

RED, GREEN, AND BLUETOOTH

Keychron rates the K1's battery life for up to 15 hours of use when using a single LED color and up to 10 hours when using full RGB lighting. In reality that works out to about 4 to 5 days between charges, but I never really had to stop using it, since the K1 charges via a USB-C port on the back, which doesn't interfere with operation in the slightest.



You can order the Keychron K1 mechanical keyboard in 87-key (pictured) and 104-key varieties, and both come with swappable Windows and Mac keys.



The newer version of the Keychron K1 has a lightbulb key in place of the dictation key, but thankfully the Siri and screenshot buttons remain.

What will slow you down, however, is the Bluetooth connection. For one, the K1 disconnects more often than other Bluetooth accessories. Sometimes it's due to lack of use (after 15 minutes of non-typing) or when the MacBook goes to sleep, other times it was when I took my MacBook to another room close enough for my other devices to stay connected. That's not entirely unexpected behavior, but Apple's Magic Trackpad or the Logitech K811 had a much easier time staying connected.

Re-connecting is just as frustrating. When I power up my MacBook, I expect my peripheral devices to be immediately available, but that's not the case with the K1. Once it disconnects,

it won't re-connect until you strike a key, and then there's a 1- to 2-second delay until you can type something. Many times (including several while writing this review), I started typing on the K1 only to have just a part of my thought communicated to my Mac. It was a constant annoyance and the biggest detriment to using what is otherwise a fantastic keyboard. However, I had zero connectivity issues when using it during a day's work.

BOTTOM LINE

As someone who types for a living, the Keychron K1 is an easy recommendation.

Even with its nagging Bluetooth issues, I thoroughly enjoyed working on the K1, and I'm not usually a fan of mechanical keyboards or RGB lighting. Mac users will love the low-profile design and hardcore gamers will appreciate the numerous backlighting options, plus it's slimmer than most mechanical keyboards, looks great on a desk, and is still small and light enough to travel with.

For Mac users struggling with their butterfly keyboards, all that will matter is that they can type freely again. ■



Keychron K1 Mechanical Keyboard

PROS

- Compact design with a solid space-gray enclosure.
- Low-profile keys have just enough travel for most fingers.
- Lots of RGB lighting options and swappable keys.

CONS

- Bluetooth disconnects too quickly when not in use
- Keys are a little loud.

PRICE

\$74

COMPANY

Keychron

Microsoft To-Do: Check ‘new Mac to-do app’ off your list

Complete with color-coded lists, themes, the ability to break tasks into manageable steps, sharing lists or tasks, and file attachments up to 25MB each.

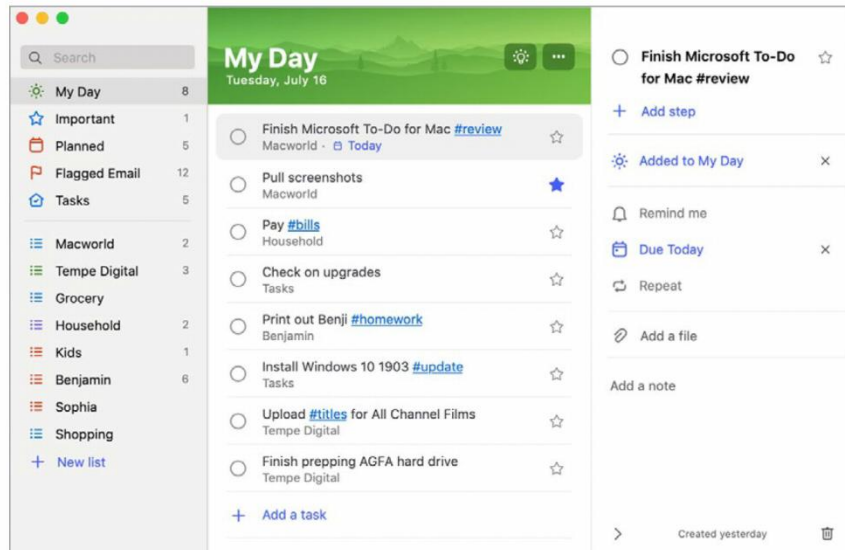
BY J.R. BOOKWALTER



It's been four years since Microsoft scooped up Wunderlist (go.macworld.com/wndr), the popular cross-platform to-do app. Although that software has thus far received a stay of execution and remains available, the introduction of Microsoft To-Do two years later with no

native Mac app in sight had many longtime users adding “Find a new to-do app” as a new task.

For those who made do with just iOS and web apps over the last couple years, Microsoft To-Do has finally arrived in the Mac App Store (go.macworld.com/mstd).



Microsoft To-Do finally arrives on the Mac, with a My Day view that keeps your most important tasks front and center.

Overall, the free app is a faithful port from Windows, although those who prefer the dark theme found in that edition will be disappointed to find it missing here, nor does the Mac version currently support Mojave's built-in dark mode.

MADE FOR MAC

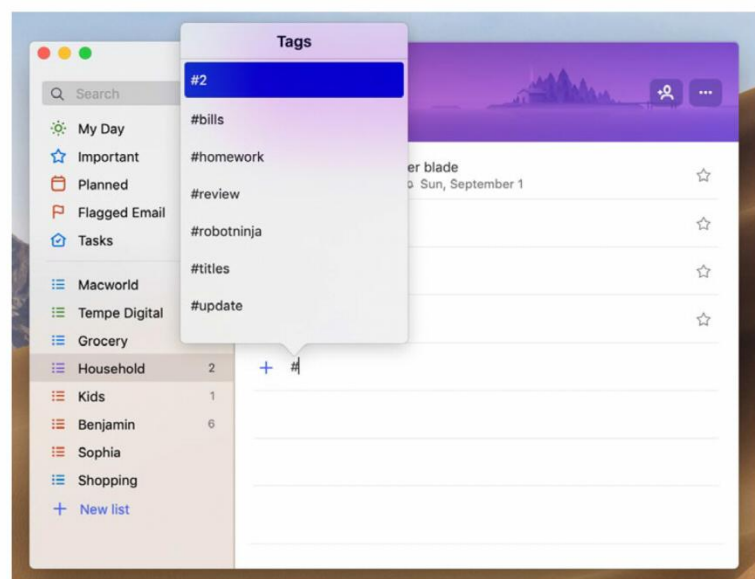
Those familiar with Microsoft To-Do know what to expect, but Wunderlist users will also feel right at home. Current day tasks are presented front and center in the My Day view, with smart lists for Important (starred) and Planned (due date) tasks, which can be disabled or auto-hidden when empty via preferences. Outlook users have the option of displaying flagged emails as well, with a unified Tasks view and

custom user lists occupying the rest of the sidebar at left.

To-Do for Mac includes the same handful of color themes and scenes available on other platforms, which can be assigned to individual lists. Although a more bountiful palette would be welcome, the included scenes provide enough variety for all but those with a huge volume of to-do lists.

MAKING THE LIST

Microsoft To-Do may be chock full of the stuff that made Wunderlist a cross-platform darling, but the Mac app hasn't achieved feature parity quite yet. For example, there's currently no way to duplicate a list,



Quickly add frequently-used tags by typing the hashtag symbol to bring up the tag browser.

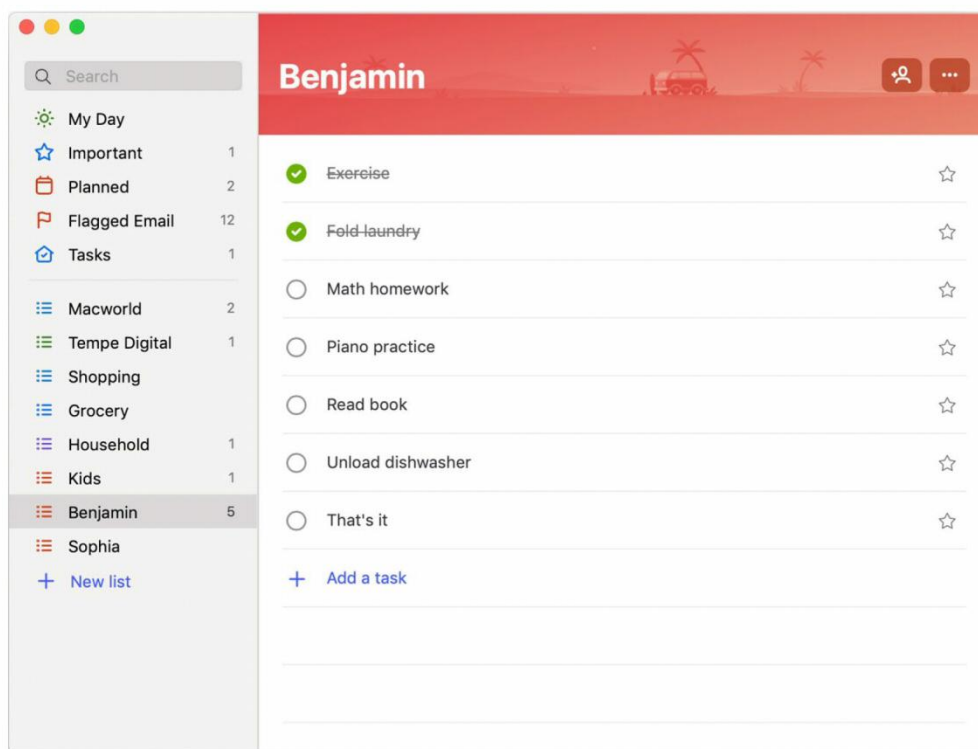
or to print or export data from this version. Wunderlist users can import data via the web app, but it took several tries before we were successful at doing so with our very sparse account.

On the plus side, sync was blazingly fast. Adding new tasks to the My Day view in the Mac app updated immediately in the web app (and vice versa), with only

a brief delay on our iPhone X.

