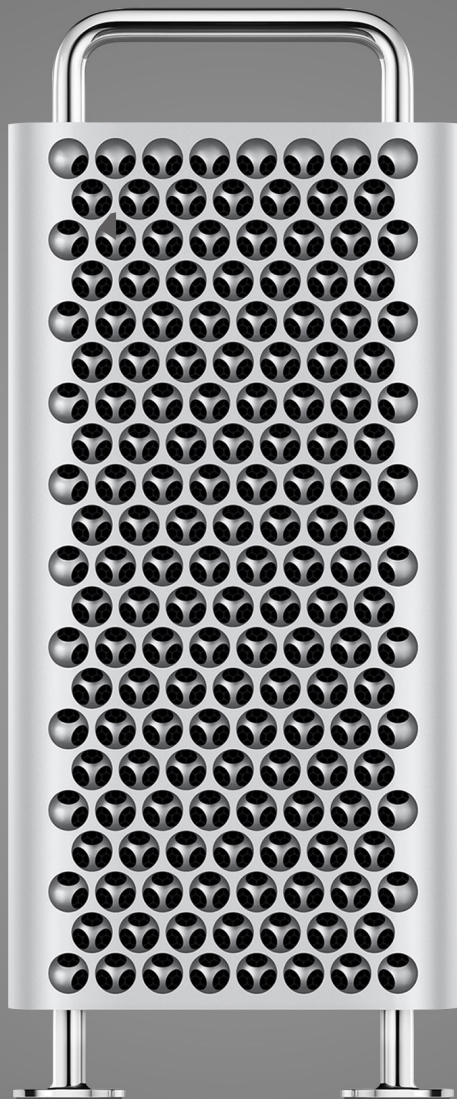


THE BEST MAC GAMES OF THE YEAR

# Macworld

FEBRUARY 2020

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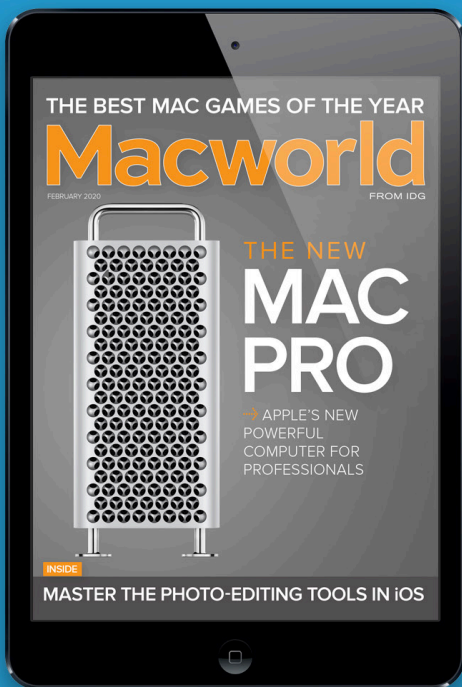


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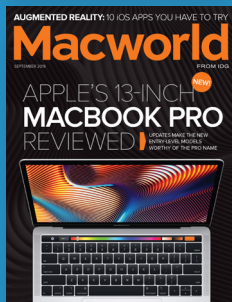


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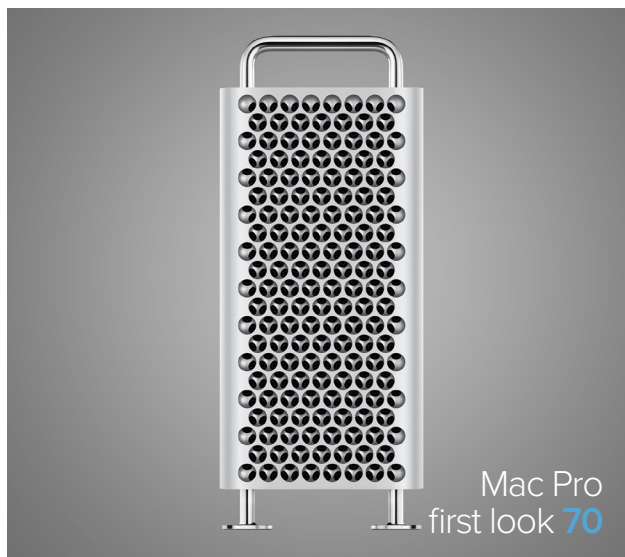
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# FEBRUARY 2020 CONTENTS



## MACUSER

Apple's next step with the Mac [7](#)

Find the parts of iTunes spread throughout different apps in macOS Catalina [10](#)

iPhoto users and macOS Catalina [14](#)

Would Apple make its own Surface Neo? [16](#)

MacUser Reviews [21](#)

Hot Stuff [28](#)

Best Mac games of 2019 [32](#)

## iOSCENRAL

The new 10.2-inch iPad vs. iPad Air [43](#)

Pixel envy: Apple needs to rethink the entire Siri experience [48](#)

Adobe Photoshop finally makes it to the iPad [52](#)

How to allow untrusted Shortcuts in iOS 13 [54](#)

How to use Apple's new all-in-one app to find friends and devices [56](#)

iOS Central Reviews [63](#)

## WORKINGMAC

What's the difference between Save, Save As, and Duplicate in macOS? [85](#)

Make sure your sent email is copied to the right location in Mail [87](#)

OVPN review [89](#)

F-Secure Safe for Mac review [92](#)

## PLAYLIST

Powerbeats Pro review [97](#)

Urbanears Rålis speaker review [102](#)

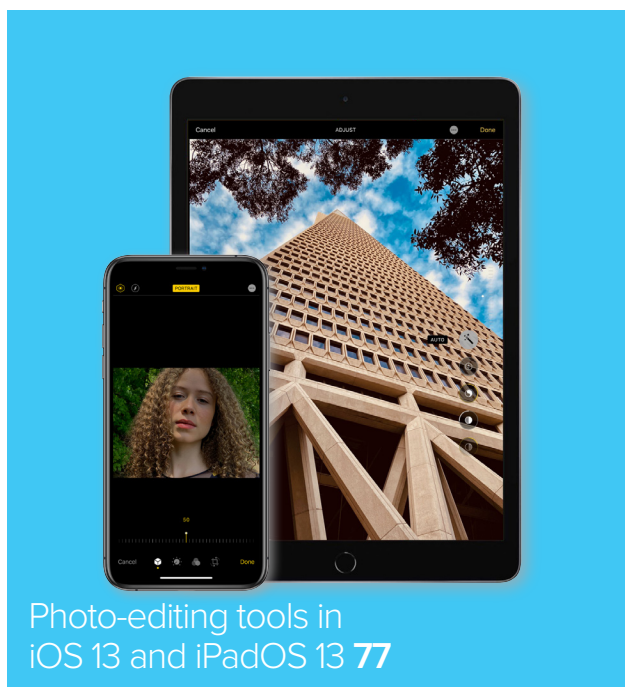
Polk Legend L100 review [107](#)

Etymotic ER4XR headphone review [111](#)

TaoTronics TT-BH046 noise-cancelling headphone review [114](#)

## HELPDESK

Mac 911: Cloud backups of Time Machine volumes, How to open enclosing folder items directly from a Spotlight search [122](#)



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#### BACK ISSUES OF MACWORLD

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#### PUBLICATION INFORMATION

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##### February 2020, Volume 37, Issue 2

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**PREVENT  
WILDFIRES,  
FOR THE  
LOVE OF THE  
OUTDOORS.**





# Apple's next step with the Mac should be consumer-focused

Consumer Macs could use a little love, too.

BY DAN MOREN



At long last, some two and a half years after Apple declared itself serious about enticing professionals back to the Mac, the Mac Pro is finally here ([go.macworld.com/mphr](https://go.macworld.com/mphr)). It joins the iMac Pro ([go.macworld.com/proi](https://go.macworld.com/proi)) and the new 16-inch MacBook Pro ([go.macworld.com/mp16](https://go.macworld.com/mp16)) as a triptych of attractive options for professional Mac users. That's great.

But while Apple was focused on the professional market, its consumer-facing options have languished a bit. It's not that

the MacBook Air, the iMac, and Mac mini aren't perfectly serviceable machines, but they could all use a little bit of love—especially after all the attention that's recently been lavished on their pro-level counterparts. The consumer Macs may lack the high margins of the pro market, but they more than make up for it in terms of volume.

The iMac, whose design has remained largely unchanged since 2012—and, if we're being honest, probably 2009—could use a refresh, but it's the consumer

portable segment of the Mac lineup that is crying out for attention. At present, that range, once the crown jewel of the lineup, is surprisingly sparse. The 13-inch MacBook Air is a good product, and will, presumably, be even better once it hopefully ends up with the same redesigned keyboard in the 16-inch MacBook Pro—but it's only one machine, with relatively few configuration options.

I get it, I do. Apple's learned a lot from what's actually important to users with its successes in the iOS device market, where options don't go beyond color and storage capacity. At times, the company has been dinged for taking some of those lessons too close to heart, such as emphasizing qualities like thinness and light weight over computing power.

Now that Apple has addressed many of those criticisms with the redesigned 16-inch MacBook Pro (and, presumably, some as yet unannounced but likely update to its 13-inch counterpart), it may be time to refocus on a few of the other benefits that it could import from its iOS lineup. Thinness and lightweight aren't inherently

bad—throw in some all-day battery life, and there's a compelling Mac laptop that a lot of consumers would probably jump at the chance for, even if it meant sacrificing some power in exchange. A lightweight laptop designed around a custom-built Apple processor seems like it would go a long way to filling that niche.

More to the point, it would provide another very distinct option alongside the MacBook Air—because as good as the Air is, one size doesn't fit all when it comes to laptops. There's a reason that the 11-inch MacBook Air and 12-inch MacBook existed alongside larger, more powerful counterparts. Even the iPad has multiple consumer options, from



The iMac's design has remained largely unchanged since 2012.

the iPad mini to the iPad to the iPad Air.

The same could be said about price points. The MacBook Air, in addition to being the only consumer-focused laptop in Apple's lineup, is also the company's entry-level option, just barely hitting that sub-\$1,000 price tag.

That's long been a staple for the company, but if it's time to shake things up in the laptop lineup, perhaps it's time to reconsider the price range that the Mac exists in as well.

I'm not suggesting Apple make a bargain basement laptop—that's simply not the way the company does business. But even experimenting with an \$800 or \$900 price point could go a long way to making the Mac seem more accessible, especially to first-time buyers. That may position the Mac in direct competition with the iPad—but, honestly, that's already happening. The entry-level 12.9-inch iPad Pro is just \$100 less than the entry-level 13-inch MacBook Pro, and if the iPad lineup can scale up to what's traditionally been a laptop price point, there's no reason the Mac can't scale down into tablet territory.

This gets to the heart of something that Apple seems to finally be recognizing: Mac



**The MacBook Air is Apple's entry-level option.**

users and iOS users aren't the same. Sure, many folks use both platforms, but there are always going to be customers who prefer one or the other, so why not appeal to both? The company has, in recent declarations, staunchly upheld that the Mac is the Mac and iOS is iOS, and never shall the twain meet—or, less poetically, what works for iOS users doesn't always work for Mac users. Mac customers buy Macs because they want the Mac, not just because they want any consumer-level computing device. To many of them, an iPad—comparable though it may be to a Mac laptop—simply doesn't fill the same niche.

Perhaps it's time for Apple to take a long look at exactly what a consumer Mac is, with the same sort of attention so recently bestowed on the pro market. Let's just hope it doesn't take two and a half years. ■

# Where did that go? Find the parts of iTunes now spread throughout different apps in macOS Catalina

iTunes is dead. But the severed parts remain if you know where to find them.

BY GLENN FLEISHMAN



**W**ith macOS 10.15 Catalina, Apple killed iTunes, but its heart still beats in different apps across the operating system. Judging by email received, knowing where to find them can be a treasure hunt. Here's how iTunes was split up.

## MUSIC

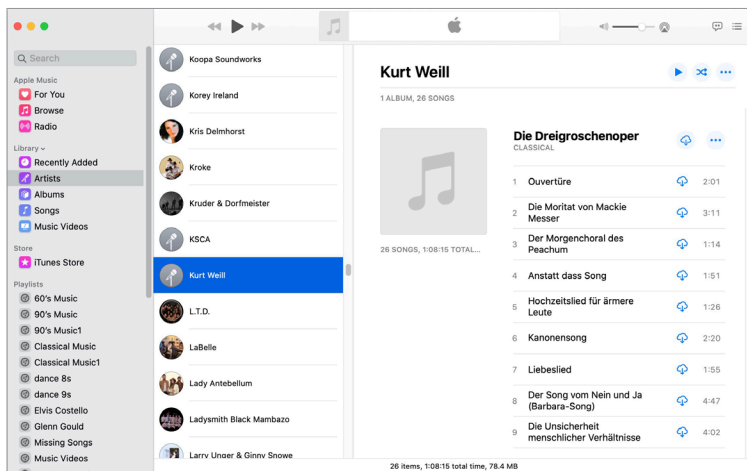
Remember when iTunes was all about music? You no longer have to remember, because the Music app replaces most of iTunes's features and is, true to its name, all about Music. In Music, you find your music library, manage an Apple Music

subscription, and purchase songs, albums, and music videos from the iTunes Store. (See, iTunes isn't really dead!)

## SUBSCRIPTIONS

You used to rely on the iTunes account feature to view and manage subscriptions. That's migrated in Catalina to the App Store. You can reach this either from the Apple ID preference pane's Media & Purchases view by clicking Manage Subscriptions or launching the App Store and choosing Store → View My Account, click View Information, enter





Music is iTunes with everything else stripped out.

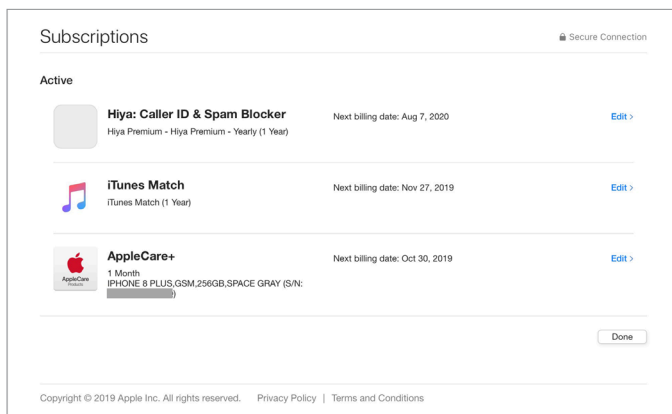
your password if prompted, and then under the Manage section, click the Manage button in the line that starts “Subscriptions: number (all time).” That’s...a lot of steps. In my account, I

## PODCASTS

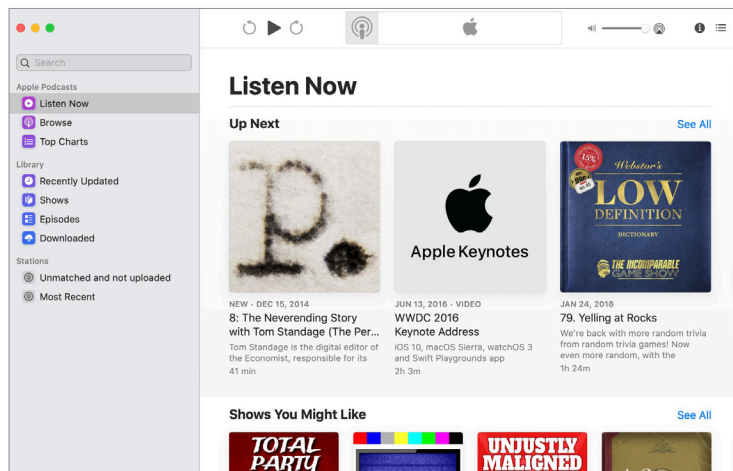
Podcasts were grafted into iTunes many years ago, because it was another form of audio. In Catalina, Podcasts gets its own stripped-down app that handles finding podcasts, subscribing, downloading, and listening.

## TV

The TV app is nearly identical to the iOS, iPadOS, and tvOS versions. It centralizes your own downloaded, purchased, and rented videos (except music videos), as well as subscriptions to premium



Subscriptions appear to be consolidated in the Mac App Store’s account settings.



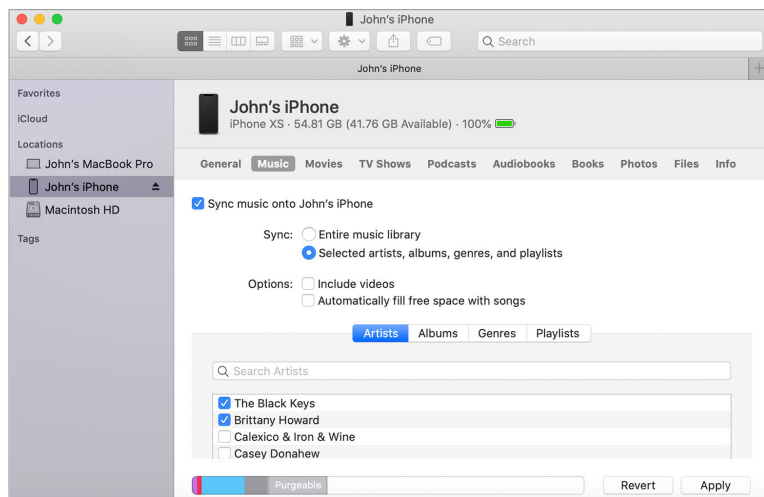
The new Podcasts app doesn't let you set an account separately for it.

services and to Apple TV+. It also incorporates purchasing, split into Movies, TV Shows, and Kids as in the other platforms' apps.

quite familiar to anyone who has used it in iOS. It's both where you'll find synced voice memos and where you can record new ones.

## VOICE MEMOS

For whatever reason deemed appropriate, Voice Memos used to be part of iTunes, and were no longer seen as the right thing to be associated with the new Music or Podcasts. There's a new Voice Memos app that will be



Use the Finder to access sync and other device settings previously reachable within iTunes.

## FINDER: ACCESSING YOUR iOS DEVICE

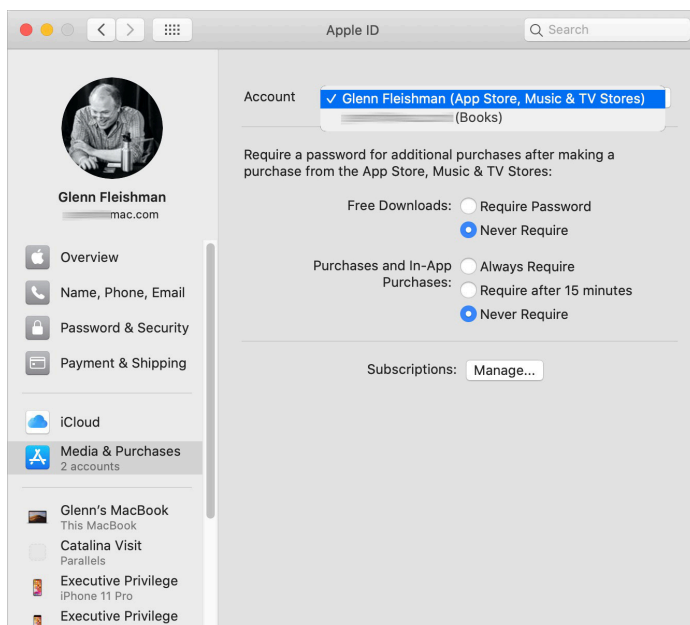
So you're wondering where you access your iPhone, iPod touch, or iPad when it's plugged into your Mac, since iTunes has been

the hub since the iSync software disappeared many moons ago. Apple integrated mobile device settings directly into the Finder, and this is the one we hear the most about.

With an iOS or iPadOS device connected, you see an entry under Locations in the Sidebar in any Finder window. Click it, and the Finder reveals a view that is effectively transplanted from the old iTunes. You can manage backups, set syncing of photos and other media if you don't use iCloud Photos and similar services, and restore or update a device.

## APPLE ID LOGINS

With Apple having split apart these different functions, the company also now lets you control which Apple ID is used with nearly all of them. You can use one Apple ID for iCloud syncing via the new Apple ID preference pane, another for the Mac App Store, another for Music, another for Books, and another for TV.