Version 1.61 also now syncs Microsoft Planner tasks, which was missing from previous Mac releases. Speaking of integration, clicking Open In Outlook from flagged emails unfortunately launches the web app, rather than the native Mac application.

There are a couple nice shortcuts baked into Microsoft To-Do. Although the UI is already quite compact, Command-2 reduces the window to a “minified” view sans sidebar, while Command-1 restores



Add new tasks, then check them off as they’re completed—Microsoft To-Do keeps everything in sync across all of your devices.



Microsoft To-Do 1.6

PROS

- Finally, a native macOS app for Microsoft To-Do.
- Easy to use, fast sync between devices.
- Color-coded themes, lists.

CONS

- Doesn’t yet fully replace Wunderlist.
- No dark theme or support for Mojave dark mode.
- Open in Outlook launches website instead of native Mac app.

PRICE

Free

COMPANY

Microsoft

everything to normal. Those who frequently use tags will love the pop-up menu as you type hashtags, allowing one-click entry of previous tags, or to view every task with that tag applied across all lists.

BOTTOM LINE

Despite the lack of dark mode support and that Microsoft To-Do may not be a feature-by-feature replacement for Wunderlist just yet, the long-awaited Mac debut checks off the most important features on our wish list. ■



Splashtop: Affordable remote access app with core remote access options

With no extras, Splashtop provides reliable remote control across platforms.

BY GLENN FLEISHMAN

With a focus on just providing solid remote-access tools, Splashtop (go.macworld.com/sptp) is far less expensive than its closest competitors, which include features that many users

may not need, such as file storage, password management, and full-blown conferencing tools.

That approach appears to allow Splashtop to offer pricing that makes sense to individual users as well as some

categories of business user. Splashtop Business Solo at \$5 a month (billed at \$60 a year) lets a single user access two computers. It offers a range of expected remote-access features, including remote printing, playing remote audio locally through client software, and managing a system with multiple modems.

A small bump up to Business Access Pro at \$8.25 a month (billed annually at \$99) allows remote access of up to 10 computers. With multiple accounts, each user can bring up to 10 computers into a group set, allowing fairly massive numbers of desktop systems to be managed inexpensively. (Splashtop offers a Personal flavor for one's non-business use that doesn't include internet-based access, which is a \$13 a year add-on. I'd recommend TeamViewer for personal use instead.)

SOLO VERSUS PRO

The main difference between the Solo and Pro flavors are with multiple monitors. With Solo, you can view all the monitors on a remote system, but have to switch among them. With Pro, you can have a large view onto the entire multiple-monitor desktop (as with Apple's Screen Sharing app), or map multiple

remote desktop monitors on multiple local displays on the client.

Splashtop has a relatively modern interface that's simple and largely free of frustration, even if its macOS version doesn't feel much like a Mac app. The desktop client software provides drop-down menus inside its floating window that are more common under Windows (and older Windows app, in particular), but they're crisply delineated. You can control the video-frame rate and scaling, as well as start a screen recording.

The iOS version is somewhat better, offering a fresher look, while also offering a high degree of clarity about what each tool's function is, and hiding tools while not in use.

Splashtop has desktop support for macOS and Windows, and clients for macOS, iOS, Windows, Android, and ChromeOS.

BOTTOM LINE

Splashtop is a solid remote-access tool, but its licensing and intent seems best suited for when you have either a very small deployment—yourself and two or a few computers—or share many desktop systems, particularly cross-platform, with a relative handful of users. ■



Splashtop Business Access

PROS

- Budget-conscious pricing.
- Clean interface across multiple platforms.
- Easy setup.
- Licensing works well for lots of computers and few users.
- Session recording.

CONS

- No file-transfer support on mobile.
- Licensing doesn't work well for a few servers and many users.
- Not very Mac-like.

PRICE

From \$5 per month

COMPANY

Splashtop

SoundSource 4: Mac audio control app Apple should have made

Menu-bar utility for changing the volume, output, and audio device settings on your Mac.

BY J.R. BOOKWALTER



Macworld
EDITORS'
CHOICE

For all the advancements Apple has made over two decades with the Mac operating system, it's surprising how little attention core features like menu-bar audio control have received.

Traditionally little more than a convenient way to adjust volume without opening System Preferences, beginning with macOS 10.12 Sierra the basic slider was imbued with the ability to also switch between output devices—and inputs too,

by first holding down the Option key.

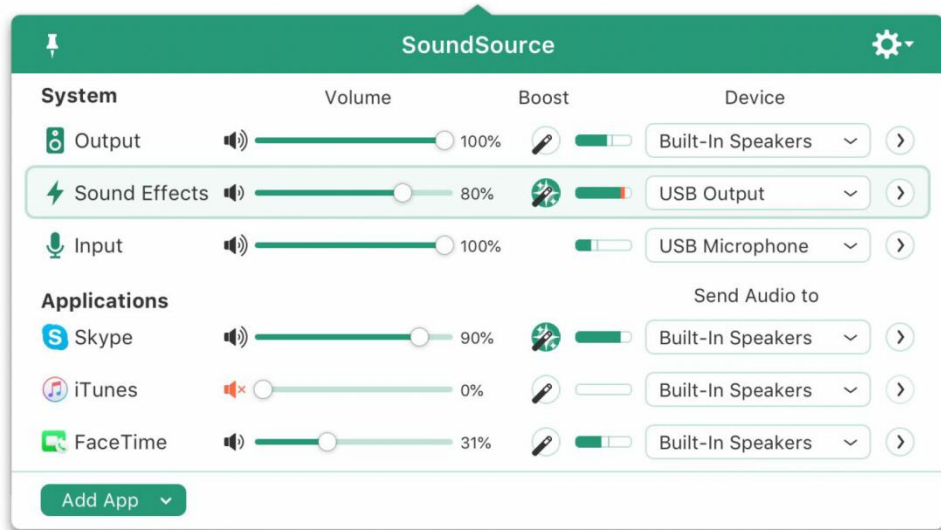
If you're thinking, "there must be a better way," you'd be right. Rogue Amoeba, the creators of awesome audio solutions like Audio Hijack and Fission, have taken the wraps off SoundSource 4 (go.macworld.com/snd4), a more powerful way to control sound

coming and going from your Mac, no matter which application you're using.

SUPERIOR CONTROL

SoundSource resides in the menu bar, summoned via mouse click or global hotkey of your choosing. From this window, you have fast access to the Output, Input, and Sound Effects of your system devices, each with its own volume slider and pull-down menu.

In addition to a more elegant UI, SoundSource provides audio meters for each item, plus a Magic Boost button to help level out the sound being output from your Mac. This feature works exceptionally well with small MacBook speakers, but the sound from a connected home theatre receiver also benefited while playing music and especially movies, where



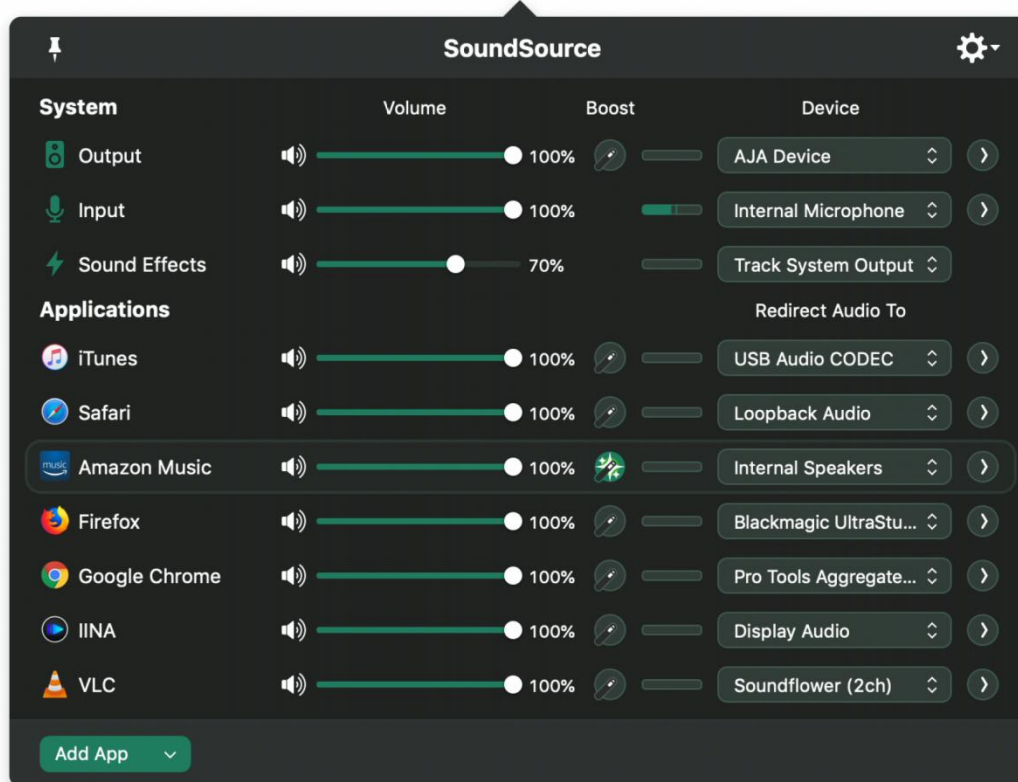
SoundSource 4 is a versatile menu-bar app that enables users to control all audio input and output from a single window.

dialogue was clearer and easier to hear.

By default, SoundSource tethers to the menu bar, but clicking the pin icon in the upper left corner conveniently detaches the window so it floats over whatever else you're doing. Aside from choosing a different system sound effect, you'll never have to open Sound Preferences again, but the settings gear includes convenient shortcuts to those options as well as Audio MIDI Setup, should you need it.