**The Apple ID preference pane shows multiple accounts in Media & Purchases if you're using different Apple IDs in different apps.**

That seems excessive, but I have two accounts for historic reasons, and I know people with three or more. (The Podcasts app has no account option. Choosing Account → View Apple ID opens the iCloud tab in the Apple ID preference pane. But for me, it uses the Apple ID I associated with the App Store, not with iCloud!)

When you're logged in to a different Apple ID for various stores and services, you will see either that account or a pop-up menu with all of the different accounts in the Apple ID preference pane under Media & Purchases. ■

# iPhoto users, you're out of time with macOS Catalina. What's your next step?

Not everyone migrated to Photos. Now you almost have to.

BY GLENN FLEISHMAN



If you've continued to use iPhoto after Apple discontinued ([go.macworld.com/dcon](https://go.macworld.com/dcon)) it in 2015, you had to know its days were numbered. Many people preferred iPhoto's controls and the new Photos app was initially missing features, and it was buggy, crashy, and slow at

times. Photos has improved substantially, though it's still not everyone's cup of tea.

Now, iPhoto's number is finally truly up. The outdated software won't launch in macOS Catalina, because its core functions rely on a software framework Apple has also sent riding into the sunset



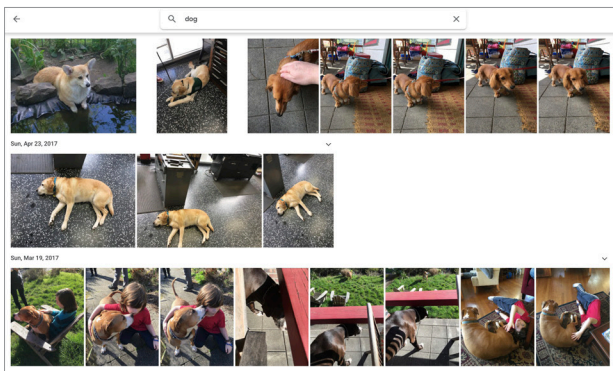
([go.macworld.com/snst](http://go.macworld.com/snst)).

If you upgraded to Catalina without first launching Photos or finding another solution, what options do you have? Plenty.

➤ Launch Photos in Catalina. Photos can still read and upgrade an iPhoto library, as it doesn't require launching iPhoto. Photos doesn't copy the iPhoto images, but it uses a special kind of link that lets the same file exist in two places, avoiding increasing your storage requirements.

➤ Switch to Google Photos ([go.macworld.com/gpht](http://go.macworld.com/gpht)). Google offers desktop and mobile apps for importing images and syncs via its cloud service. You can have the desktop software read an iPhoto library to upload your images.

➤ Switch to Adobe Lightroom for photo library managing and maybe for cloud-based sync. Adobe offers two different versions: one is oriented toward images stored on a computer (Lightroom Classic [[go.macworld.com/ltrc](http://go.macworld.com/ltrc)]), while the other leans heavily on cloud-based sharing and access for mobile, desktop, and Web (the weirdly named Adobe Photoshop Lightroom [[go.macworld.com/ltrm](http://go.macworld.com/ltrm)]). The cloud-oriented version is just \$10 a month ([go.macworld.com/10mn](http://go.macworld.com/10mn)), which includes 1TB of storage and the use of all the apps

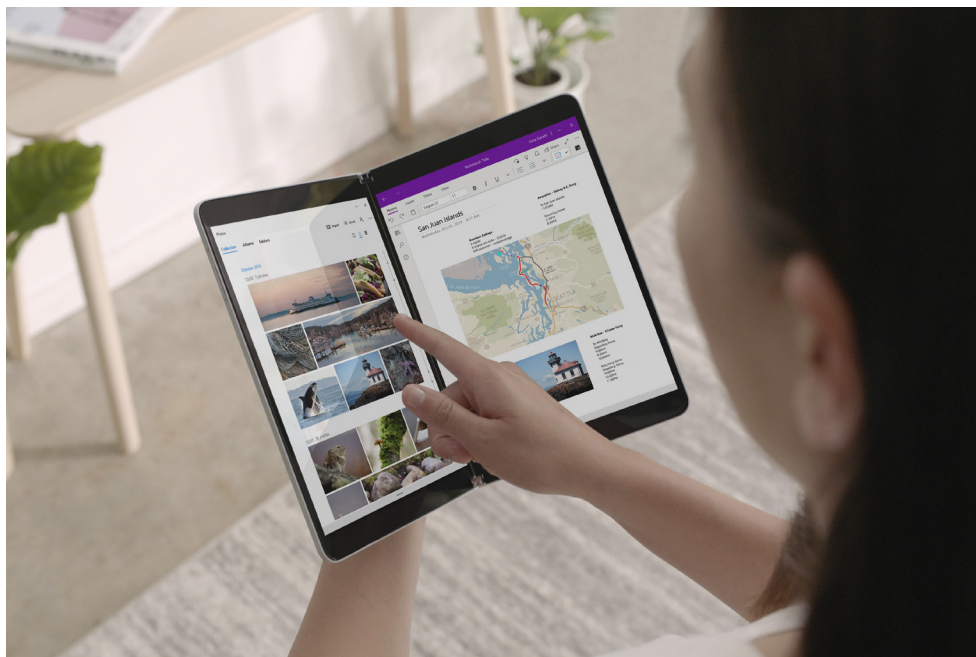


**Google Photos is an easier way to share an entire library than iCloud Photos.**

across your devices.

➤ Install a virtual machine to keep macOS Mojave or an earlier macOS running for iPhoto and other apps. While it's not a solution forever, you can use Parallels ([go.macworld.com/prls](http://go.macworld.com/prls)) or VMWare Fusion ([go.macworld.com/fson](http://go.macworld.com/fson)) within Catalina. You can postpone making a change for a little or long while. (You could also revert to Mojave, but that's a time-limited choice, too, and Mac models released after this point won't run macOS before Catalina.)

With Google Photos and either Lightroom choice, you won't be able to preserve metadata added in iPhoto, however. And you might not be able to import modified versions of photos you edited within iPhoto—only the originals. Upgrading to Photos or using a virtual machine preserves both. ■



# Would Apple make its own Microsoft Surface Neo?

If Apple made its own dual-screen device, would it run macOS or iOS?

BY JASON SNELL

Recently, Microsoft introduced the Surface Neo ([go.macworld.com/sneo](https://go.macworld.com/sneo)), a strange device that looks like two iPads stuck together, or alternately, a laptop in which the keyboard has been replaced with a second touchscreen. Upon first seeing the Surface Neo, I immediately wondered:

Would Apple make a product like this?  
And if not, why not?

Let's start by noting that the Surface Neo doesn't really exist. People at Microsoft's event weren't allowed to use it, the company admitted some of its hardware specs were yet to be decided, and it's been announced for a "holiday

2020" release. In other words, what was announced was Microsoft's intention to ship this product almost a year from now.

But still: Two iPads hinged together to make a laptop sandwich! Imagine the possibilities. Given the clear distinction Apple has made between laptop shapes (which run macOS), and tablet shapes (which run iPadOS), one would think not. Then again...

## MACBOOK NEO

If you had considered longstanding trends in Apple product design before the introduction of the new 16-inch MacBook Pro ([go.macworld.com/m16](https://go.macworld.com/m16)), there was a strong argument to be made that Apple dreamed of making a laptop keyboard without any moving parts. The low-travel butterfly keyboard was one step in that direction, but it backfired, as is seen by the introduction of the Magic Keyboard in the latest MacBook Pro and due to show up in MacBook models introduced throughout 2020.

Has Apple learned its



**Microsoft Surface Neo.**

lesson, and will never again attempt to reinvent the computer keyboard? It's possible, I suppose. But isn't the unreliability of the butterfly keyboard due to ingress of tiny specks of dust, crumbs, and other detritus also evidence that Apple's desire to get rid of moving parts is



**Apple's attempts to reinvent the keyboard have been lackluster. Is a virtual keyboard the answer?**

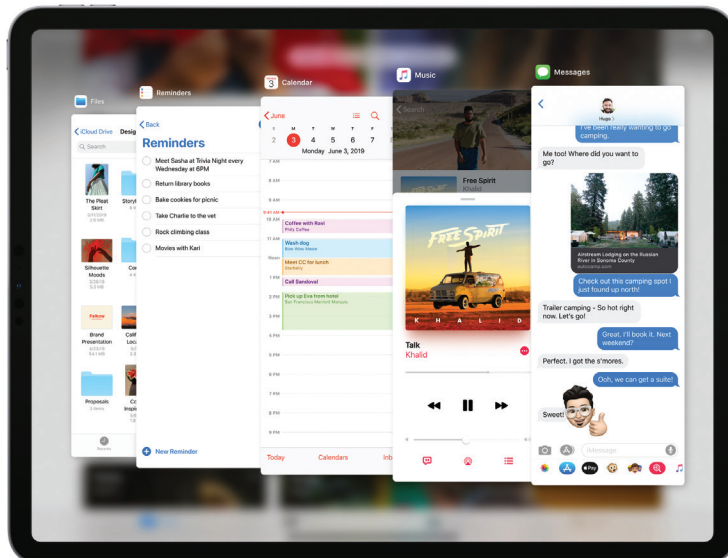
correct? You can't get crumbs caught in a touchscreen.

I'm sure that in its labs, Apple has toyed with extending the Touch Bar so that it's a virtual keyboard and trackpad, a control surface that can be retasked to be pretty much anything you want it to be. (Is this not the ultimate lesson of the original iPhone?)

The problem with this scenario is that it crashes against the fact that Apple has not yet made any efforts to adapt the Mac interface to support touch. Unless it does so, what does this product look like? Is there an entirely separate interface on the bottom surface, separate from the Mac, like the Touch Bar? It seems like a waste of the space if macOS can't use that screen as a second display—but without a touch-friendly interface, it seems like a waste of time.

## iPAD NEO

Let's turn to the iPad, where Apple has shown that it's more open-minded about extending the way the device works



**Support for multiple windows in iPadOS could lead to the ability to run those apps over multiple displays.**

with alternate input methods. Apple has embraced keyboard input on the iPad with the Smart Keyboard, and even added a dollop of mouse support in iPadOS 13.

Perhaps more importantly, iPadOS 13's addition of multi-window support might be about more than just different ways of multitasking. Once iPadOS and all of its apps understand the idea of running in multiple windows, the door is also open to running those apps across multiple displays—as in a two-screened device like an iPad Neo.

Still, the Surface Neo is shaped like a laptop—the hinge is a pretty powerful



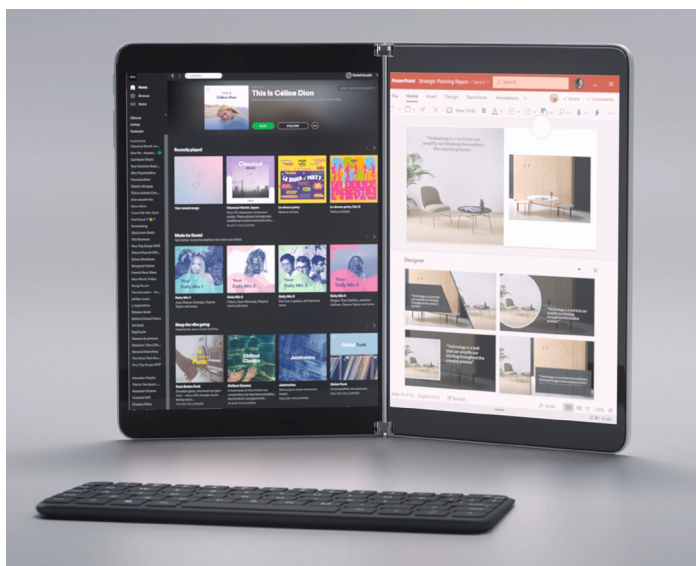
defining hardware characteristic. Thus far, Apple has struck a pretty hard line when it comes to device shapes: if it's got a hinge, it's a laptop, and laptops run macOS. If it's a single slab of touchscreen, it's a tablet, and tablets run iPadOS. That wouldn't stop Apple from making a device like this and putting iPadOS on it, but it would certainly require a shift in attitude.

## ANOTHER ONE AGAINST THE WALL

The best bet is that Apple just won't ever make a device like this. While Apple has built a reputation as an innovative company over the years, it's remarkably conservative when it comes to product launches. This is not a company that throws a bunch of different product choices against the wall and sees what sticks. (Not in public, anyway. I'm sure Apple makes all sorts of stuff like this in secret, and then is absolutely ruthless about killing products that don't measure up to its standards.)

The real question is, does Apple think the future of computing—most especially laptop computing—includes a device with two screens? If it does, is that device an expanded iPad or a MacBook? The Mac is probably the better choice here—except that Apple has steadfastly kept the Mac interface away from being touchscreen friendly.

Who knows—maybe Apple has a product in the lab, ready to go, that we haven't even heard a rumor about yet. Maybe it's in the planning for an announcement at a fall event next year, in which case it would end up beating the Surface Neo to market. Wouldn't that be something? ■



**Are two-screen mobile devices part of the future of computing?**



## 1 in 7 children faces hunger.

There's more than enough food in America for every child who struggles with hunger. Help get kids the food they need by supporting Feeding America, the nationwide network of food banks. Together, we can solve hunger™. Join us at **[FeedingAmerica.org](https://FeedingAmerica.org)**





DESKTOP PUBLISHING SOFTWARE

## SWIFT PUBLISHER 5.5: AFFORDABLE DTP SOFTWARE FOR MAC EXPANDS DESIGN OPTIONS

BY J.R. BOOKWALTER

**Macworld**  
EDITORS'  
CHOICE

As someone who still burns a fair amount of DVDs and Blu-rays, I was alarmed to discover my favorite Mac applications for printing disc labels have been either abandoned entirely (R.I.P. Disclabel [[go.macworld.com/dslb](http://go.macworld.com/dslb)]) or become victims of the macOS Catalina 32-bit “app-ocalypse” (Disc Cover [[go.macworld.com/dcvr](http://go.macworld.com/dcvr)]). Thankfully, BeLight Software comes to the rescue by incorporating disc labeling tools into their already awesome page layout software.



Swift Publisher 5.5 adds the ability to create label designs for optical media, then print directly to disc with supported hardware.

## LABELS AND MORE

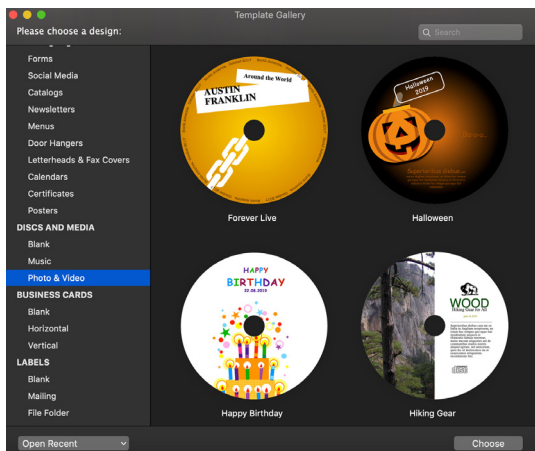
A free update for owners of version 5.0, Swift Publisher 5.5 ([go.macworld.com/swpb](http://go.macworld.com/swpb)) adds a ton of awesome functionality to the most capable and affordable Mac desktop publishing software. This \$20 app already gave the likes of Adobe InDesign a run for its money with two-page spreads, unlimited layers, master pages, rich text tools, and print/export of projects in RGB or CMYK color modes for home or professional service bureaus.

Now it's even better, thanks to the ability to print labels, envelopes, business cards, and other types of folded or flat cards using built-in templates from Avery and leading

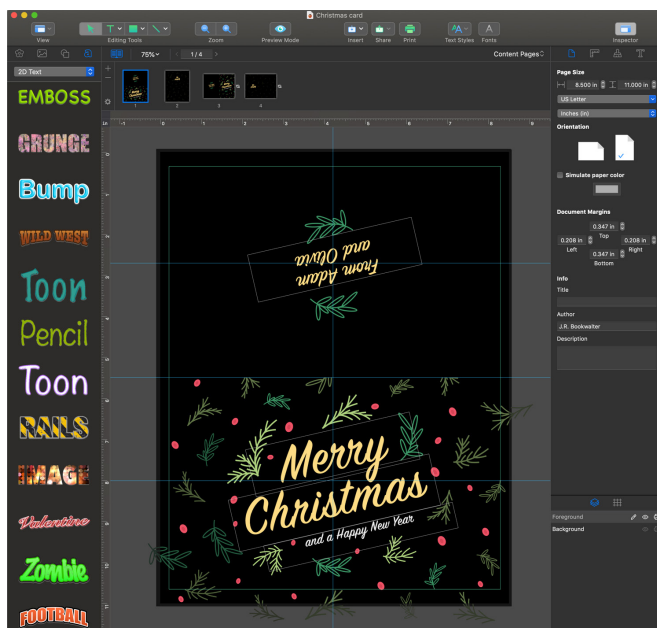
vendors. Whether doing a mail merge from Contacts, printing barcode labels (UPC, ISBN, and QC are among those supported), or creating customized business cards from more than 60 ready-made designs, Swift Publisher deftly handles it all.

Of course, one could create nearly any type of layout from scratch with previous versions, and the blank page option remains available in every category. What makes this update impressive are the sheer number of attractive, one-click designs available from

the built-in Template Gallery, and not just labels and cards. There are CD, DVD, or



Swift Publisher 5.5 includes a robust gallery of ready-made templates for all kinds of print needs, including optical media.



Get ready for the holidays by designing custom folded cards that can be printed at home or through online services.

Blu-ray inserts; booklets; jewel box covers; case wraps; and even VHS tape face/spine labels or covers for those who want to party like it's 1999.

## JACK OF ALL DISCS

The exhaustive list of media supported in Swift Publisher 5.5 includes CD/DVD labels, which can be printed on old-school adhesive sheets or directly to disc using printers from Canon, Epson, HP, and others. Happily,



### Swift Publisher 5.5

#### PROS

- Affordable, full-featured desktop publishing alternative to Adobe InDesign.
- Direct to disc printing.

#### CONS

- No support for Dymo label printers.
- Default layouts require manual tweaking for full coverage disc printing.

#### PRICE

\$20

#### COMPANY

BeLight Software

the list of compatible hardware includes my aging Primera Disc Publisher SE, which means I can continue pumping out high-quality, full-color disc labels for years to come.

One admittedly minor quibble is that default disc layouts don't take into account full-coverage printing, where ink is applied all the way to the inner spindle hole. However, you can easily adjust dimensions manually from the Inspector panel, then save that project as a custom template for future use.

It's also worth noting that although Dymo DiscPainter is supported, the company's popular label printers are notably absent—something that will hopefully be addressed in a future update.

## BOTTOM LINE

Swift Publisher 5.5 is an absolute must-have update to our favorite inexpensive Mac desktop publishing software which makes it easier than ever to design and print labels, envelopes, cards, disc media, and much more. ■



FONT MANAGEMENT UTILITY

## FontExplorer X Pro 7: Helpful Tools to Find the Font You Need

BY JAY J. NELSON

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

While an up-to-date font management utility is a necessary tool for creative professionals, version 7 of FontExplorer X Pro ([go.macworld.com/fnpx](https://go.macworld.com/fnpx)) adds features that make it appealing to any Mac user who wants to explore their font collection. In addition to the arsenal of useful features and tools in previous versions ([go.macworld.com/pvrs](https://go.macworld.com/pvrs)), version 7 adds helpful and educational features, such as automatic classification of your fonts by style, suggested usage, or theme, as well as the ability to show you similar fonts, and to show you fonts that pair well with a selected font.

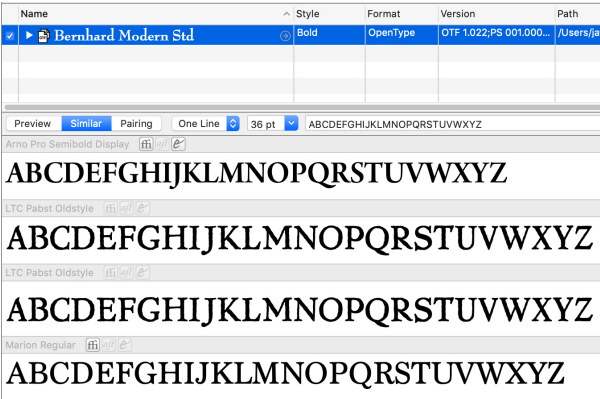


FINDING FONTS

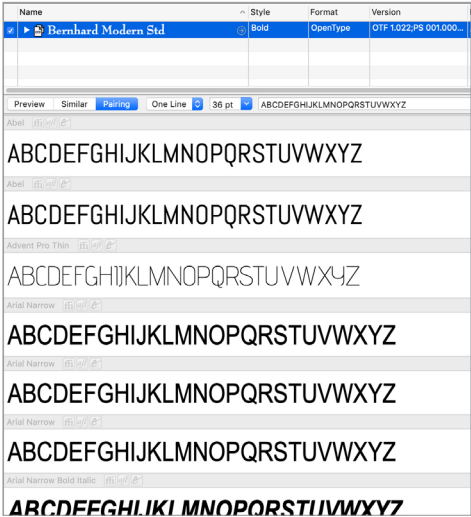
Sometimes when choosing a font for your project, you find a font that’s almost what you’re looking for, but not quite. The new Similarity panel helpfully shows you other fonts in your collection that are similar to the one you’ve selected. (Note: As with the other new font identification features, Similarity only works with fonts in the TrueType or OpenType formats. PostScript fonts and web fonts are not included.)

Once you’ve decided on a main font for a project, it can take hours to find fonts that pair well with it. You can shorten that time dramatically by using the new Pairing panel, which displays a list of your fonts that work well with a selected font. In my collection of thousands of fonts, it did a reasonable job.

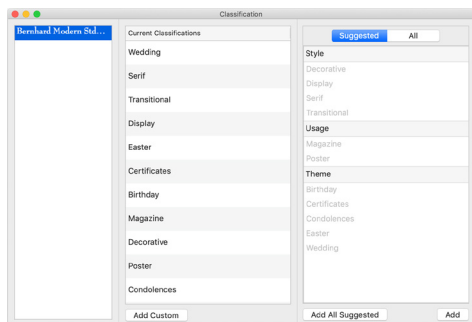
Font aficionados know to look for fonts by style, such as Decorative, Script, or Old Style Serif. But sometimes it’s more useful to be able to choose by intended usage, such as Book, Poster, or Screen; or by theme, such as Birthday, Certificates, or Halloween. FontExplorer X Pro 7 not only automatically classifies your fonts by Style, Usage and Theme, it adds them to Smart Sets that are named with these classifications. This makes it easy to flip



FontExplorer can show you other fonts in your collection that appear similar to a selected font in your library. To see the list, click the Similar tab in the preview window.



To see fonts in your collection that pair well with a selected font, click the Pairing tab in the preview window. Here, these sans-serif fonts pair well with the dramatically-serifed Bernhard Modern. Helpfully, you can choose from several different one-line or multi-line type samples, from alphabets to your own custom text.



The Classification panel lets you see and edit the classifications assigned to a selected font by FontExplorer, as well as add and assign your own. To open the Classification panel, click the Edit Classification button in the Information window. The Classification interface is new in version 7.

through a list of your Birthday or Poster fonts for that special project.

However, you're not limited to only the classifications provided and assigned by FontExplorer. You can create your own and apply any combination of classifications to a font.

## BACKGROUND MODE

FontExplorer includes plug-ins to automatically identify and activate the exact versions of fonts used in documents created by Adobe InDesign, InCopy, Illustrator, Photoshop, and Quark's QuarkXPress. Now in version 7, even if the FontExplorer app isn't currently running, these plug-ins can launch the app to run in the background. When that happens, the



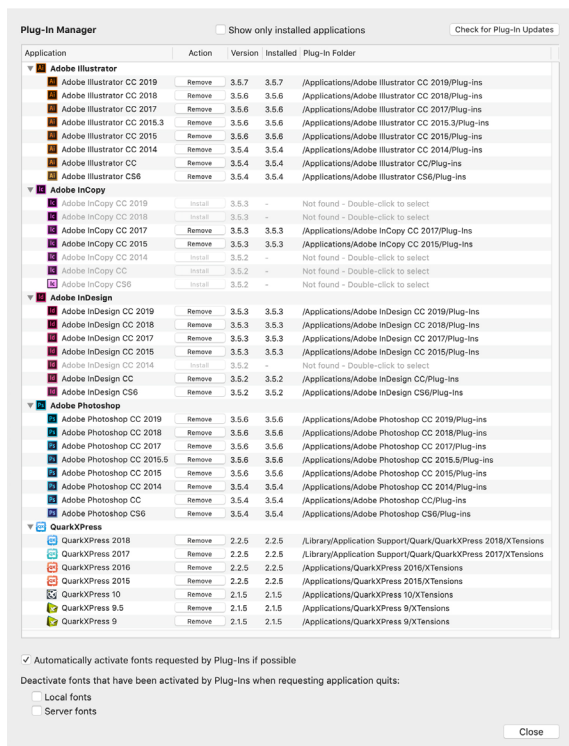
You can create a Smart Set from any combination of dozens of font attributes, including when they were last activated or deactivated.

normal FontExplorer window doesn't open, and its Dock icon turns black instead of blue.

Font Explorer now remembers when each font is activated and deactivated, so you can use Smart Sets to quickly get back to fonts

you recently used. Also new is the ability to use relative date options, such as the last 30, 90, or 180 days.

Your purchase or upgrade to version 7 includes dozens of professional fonts from Monotype, including Bell Gothic, Daytona Pro, Garamond MT Pro, Meta Corr Pro, Smile, Tresillian Script, and Wolpe Pegasus.



FontExplorer's Plug-in Manager lets you install or remove its plug-ins for many versions of some Adobe apps and QuarkXPress.

webpage, and then automatically generate the CSS code required to use them. You can even edit the text on the webpage and view the page as it would appear in several different web browsers, devices and operating systems.

➤ Function as a client to FontExplorer X Server 3 (available as a separate product). The server's administrator controls permissions for each client, including the ability to export fonts from the server, buy fonts from online stores, and many other client capabilities.

## OTHER POWERFUL FEATURES

The new version also includes many unique workflow-enhancing features from previous versions.

➤ Detect and collect fonts in documents without opening them. Dozens of file formats are supported, but notably not QuarkXPress.

➤ Preview how your fonts would appear on an existing



### FontExplorer X Pro 7

#### PROS

- Automatic font classification.
- Discovery Engine finds similar and complementary fonts.
- Fast and powerful.

#### CONS

- Font classification doesn't support PostScript format.
- Pricey for casual users.

#### PRICE

\$119

#### COMPANY

Monotype

## BOTTOM LINE

If you already use FontExplorer, this upgrade justifies its cost, especially if you factor in the bundled professional fonts. But if you simply want to feel more knowledgeable while choosing your fonts, version 7 is a relatively affordable ticket into the wonderland of discovering and pairing your fonts. ■

# Hot Stuff

What We're  
Raving About  
This Month



## LEVITON TYPE A & TYPE C USB CHARGER OUTLET

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

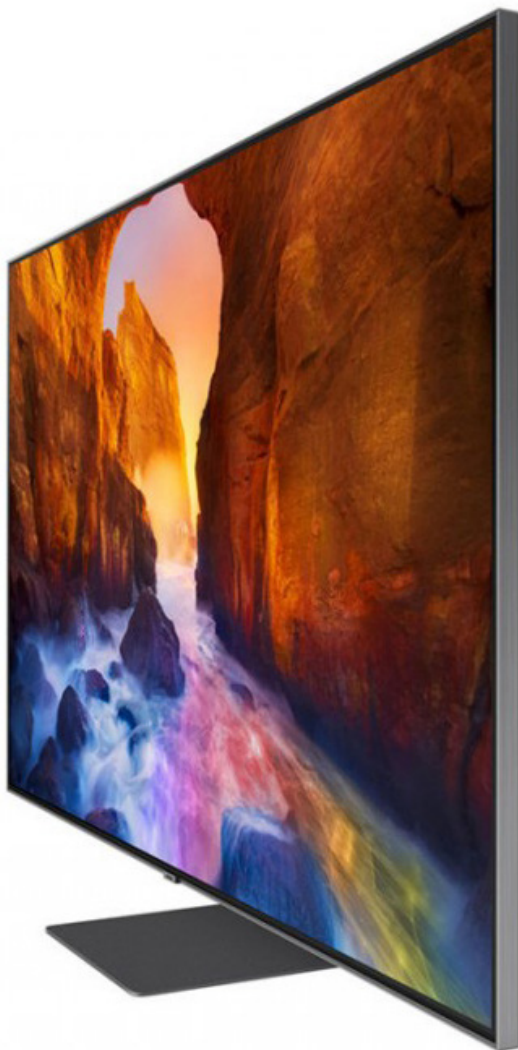
Leviton's outlet isn't smart—it doesn't connect to your Wi-Fi network, and it doesn't have a Zigbee, Z-Wave, or Bluetooth radio onboard—but it will charge one or two smartphones, tablets, or other devices without need of a power adapter. The duplex outlet makes a total of 5.1 amps available to its USB ports (up to 2.4 amps at 5 volts to the Type-A port, and a maximum of 3 amps at 5 volts to the USB-C port), enabling quick charging on the USB-C side with devices that support that technology. Oversized plugs may block the USB-C charging ports, however. —MICHAEL BROWN

# SAMSUNG Q90R 4K UHD SMART TV

[samsung.com](https://samsung.com)

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Samsung's Q90R is a great TV. It's super bright, has amazingly accurate color, and it makes HDR pop and details sing. There's super accurate and rich quantum dot color, plus more than 1,300 nits peak brightness. Screen uniformity on the Q90R is very good, and the usable off-axis viewing angles are so wide that you basically lose the sense of the picture before you see artifacts. The TV supports Samsung's own Bixby digital assistant, plus Amazon Alexa and Google Assistant. There is an Apple TV app, plus support for Apple's AirPlay 2 multi-room audio tech. —**JON L. JACOBI**



# Hot Stuff

## iROBOT BRAAVA JET M6

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

The Braava Jet m6 performs both dry sweeping and wet mopping, covering up to 1,000 square feet in a single cleaning session. A “precision spray” nozzle on the front of the Braava Jet m6 wets the floor for mopping, and it maps your floor plan for targeted zone cleaning. You can customize your wet mopping preferences in the app’s Settings menu. Three preset mopping modes are offered: Standard mode balances cleaning power and total area covered; Deep mode boosts the power and reduces the cleaning area to tackle tough messes; and Extended Coverage mode mops a larger area more quickly and with less cleaning power.—MICHAEL ANSALDO







#DanceLikeaDad



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

# BEST MAC GAMES OF 2019

This year was one of the best years for gaming in ages—that is, if you weren't playing on a Mac. Regular releases of Mac games were so scarce this year that this past summer we retired our monthly roundup because finding five good new games every month started to feel like looking for an Apple I in a garage sale. **By Leif Johnson**



## UNTITLED GOOSE GAME

[go.macworld.com/ugg](https://go.macworld.com/ugg)

*Untitled Goose Game* (\$19.99) didn't have a blockbuster budget, nor does it drag on for 70 or more hours as so many games do these days. (In fact, you could easily finish it in less time than it takes to watch *Star Wars: The Rise of Skywalker*.) But it was the game everyone couldn't stop talking about this year. Its own tagline explains the concept nicely: "It is a lovely morning in the village and you are a horrible goose."



# TOTAL WAR: THREE KINGDOMS

[go.macworld.com/twtki](http://go.macworld.com/twtki)

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Long-running series tend to lose their vitality as they grow older, but *Total War* is somehow getting better. In *Total War: Three Kingdoms* (\$59.99), we have a near-perfect strategy game that shows it's learned all the right lessons from its predecessors. If you want to battle through China's turbulent second century with *Total War*'s traditional tactics and statecraft, you can. But if you want a dash of the fantasy you'd get from *Total War*'s acclaimed *Warhammer* titles, pick the "Romance" campaign. Generals are unprotected and almost like gods, tactics are deemphasized, and generals can duel each other in order to turn the tide of a battle.



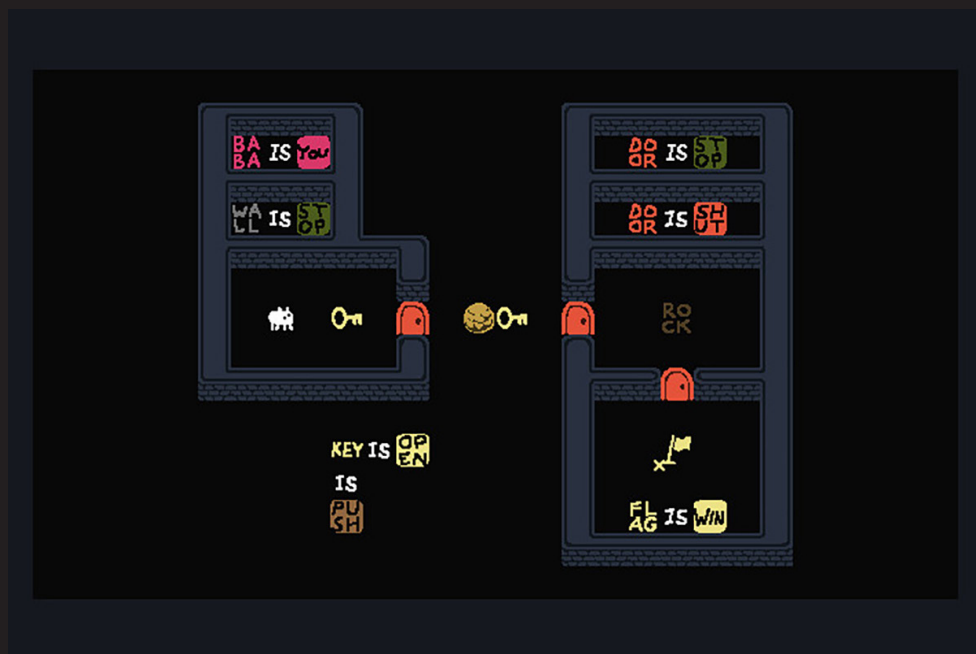
## FINAL FANTASY XIV: SHADOWBRINGERS

[go.macworld.com/sbri](http://go.macworld.com/sbri)

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If there's one thing you can generally count on in a *Final Fantasy* game, it's that the "warriors of light" will save the day. *Final Fantasy XIV's* *Shadowbringers* expansion (\$59.99), though, flips that concept on its head and casts the light as an oppressive, all-consuming force that threatens to consume the world—in another dimension, anyway. And so this time around, you're the warriors of darkness. It's a simple concept, but it provides fertile ground for the best story we've seen from Square Enix's popular MMO to date.





## BABA IS YOU

[go.macworld.com/biy](http://go.macworld.com/biy)

The rules of *Baba is You* (\$14.99) are always right there on the floor of its 2D arenas, and you start off with Baba Is You, Flag Is Win, Wall Is Stop, and Rock Is Push. At the beginning—because, you see, Flag is Win—victory involves little more than making Baba (who, incidentally, is a ewe) move over the flag. But it's the following levels that make this one of the most creative and mind-bending puzzle games in years.



## KATANA ZERO

[go.macworld.com/kz](https://go.macworld.com/kz)

You're a pixel-art, bathrobe-wearing urban samurai in *Katana Zero* (\$14.99), and your blade slices through swarms of gun-toting goons who never get a chance to touch you. Sometimes you'll deflect bullets. Sometimes you'll drop to kill your foes after scrambling through hidden passages. Sometimes you'll even slow time.



# SUNLESS SKIES

[go.macworld.com/ssk](http://go.macworld.com/ssk)

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If the idea of steaming through space in a locomotive doesn't strike you as all that safe, *Sunless Skies* (\$24.99) will do little to convince you otherwise. The hull breaks easily, fuel is scarce, food is even scarcer, and almost every action in this gothic horror roleplaying game brings the threat of death. It's the sequel to 2015's acclaimed *Sunless Sea*, and *Skies* manages to spin both a better yarn and be less punishing for new players.



# WARGROOVE

[go.macworld.com/wg](http://go.macworld.com/wg)

We haven't seen a new *Advance Wars* game in over a decade, and Wargroove makes no attempt to hide the fact that it exists to fill that gap. It looks like *Advance Wars*. It plays a lot like it. And if you've never played that wonderful turn-based tactics series, *Wargroove* (\$19.99) is a fine substitute. Most levels involve either sacking the enemy's base or defeating their commander, and the large maps often make this a challenge. It's a game that rewards smart thinking, whether it's through amassing resources or well-timed uses of special abilities that can, say, call skeletons into battle or heal surrounding troops.





## A SHORT HIKE

[go.macworld.com/ashi](http://go.macworld.com/ashi)

True to its name, *A Short Hike* (\$7.99) only takes a couple of hours to finish. I'm including it on this list, though, because I still find myself thinking about it a couple of months later. If Mr. Rogers had made a video game, I like to think it would have turned out something like this. You're a little bird in this tale, and with no greater goal than to reach the summit of the peak on the island where your family is vacationing. You technically don't even have to do much more than that. But the real *A Short Hike*, you might say, is the friends you make along the way.

# BORDERLANDS 3

[go.macworld.com/b3](https://go.macworld.com/b3)

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The poor Mac doesn't get a lot of love from so-called "AAA" games publishers—and when you do see these types of games, they're usually in the form of third-party ports that drop months (or years) after their PC and console counterparts. *Borderlands 2*, though, was a famous exception, and Gearbox showed its love for Mac this year again when it dropped *Borderlands 3* (\$59.99) at the same time the looter-shooter dropped for everyone else.







## VOID BASTARDS

[go.macworld.com/vba](http://go.macworld.com/vba)

*Void Bastards* (\$29.99) is a game about exploring derelict ships and ransacking them for supplies so you can escape to a safer sector, and it's made by some of the same minds behind *BioShock* and *System Shock 2*. But this delightful spacefaring "rogue-lite" doesn't bother with those games' weighty philosophical themes. Instead, it's all about staying alive, and it peppers that desperation with some great one-liners. It's about taking along the right crew and crafting the right items across the roughly 15-hour campaign. Sometimes it's a first-person shooter, sometimes it's a galactic explorer, but it's almost always a blast.

# MY SHELTER PETS ARE MY BEST FRIENDS

*#AdoptPureLove*



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

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



**THE SHELTER PET PROJECT.ORG**





## The new 10.2-inch iPad: How does it compare to the iPad Air?

Apple's display-size boost for its entry-level tablet invites comparisons to a similar model.

BY LEIF JOHNSON

Apple recently announced the seventh generation of its entry-level iPad, and it's a weird little beast. The screen is a little larger than last year's model, and you can now use a full-sized Smart Keyboard, but the processor remains the

same and the overall design has only slightly changed. The changes are so few between last year's model and this one, in fact, that we basically covered them all in our announcement post ([go.macworld.com/7gen](https://go.macworld.com/7gen)).

Instead, let's compare the new kid on

the block to this year's refreshed iPad Air ([go.macworld.com/ipar](https://go.macworld.com/ipar)), which has a 10.5-inch Retina display that's now very close in size to what you'd get on the 10.2-inch iPad. The bodies of both models now measure exactly 9.8 inches by 6.8 inches, although the Air has a tiny advantage in thinness. The Air costs more,

but unless you're really just out to save money or you don't think you'll need more space, the iPad Air undoubtedly will be the smarter buy at this size. Here's why.

## THE IPAD AIR'S DISPLAY GIVES YOU A LOT MORE BESIDES EXTRA ROOM

If you're just using your tablet for watching videos or surfing the web, you're probably not going to notice the fraction-of-an-inch difference in the displays for the two models. For that matter, both models have a pixel density of 264 pixels per inch and can reach 500 nits of brightness.

You might notice the difference, though, if you're using your iPad for writing or drawing with the supported first-generation Apple Pencil. And that's also where you might appreciate the Air's many improvements over what the 10.2-inch iPad offers. For one, it supports Apple's TrueTone tech, which adjusts the colors on the screen to better fit the light around you for more comfortable reading. It's also got a laminated display—which means the



The iPad Air supports Apple's TrueTone tech.

glass sits closer to the actual display—as well as a P3 wide-color display and an anti-reflective coating. The laminated display in particular does a good job of helping the iPad mimic the feel of writing on paper with a pen.