SWEETER SOUND

If that's all SoundSource did, it would still be worth the money, but version 4.0 kicks things up a notch with per-application audio controls. This allows users to raise, lower, or mute the output of individual apps, enable Magic Boost only for specific software, or redirect apps to a different



Per-application audio controls allow SoundSource 4 owners to route sound from different software to as many devices as you have.

output altogether. This amazingly powerful addition comes configured with a selection of sound-producing apps when you install SoundSource, but others can easily be added, with drag-and-drop support for arranging icons in any order you like.

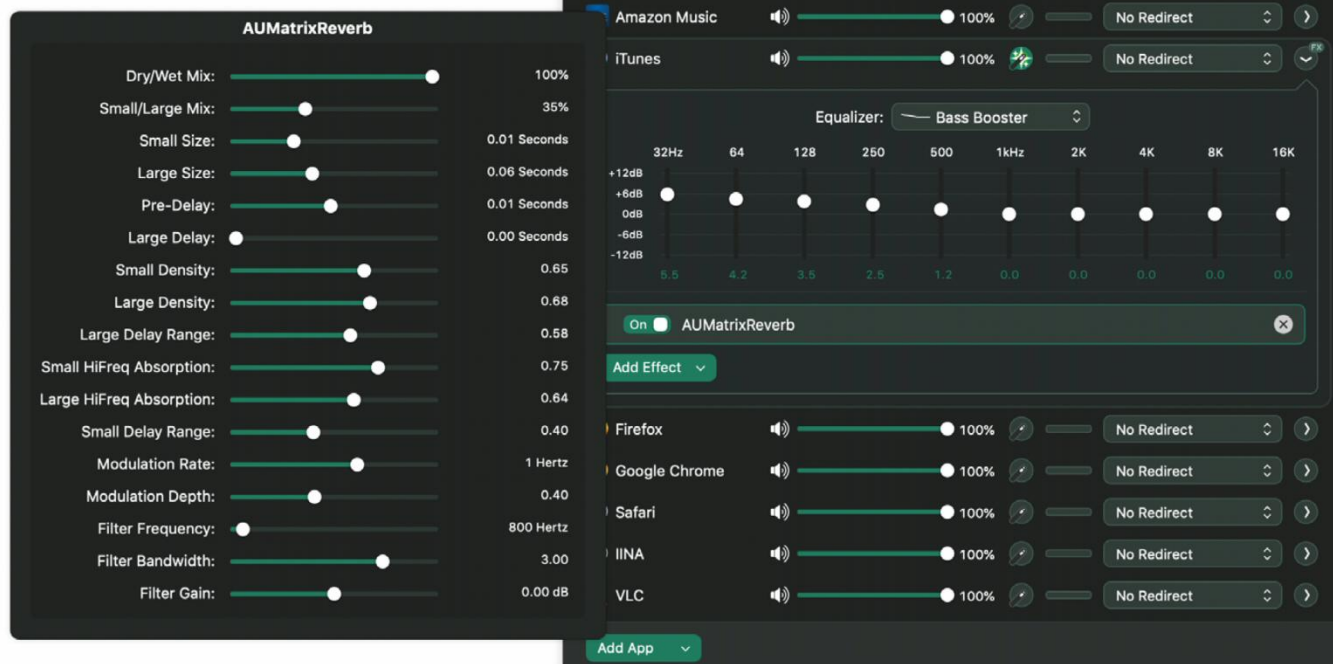
Even cooler, each output comes equipped with a 10-band Lagutin equalizer, balance slider, and the ability to apply Audio Unit effects. That's right—if you already have AU plug-ins installed on your system, they'll now work directly in SoundSource 4 straight away, while the equalizer includes over 20 presets with the ability to create and save your own.

These advanced options are tucked away out of sight, accessible by clicking the right-facing arrows next to each device or application. The software makes it easy to switch between input or output sample rates—that is, unless you have dedicated video hardware which locks the output sample rate at 48Hz.

SoundSource 4 supports macOS Dark Mode and includes an option to display the output volume indicator on the menu bar just like the current Sound preference setting. That may seem trivial, but I toggled this option on, disabled Apple's Show Volume In Menu Bar option, then moved SoundSource 4 to the same position on the menu bar using the Option key and haven't looked back.

Finally, there's a clever Super Volume Keys option, which enables keyboard volume control for external HDMI devices and DisplayPort monitors that don't natively support it. We couldn't get this to

Now empowered with a built-in 10-channel equalizer and support for Audio Units plug-ins, SoundSource 4 is more powerful than ever.



work with our AJA T-Tap connected to a Yamaha receiver, but that had more to do with the hardware conversion from Thunderbolt to HDMI output than a limitation of the software itself.

The news isn't all rosy for longtime SoundSource users, however. Version 4.0 drops support for audio play-thru of input devices. The developer explains this feature, which monitored incoming audio through the Mac, was only used by "a small group of users" and



SoundSource 4

PROS

- Fast access to system audio settings from the menu bar.
- Magic Boost button improves audio levels in one click.

CONS

- Play-thru functionality dropped from previous version.
- Can't adjust output sample rate for dedicated video hardware.

PRICE

\$29

COMPANY

Rogue Amoeba

"no longer a good fit" with SoundSource. (Personally we don't miss it, but for those who do, check out the company's excellent Audio Hijack [[go. macworld.com/ahjk](http://go.macworld.com/ahjk)] instead.)

BOTTOM LINE

SoundSource 4 is must-have utility for any Mac user who wants more control over audio input and output, and truly puts Apple to shame for how anemic the built-in macOS controls really are. ■



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Monolith Headphone Amp and DAC with THX AAA Technology: High value, minor flaws

This affordable and portable headphone amp will bring out the best in your headphones; but the unit's size, weight, and smudge-prone surface keep it from earning our top mark.

BY THEO NICOLAKIS

Today's laptops and smart devices pack lots of performance and high tech. Their audio prowess, however, often leaves something to be desired. The biggest shortcomings typically lie with their

onboard amplification and the DACs that convert a digital signal to analog. As audio enthusiasts with premium headphones know all too well, these deficiencies can rob their headphones of peak performance.

Monoprice's \$279.99 Monolith Portable Headphone Amplifier and DAC aims to address those shortcomings while providing gobs of power, an advanced DAC, and adding premium features in a small package.

METEORIC RISE ONTO THE AUDIO SCENE

Monoprice blasted onto the scene seemingly out of nowhere years ago, selling high-value, high-performance HDMI cables. At the time, Monoprice shattered the market held by ridiculously priced HDMI cables.

Thanks to some nudging from audio enthusiasts within the company, Monoprice then launched a line of high-performance, high-value audio gear under the Monolith brand. The Monolith line is

geared toward the audiophile and home theater crowd. I had the opportunity to review the Monolith 7 (go.macworld.com/mon7), a seven-channel 200-watt-per-channel amplifier whose price and performance left me awe-struck.

The Monolith portable headphone amplifier connected to an iPhone XS. The two are comparable in size.

Since my review, Monoprice's Monolith lineup has grown exponentially to include speakers, headphones, subwoofers, a Dolby Atmos multichannel preamplifier, as well as desktop and portable headphone amplifiers and DACs.

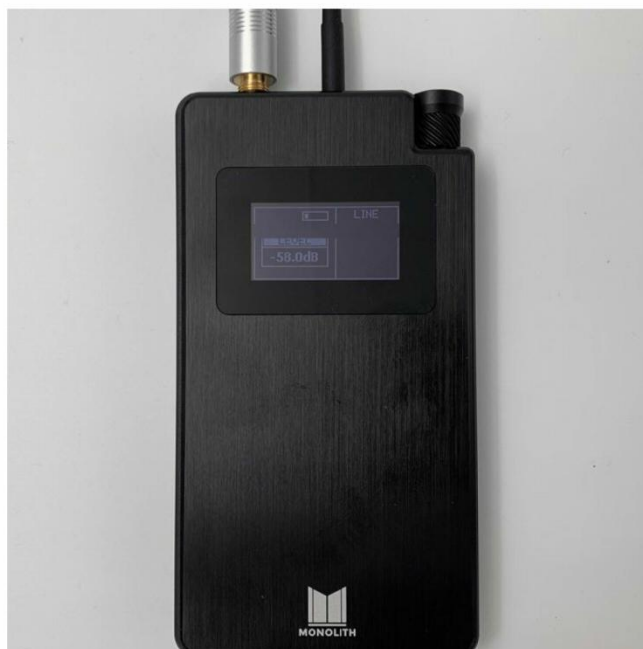
BEAUTIFUL BUILD AND STYLING

The Monolith Portable Headphone Amplifier and DAC is beautifully constructed

with a black, brushed metal face; matte black sides, and a back plate with a flush, imitation leather grain that goes almost edge to edge. The unit's monochrome screen is small but legible. The screen serves as a dashboard letting you know the input, volume, and battery status. If you're connected via USB, it will show you if your audio source is PCM or DSD along with the source's sampling rate.



The Monolith portable headphone amplifier connected to an iPhone XS. The two are comparable in size.



Monoprice Monolith Portable Headphone Amplifier and DAC sports a brushed aluminum front.

The Monolith measures 5.35 x 2.84 x 0.57 inches, which is about the size of a typical smartphone, and it weighs in at half a pound. There are four physical buttons on the right-hand side for menu functions.

While the Monolith sports a small form factor, it doesn't mean it's a practical on-the-go amp and DAC. I found the Monolith a bit cumbersome to carry around in addition to my iPhone XS, and the tangled web of cables cumbersome to use when walking. I'd say this is really intended for someone who wants portability but won't be moving around when you're using the Monolith Portable Headphone Amp.



Detail view of the physical buttons along the unit's right-hand side.

POWER UNDER THE HOOD

AKM's flagship 32-bit AK4493 DAC is at the heart of this device, supporting PCM sources up to 768kHz and DSD 2.8, 5.6, and 11.2 signals.