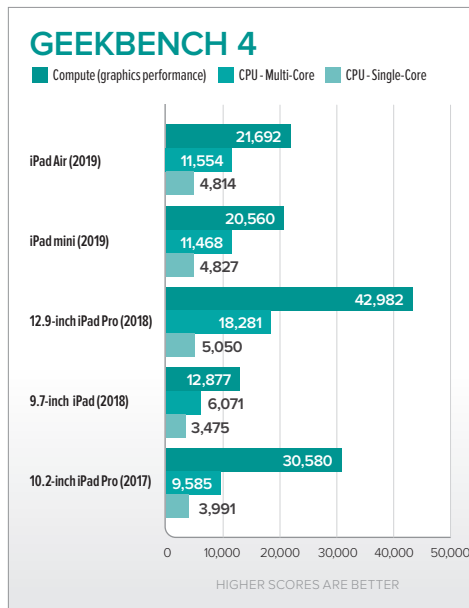
## THE IPAD AIR IS A LOT FASTER

The 10.2-inch iPad contains the same A10 Fusion chip we found in last year's 9.7-inch model, while the iPad Air has an A12 Bionic chip that includes Apple's second-gen Neural Engine for optimized machine learning. It's quite the jump.

Mind you, the A10 is a fine chip. Until recently, I used the 9.7-inch iPad every day and I never thought it let me down. But as you can see from our benchmarks from earlier this year, the A12 in the Air thumped the A10 soundly on iOS 12. If you're looking for a relatively future-proof device that's less likely to slow down with heavier-duty apps and OS upgrades in the coming years, go with the Air.

## YOU GET A LOT MORE ROOM WITH THE IPAD AIR

This could be a biggie if you download a lot of movies or games to your iPad. The 10.2-inch iPad only comes in 32GB and 128GB configurations, while the iPad Air starts at 64GB and goes all the way up to 256GB. Lately I find myself struggling with



**It doesn't come close to the Pros, though.**

64GB on my iPhone, so if you plan on using your iPad like a laptop with all the neat new features coming in iPadOS 13 ([go.macworld.com/ipos](https://go.macworld.com/ipos)), go with the Air. Which reminds me...

## ...THE IPAD AIR IS A BETTER MATCH FOR THE SMART KEYBOARD

Yes, the new 10.2-inch iPad has a Smart Connector for use with Apple's full-sized (and expensive) Smart Keyboard, and I'm happy to see it.

But it's the same Smart Keyboard you can use with the iPad Air, and if you're

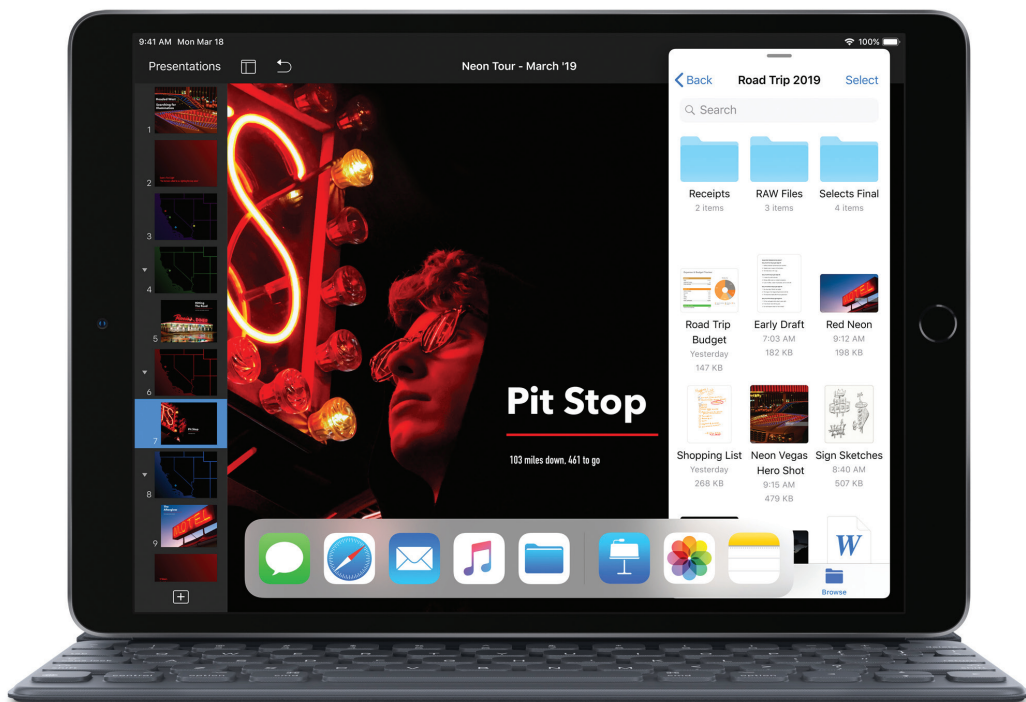
willing to drop down \$159 on a keyboard, go ahead and spend the extra \$170 to get the iPad Air as well. With its faster chip and more storage space, the Air can perform the “laptop alternative” role more easily than the seventh-generation iPad.

## THE IPAD AIR HAS A BETTER FACETIME CAMERA

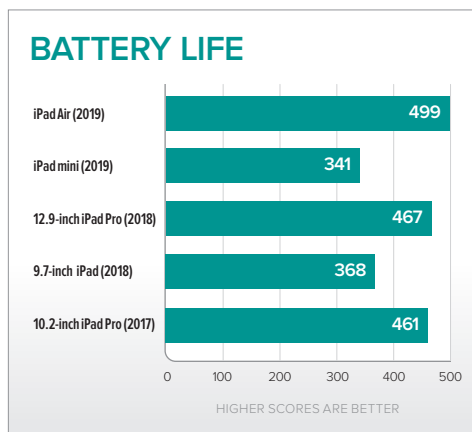
If an iPad’s rear camera is somehow a priority, you needn’t worry. Both models have the same 8-megapixel rear camera

that’s limited to recording video in 1080p. As is typical for non-Pro iPad cameras, it’s just enough to get the job done.

You’re much more likely to use an iPad for FaceTime, though, and unfortunately the differences in this case are stark. The 10.2-inch iPad only has a puny 1.2-megapixel camera that records video in 720p, while the iPad Air has a 7-megapixel camera that can capture at 1080p. If you use FaceTime a lot, go with the Air.



The iPad Air and its keyboard.



**It even beat the Pros!**

## THE IPAD AIR WEIGHS (SLIGHTLY) LESS

Even with all the power and storage Apple has packed into it, the Wi-Fi-only iPad Air still weighs just a single pound. Meanwhile, the 10.2-inch iPad weighs 1.07 pounds. That's not a huge difference, but as a person with a nasty habit of overstuffing his backpack, I can attest that lighter is usually better.

## THE IPAD AIR'S BATTERY MAY LAST LONGER

Here's an iffy one. Like the 9.7-inch iPad before it, this year's 10.2-inch model has a 32.4-watt-hour battery, while the iPad Air has a 30.2-watt hour battery. In both cases, Apple says that will get you around 10 hours of browsing or watching videos.

But the Air might do you better,

although we won't know for sure until we get our hands on a unit. When we did our benchmarks for this year's Air, though—importantly, while it was running iOS 12—the iPad Air performed the best out of all iPads, clocking in at eight hours and 19 minutes while the regular iPad ran for six hours and eight minutes.

## THE IPAD AIR COSTS MORE, BUT...

...you're getting a lot more for a device that's roughly the same physical size.

The seventh-generation iPad starts at \$329, while the iPad Air starts at \$499. If you just want an inexpensive tablet, the regular iPad will do fine—more than fine, in fact! But if you want a device that comes close to the speeds of some older iPad Pros, has more storage space, comes with a better FaceTime camera, and can tackle more intensive app apps, you'll want to spend that extra cash.

On the bright side, prices have already gone down a bit for the iPad Air now that it's been out for a while—you can typically find it selling for around \$460 on Amazon. The regular iPad typically also sees discounts a couple of months after refreshes launch, but we likely won't see those for several weeks considering how new the 10.2-inch iPad is. ■



# Pixel envy: Apple needs to rethink the entire Siri experience

Apple's catching up with Google on computational photography, but its smart assistant still feels stuck in 2014.

BY JASON CROSS

**T**he tech media has long compared Google's Pixel phone with the iPhone, despite the incredible disparity in consumer appeal. After all, the Pixel is the only other phone actually made by

the company that controls its primary ecosystem. It's the Android phone by the Android maker.

For the last couple of years watching the introduction of a new Pixel phone ([go.macworld.com/p4ho](https://go.macworld.com/p4ho)), it was easy to



imagine an iPhone user looking at the camera features and results and thinking, “I wish my iPhone did that!” This year, while the Pixel 4’s ([go.macworld.com/p4cm](https://go.macworld.com/p4cm)) camera capabilities might be better than the iPhone 11’s, Apple has at least caught up enough for it not to be the envy of an iPhone user’s eye.

This year, the thing that makes iPhone users say, “I wish my phone did that,” is Google Assistant. It’s past time for Apple to step up Siri in a big way.

## SIRI’S SQUANDERED LEAD

Siri was first released as an iPhone app in early 2010. Apple knows something groundbreaking when it sees it, and snapped up the company that originally created Siri, before Android and BlackBerry (remember BlackBerry?) versions could be released. A year later, it debuted as a beta feature of the iPhone 4s.

It proved wildly popular. So popular that the Siri back-end infrastructure couldn’t keep up with demand. No other phone had an assistant like Siri. Apple had a several-year head start on what would become a core feature of all smartphones and, eventually, smart home devices.

As it sometimes seems to do, Apple failed to recognize that its advantage was tenuous and must be vigorously defended.

It didn’t invest nearly enough in its assistant technology, allowing Google—and some would say Amazon—to catch up and eventually pass it by. Now, Google Assistant on the Pixel 4 looks like the future, and Siri just feels like a more polished version of what we’ve been using for years.

## WE NEED A NEXT-GEN SIRI, NOT JUST A BETTER SIRI

Apple has gotten serious about machine learning and its virtual assistant in the last couple of years, going on a huge hiring and acquisition spree to bolster its R&D efforts. But as a customer, I don’t feel like Siri is next-level. I feel like I’m fundamentally using the same Siri I have been for the last seven years.

Siri is dramatically better than it used to be, but it still works in essentially the same way, and does essentially the same things. Say “Hey, Siri” or press and hold the side/home button, and it takes over the entire screen, giving you hit-or-miss answers to certain classes of questions or performing carefully prescribed functions. It is an island unto itself, siloed into its own full-screen interface, and yet requires an internet connection (despite Apple’s stance on privacy and performing operations entirely on your iPhone).

Google’s demonstration of its new

voice recorder feature that does real-time transcription ([go.macworld.com/vrcd](https://go.macworld.com/vrcd)) was a dramatic display of its ability to understand speech, but more impressive is that it operated in Airplane Mode. In fact, many Google Assistant features will be run entirely on-device. This seems like the kind of thing Apple should have demonstrated when it overhauled the Voice Memos app in iOS 12 ([go.macworld.com/vmem](https://go.macworld.com/vmem)), doesn't it?

With all of Apple's talk about privacy and security, why can't Siri do on-device real-time voice transcription of our Voice Memos? Turn on Airplane Mode and you can't even invoke Siri at all. You get a big fat error stating that you have to be connected to the internet.

Why? Why can't I tell Siri to launch an app, or convert pounds into ounces, or roll dice, or tell me about any of the info that's already on my phone (like calendar events or reminders)? Siri should only need to connect to the internet when the answer to a question has to come from there, like stock prices or sports scores. "Remind me when I get home to call Jon" should be able to set the proper reminder without any network connection. There's no need to be online for, "Show me photos of mom," or "Set an alarm for 7:30 tomorrow."

Perhaps worse than its internet-connected requirement is the way Siri still

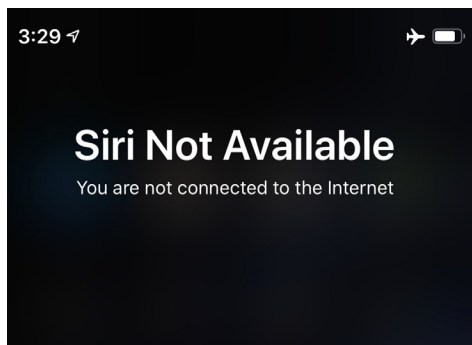
feels like a separate entity, rather than a holistic part of everything I do on my iPhone.

Invoking Siri takes over the entire display. Why? In iOS 13, Apple made Siri a simple overlay along the bottom of the screen in CarPlay, but on your iPhone it still takes over your whole device. It's a visual distinction that sends a clear message—Siri isn't a part of what you're doing, it's something you stop what you're doing to use.

It's also blissfully unaware of the context of what you're doing at the time. I should be able to have any webpage open and ask Siri to, for example, "Translate this page into Spanish." Or select a word in any app, in any language, and ask, "What does this word mean?" to get a definition. If I have the Calendar app open to a specific day, I should be able to tell Siri, "Make an event for 6 p.m. to get drinks with Susie," and it will know by context to put it on that day of my calendar, rather than today.

Queries and commands to Siri should understand the context of anything on my screen. If I'm watching a movie trailer on YouTube, I should be able to say, "Buy tickets to this," and get nearby movie ticket results for that particular film.

This works in very limited capacity today. For example, if I'm looking at an iMessage conversation with my wife, I



**It's 2020, Apple is apparently The Privacy Tech Company™, and yet Siri won't even work without an internet connection.**

can say, “Where is she?” and my phone will open to her results in Find My Friends, because I have her added there. A true next-gen Siri should seek to draw proper context from anything on my iPhone or iPad's display, in addition to the ambient sound, location—the full suite of sensor data.

## THE SIRI EXPERIENCE NEEDS A DRAMATIC OVERHAUL

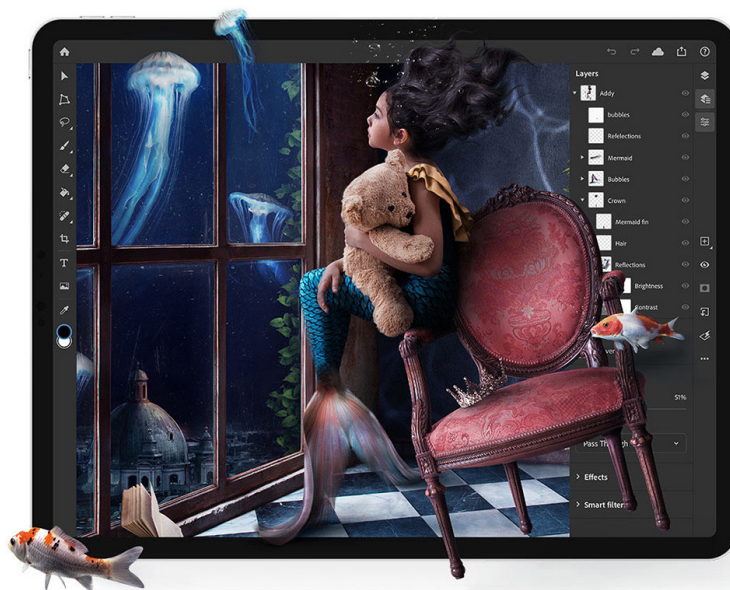
Google may not sell as many Pixel phones as Apple does iPhones. The future of Apple may be services, not just hardware. But Apple would be well-advised to look at Google's latest phone and feel a sense of paranoia. No advantage sticks around forever, and no ecosystem has a moat too big to cross. Apple should make beating Google Assistant as big a priority as it must have

been to beat the Pixel's camera.

It will have to “skate where the puck is going ([go.macworld.com/puck](https://go.macworld.com/puck)),” as the saying goes, to envision Google Assistant several years out and architect a completely new Siri experience to beat it. Hopefully, Apple recognized its long-lost leadership position in this area years ago and has been architecting a next-generation Siri experience for a long time.

The iPhone of the future needs more than an incredible camera, 5G connectivity, and a superfast processor. Apple keeps reminding us that machine learning is used in all aspects of the operating system. It's time to tie all that intelligence together and surface it in a whole new Siri experience, instead of continuing to iteratively improve this iPhone 4s interaction model. It's time for a whole new Siri experience that fully integrates with everything we do with our phones and runs entirely on-device wherever possible.

If Siri continues to evolve in the ways it has recently—adding a domain here or there, improving its voice, delivering slightly better results to specific types of queries—it will be left hopelessly in the dust by Google Assistant on Android phones and Alexa on, well, everything else. It's already way behind, and pretty soon, consumers are going to really start to notice. ■



# Adobe Photoshop finally makes it to the iPad

The popular photo editing app isn't picture perfect yet, but it's off to a nice start.

BY LEIF JOHNSON

A “real” version of Adobe Photoshop ([go.macworld.com/apht](https://go.macworld.com/apht)) is finally available on the iPad, over a year after Adobe first announced it was coming.

Keep in mind, though, that “real” Photoshop and “full” Photoshop aren't quite the same things. Adobe gets away with calling it “real” Photoshop (in contrast to something like Photoshop Express [[go](https://go)].

[macworld.com/phxp](https://macworld.com/phxp)]) because the iPad version shares the same base code as the desktop version. This, in turns, allows iPad users to easily and swiftly switch between desktop and mobile versions of their projects thanks to the cloud version of Adobe's PSD file format. Adobe also uses this as an incentive to start keeping your files in its cloud, which shouldn't be too much of a storage problem if you keep

included files limited to recent projects.

We haven't spent a lot of time with Photoshop on the iPad, but it's clear the interface is familiar enough that Photoshop veterans should have no trouble finding their way around. The tool palette is on the left—and it includes familiar tools like the clone stamp and healing brush—while on the right you'll find menus for layers and adjustments for levels, gradients, and blends.

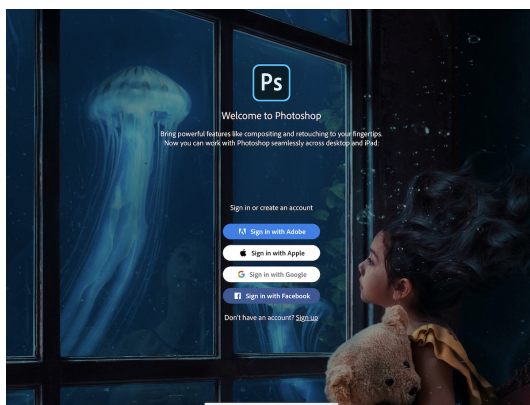
Unfortunately, as Adobe made clear not long after its initial announcement, it's also missing popular (and arguably essential) features like the pen tool. As Adobe explains in a blog post ([go.macworld.com/bl0g](https://go.macworld.com/bl0g)) announcing the release, this mobile version currently emphasizes “workflows, compositing, masking, and retouching.” To give you an idea of just how much is missing, Adobe's landing page says that a coming feature is the ability to rotate canvases. If you're a serious artist, you'll probably still end up doing the majority of your work on the desktop.

But considering that you can easily switch back over to desktop Photoshop, Photoshop on iPad still comes off as a good option for lightweight edits on the couch or in coffee shops. This version even supports the Apple Pencil, and if Adobe Photoshop for iPad gets robust enough, some artists may even

grow comfortable using their iPads over Wacom Cintiq tablets. This arrangement should become even more attractive once Adobe Illustrator also makes it to the iPad sometime next year.

You can start using Adobe Photoshop for free right now if you already have a Creative Cloud subscription from Adobe. The iPad version also supports the new “Sign In with Apple” feature, and we discovered it only takes a couple of seconds to tie it to a Creative Cloud subscription.

Alternatively, you can try it out for free for 30 days and then pass the cheapest \$9.99 monthly subscription that grants access to both Adobe Photoshop and Adobe Lightroom ([go.macworld.com/ltip](https://go.macworld.com/ltip))—the latter of which has been available on the iPad for a while now. ■



**“Sign In with Apple” hasn’t been on the radar much, but it does exist!**



# How to allow untrusted Shortcuts in iOS 13

You might run into a problem that prevents a Shortcut from installing. Here's the fix.