The amplification side of the device is handled by a THX AAA 788 amplifier module. The acronym stands for Achromatic Audio Amplifier. (Achromatic is a Greek word meaning "without color"; hence, THX claims its AAA technology aims to amplify the audio signal without coloration.)

THX's AAA amplifier technology is known for its linearity and vanishingly low distortion (go.macworld.com/lwds), among other things. I have quite a bit of

experience with AAA amplifier technology, having two THX AAA-based Benchmark AHB2 power amplifiers (go.macworld.com/b2bn) in my reference setup. If you're interested in learning more about this technology, you can read an in-depth interview with THX's senior vice president of audio research, Laurie Fincham, at go.macworld.com/lfin. He discusses how AAA was developed and how Benchmark came to adopt it. I don't mean to imply, however, that the Monolith is a Benchmark AHB2 in miniature. An audio system's sound is always the sum of its parts.

The Monolith headphone amp is designed to drive just about any headphone. It will pump out 220mW into 16 ohms, 91 mW into 150 ohms, and 23 mW into 600-ohm headphones. Indeed I had no trouble driving any headphone I threw at it. I should note that some users in online forums have commented about excessive hiss through easy-to-drive in-ear monitors when used with the Monolith.

After extended use, the headphone amp had a tendency to get warm but never hot. I suggest keeping it well ventilated, not using it in an enclosed bag.

The Monolith Portable Headphone Amplifier has a 4000mAh battery. I do, however, wish that the Monolith could double as a portable charger, like Oppo's now defunct HA-2 portable headphone amplifier.

ADVANCED FEATURES

Features is where the Monolith shines. First up is Dirac Sensaround II. Dirac is well known in the home theater world, developing one of the best room-correction packages available. But don't think you're getting some cutting-edge headphone auto-EQ solution when you see the Dirac logo on the side of the Monolith.

As deployed here, Dirac Sensaround II is a DSP mode. It's billed as creating a "vast, clear, and realistically immersive sound stage free from the constraints of the space in your



Dual USB ports on the bottom allow you to charge the unit and use it as a USB DAC simultaneously.



Detail view of the Monolith's top with 3.5mm input and headphone output.

ear, much like a multi-speaker home theater system.” Well, I wouldn’t go that far. In real-world use, Dirac’s Sensaround II creates a more relaxed musical presentation, as opposed to the more forward sensation you get with headphones. The effect is not as dramatic as the marketing folks make it out to be, and you’ll either like it or you won’t.

The Monolith’s inputs are versatile. In addition to the USB input, the 3.5mm analog line-level input doubles as an optical input.

Four additional features elevate the Monolith’s value and practicality:

- > You have the ability to set PEQ (parametric EQ) to target specific frequencies.

- > Shelf EQ lets you boost or cut frequencies above or below a frequency setting.

- > You can change the DAC’s filter speed settings

- > Dynamic range control lets you set two independent stereo compressors and a mixer to combine the low and high bands.

THAT VOLUME KNOB IS A TWO-EDGED SWORD

The analog volume dial dominates the unit’s upper right corner. Taking a cue from high-end digital audio players ([go. macworld.com/dgap](http://go.macworld.com/dgap)), the volume knob plays a prominent design role. I found it relatively easy to turn with my index finger



The analog volume knob, which is extremely sensitive.

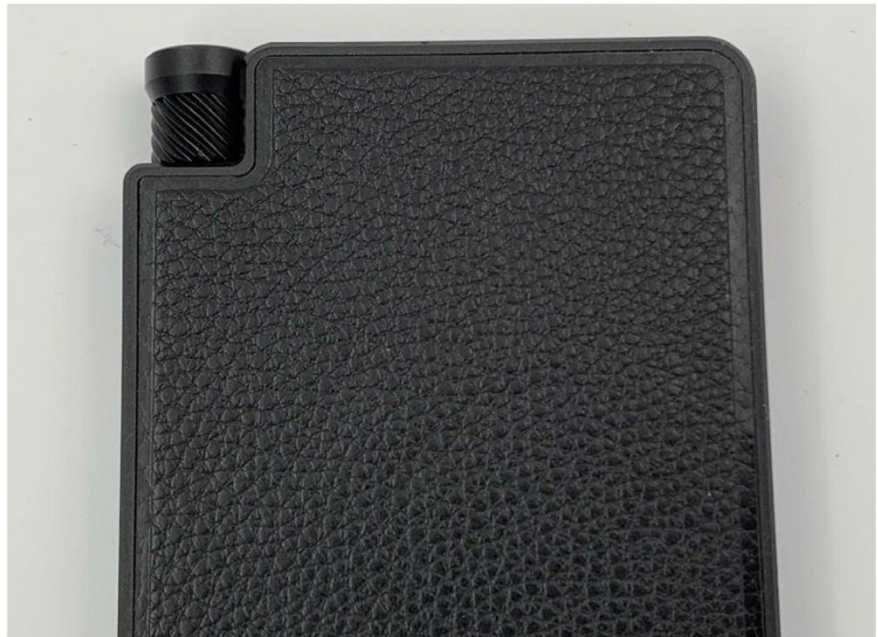
for left-handed control or with my thumb for right-handed use. Be warned, however, the volume dial is very sensitive.

That will be a good or bad thing, depending on your perspective. It's good in that you can spin the volume up or down quickly. But don't dare rub up against it while it's in your pocket. Your music will go silent or you'll throw your headphones off your head as the volume spikes. I

had a couple of situations like that when I was just reaching for the unit. I'd like to see Monoprice make some adjustments with the volume knob's sensitivity or perhaps introduce a volume lock feature.

PERFORMANCE

I tested the Monolith Portable Headphone Amplifier and DAC with the Astell&Kern Billie Jean (go.macworld.com/bljn), Aurvana Trio (go.macworld.com/trio), Bowers and Wilkins C5, and Fiio F9 Pro in-ear-monitors as well as the Focal Clear (go.macworld.com/cler) and Beyerdynamic Amiron Home (go.macworld.com/byer) over-the-ear headphones. I used the Monolith as a USB DAC connected to a Mac, and I used the analog input fed from an iPhone XS. Sources included my Roon



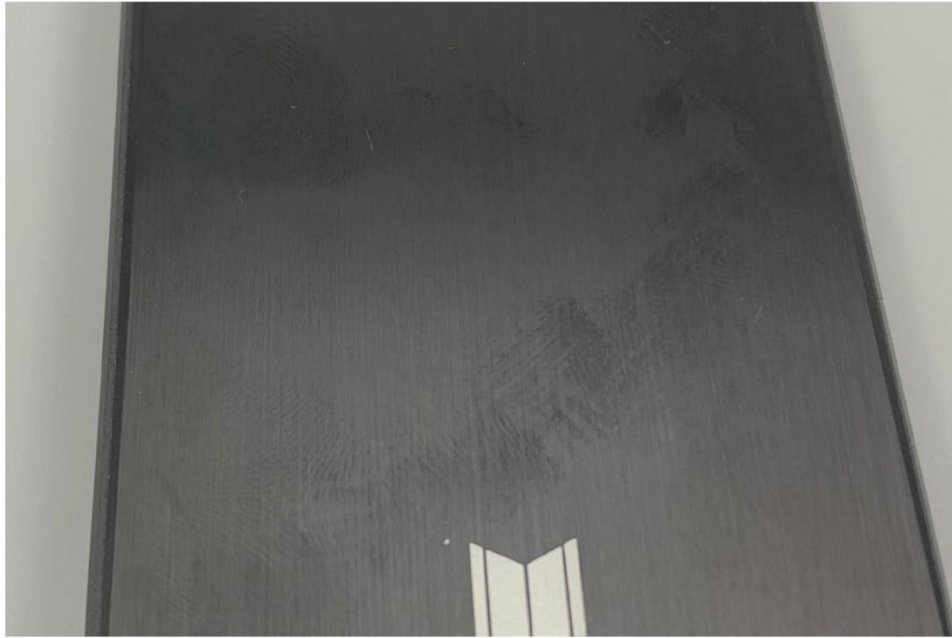
The Monolith's rear has an imitation leather grain.

media server and Tidal.

The Monolith Portable Headphone Amplifier drove every headphone I connected to it with ease. This was most notable with the Beyerdynamic Amiron Home and Focal Clear. Bass control on Shaed's "Trampoline" or Imagine Dragons' "Bad Liar" was good, though I longed for a bit more texture.

The Monolith delivered siren songs from my pantheon of female vocalists, including Natalie Merchant, Norah Jones, Adele, Dido, Alicia Keys, Lauren Daigle. At times, I longed for a bit more presence, midrange transparency, and dynamics.

Generally speaking, the Monolith Portable Headphone Amplifier and DAC is a very good product. In my tests with over-the-ear headphones, the Monolith



The Monolith's aluminum face is prone to fingerprints and smudges.

conjured up the music from a black background. If you're looking to elevate your computer or smart device's audio and gain advanced features such as PEQ, it's something you should seriously look at. But I'll stop short of calling it a reference product. The device shines with its digital inputs, but the analog input is less impressive. For me, it lacked that last ounce of transparency, involvement, and musicality.

BOTTOM LINE

Monoprice's Monolith Portable Headphone Amplifier packs a lot of tech in a tiny package, though

I'd stop short of calling it practical for active on-the-go use. Built around THX's superb AAA amplifier technology and AKM's flagship DAC, there isn't a file format or headphone that will make this baby sweat. The digital inputs sound better than its analog counterpart.

But the Monolith's real value lies in its

arsenal of PEQ, shelf EQ, filter speed settings, and dynamic range control. Dirac's Sensaround II will appeal to some and disappoint others. If all those features resonate with you, then the Monolith Portable Headphone Amp deserves serious consideration. If they don't matter to you, the Monolith's value proposition drops a bit. Likewise, if you're in the market for a headphone amp and DAC and intend to use primarily digital sources with it, this one should float your boat. If you think you'll be listening exclusively to analog sources, it's much less appealing. ■



Monolith by Monoprice Portable Headphone Amplifier and DAC

PROS

- Will drive nearly any headphone effortlessly.
- Features AKM's flagship 32-bit AK4493 DAC, with PCM and DSD support.
- Outstanding set of PEQ, shelf, and dynamic-range control settings.