BY ROMAN LOYOLA

**T**he Shortcuts app is a great way to automate tasks that require several steps on iOS. You can create your own shortcuts, or sift through the Shortcuts Gallery to find and install shortcuts that others have created.

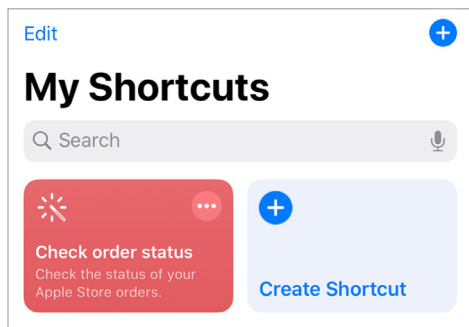
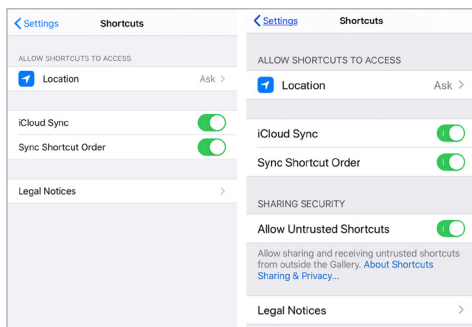
You can also find Shortcuts on the internet, but if you try to install them, you might run into a problem that prevents the Shortcut from installing. You might see the message shown on the bottom of the

next page.

When you see that message, you might think, "O.K., I'll just go in the Shortcuts settings and allow untrusted shortcuts." But if you've never run a shortcut before and you go into Settings → Shortcuts in iOS, you won't find any security settings to adjust.

Despite the missing setting, you can change it. You have to and can make that setting appear. Here's how.





**Shortcuts settings: Before you run a shortcut (left), and after (right).**

## HOW TO MAKE THE SHARING SECURITY SETTING APPEAR IN THE SHORTCUTS SETTINGS

If you've never run a shortcut before, the Sharing Security setting doesn't appear. To make it appear, you have to run a shortcut.

Fortunately, that's easy enough to do. iOS 13 includes a shortcut in the Shortcuts app. Launch the Shortcuts app, and you'll find the Check Order Status shortcut, which, as the name says, checks your orders at the Apple Store.

You can run the Check Order Status shortcut by tapping it. It may check your order status if you have an actual order in process, or you'll see an error alert. Most importantly (for the purposes of this how-to), you've run a shortcut, and now you can set the Sharing Security settings.

Here's how to adjust the Sharing Security setting to allow untrusted shortcuts to run on your iOS device.

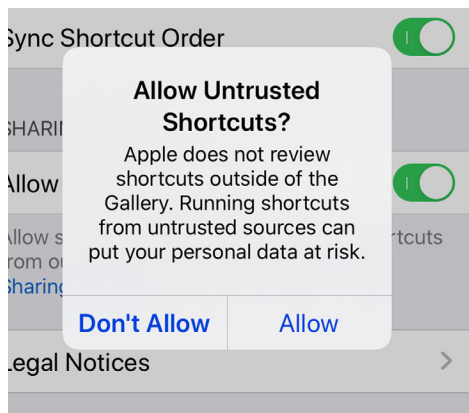
**1.** Launch the Settings app.

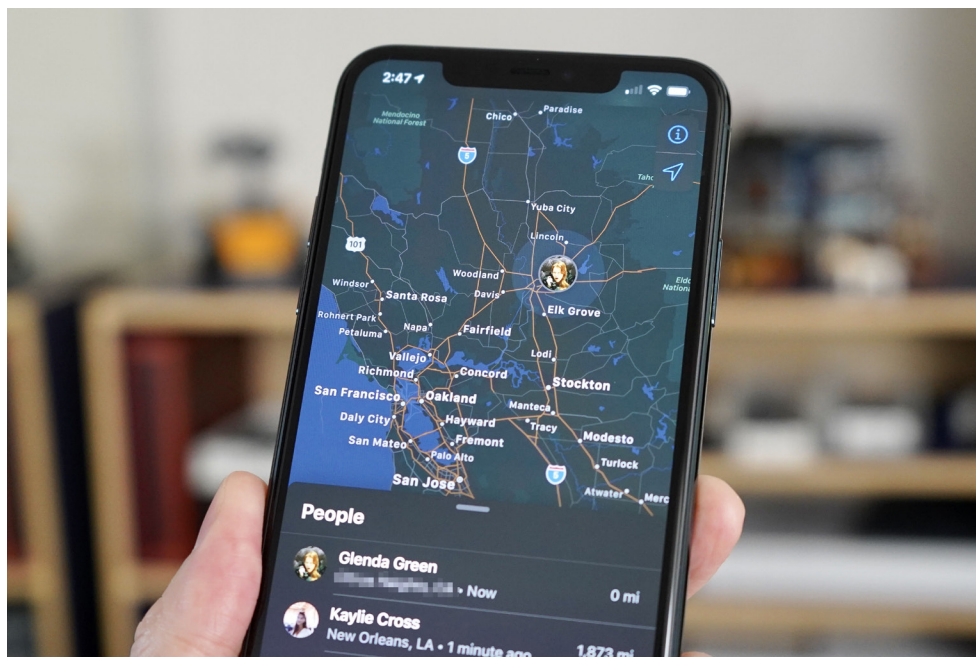
**2.** Scroll down until you get to Shortcuts and tap it. You'll find Shortcuts at the end of the section that starts with Password & Accounts.

**3.** The Sharing Security section should now appear in the Shortcuts setting. Toggle the switch on for the Allow Untrusted Shortcuts setting.

**4.** A confirmation window will appear. Tap Allow.

**5.** Exit Settings and you're done. ■





# Find My: How to use Apple's all-in-one app to find friends and devices

Here's everything you need to know about the new find-everything app.

BY JASON CROSS

**F**ind My Friends was not the first location-sharing app when it was introduced in 2011, but by being a first-party solution, it saw incredibly widespread support. So much so that Apple just went ahead and bundled it with iOS starting with iOS 9. Find My iPhone first launched as a

MobileMe service in 2010, and became a free iCloud service in 2011. It has been a critical piece of infrastructure to help people locate their lost gear.

The ubiquity of these services have made them so popular, so oft-used and reliable, that they have become a mainstay of the Apple ecosystem; a reason to stick

with Apple, just like iMessage.

With iOS 13 and macOS Catalina, Apple has given these location services their biggest overhaul yet. Since the two apps essentially do the same thing, they have been combined into a single app called Find My with a new interface. It's included in iOS 13, iPadOS 13, and macOS Catalina.

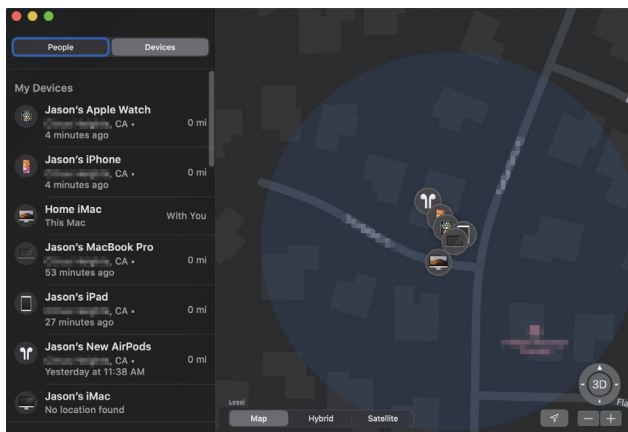
(On the iCloud.com website, Find Friends and Find iPhone are separate apps. The Apple Watch only has a Find People app.)

Here's what you need to know about the Find My app and how you can use it to keep track of people you care about and all your Apple gear.

## WHAT CAN YOU DO WITH THE FIND MY APP

The Find My app does more than help you find where you may have left your phone or see if your bestie is on the way or not. You can:

- See your friends' location (with their permission)
- See where all your Apple devices are
- Make your devices emit a sound so you can find them more easily
- Put your devices into a locked "lost



**Find My can help you keep track of all your Apple gear, now even on macOS Catalina.**

mode”

- Remotely erase a lost device

It's about more than convenience, it's about security. And because it deals with sensitive location data, it's critical that Apple has engineered it to protect your privacy as much as possible.

## HOW FIND MY PROTECTS YOUR PRIVACY

Any app that shows you the location of people and your very expensive gear should be architected from the ground up to protect your privacy.

Apple does, of course, get location data for your devices (how else would it show you where they are?) but it minimizes the data it collects and stores. Apple receives location information only when

you actively locate your device, mark it as lost, or enable Send Last Location. Then, the data is stored encrypted on Apple's servers, and is retained for no more than 24 hours.

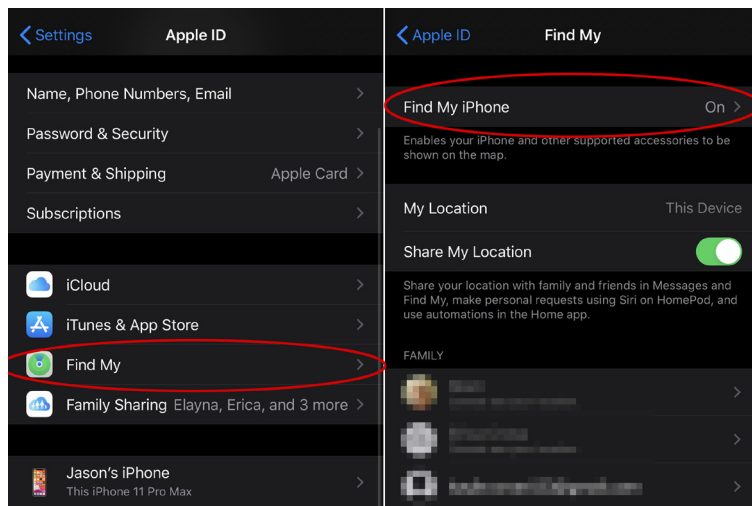
Finding offline devices using Bluetooth beacons is even more private—

that relies on a system of fully end-to-end encrypted and anonymous identifiers that use a rotating key provided by one of your other Apple devices. Nobody else, not even Apple, can identify and track your devices this way.

When somebody shares their location with you, you do not automatically share your location back—you're given the option to. And you can share your location for just one hour, until the end of the day, or indefinitely.

## HOW TO ENABLE FIND MY ON YOUR DEVICE

When you sign in to your Apple ID on your device, it automatically enables certain



**Find My should be on by default for most users, but you can enable or disable it in Settings.**

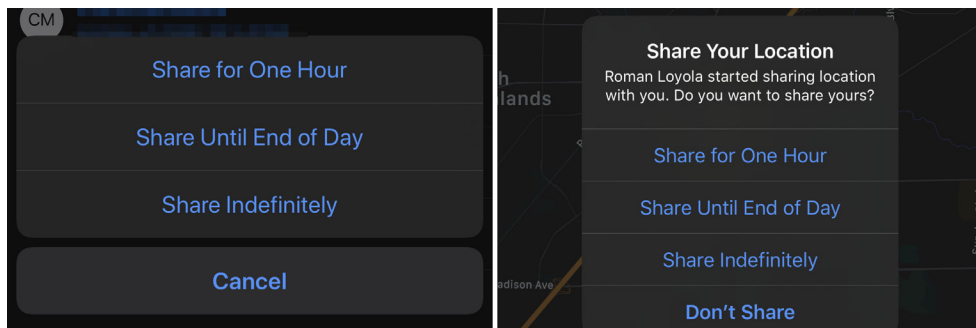
features, including Find My [device]. It's enabled for your Apple Watch or AirPods if it's enabled for the iPhone they're associated with.

If you've disabled this for some reason, you can re-enable it in the Settings app.

Open Settings, and then tap on your Apple ID at the top. Select Find My and you'll see a Find My iPhone/iPad menu at the top of the screen to enable Find My iPhone/iPad, Enable Offline Finding, and Send Last Location.

You can also choose whether to share your location with others, including when making requests of Siri or to trigger location-based automations in the Home app.

On a Mac running macOS Catalina,



Whether you initiate location sharing or someone else does, you'll have the option to limit the length of your location sharing.

open the System Preferences app and click on Apple ID. Select iCloud on the left, and scroll down through the list of apps using iCloud to make sure that Find My Mac is selected.

## SHARING YOUR LOCATION WITH OTHERS

Sharing your location is simple. Open the Find My app and tap the Share My Location prompt at the bottom of the People tab. On a Mac, it's in the left sidebar.

In fact, for all functions, the app works essentially the same on the iPhone, iPad, and Mac, just with slightly different interface layouts. The iPhone has a bottom bar, the iPad a floating window on a map, and the Mac has a left-side navigation bar.

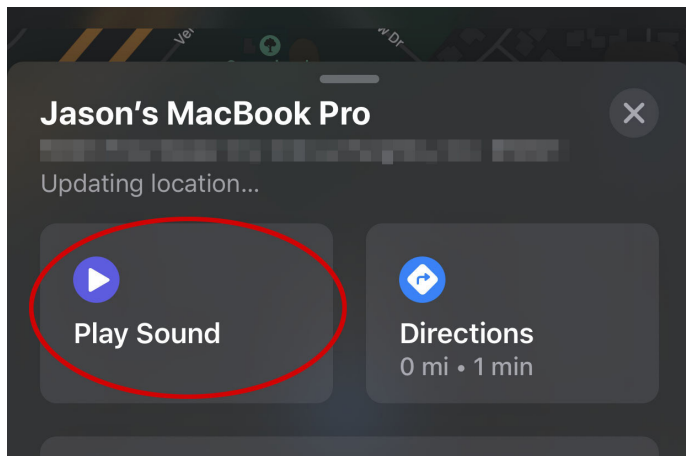
You'll then have to enter the name, email address, or phone number of the people to whom you want to share your location. If they have multiple phone

numbers or email addresses, be sure to use the one associated with their Apple ID, just as if you were going to send them an iMessage. You'll then be prompted for how long you wish to share your location: One hour, until the end of the day, indefinitely, or don't share your location after all.

To stop sharing your location with someone, tap their name on your People list, and scroll down to select Stop Sharing My Location.

Under the Me tab, you can control how your location is shared. You can choose to stop sharing your location, and if you have multiple iPhones, you can decide which one should be used to represent your location to others. You can toggle the ability to receive friend requests or decide whether you want to receive location updates from everyone, or just those who you have also shared your location with. Finally, you can label your current location (Home, Work, School, Gym,





**Know your Apple device is somewhere nearby but still can't find it? You can make it emit a loud sound.**

or your own custom label).

## PLAYING A SOUND TO HELP FIND DEVICES

If you can't find one of your devices, but the map shows that it's around here somewhere, you can make it emit a sound.

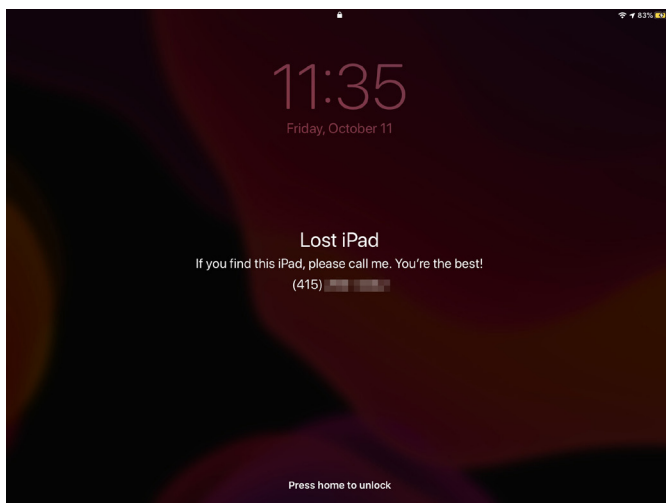
Select the device from the Devices tab, then tap the Play Sound button. You'll get an alert on the target device, after which it will make a series of increasingly loud sounds.

It even works for your AirPods, assuming the battery isn't dead.

## MARKING A DEVICE AS LOST

If you lose your device, you can use Find My on another one of your Apple devices to mark it as lost. This works on almost any device with a screen (so, not AirPods).

Just tap the device in the Devices tab, and scroll down to the Mark As Lost section. Tap Activate and you'll get a series of prompts—your lost



**When you lose your device, you can quickly remotely lock it and make it display an optional message and phone number.**

device will be locked, and you can optionally display a phone number and a message to display on the lock screen, to help the person who finds it contact you.

The Mark As Lost section will change to show you when it was activated—you can tap on this to change the phone number and message, receive email updates about the device (with its location as it moves), or turn off the Mark As Lost feature.

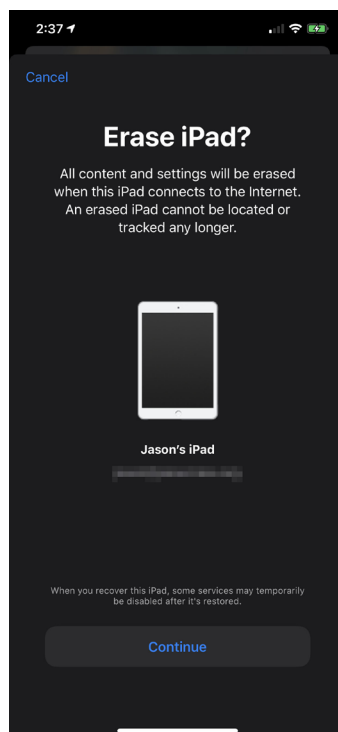
## REMOTE ERASING YOUR DEVICE

If you know one of your devices is gone forever and you want to make sure nobody could possibly get at your data, you can remotely erase it.

Just open the Find My app, go to the Devices tab, and select the lost device. Scroll down and tap on Erase This Device. This will remove all content and settings from your device, essentially returning it to its new-in-box setup process.

If the device is offline, it will erase itself as soon as it comes online. If you have an Apple ID associated with the device, Activation Lock ([go.macworld.com/aclk](https://go.macworld.com/aclk)) will prevent someone else from setting it up without first entering your Apple ID. You need to remove your Apple ID from that device before someone else can set it up for themselves.