CONS

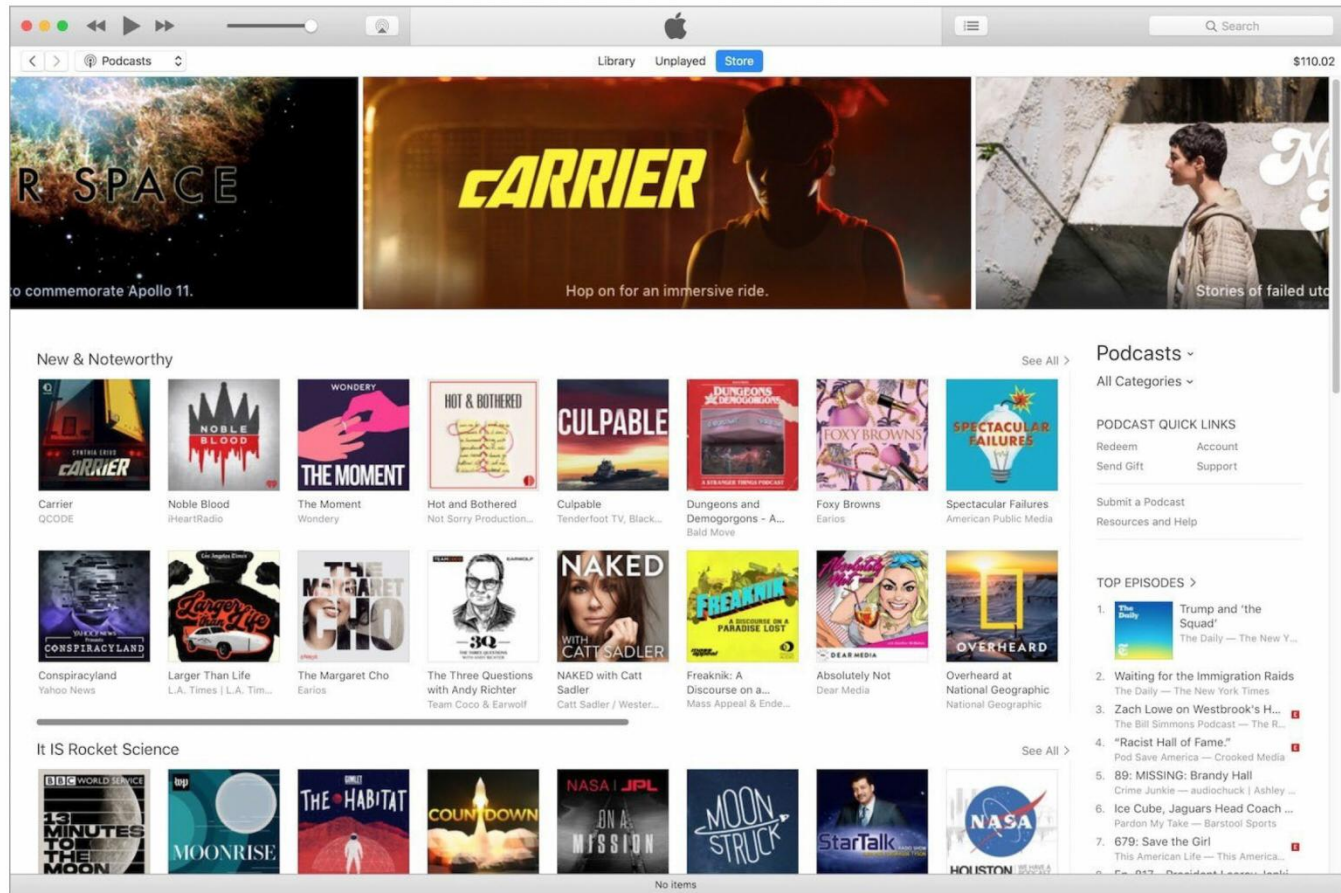
- Brushed metal surface easily picks up fingerprint smudges.
- Analog input not as refined as the digital inputs.
- Size and weight make it cumbersome for active use.

PRICE

\$279

COMPANY

Monoprice



Is it a good idea for Apple to buy exclusive rights to podcasts?

Why Apple's big podcasting move makes sense—and might not work.

BY JASON SNELL

The podcast industry has been flooded with big money ([go. macworld.com/bgmy](http://go.macworld.com/bgmy)) over the last few years, as businesses and investors seek to get in on a rapidly growing media business that's got a lot of room for audience and revenue growth. (Spotify alone is spending \$500

million on podcast companies and exclusive content.)

And yet over all this time, the industry's biggest player hasn't made any big podcast business moves.

That player is Apple—its Podcasts app is the top podcast player, with 50 to 70 percent of the app market—and its time as

a neutral supporter of the industry may be coming to an end. Bloomberg's Mark Gurman and Lucas Shaw report that Apple is talking to media companies about buying exclusive rights to podcasts (go.macworld.com/xrit).

This isn't a surprising revelation. Podcasting is an area in which Apple currently exerts a huge amount of influence. This is not to say that any new Apple podcast endeavor would be a sure thing.

WHY IT MAKES SENSE

Back in February, I wrote about Apple's curiously hands-off approach to the podcast explosion (go.macworld.com/pdxp). This is a company that is trying to dramatically increase services revenue, and is currently in the process of launching a new video service populated with exclusive content to go alongside its popular subscription music service. Its powerful position in podcasting is a lever it can use to generate more revenue growth. Along the way, it can blunt the impact of competitors who are spending a lot of money trying to become the Netflix of podcasts.

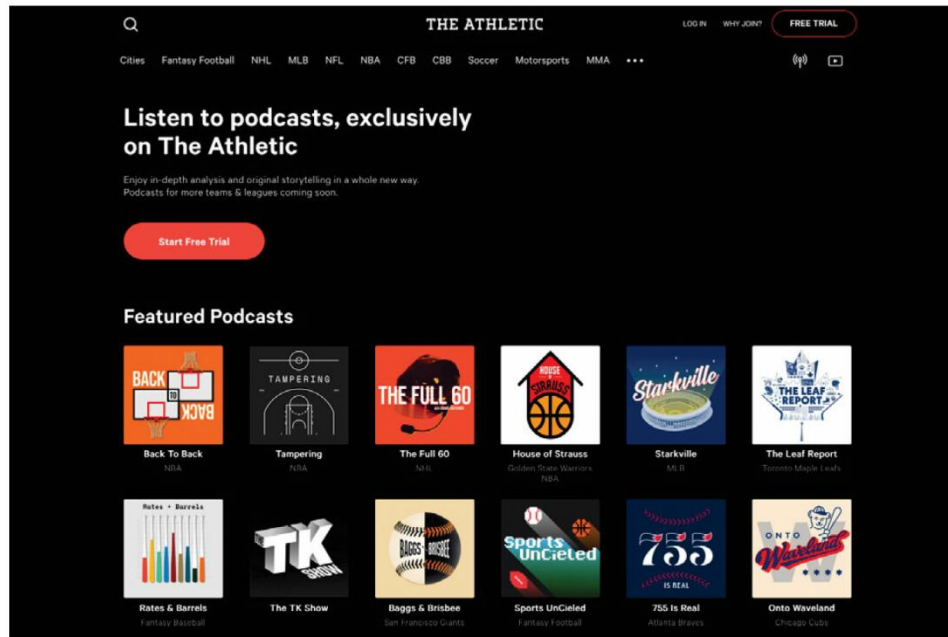
The Bloomberg report says that "Apple has yet to outline a clear strategy" here, so it's entirely possible that not even Apple knows quite what the right move is in terms of podcasting. I keep thinking that Apple simply can't keep introducing

additional subscription services, but it keeps on doing so—Apple TV+ will soon join Apple Music and Apple News+ on the front lines. So who's to say that a standalone Apple Podcasts+ service isn't in our future?

That said, it does seem like access to exclusive podcasts might be better used as an add-on to Apple Music, especially given the fact that its biggest music competitor, Spotify, is doing the same. Apple could also split the difference and offer a standalone premium podcast subscription that's aggressively bundled with Apple's other media subscriptions.

The biggest problem faced by companies building premium audio content is the open nature of podcasts themselves. The podcast world is filled with free podcasts that can be consumed in any podcast app, just as you can visit webpages in your browser of choice. Though it's technically possible to secure podcasts behind a username and password in standard podcast clients, the makers of premium podcasts don't like that idea—they want you to use their apps, even though every other podcast you're listening to is in a completely different app.

I face this myself with The Athletic (go.macworld.com/atlt), an excellent subscription sports journalism site that has an impressive array of podcasts—all of which must be listened to only on its own



The Athletic.

app. The result? I never listen to those podcasts, even though I'm a paying customer, because they don't live where my other podcasts live.

This is the real advantage that Apple has: An enormous number of podcast listeners already use Apple's app to listen to podcasts. Apple can use its home-field advantage to make it easy for those users to add Apple's exclusive podcasts to the ones they already listen to. It's never bad when your competitors have to face a serious barrier to success that you can simply ignore.

WHY IT MIGHT NOT WORK

The great thing about podcasts—and I say this as both a listener and a creator of podcasts—is that it is, like the web, a free and open ecosystem for content. You can

listen to any podcast in any podcast player. If Apple creates podcasts that can only be listened to in Apple's own app, it is furthering a potential future where your favorite shows are scattered across multiple services and siloed in different apps.