This is a great feature to help protect your products from being stolen—they're



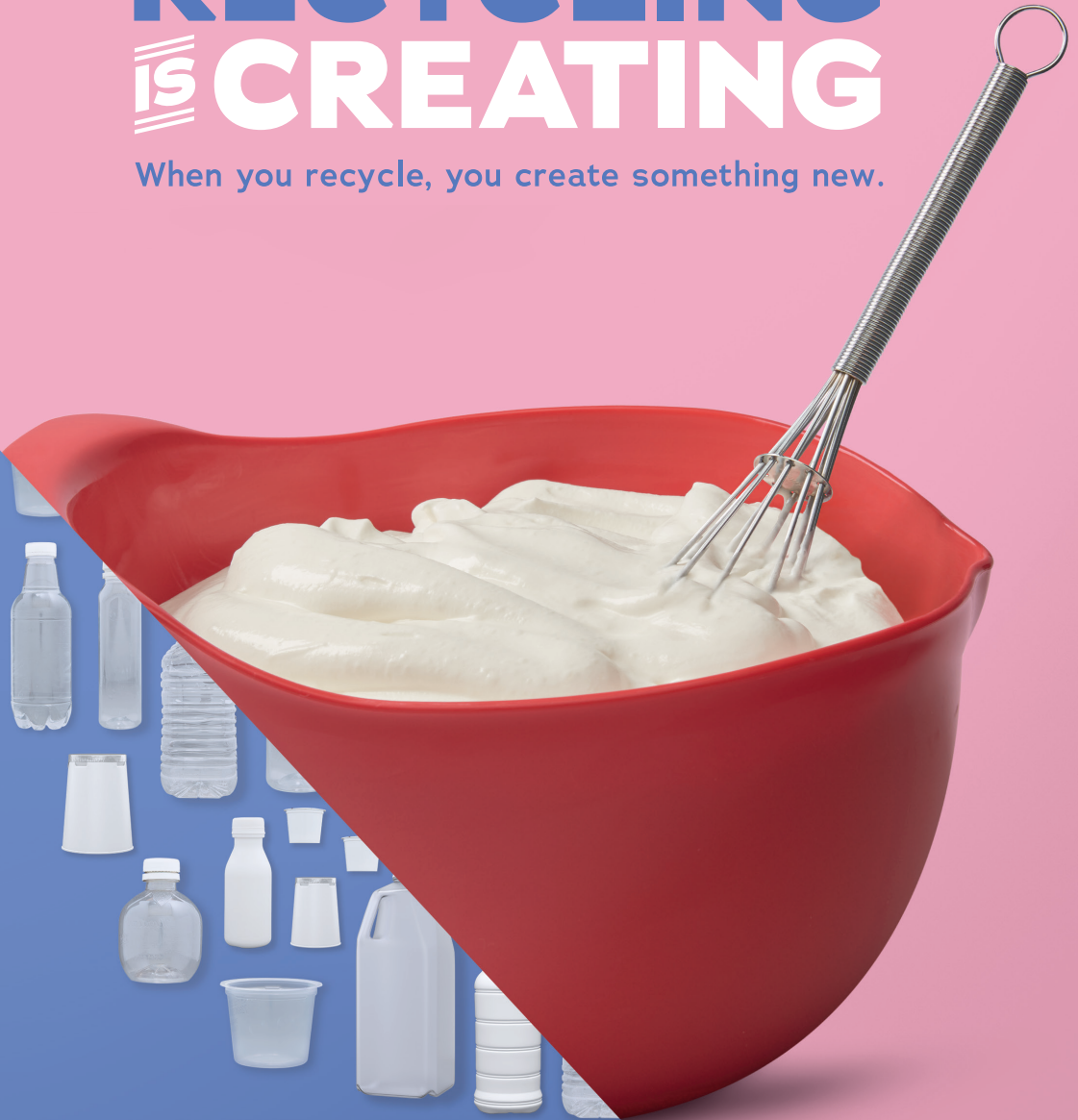
**If you feel your device is probably gone forever, be sure to erase all your content and settings.**

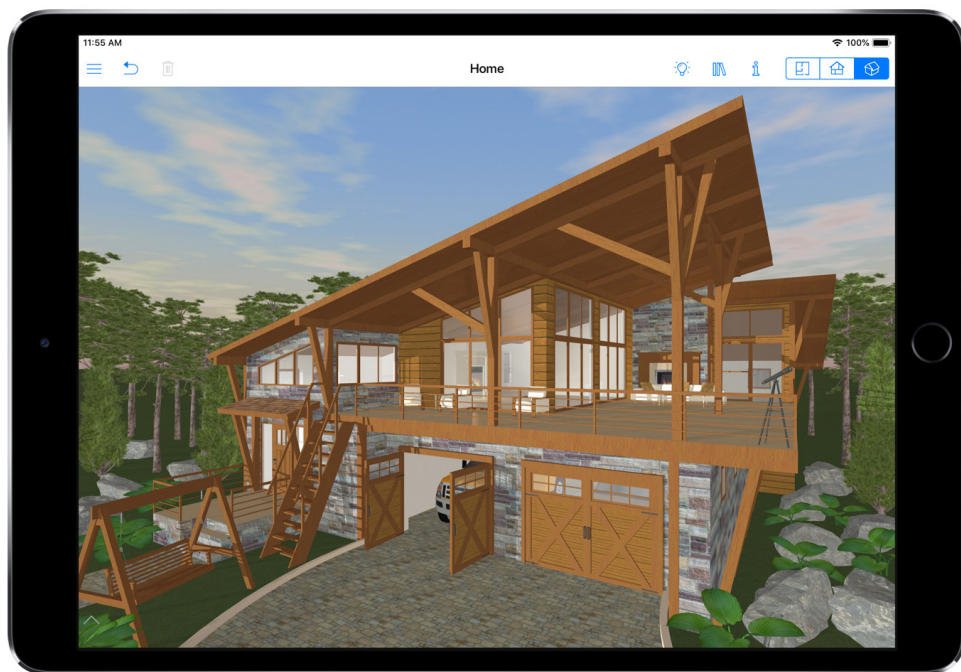
of no use to thieves without your Apple ID login and password. But if you plan to sell your device, make sure you remove your Apple ID from it first!

Most of the actions you perform on your devices using the Find My app will trigger an email to the address associated with your Apple ID: playing sounds, marking as lost, erasing devices, and so on. So if someone else gets access to your unlocked phone and starts making changes to how it is tracked, you'll at least get an email about it. ■

# RECYCLING **is** CREATING

When you recycle, you create something new.





INTERIOR DESIGN APP

## LIVE HOME 3D PRO: DESIGN A DREAM HOME IN THE PALM OF YOUR HAND

BY J.R. BOOKWALTER

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

Whether building a new home or designing a makeover for your current property, it's a good idea to visualize ideas before breaking out the sledgehammer and tearing down walls. But without an interior design background, that's easier said than done.

Thankfully, there's a great app called Live Home 3D that makes the process easy and fun to do. You can make a design right from the comfort of the living room couch (or most anywhere else) using a smartphone or tablet, complete with a virtual walkthrough of the new digs.

## EYE FOR DESIGN

Live Home 3D Pro is a full-featured home design app for iPhone and iPad that makes it a snap to design a floor plan and build a virtual home or office onto it in 3D space without a degree in architecture. Having prior experience with the excellent Mac version, it's pleasing to know that the developer hasn't skimped on porting to iOS devices.

This is not some feature-limited companion app, but a true mobile powerhouse in every way. You can start from scratch or open existing designs started on the desktop to add finishing touches while on the go, and vice versa. iOS 13 improves the experience by using Apple's latest augmented reality technology (and devices with A12 or better chips) to incorporate real-world people alongside virtual objects in the same scene, and instantly share AR views on two or more devices. Dark Mode is supported, and iPad users can now work on multiple side-by-side projects.

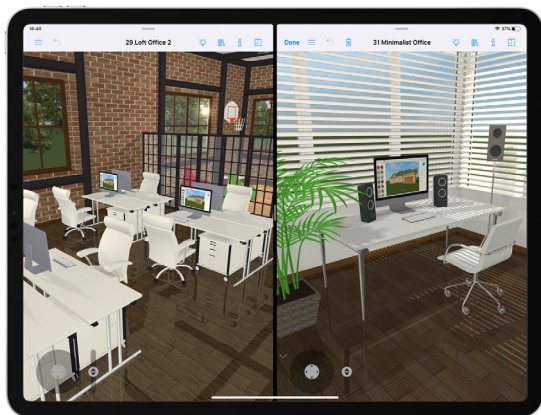
Getting started isn't as daunting as one might think. I quickly imported an existing 2D floor plan, resized it using the Dimension tool for proper scale, then precisely traced walls, doors, and



**Comprehensive building tools make it a snap to construct the virtual home you've always wanted.**

windows over the background. This works great with your finger, but the Apple Pencil lets iPad owners work more precisely.

If you're starting from scratch, there are plenty of sample rooms, houses, and apartments available. Once you have a room laid out, it's a piece of cake to add objects, then apply colors and textures to suit your tastes, no heavy lifting required.



**iPadOS 13 allows Live Home 3D Pro to work on multiple projects at the same time, side by side.**





Once the rooms have been built, adding 3D objects and textures is a snap with Live Home 3D Pro.

## FINISHING TOUCHES

Perhaps the most impressive aspect of Live Home 3D is how fluidly it all works. At the tap of a button, switch from a flat, 2D view to a detailed 3D model of your virtual home in real time, allowing you to pan, zoom, and explore the property from almost any angle. Views can be exported and shared as JPEG, TIFF, PNG, BMP, or 360-degree panorama files.

There's a rich, built-in library with thousands of materials, furniture, and other objects to decorate virtual homes, or import existing images and 3D objects to see how stuff you already own will look there. Others can be acquired via in-app purchase, but if that's still not enough, Live

Home 3D integrates with Trimble 3D Warehouse, a popular online portal chock full of preexisting content.

The free version is limited to a single project; a Standard upgrade (\$10) unlocks unlimited projects, but the Pro upgrade (\$20, available standalone or in-app) is well worth the money. For starters, you'll be able to construct buildings higher than two stories, add custom light sources to objects, save images

or videos in much higher quality (up to 4K resolution), and export 3D models for use in other software.

There are a few small improvements that the app could use. The app doesn't prompt for a custom name when creating new projects and renaming can only be done from the Project Gallery. Landscaping options remain limited without purchasing a \$5 extras pack, and although tons of tutorial videos are available, support is limited to online only.

## BOTTOM LINE

The same great home design app you know and love on Mac is even better on iOS, thanks to support for augmented reality. ■



### Live Home 3D (iOS/iPadOS)

#### PROS

- Comprehensive home design for mobile devices.
- Built-in library contains thousands of 3D objects, textures.

#### CONS

- Augmented reality limited to recent iOS hardware.
- Limited landscaping options, tools.

#### PRICE

Free (in-app purchases)

#### COMPANY

BeLight Software



PHOTO CAMERA APP

## FILMIC FIRSTLIGHT: SUBSCRIPTION MODEL HOLDING BACK SLICK CAMERA APP

BY J.R. BOOKWALTER

Following the App Store's debut in 2008, a cottage industry for third-party iPhone camera apps began to flourish, a testament to how underwhelming Apple's software was at the time. Over time, Apple started catching up, with the latest iOS releases proving the company now takes the Camera app as seriously as the hardware that drives it.

Third-party developers responded by finding new ways to differentiate their camera apps from the one already built in. The latest to face this challenge head-on is Filmic, virtually a brand name when it comes to shooting mobile video. Can the makers of popular video app Filmic Pro

([go.macworld.com/flpr](https://go.macworld.com/flpr)) conjure similar magic with photos as well?

## ADVANCED CONTROL

Filmic Firstlight ([go.macworld.com/flmc](https://go.macworld.com/flmc)) is an iPhone camera app tailored to shutterbugs who want more control over how images are taken. Although the app offers automatic focus and exposure—one tap on the screen to set, another to lock—most everything else involves manual intervention. It's great for capturing scenery and static subjects, but a little too fiddly for shooting fast-moving subjects like kids or pets.

Focus and exposure can also be independently adjusted with the swipe of a finger: left and right for the former, up and down for the latter. An RGB histogram dynamically updates with real-time exposure feedback, while analytics show peaks for sharp focus or zebra stripes for unruly highlight and shadow areas.

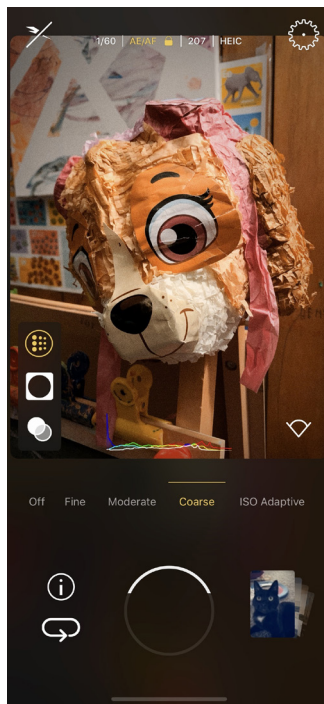
There's even a nifty loupe feature (tap and hold to summon or dismiss) to help bring a subject closer

while making precise focus adjustments, as well as a lens selector for quickly switching between all available front and back cameras on your device.

Images are saved in your choice of JPEG or HEIC and with or without HDR (on supported iPhone models), with a full complement of additional options (burst mode, timer, flash, grid overlays, aspect ratio presets) available from the settings menu. A custom function button in the

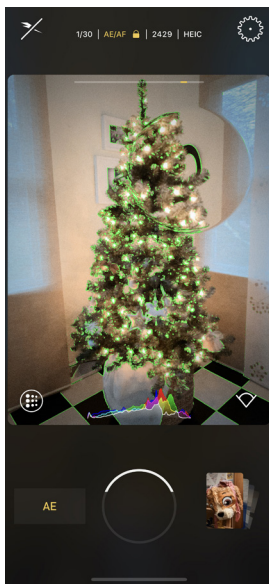


**Designed for shutterbugs who prefer as much manual control as possible, Filmic Firstlight heeds the call.**



**Filmic Firstlight subscribers have access to four different film grain settings, adding texture to otherwise bland photos.**

When auto isn't enough, swipe left and right to put images into sharp focus, with an optional magnifying loupe to get closer to a subject.



upper left corner defaults to opening Filmic Pro for shooting video instead of

taking photos but can be configured to perform one of eight different tasks instead. And yes, the volume rocker acts as a shutter button, a convenience the creators of other camera apps sometimes overlook.

## ANALOG LIVE

Beyond the basics, Filmic Firstlight can also enhance your photos with vintage simulations, film grain, and vignettes. Unlike Instagram-style filters applied after the fact, these are live, real-time effects, so what you preview on screen is precisely what's captured. The downside is that Firstlight can't

apply looks and filters after a shot is taken—or edit images at all, for that matter.

While the effects are top-notch (a favorite is the lovely, authentic film grain), such creative options are limited without the purchase of a premium subscription. We're only talking about a dollar per month here (or \$8 annually), but this is a business model that feels ill at ease for a camera app and worse yet, there's no free trial to get a feel for the full version before paying. (Several vintage looks are free, along with medium grain and vignette settings, but that's still not the complete experience.)

The premium version also enables users to dial up specific shutter speed and ISO values, although we found navigating these options a little clunky and unintuitive. Custom settings allow users to tweak the

color palette used to display live analytics or swap how the aforementioned focus and exposure controls respond. For those who prefer shooting RAW, there's no getting around buying a subscription, which provides the option to save images in DNG or TIFF formats as well.

## BOTTOM LINE

There's a lot to love about Filmic Firstlight but forcing a subscription into a camera app makes for strange bedfellows. ■



### Filmic Firstlight

#### PROS

- Advanced, robust manual control over camera.
- Live vintage looks, film grain, vignettes.

#### CONS

- Subscription business model out of place in a camera app.
- No photo editing or applying filters to existing images.

#### PRICE

Free (in-app purchases)

#### COMPANY

Filmic



**Discover the unsearchable**



**Discover the forest**



Find a trail near you at  
**DiscoverTheForest.org**





PRO  
PRO  
MACSPECS, PRICES AND EVERYTHING  
YOU SHOULD KNOW ABOUT APPLE'S

BY ROMAN LOYOLA

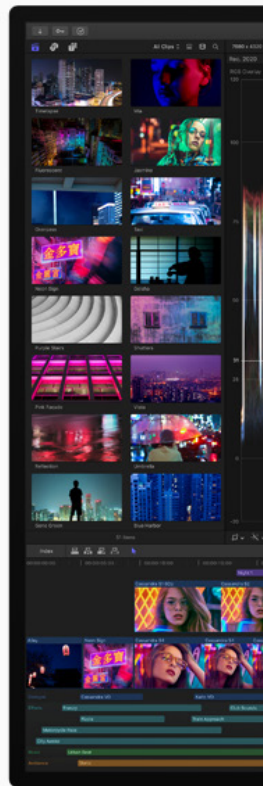
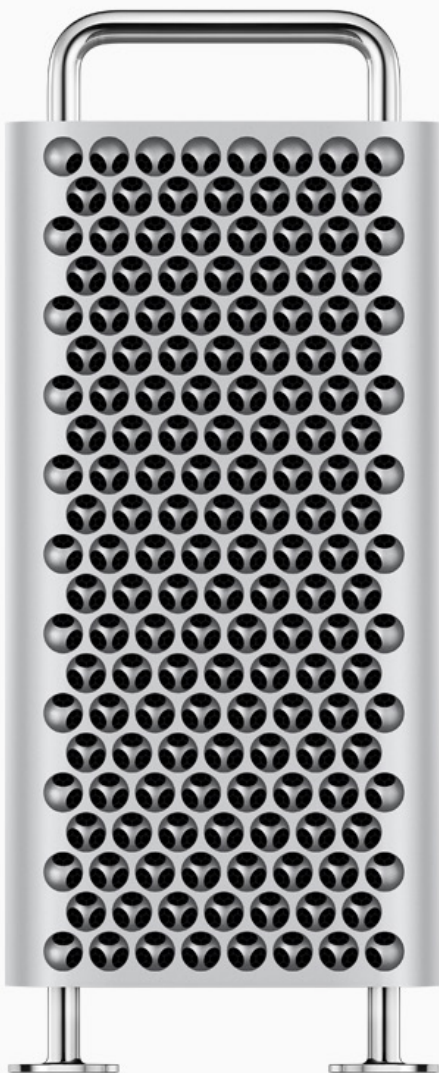


IMAGE: APPLE

EVERYTHING ELSE YOU NEED TO  
HIGH-END DESKTOP COMPUTER



The Mac Pro ([go.macworld.com/prOm](https://go.macworld.com/prOm)) is Apple's workstation. It's designed for professionals who need a powerful and flexible machine, and is ideal for applications that use as many processing cores as possible—video-editing applications, image-editing software, 3D programs, and the like.

The Mac Pro is getting a revival of sorts. The company released a brand-new, redesigned Mac Pro in December 2019, after years of stagnation with the previous, cylindrical Mac Pro.

Apple doesn't offer standard configuration choices for the Mac Pro. It's really meant to be customized by the

customer. To give you an idea of where pricing starts: if you configure the Mac Pro with the base components, it's \$5,999. Learn more about the Mac Pro by reading about its main features below.

## PROCESSOR

Apple uses Intel Xeon W processors, starting with a 3.5GHz 8-core CPU. Apple also offers 12-, 16-, 24-, and 28-core processors.

## MEMORY

The Mac Pro uses DDR4 ECC memory, and has 12 DIMM slots. However, the memory configurations that Apple offers

don't always fill all of the slots.

Here's what Apple offers:

- > 32GB (four 8GB DIMMs)
- > 48GB (six 8GB DIMMs)
- > 96GB (six 16GB DIMMs)
- > 192GB (six 32GB DIMMs)
- > 384GB (six 64GB DIMMs)
- > 768GB (six 128GB DIMMs

or 12 64GB DIMMs)

> 1.5TB (12 128GB DIMMs; for models with a 24-core or 28-core processor)

## GRAPHICS

The Mac Pro has room for two graphics cards. Apple has three different AMD cards from which to choose.



- > 8GB AMD Radeon Pro 580X
- > 32GB AMD Radeon Pro Vega II
- > 64GB AMD Radeon Pro Vega II Duo

According to the Mac Pro ordering page, Apple will be offering soon a 16GB Radeon Pro W5700X, and a 32GB Radeon Pro W5700X Duo.

## DISPLAY

Along with the new Mac Pro is a new display, the Pro Display XDR ([go.macworld.com/xdrp](https://go.macworld.com/xdrp)). There are two models available: one with standard glass (glossy) for \$4,999, and one with nano-texture glass (matte) for \$5,999.

The Pro Display XDR doesn't include a stand, however. That'll cost an addition \$999. If you want a Vesa mount, it's \$199.

## STORAGE

The Mac Pro has room for two SSD modules. You can get a single 256GB SSD, or you can get 1TB, 2TB, 4TB, or 8TB of storage that's installed as a pair of SSDs.

## AFTERBURNER

Apple offers a special component with the Mac Pro called Afterburner. This is an accelerator card with a Field-programmable Gate Array (FPGA) designed for video production. According to Apple, Afterburner can handle up to six streams of 8K ProRes RAW video at 30 fps; up to 23 streams of 4K ProRes RAW video at 30 fps; and up to 16 streams of 4K ProRes 422 video at 30 fps.



Two versions of the Pro Display XDR are available.

If you want Afterburner, it's a \$2,000 option.

## EXTERNAL PORTS

The Mac Pro has an I/O card installed in its half-length x4 PCI Express slot. This card provides two USB 3 ports and two Thunderbolt 3 ports. The Mac Pro also has two 10Gb ethernet jacks. All of these ports are accessible on the back of the Mac Pro.

On top of the Mac Pro, there are two Thunderbolt 3 ports. Apple also says

there's a headphone jack, but by looking at the photos of the Mac Pro, we can't find it. It's probably somewhere on the front of the machine.

## INTERNAL EXPANSION SLOTS

Inside the Mac Pro are eight PCI Express expansion slots. You can install up to two MPX modules, or up to four PCI Express cards. There are also three full-length PCI Express gen 3 slots (one x16 slot and two x8 slots) and a half-length x4 PCI Express gen 3 slot, but that's used by an Apple I/O

card that provides two USB 3 and two Thunderbolt 3 ports.

## WIRELESS

802.11ac Wi-Fi and Bluetooth 5.0 come built-in.

## SPEED

Apple says that the new Mac Pro is "designed in pursuit of performance," capable of handling 8K video editing, 3D applications, software development, and other production-oriented tasks.

Apple's Mac Pro website shows only benchmarks for the highest-end 28-core model. They claim the new Mac Pro provides three times the performance in ProRes



The Mac Pro has plenty of room for expansion.





**This Mac is aimed squarely at pro users.**

transcoding over the previous 12-core Mac Pro using Final Cut Pro X. Apple also says you'll see more than triple the performance in task performed in Adobe Photoshop 2020, Autodesk Maya, Logic Pro X, MATLAB, and Wolfram Mathematica.

Popular Mechanics has an article on how the Mac Pro's cooling system works ([go.macworld.com/csyz](https://go.macworld.com/csyz)), enabling the computer to maintain a high level of performance.

## WHO IS THE MAC PRO FOR?

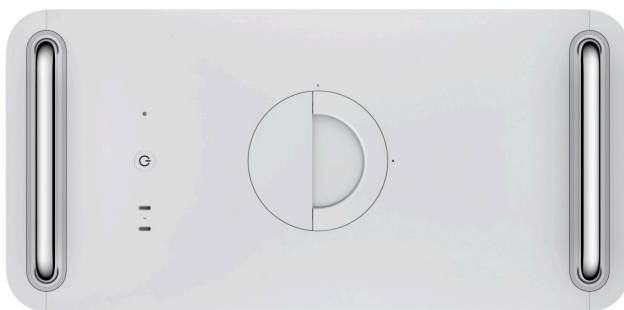
The Mac Pro provides processing power that the most demanding users need. We're talking about production environments, like TV and audio recording studios, animation houses, and software developers. If you feel like you can never have enough power, you're probably the professional the Mac Pro is aimed at.

If you're more of a "prosumer" than a professional—someone who is an expert Mac user, but doesn't use high-end apps—the Mac Pro is overkill. You're probably not going to be able to take advantage of what the Mac Pro has to offer. You also should

take a look at an iMac Pro ([go.macworld.com/prim](https://go.macworld.com/prim)).

## HOW TO BUY A MAC PRO

Ready to buy a Mac Pro? Go to the Apple Store ([go.macworld.com/bypr](https://go.macworld.com/bypr)). ■



**A view of the Mac Pro from above.**

#DanceLikeaDad



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





HOW  
TO TAKE  
ADVANTAGE  
OF THE

# PHOTO-EDITING TOOLS

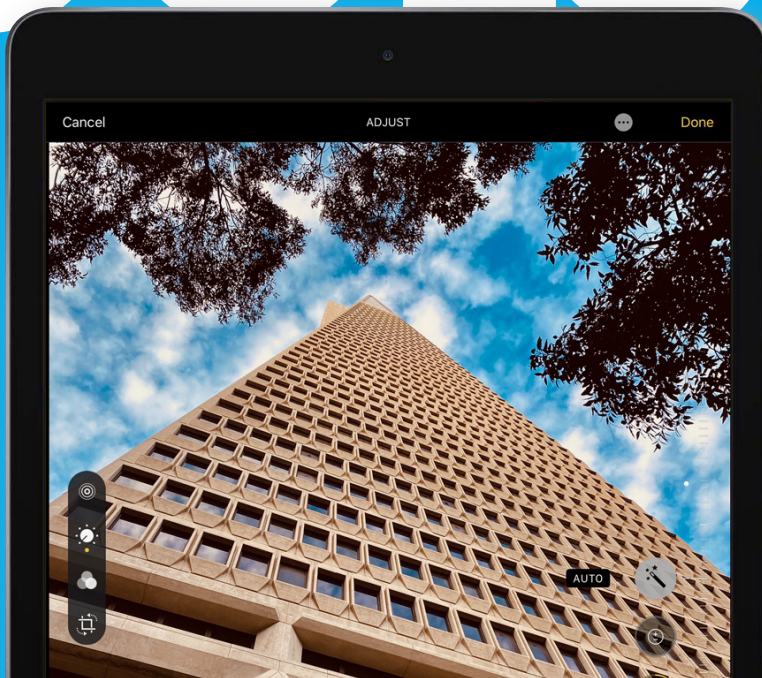
IN iOS 13 +  
iPADOS 13

BY GLENN FLEISHMAN

REFRESHED EDITING  
TOOLS FINALLY MAKE  
ON-DEVICE EDITING  
WITHIN THE PHOTOS  
APP A PLEASURE  
INSTEAD OF A SLOG



IMAGES: APPLE



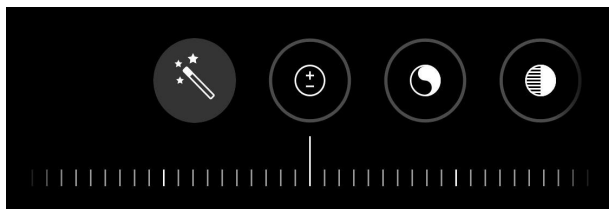
The Photos app for macOS has improved substantially since its introduction, especially in the variety and sophistication of its image-editing tools. On the iPhone and iPad, Photos lagged considerably. But with iOS 13 and iPadOS 13, Apple offers a distinct catch-up with its image-editing tools, even exceeding the Mac version in a couple regards.

Let's look at what's new and how to best use these new tools to crop, revise, and enhance images after capturing pictures.

## WHAT'S NEW IN PHOTOS EDITING

Apple changed and expanded the controls available while editing, while also improving the way in which each control is accessed and modified.

**Intensity slider.** Nearly every tool now has an adjustment slider you can slide left and right or up and down, depending on your editing orientation. This allows fine and coarse changes in the “intensity,” or how much of the setting

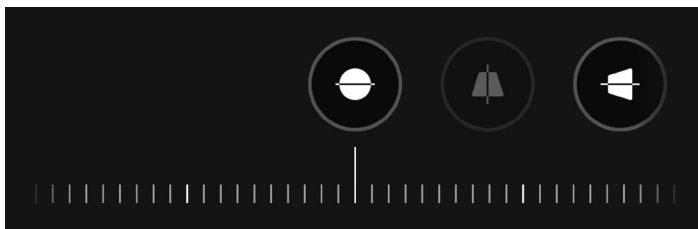


**The intensity slider allows precision control over application of settings of all kinds.**

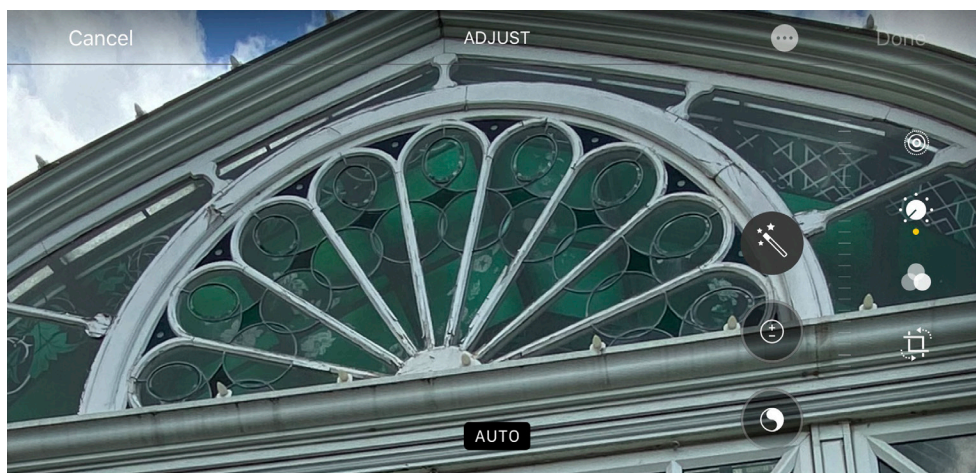
you're applying. Tapping the main control icon typically resets the slide back to remove the adjustment. Haptic feedback lets you feel a sort of rotation, like it's a dial, particularly the zero point. Intensity also applies to photo filters, so you can apply one with a heavy or light hand, as you like.

**Cropping.** You can now skew an image in each axis across its middle and its center as separate controls, the effect of rotating the image as it were a flat object you were turning with perspective toward or away from you.

**Controls don't crowd the screen.** Earlier editing tools splayed out more like the macOS equivalent, making it very awkward to see and select tools from a list



**Cropping tools include rotation and two tilt options.**



**You can now zoom for details while adjusting a photo.**

on an iPhone. The new layout works far better in any view.

**More editing adjustments.** If you've used the adjustment options in Photos for macOS, none of the tools in Photos for iOS and iPadOS will be new, but several make their first appearance here. Those are Definition, Noise Reduction, Sharpness, Tint, Vibrance, Vignette, and Warmth.

**Zoom for details.** You can use gestures to zoom and pan within an image while you're adjusting it to see the effects of your changes close up. You can zoom to fill the entire screen, as shown above.

## USE THE NEW EDITING TOOLS

Tap the dial icon, and the general editing tools appear, which you swipe through. An all-caps label appears below the

image, identifying which of the 16 tools is selected. The intensity slider appears below the tool when your iPhone or iPad is in portrait orientation and to its right in landscape.

You're familiar with the Auto tool, which is like the legendary "make better" button. Tap it, and Photos analyzes the image and applies a number of corrections to make it pop. In this update, however, you can use the intensity slider to increase or reduce the overall enhancement.

You'll also notice that each editing control shows the amount of adjustment applied as a filled portion of the outline of the circle surrounding its icon. Positive values—increasing the setting—show as yellow in the circle, while negative values show as a white line in the perimeter. This all



**The editing controls are easier to access and reveal changes made to each.**

lets you take in adjustments at a glance when you want to modify them individually. Tap the control, and Photos toggles it to 0 or a neutral setting, depending on the tool; tap again, and the previous value is restored.

You can also view the image with and without current corrections. Tap the image and corrections disappear. Photos displays a label that says *Cropped Original* if the entire image isn't shown. You can tap to get back to the current modifications or, after a few seconds, the display toggles back to that, too.

Instead of using Auto, you can swipe and pick specific controls to adjust from scratch. For example, increasing contrast puts more tonal difference between midtones, which can make an image look starker—often bad for photos of people, but good for those of objects. You might also try Definition, which combines sharpening and contrast in a photo's

midtones, enhancing detail more subtly.

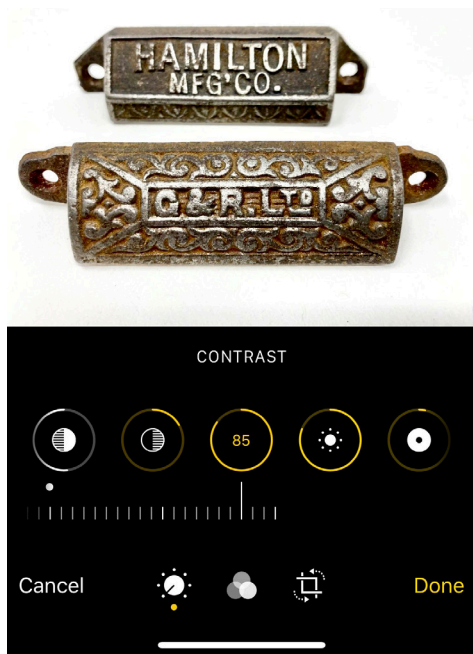
Noise Reduction is a big help for photos taken in low-light conditions, which can produce

speckling or other kinds of artifacts across smoother areas of tone. Don't pump it up too much, or your images start to look ultra smooth and artificial. Balancing Sharpness and Noise Reduction can often dramatically improve a picture's clarity.

Exposure, Brilliance, Highlights, Shadows, Contrast, Brightness, and Black Point all adjust different aspects of an image's overall tonal range. Exposure bumps all tones up, and can blow out (eliminate detail) from the lightest areas. Brightness and Brilliance carve out aspects of tones to change, and can bring out detail from a dark photo or enhance the brightest parts—but so can Shadows and Highlights, which affect only the darkest and brightest tones. It's worth experimenting to find the right balance, and this new editing environment makes it very easy to play with values.

While Photos now includes Vibrance,





**Use Contrast to help images pop by creating a greater distinction between lights and darks.**

Tint, and Warmth—Saturation was already present—it can be difficult to get the right tone on your images when you’re trying to adjust for natural or artificial lighting. Photos in macOS still offers more robust adjustment tools, especially in its White Balance section.

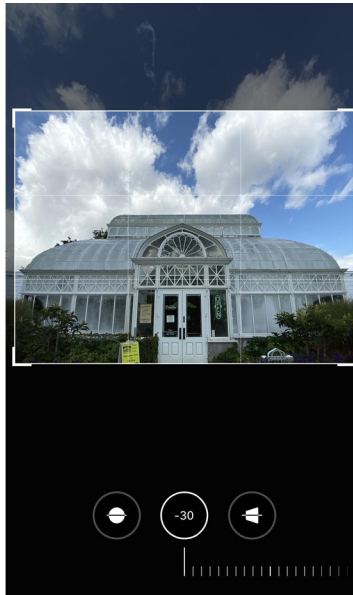
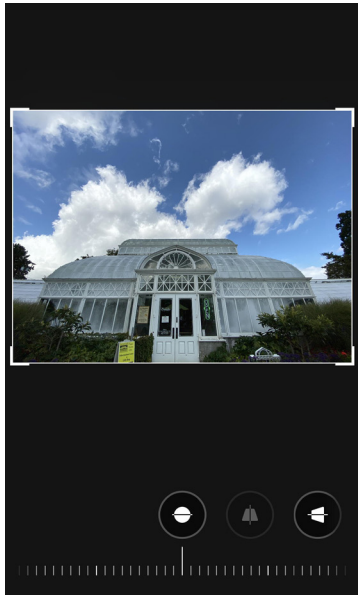
One missing piece are the black and white controls, still available in macOS, which let you switch a picture from color to grayscale. However, you can use the Mono, Silvertone, and Noir filters to apply a conversion, and then use the editing controls to tweak the tonal shape.

## CROP AND STRAIGHTEN IN MULTIPLE DIMENSIONS

You might think it peculiar that I am jumping up and down—and side to side—about cropping, but the update in cropping controls and automatic correction dramatically improves how you can correct a shot or make artistic modifications within the Photos app.

Previously, you just had cropping edges and corners, a rotation dial, and the proportions button (still present, but improved) to choose cropping ratios. Now, there are three adjustment tools (see images on next page). It helps to visualize an image in this mode as being a real photo you hold in your hands that you can move around. The tools are:

- > Standard rotation (icon at left) is the familiar rotation around the axis as if the photo is held flat in front of you and you turn it from a car’s steering wheel.
- > Tilt forward/backwards (middle icon) treats the photo as if you’re tilting it toward you at the top with the bottom nearly anchored, with the perspective warping as you do (negative slider), or toward you from the bottom with the top mostly anchored (positive slider).
- > Tilt left/right (icon at right) tilts the image with perspective towards you from the left with the right loosely anchored (negative slider) or toward you from the right with the left more firmly in place



The new tilt options for the Crop tool let you fix perspective on images, such as this wide-angle shot (left) normalized for perspective with top/bottom tilt (right).

(positive slider).

This combination can let you correct for optical effects, particularly in adjusting images taken with the new ultra-wide-angle lens on the iPhone 11 series.

Tapping the Crop tool before making any changes triggers an analysis by Photos. Previously, this applied just straightening. Now it may also automatically apply a tilt, too. If corrections were made, a white-on-yellow AUTO button at the top appears with a dash-bordered square to its left. You can tap that button to toggle those changes off and on.

Finally, if you have an iPhone 11 phone, you can turn on Capture Outside the

Frame in Settings → Camera, and if you're shooting at 1x (all iPhone 11 models) or 2x (iPhone 11 Pro and Pro Max), the Camera app captures additional detail used for automatic framing, but that's available for adjustment in the Crop view.

The Camera app may automatically apply cropping adjustments using information outside the frame if Settings → Camera → Auto Apply Adjustments is on. If so, you see a blue AUTO label in Photos. (I have not yet seen this appear after taking a large number of over-captured photos, however.)

Learn more about the iPhone 11 over-capture feature and how to use it to its best advantage ([go.macworld.com/ovrc](https://go.macworld.com/ovrc)). ■



>> How a silver lining forms

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

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

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

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





102  
102

JODI, heart attack and stroke survivor.

## YOUR **NUMBERS** COULD CHANGE YOUR LIFE.

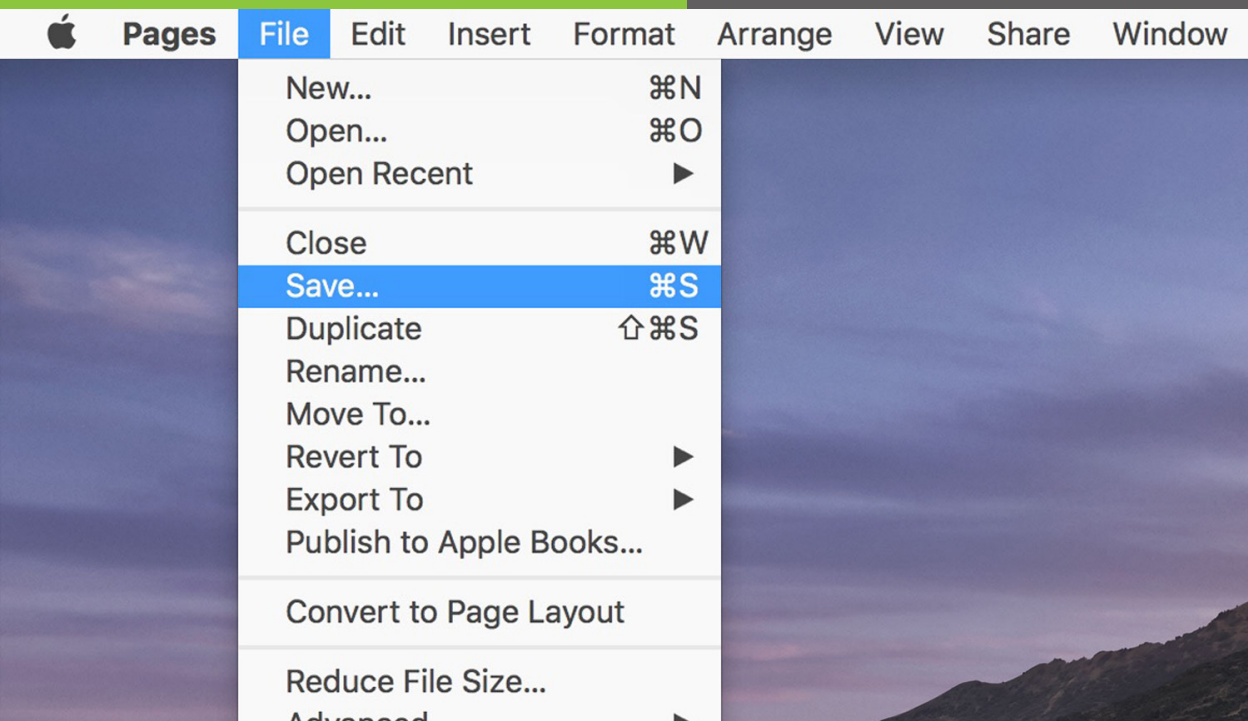
Lowering your high blood pressure could save you from a heart attack or stroke.

If you've stopped your treatment plan, restart it or talk to your doctor about creating one that works better for you.

Start taking the right steps at [ManageYourBP.org](http://ManageYourBP.org)







## What's the difference between Save, Save As, and Duplicate in macOS apps?

Apple's document-based apps and those of many other developers have three ways to save a file.

BY GLENN FLEISHMAN

Even for long-time Mac users, it can be challenging to identify the differences between Save, Save As, and Duplicate. Save is seemingly straightforward, but not

necessarily so—a lot happens behind the scenes for every save in Pages, Keynote, and Numbers, among other apps from Apple and those that adapt the Save/Duplicate/Save As approach.