You may notice that this doomsday scenario isn't really

any different than today's streaming video world (every service has its own app)—and that's not so bad. The difference is that an enormous amount of podcast listening happens hands-free, as people are driving or riding public transportation or walking or running. Podcast apps make this easy: when one episode is done, the next episode (in a particular podcast or in a playlist of many podcasts) starts to play. When you're commuting, the last thing you want to do is to have to launch a different app and navigate a new interface in order to listen to the next thing—but that's what would happen in a siloed world.

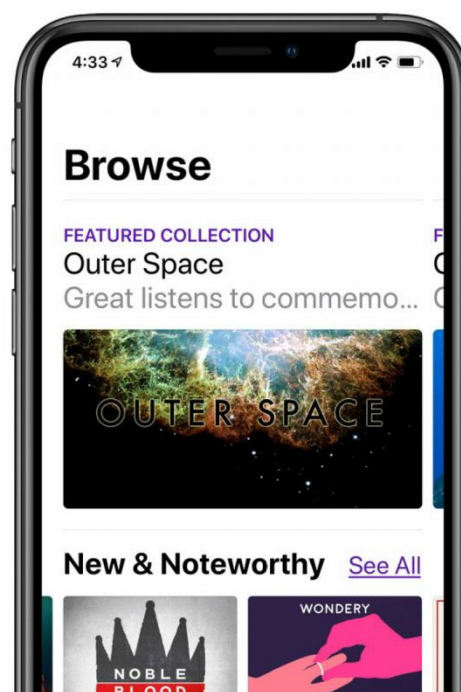
Going exclusive might seem like a good deal for creators, too, but it has some serious drawbacks as well. Sure, if Apple wants to back a truck full of money

up to your front door, I can see why it would be easy to say yes. But if an existing creator or podcast moves to a premium service, a large part of their audience simply won't follow them—that's just the nature of converting from a free service to something that's paid. Worse, it's harder to acquire new listeners when you're behind a paywall—you might get sampled by subscribers to the service, but randomly curious people on the Internet will no longer be able to discover that podcast.

Popular podcasts also make a lot of money by selling merchandise and performing live on tour in front of large, paying audiences. Those audiences will be a lot smaller after any program goes behind a paywall—and those revenue streams will drop accordingly.

Howard Stern made it work when he went from free radio to pay satellite radio, but most podcasts are not Howard Stern.

I also wonder if Apple might consider offering money to popular podcasts to hide ancillary material behind a paywall. That's an approach that's been used by companies such as Stitcher, which partnered with a podcast I like a lot—"Hello from the Magic Tavern"—to create a spin-off podcast that was available only on Stitcher. This would be a way for Apple to get exclusive content without forcing creators to disappear entirely behind a paywall.



iOS 12's Podcast app.

While I can see powerful arguments for Apple to buy exclusive audio content and release it in the Podcasts app, there's every chance it won't succeed. Other companies have tried this same approach and, at least so far, nobody has really succeeded in breaking the power of the open, flexible podcast ecosystem.

And while Apple's power position in podcasting gives it a leg up, let's also not forget that Apple is hardly experienced in getting users to pay for exclusive content. Apple News+ is at best a work in progress, and Apple TV+ is still a few months away from launching. Apple's probably got the money to make exclusive podcasts an experiment worth trying, but there are plenty of reasons for it not to succeed. ■



Plantronics BackBeat Fit 3100: Excellent durability for athletes, but plagued by connection problems

Athletes will love the stay-put, lightweight, durable design, but connectivity problems and middling sound quality make these hard to recommend.

BY THEO NICOLAKIS

Plantronics has a reputation for churning out well-made, reliable hands-free Bluetooth communications gear that drivers and corporate IT types adore. Its headphones and earphones, however, tend to fly under the radar of most music

lovers. It's a shame, as their consumer audio gear not only sounds great (for the price) but also comes packed with features typically reserved for headphones that cost significantly more. As such, I expected great things from Plantronics' first stab at a pair of true wireless earphones, the

BackBeat Fit 3100 (go.macworld.com/bkbt).

After a week of testing I can tell you that, while the company got a great deal right with these earbuds, there's still room for significant improvement.

DESIGN

The size of the Fit 3100 make them look heavy. This is a deception: Pick up one of the earbuds and you'll discover that, despite their beefy, rugged build, they're reasonably light. The large, rubberized ear caps that contain the headset's batteries and electronics have an IP57 rating. So you can expect them to stand up to dust or even take them swimming (although you might not hear much music). Need to wash mud or grime off of them after a workout? No problem.

That the Fit 3100 were designed with athletics in mind is clear to see. Soft, pliable silicon ear hooks ensure that the earbuds will stay attached to your skull as you navigate highly technical trail runs or cycle down city streets. Plantronics' Ambient Aware ear tips all but do away with the passive noise blocking that most other true wireless earphones aspire to. Provided you're not listening to your music at a ludicrous volume, you'll always be able to hear what's going on in the world around you. That's important for staying safe while you're out for a jog or sharing a gym with others. Unfortunately, the

earphones don't ship with a second set of ear tips. If you happen to lose one, you'll have to contact Plantronics for a replacement.

The Fit 3100 battery case, for better or worse, is unique among the ones shipping with true wireless earphones. Where most companies rely on a mechanical latch or magnets to keep their cases closed when not in use, Plantronics has opted to use a zipper. The upside of this design is that, should the case ever get dropped, there's no way that it can fly open to send your earbuds skittering across the ground. The downside is that the zipper Plantronics has employed is of middling quality. I found that the zipper pull was easily bent, and while opening or closing the zipper, I noted a couple of spots that gave a small amount of resistance. Neither of these flaws suggest long-term durability. That said, the rest of the case seems sturdy enough and should protect the earbuds inside of it from casual abuse.

Plantronics claims that the Fit 3100's battery case can provide two additional charges, which is good, as you might need them: while these earphones are advertised as having a five-hour runtime, I found that they averaged around 3.5 hours per charge. You should know that some care is needed while placing the Fit 3100 back into their case: if they're seated in the wrong position, they won't charge.



The Fit 3100's zippered charging case is unique, but could have long-term durability issues.

USABILITY

The Fit 3100 don't have the most intuitive control scheme that I've tested, but it's not the worst, either. Both earbuds have large, clicky buttons built into their end caps. The right earbud's button offers users track controls and the ability to accept or end phone calls. The left earbud's button is capped with a touch panel: a quick touch of the panel decreases the volume, a long press will increase it. Through Plantronics'

free BackBeat Fit Companion app, it's possible to customize the left ear cap click—in theory. I tried and failed multiple times to get the app to recognize my pair of Fit 3100s, despite the fact that the earbuds were connected to my iPhone 7 Plus and worked in every other respect. I attempted to pair them to the app on an iPhone SE and OnePlus 6t, to ensure it wasn't an issue with my handset. After checking with both the iOS App Store and Google Play Store, I found that many other Fit 3100 were having the same issue. Given the price point of these earbuds, this is a difficult problem to overlook.

During the week that I tested these earphones, connectivity issues became something of a theme. Beyond the failures in trying to get the Beat Fit Companion app to pair with the earbuds, I also experienced frequent Bluetooth connectivity hiccups anytime I wore the Fit 3100 outside of my home. A car passes by as I walk down the street: hiccup. Putting my phone in my left jacket pocket inside of my right: lots of hiccups. Using them in a crowded coffee shop while I do a bit of work...well, you get the idea.

SOUND

The Fit 3100 won't win any prizes for audio fidelity. But that's okay, they're not supposed to. In order to ensure good sound with a pair of in-ear headphones,



you'll need a modicum of passive or active noise cancellation. This ensures that much of the noise from the outside world gets blocked out while you're wearing them and, at the same time, allows for the sound generated by the tiny drivers in the earphones to be fully realized as it's pumped into your skull. A good in-ear seal allows the user to enjoy richer bass and more detailed mid and high frequency sound.

As the Fit 3100 shy away from passive noise cancellation in favor of providing users with situational awareness, they don't sound as good as other sports-oriented earphones, like Jaybird's X4 (go.macworld.com/jyx4) do. Despite this, the audio that they serve up is definitely up

to the task of powering athletes through their workout. If you find that you're unhappy with the sound that these earphones provide but want the level of

situational awareness that they afford, you might want to consider Bose's outstanding SoundSport Free (go.macworld.com/sosp) true wireless earphones, which typically sell for around \$50 more.

BOTTOM LINE

Despite their sturdy build quality and the amount of situational awareness they afford, I can't recommend the Plantronics BackBeat Fit 3100. Their subpar battery life and spotty connectivity are impossible to ignore. ■



Plantronics Backbeat Fit 3100

PROS

- Offer great situational awareness.
- Lightweight.
- Water resistant.

CONS

- Difficulties pairing with audio source during testing confirmed by third parties.
- Limited audio controls.
- No on-earphone Siri controls.
- Charging-case zipper could be of better quality.

PRICE

\$139

COMPANY

Plantronics

Smokey Says...

MAKE IT YOUR
GOAL
TO EXTINGUISH
HOT
COALS



IF IT'S TOO HOT TO TOUCH,



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Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN



HOW TO BUY A USED MAC WITHOUT BEING LOCKED OUT

One of the great selling points for Macs has been a combination of their longevity and resale value. I know plenty of people with decade-old Macs. In the last two decades, I've easily gotten seven or eight years out of some Macs I've owned, and then sold them to folks who kept them in service.

There's a lot to consider when buying a used Mac to make sure that it will keep working. But something that you might

overlook is that security decisions made by the previous owner could conspire to lock you out in certain circumstances. This could happen on a restart, when trying to erase and reinstall macOS, or even on logging in, depending on what state the Mac was left in when you purchased it.

The best way to buy a Mac is after the seller has erased the drive and installed a fresh copy of macOS on it without yet completing setup, so you can do that from scratch without worrying about any software they may have installed or

passwords or accounts they've created. And the best scenario to receive a used Mac is to do so in person, so you can fire up the computer and see it's working, run through tests listed below, and be sure no extra passwords or permissions are needed.

Regardless of how you receive the Mac, check out these items—preferably before finalizing the deal.

- > Shut the Mac down and perform a “cold boot”—start it up and see if you can log in with account information provided or complete macOS setup.
- > Restart normally from the Finder and hold down Command-R to make sure you can start up in macOS Recovery. (If macOS Recovery isn't installed, the Mac should attempt to retrieve it over the internet and install it. If shown a lock icon and password field by itself, see the firmware password section below.)

> In Recovery, run Disk Utility. Can you mount the disk without a password? And run Disk First Aid to ensure that no problems are reported.

That covers the basics, but you can and should dig deeper. (You should also use this checklist before selling a Mac.)

Tip: If a seller balks at providing a password to you directly for something that can be typed in while booted into macOS proper—a perfectly reasonable



If you see this screen at startup, you need a firmware password from the seller to unlock the Mac.

thing to resist—you can use a slightly hidden feature for iMessages. In a chat session with Messages for macOS that has the blue bubbles showing an iMessage connection, click the Details button in the upper right corner, and then click the overlapping screens icon. Select the Invite To Share My Screen option. The seller can then remotely type the password in as required. (They may want to and probably should change their iCloud or other password after that, too.)

Were one or more accounts created?

If someone else set up a computer, you don't necessarily know what's running on it. I suggest erasing the drive and reinstalling macOS via macOS Recovery. However, if that's not an option or you're not concerned, at least delete all unnecessary accounts and change the password on the main account, which

must have administrator privileges.

You should also make sure if you're retaining any accounts that the Mac isn't logged in to the seller's account in the iCloud preference pane.

Is a firmware password set?

A firmware password locks the Mac to booting only with a particular startup disk. This can be a problem later if you want to start up from an external drive or make other changes. Check on this and then remove or change the firmware password with these steps:

1. Restart your Mac and hold down Command-R to start up in macOS Recovery.

2. If you're prompted for a password next to a lock icon, you need the seller to provide this firmware password. Enter the

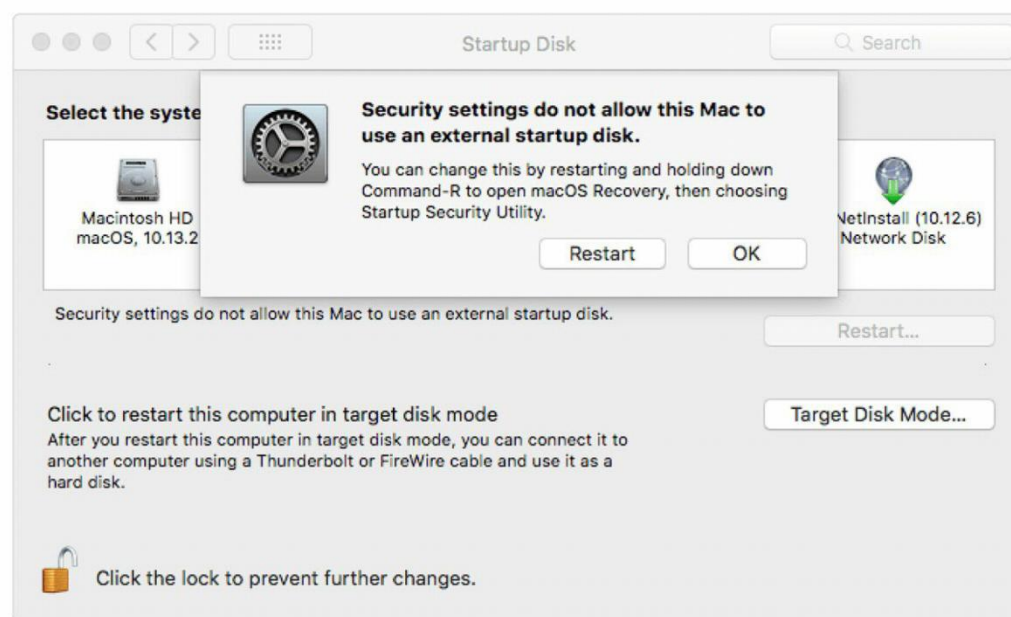
password.

3. After Recovery starts up, select Utilities → Firmware Password Utility (older Macs and some newer models) or Utilities → Startup Security Utility (Macs with a T2 security chip), and then Turn Off Firmware Password. Enter the password again when prompted.

4. If you want to keep the firmware password enabled, now click Turn On Firmware Password and enter a password only you know and that you make a record of, preferably in a password-management app.

If the seller doesn't have the password, all isn't lost, but it requires their participation to get the Mac unlocked. Apple says that the original receipt or invoice showing purchase of the Mac is required, and the Mac has to be brought in

person to an Apple Store or an Apple authorized service provider.



With a firmware password enabled, the startup disk cannot be changed.

Is FileVault turned on?

FileVault encrypts the entire contents of a Mac's drive, making files unreadable when it's powered

down. It's terrific technology that I strongly advise using. However, there are two kinds of problems with having it enabled when you purchase a used Mac.

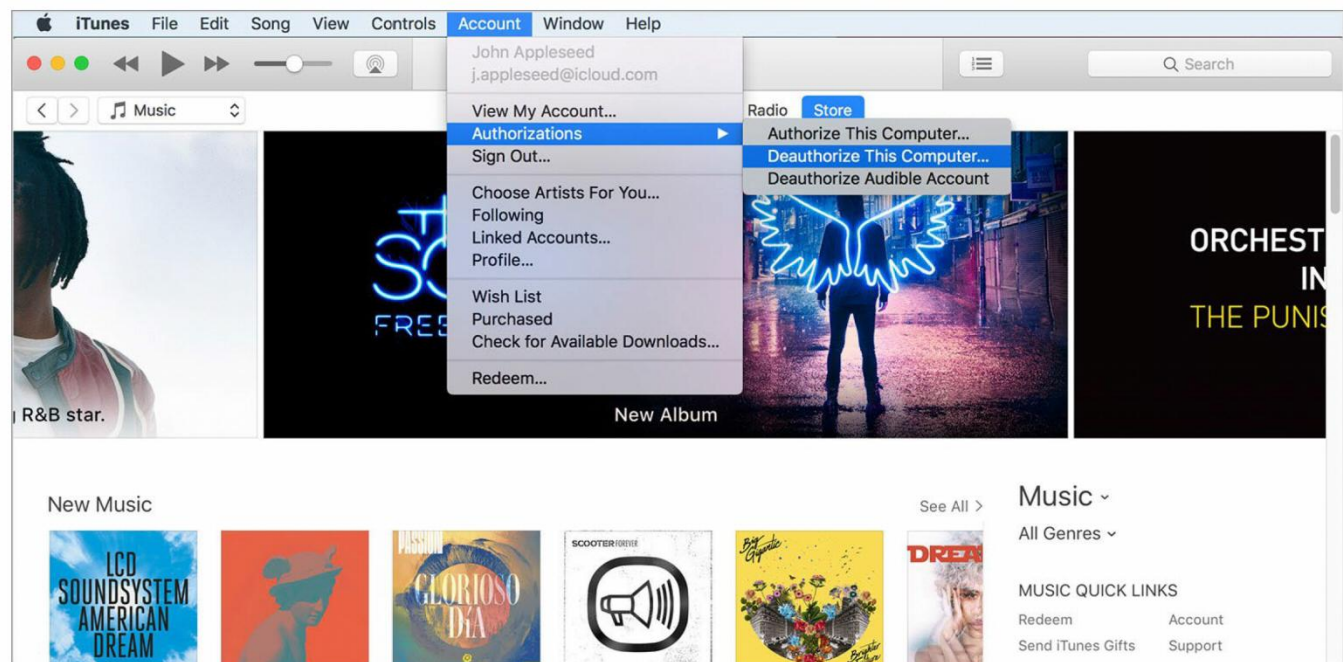
First, FileVault has to be enabled on every account that you want to be able to log in. On a used Mac that's prepared for you, there should be a single account created with administrator privileges. Because FileVault has to be turned on for at least one account, that's all that's needed. I suggest deleting any other accounts created on the device and changing the password on this account.

Second, there's a kind of security exploit available if someone else set up FileVault. When you turn on the encryption, macOS generates a recovery

key that allows you to decrypt a drive even if you don't have an account password. This can be provided directly to the person setting it up or stashed in an iCloud account as escrow.

The seller could and should provide that key to you. However, you should also reset FileVault encryption. Without the recovery key you could be locked out. Or, in the unlikely event you're purchasing a computer from someone criminal who might try to get it back later, they could decrypt the drive without your permission or password.

Follow Apple's instructions ([go. macworld.com/fvlt](https://go.macworld.com/fvlt)) to turn off FileVault and then turn FileVault back on. It can take a while to complete both decryption and encryption, but it's worth it.



De-authorizing iTunes on a Mac is easy.

In Catalina, check Find My Mac

Apple is extending the activation lock protection that it added several releases ago to iPhones and iPads with macOS 10.15 Catalina to any Mac with a T2 security chip. That chip offers the same “secure enclave” that makes Apple Pay, Touch ID, and other features available on Macs as it has been on generations of iPhones and iPads.

With the activation lock turned on, you won't be able to erase the Mac and reinstall macOS from scratch. Check for the activation by logging in to the main or sole account and looking at the iCloud preference pane—is Find My Mac enabled?

If it is, that's bad from a couple fronts, because it means the seller is sharing other iCloud information with you, too, as well as the Mac being locked against future erasure. The seller should be amenable to making sure activation lock is disabled.

Deauthorize iTunes

As a courtesy when buying remind the buyer to deauthorize iTunes ([go. macworld.com/daut](https://go.macworld.com/daut)) on a Mac before they erase it or pass it on to you. The iTunes Store has a five-computer limit for use with a single account, and you can't deauthorize individual computers after they've had their drives wiped, even after reinstalling macOS.

You can deauthorize all computers

associated with an iTunes account, however, and then log back in to just the computers you want to keep in the set. You can only deauthorize all computers twice a year.

GETTING TIME CAPSULE FAILURE WARNINGS? HERE'S WHAT YOU CAN DO

Apple no longer sells its Time Capsule, a combination of a backup drive, Time Machine, and an AirPort Extreme Base Station. However, many are in use, and some components inevitably fail, especially the internal hard drive.

If you receive an error on a Mac using the Time Capsule for Time Machine backups that you can no longer back up to it, you can try to work your way out of the problem by using AirPort Utility.

Warning! This approach erases all the backup snapshots stored on your Time Capsule. There may be no way to recover them—hence the error—but you should perform full Time Machine backups or disk clones of all devices that used the Time Capsule for archiving files, as well as trying step 4 below.

1. Launch AirPort Utility and connect to your Time Capsule.
2. Click the Disks tab.
3. Select the internal Time Capsule disk. If it doesn't appear—well, that's a problem and jump below.



4. If the Archive Disk button is available, you can attach an external drive to the Time Capsule with at least as much available storage as is in use on the Time Capsule drive, and attempt to copy the snapshots already stored.

5. Click the Erase Disk button and follow prompts.

Now try to perform a Time Machine backup from one of your Macs to the Time Capsule drive. If it succeeds, then data may have been corrupted on the drive for some reason, but it's still functioning.

If you get a failure in step 3, 4, or 5, or can't back up to the Time Capsule after step 5, you should remove the Time Capsule drive as a destination on every Mac that's been backing up to it, otherwise you'll receive regular errors on each Mac. Open the Time Machine preference pane on each Mac and remove the drive from the list of destinations.

If the Time Capsule drive won't accept backups, it's failed in some sense of the

word. Most people will find the steps to replace the internal drive are too involved and not worth the effort. You can instead attach an external drive via USB to the Time Capsule and use that for Time Machine backups, or attach a drive to any Mac on a network and use it as a networked destination instead.

Note: If you're concerned about properly disposing of data stored on a hard drive you can't access that's within a Time Capsule—or with a Time Capsule that itself has failed—see this sibling column, “Your Time Capsule has died. How can you wipe its data?” (go.macworld.com/tcdy).

HOW TO USE iCloud TO HELP MANAGE PHOTOS LIBRARIES TOO LARGE FOR AN INTERNAL MAC DRIVE

In a recent column, “How to cope with a Photos library too big to fit on an internal Mac drive (go.macworld.com/phlb),” I

explained that there aren't any methods supported by Apple that let you have a Photos library at full resolution on a Mac if the library can't fit on your internal drive with the spare room you need—or exceeds the drive entirely.

Macworld reader Matt wrote in with a terrific workaround that offers an approach much closer to what other readers were looking for: one copy of a Photos library set up with iCloud Photos that's only thumbnails and stored on your internal drive, and a second iCloud Photos–linked copy that's linked to an external drive.

Matt's idea relies on how macOS lets you create multiple accounts, each of which can be uniquely linked to an iCloud account.

However, it's also possible for two accounts or more to both link to the same iCloud account.

Normally, you wouldn't want this, because it would mean syncing the same data in two places on your startup drive. But with the way in which iCloud Photos and Photos for macOS works, it's a nifty solution.

Here's the schematic of how to make this work:

1. Attach an external drive with sufficient storage for your full iCloud

Photos library at full resolution. (You can find this number at [iCloud.com](https://www.icloud.com): log in, click the Settings icon, and hover over the Photos and Videos section of the Storage usage bar.)

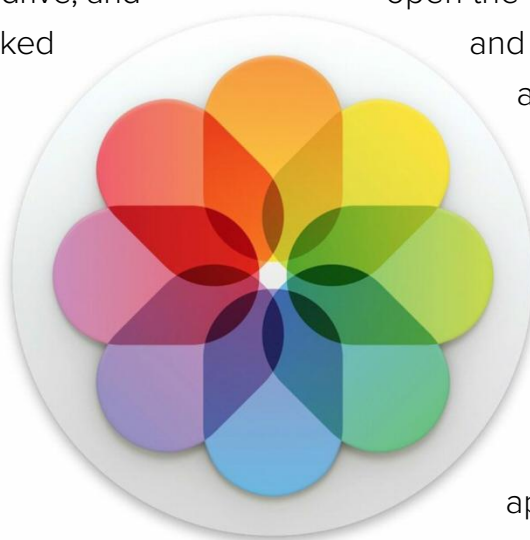
2. Next, create a second macOS account called, for instance, *Yourname Plus Photos*, via the Users & Groups preference pane.

3. Log in to that macOS account (optionally using Fast User Switching), open the iCloud preference pane, and log in to the iCloud account used with your main macOS account and with iCloud Photos.

4. Hold down the Option key and launch Photos.

5. In the Choose Library window that appears, click Create New, and save the library on your external drive. Photos now launches with that empty library.

6. Choose Photos → Preferences → iCloud and check iCloud Photos if it isn't already, and select Download Originals to This Mac. Your full iCloud Photos library will now download from [iCloud.com](https://www.icloud.com), and this may take a long while if you have a lot of media and not super-speedy broadband. When complete, you have a full copy on the external drive.



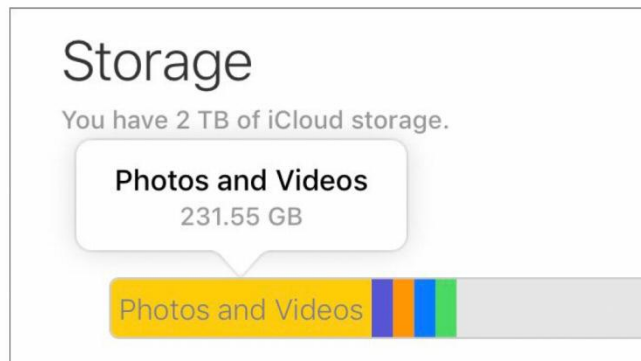
and log in to the iCloud account used with your main macOS account and with iCloud Photos.

4. Hold down the Option key and launch Photos.

5. In the Choose Library window that appears, click Create New,

and save the library on your external drive. Photos now launches with that empty library.

6. Choose Photos → Preferences → iCloud and check iCloud Photos if it isn't already, and select Download Originals to This Mac. Your full iCloud Photos library will now download from [iCloud.com](https://www.icloud.com), and this may take a long while if you have a lot of media and not super-speedy broadband. When complete, you have a full copy on the external drive.



Use iCloud.com to get the full-resolution size of your iCloud Photos library.

7. Log out of the photos-oriented account.

8. In your main account, if you haven't already, launch Photos and in Photos → Preferences → iCloud, make sure that Optimize Mac Storage is selected.

Now, whenever you want to ensure you have a full backup of your iCloud Photos library, attach the external drive, log in to the second account, and iCloud will download and update any media that isn't already present.

This still requires some monkeying around, but it's the closest thing to an easy way to ensure a local backup of iCloud Photos without working against how Apple designed its iCloud Photos synchronization.

HOW TO BETTER PROTECT YOURSELF FROM ROBOCALLS ON YOUR IPHONE

Automated calls that offer unwanted or illegal products or that attempt to defraud

you are known as robocalls. And they have risen into the billions in recent years. The FCC is trying to fight it as are the telephone carriers, who waste large sums of money trying to block such calls legally from their networks and have to field millions of angry questions from subscribers.

(Some robocalls are legal and desirable: school announcements, doctor appointment reminders, and automated messages from companies that you do business with and gave permission to call you.)

Part of the problem is that FCC rules limit the way in which telcos can prevent calls from passing over their networks. That's to prevent phone operators from blocking competitive companies. But it also ties their hands a bit regarding fraud.

But if you opt into call blocking of scams and spam, the phone companies have your permission and it's just fine. (The FCC and telcos are working on a comprehensive solution called STIR and SHAKEN [go.macworld.com/stir] that will block forged Caller ID messages, too.)

Protect yourself from robocalls

Apple added the option in iOS 9 for third-party apps to annotate incoming calls based on Caller ID. Several of these are available, some with free tiers and some with paid options. The best of

them, such as Hiya (go.macworld.com/hiya) and Nomorobo (go.macworld.com/nmbo), show a message alongside an incoming call that matches their databases that reads “robocall” or “scam or fraud”—or the great “neighbor scam,” in which the area code and prefix (next three numbers) of the incoming call are changed to match your number, making you think it might be a call from someone you know.

You can also turn to free services that can be enabled via apps or your account from three of the four biggest U.S. wireless carriers. Because these work at the network level, you’ll have fewer calls pass through to your phone that are problematic.

> AT&T Call Protect (go.macworld.com/clpr). The free flavor installs as an app for controlling features and viewing information, and blocks calls before they hit your phone as well as identifies ones that are sketchy. You can also create a personal block list. A paid flavor adds reverse-number lookup and a few other security features. (I’m an AT&T customer, and have the free flavor installed for years; I receive nothing like the volume of robocalls most people I know complain of.)

> T-Mobile Scam ID and Scam Block (go.macworld.com/blck). These two services don’t require apps. Scam Block prevents calls identified as scams from reaching a customer, while Scam ID alerts

iOS apps like Nomorobo can identify robocalls.



customers during the incoming call that T-Mobile analyzed a call as but not positively a scam. Name ID, a paid service (free for ONE Plus subscribers) uses an app that can route nuisance callers by category to voicemail, perform reverse number lookups, and allows for a personal blocklist.

> Verizon Call Filter (go.macworld.com/filt). This Verizon app can be set to block and mark calls. A paid version adds a separate personal spam and block list. Verizon joined AT&T and T-Mobile with the free version just a few days ago, and it has fewer features than the free tier of the other two carriers. ■