## SAVE

For apps that support storing versions of files, each Save not only takes the current changes stored temporarily for an active document and writes them to a file on a volume, but also may create an archived version of the file's previous state. Apple says that a version is stored each hour and then also for any time major changes are made in a document, without being too specific about how significant those changes are.

You can manage the version history through File → Revert To → Browse All Versions, as I wrote about in a recent column describing how to purge older versions ([go.macworld.com/mnvh](https://go.macworld.com/mnvh)).

## DUPLICATE

By default, the File menu shows Duplicate below the Save item. Choosing File → Duplicate creates a copy of the current state of the file, including unsaved changes. The copy is a separate document that has as its name the original file's title plus the word "Copy," and the title is highlighted.

The file is stored in the same location as the original once the title is edited; in the meantime, it's stored temporarily in iCloud Drive, typically in the location devoted to the app you're using, like Pages.

Duplicate detaches itself from old versions, so you can't revert to earlier

forms of the original file, and starts its own version history. However, you can always open the original file—so long as you didn't delete it—and review its version history.

Trying to close the duplicate without saving brings up a Save dialog that asks if you want to keep the document and offers Delete Copy, Cancel, and Save as options.

## SAVE AS

Hold down the Option key and File > Duplicate changes to the previous and long-running menu item Save As. Select that option, and a Save As dialog appears allowing you to choose a name and destination for the file.

Save As differs in three ways from Duplicate:

- > The original file isn't left open, but the current window adopts a new file name or location or both.

- > The Save As dialog lets you choose any destination for the file before editing it.

- > If the document contains unsaved changes, the app includes a checkbox in the Save As dialog that reads "Keep changes in original document." If checked, the app performs a Save operation in the original file, then saves the new version and leaves that as the only open, active window.

However, like Duplicate, Save As trims the version history: the new file has a fresh start. ■





# Make sure your sent email is copied to the right location in Mail

You can store your Sent mailbox on a server or in a Sent folder on a device.

BY GLENN FLEISHMAN

When you send a message, your computer or mobile device is obviously not “sending” it, any more than a Star Trek transporter is “transporting” people to the surface of a planet. In both cases, the information that makes up the original is sent, but the original remains in place and is optionally deleted. (Yes, the

crew is copied then destroyed, otherwise, you’d end up with a lot of Captain Kirks wandering around.)

With Mail for iOS and macOS, sent mail is always retained in a Sent mailbox. However, you can opt where that Sent folder is kept.

In macOS, find the settings through these steps:

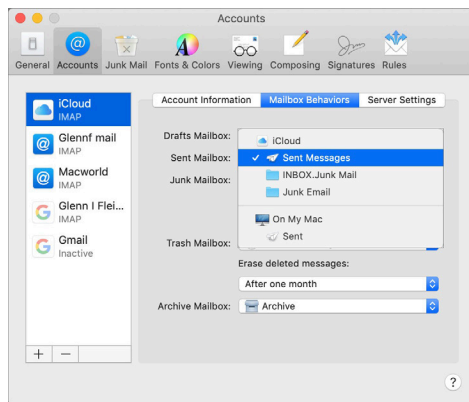
1. Select Mail → Preferences and click Accounts.
2. Choose a mail account in the list at left and click the Mailbox Behaviors button.
3. The Sent Mailbox popup menu lets you select among various mailboxes, but note that you can store it in a mailbox associated with the account (at top) or in a local Sent folder under the On My Mac label.

In iOS, you have to drill down a bit farther:

1. Open Settings → Passwords & Accounts and tap the email account. (It can't be the iCloud account, as it won't let you choose email storage locations in iOS.)
2. Tap Account → Advanced → Sent Mailbox. (Not all mail hosts let you select this in iOS, such as Gmail, even if it appears as an option in Mail for macOS!)
3. In this list, you can again pick from choices on the server or under On My iPhone, the Sent mailbox.

If you pick the local mailbox (On My Mac, On My iPhone, or On My iPad), you might think your sent email wasn't retained if you search from any of your other devices or use a web email interface to check mail. You can only find sent messages stored to a single device on that device, naturally; to keep a record of a message accessible from every device and via a web app you have to leave it on the server.

Some email hosting services



**The Sent Mailbox can be set to a server location or stored locally on a Mac.**

separately let you control the behavior of whether sent email is retained when you use a web app. That can result in a problem where sent messages are moved to a Sent mailbox and then deleted by the mail host, either immediately or after a set number of days. For services other than iCloud and Gmail, check the settings at the mail host directly to ensure you won't find those messages missing in the future.

As one more piece of belt-and-suspenders backups of my messages, I have a folder on my Mac to which I copy (but do not move) Sent email from my various accounts. This gives me a local backup in case there's a server problem or I accidentally delete sent email from the server.

Now about those crew duplicates: "Scotty, don't beam me down!" ■



# OVPN: A solid performer, with very good privacy promises

OVPN is an interesting service that takes an extra step to secure its servers, and offers some solid privacy promises.

BY IAN PAUL

Sometimes we run into VPNs that are doing things that might sound a little gimmicky. OVPN is one of those services, but surprisingly its “gimmick” means a high level of privacy and anonymity that comes very close to Mullvad ([go.macworld.com/mvad](https://go.macworld.com/mvad)), our gold standard for VPN privacy.

OVPN wants to know very little about you. You can share your email as a backstop for account recovery, but you don't have to. Instead, all the company wants is a username and password. It also keeps data tracking to a minimum and even goes that extra step with how it configures its servers to keep your information private.

## SECURITY, SOFTWARE, SERVERS, AND SPEED

OVPN starts with an OpenVPN configuration. It uses AES-256-GCM for data encryption, SHA1-HMAC for authentication, and TLSv1.3 for the handshake. What's interesting about OVPN isn't so much the software, but what its hardware is doing.

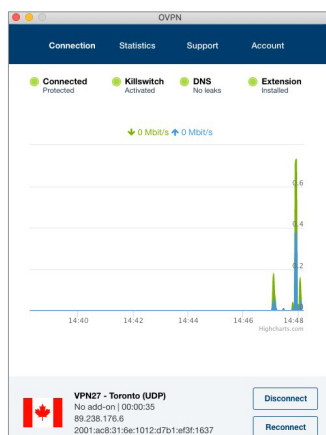
OVPN runs everything on its machines in RAM. There are no hard drives or USB sticks or any other kind of drives connected to its servers. Everything, including the OS, is running on RAM. The company also made it impossible to have physical access to the servers, with no way to connect a keyboard and no on-site console access.

As for privacy and trust, the company is based in Stockholm, Sweden, and the company founder is David Wibergh. OVPN's privacy policy says it doesn't log traffic, timestamps, DNS requests, IP addresses, MAC addresses, or bandwidth. Those are the privacy promises you want from a VPN provider—and the promise to run everything in RAM is the icing.

When you open OVPN on Mac, it offers

a fairly easy-to-understand interface. By default it shows a drop-down list offering to connect to the best-performing server based on your location. Otherwise, you can click on the menu and select from 12 countries. That's a small selection, which may not appeal to some, but companies that own their own network tend to have fewer choices. The country selection is centered on North America and Europe, with no options for other parts of the world, though the company plans to add a Singapore server soon. Once that happens, OVPN will have 77 servers, total.

The OVPN app has four tabs at the top including Connection (the default), Statistics, Support, and Account. The Statistics tab is interesting as it shows your VPN usage for the last hour and the last 24 hours. The Support tab has a form you can fill out for email support, and the Account tab has nothing at all to do with managing your account, as you might think. Instead this is where



**OVPN with an active connection.**

the settings are. You can turn on or off settings such as the internet kill switch, DNSCrypt, IPv6, launch on boot, and so on. There are also options to log out, and to view the app's on-device logs for

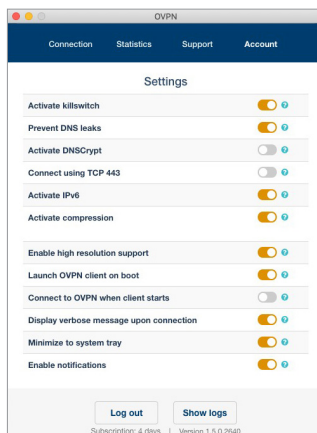
troubleshooting.

As for speeds, OVPN turned out quite well on Mac. Using five different locations, OVPN retained 39.21 percent of the base speed during our testing periods. That's very good and puts it around the top of the middle of the pack for speed tests. You should have no trouble carrying out most common online tasks with this VPN.

The one odd thing about OVPN is that it often appears to use virtual server locations. A server that was supposed to be in Canada, for example, showed up as being from Sweden. Oddly, however, this usually didn't appear to affect speeds. I asked the company about this and a spokesperson said that the IP addresses are owned by OVPN, which is based in Sweden. Because of that, some GeoIP databases don't assign the correct country location. That is an odd thing, however, and the first time I've seen it after reviewing dozens of VPN services.

## PRICING

OVPN's best deal is its one-year subscription for \$84.



**OVPN's Account tab houses the app's settings.**

There's also a six-month option for \$50, or you can pay the high-priced \$11 per month on a month-to-month option. The company accepts payments via credit card, Bitcoin, or cash via regular mail. There's also a 10-day money-back guarantee.

In addition to the base service, you can pay an extra \$5 per month to enable OVPN's multi-hop service. This allows you to connect to two VPN servers in different locations before hitting the open internet.

## BOTTOM LINE

OVPN is a solid VPN with excellent privacy promises, and it goes that extra step to protect privacy by locking down its servers. The speeds are good on Mac, though we'd like to see more country connections and the price is a little on the high side. Mullvad, for example, costs just five Euros per month, though we did find that OVPN's speeds were better. Overall, OVPN is a solid service that is well worth a look. ■



### OVPN

#### PROS

- Privacy and anonymity are top priorities.
- Accepts cash payments for added anonymity.

#### CONS

- A little on the expensive side.
- Geo location is not always accurate.

#### PRICE

\$84

#### COMPANY

OVPN





## F-Secure Safe for Mac: No-frills quality protection

This antivirus suite provides a lot of protection, but that's about all it offers.

BY IAN PAUL

**S**implicity is the name of the game when it comes to F-Secure Safe. This antivirus suite provides a lot of protection, but that's about all it offers. You won't find any extras such as encrypted online storage, secure file erase, or a VPN, though F-Secure does have its own VPN called Freedom ([go.macworld.com/fdom](https://go.macworld.com/fdom))

that can be purchased separately.

A lack of extras is not necessarily a bad thing. Many security suites get overloaded with tools that few people use, but a few well-chosen extras such as those mentioned above would've been a nice addition. Still, there's no denying that F-Secure's protection level is very high. Let's dive into the details of this suite.

## PERFORMANCE

F-Secure provides excellent security coverage. AV-Test ran F-Secure Safe through its widespread and prevalent malware test for Mac in June.

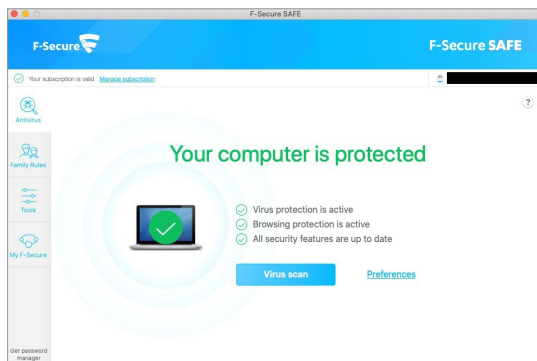
F-Secure Safe earned a 99.5 percent protection rate. During the testing period there was one false detection of legitimate software.

Over on the Windows side, F-Secure earned 100 percent in July and August against the widespread and prevalent malware test, and the 0-day and malware test.

AV-Comparatives also gave F-Secure Safe high marks with a 99.8 percent protection on Mac and 100 percent detection of Windows malware on Mac. The Windows tests for F-Secure Safe also earned high marks, though in the real-world protection test there were 25 false positives.

Finally, F-Secure earned top marks on the Windows side in the latest published report from SE Labs earning a AAA rating.

In our own spot tests, F-Secure performed very well. We couldn't get into the Wicar test site without running through a bevy of warnings from both Firefox (our chosen browser for these tests) and F-Secure. Checking out the Objective See malware archive, F-Secure easily detected every piece of malware we tried to get onto the test computer. We were able to



**F-Secure's default dashboard on Mac.**

download these malware pieces, but the minute we tried to install them F-Secure stopped it and immediately deleted the problematic software.

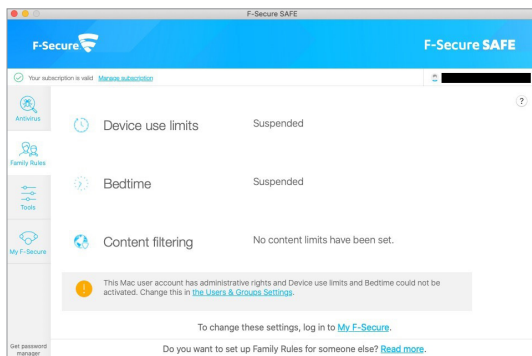
## INTERFACE AND FEATURES

F-Secure Safe has a very simple interface. The primary dashboard shows pretty much everything you need to know. At the top is a large green message saying your computer is protected, or a red warning message if not.

Below that is a list of all the various components that are active, including virus and browsing protection, as well as having “security features” up to date.

From the dashboard you can also initiate a scan and open the Preferences window.

Moving over to the left rail, select the Family Rules tile to set restrictions on any child accounts on the Mac. This includes



### F-Secure's Family Rules section.

device use limits, a curfew for computer usage, and content filtering. The Tools section doesn't have a lot to it. Here you start scans on specific sections of your Mac, disable the firewall, open the preferences, and submit a suspicious file for analysis.

Finally, the My F-Secure section is just a launching pad to the web interface where you can carry out actions such as beginning the installation process for F-Secure, and viewing how many available device licenses you have.

F-Secure's web protection, like a lot of other suites, depends on a browser extension. When it's installed, F-Secure will put a little green checkmark or a red "X" next to websites in Google results to show which sites are safe or not. It will also alert you

when you go to a banking site and whether that site is trusted or not. That's a helpful tool to prevent you from logging in to BankOffAmerica.com instead of BankOfAmerica.com, for example.

## PRICING

F-Secure's pricing is very straightforward. The company has one price, rather than introductory offers for a ridiculously cheap first year and higher

charges for additional years. It also has a number of tiers so you can pay less based on how many devices you want to cover.

F-Secure Safe's base package is \$70 to cover up to three devices for one year. There's also an option to protect 5 or 7 devices at \$90 and \$110 per year respectively. That's a little more expensive than other mainstream top suites that

charge around \$100 to cover 10 devices for a year.

## BOTTOM LINE

F-Secure offers very good protection, and the app is very simple to use without a lot of extras. That may be the problem for some. If you're into the bells and whistles—especially if you have Windows devices in the house—then you can find better value elsewhere. ■



### F-Secure Safe for Mac

#### PROS

- Very high level of malware protection.
- Simple, well designed primary dashboard.

#### CONS

- Not much in the way of extras compared to other suites.

#### PRICE

\$110

#### COMPANY


F-Secure

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

Lisa, adopted 16-year-old Allison







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

Based on USDA food security data released in 2018







## Powerbeats Pro: Better than AirPods, but not for everybody

Apple's Beats by Dre subsidiary has its first true wireless earbuds, and they're wonderful.

BY JASON CROSS

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

AirPods are a cultural icon, and for good reason. More than two years ago, Apple released a set of true wireless earbuds that solved many of the problems that made us hate Bluetooth headphones, making them as convenient and reliable as we've always

dreamed. And now Apple has newer AirPods with a custom H1 chip that makes them even better.

But the second-generation AirPods



**VIDEO: POWERBEATS  
PRO REVIEW**

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

([go.macworld.com/2apr](https://go.macworld.com/2apr)) aren't the best true wireless earbuds Apple makes. Not anymore. That honor now belongs to the company's Beats by Dre subsidiary and its new Powerbeats Pro earbuds.

The first true wireless earbuds by Beats, the Powerbeats Pro, are better than AirPods. You pay a premium for this quality—\$249, compared to \$159 for AirPods—and you won't find the Powerbeats Pro quite as portable as AirPods. But if you want true wireless earbuds that work with your iPhone as effortlessly as AirPods and sound better and last longer, they're well worth the premium price.

## BEATS ON THE OUTSIDE

The Powerbeats Pro will look familiar to fans of the incredibly popular Powerbeats Bluetooth earbuds. They have the same angled nozzles with rubberized tips that fit snugly in your ear canal. Four pairs of tips are included, so almost anyone should be able to find a comfortable fit. They have the same flat, forward-facing body (this time slanted upward a little), connected to an ear hook that fits behind your helix, like a tightly-fitted pair of glasses.

It's a design made to keep the 'buds in place during athletic activity. Running, weightlifting, CrossFit—whatever it is you do, the Powerbeats Pro aren't likely to get dislodged. They're IPx4 water resistant, which basically means you don't have to worry about sweat or splashes, but you shouldn't submerge them.

In my testing, I couldn't get them to budge without deliberately knocking them. I ran, I turned cartwheels, I did jumping jacks, situps, and pushups, I stumbled my way through a few shoulder rolls I haven't attempted since practicing Aikido 20 years ago. Not only did the Powerbeats Pro stay on my ears, they stayed properly fitted into my ear canals.

They're comfortable enough to wear for extended periods, though as with all earbuds that feature ear hooks, the hooks start to



**The hook keeps the earbuds in place, but can become uncomfortable after a couple hours.**

bother me after an hour or two.

Any earbud enthusiast will tell you, a good seal means better sound (especially bass), so the Powerbeats Pro design delivers much better sound quality than AirPods, though they aren't necessarily the best-sounding true wireless earbuds you can buy. If you're familiar with the Powerbeats 3, you'll have a good idea of the acoustics you can expect. Beats made the Powerbeats Pro a little smaller and lighter, and they use a different driver technology, but the overall sound quality is quite similar.

The tight seal means you'll hear a lot less of the world around you, which makes them perfect for noisy environments where you want to block out sound (buses, trains, planes) and worse for noisy environments where you need to hear to be safe (city streets).

The controls will be familiar to Powerbeats users, too. Instead of tapping as you would on AirPods, there are physical controls mirrored on each side: a volume rocker, and a single multi-function button. Tap once to play/pause, twice to skip forward, three times to skip back, or hold it down to trigger Siri. Touch-sensitive tapping probably isn't the best interface for a pair of earbuds made for athletic endeavor. The



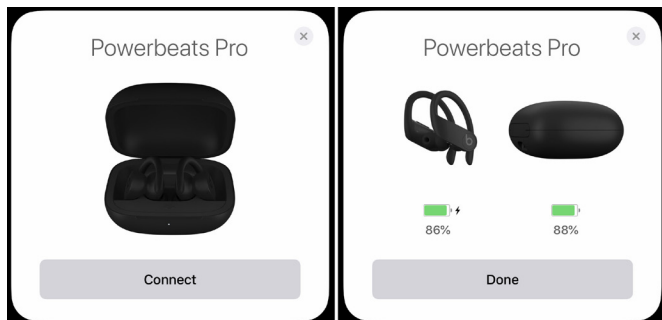
**Powerbeats Pro are a lot larger than AirPods, but still light and comfortable enough for extended wear.**

buttons are easy to locate and use, though, with just the right amount of resistance. Each earbud can detect when it is removed from your ears and automatically pause or resume music, just as AirPods do.

They're also available in four colors, unlike AirPods: black, ivory, moss, and navy. Only the black model is currently available, the others are coming soon. It's odd (and a little disappointing) that the classic Beats red is nowhere to be found.

## AIRPODS ON THE INSIDE

Inside, the Powerbeats Pro feature the same H1 chip and sensors as the second-generation AirPods, so it has almost all the same features. You pair them to your iPhone by just opening the charge case near it, and check the battery levels the



**You pair and check battery on the Powerbeats Pro just as you would with AirPods. It's like magic.**

same way. You can trigger Siri with a hands-free “Hey, Siri” instead of tapping, and it works just as well as it does on the new AirPods. The H1 chip provides a rock-solid Bluetooth connection. I didn’t experience any pausing or skipping, even on a crowded commuter train where there must have been at least 20 other bluetooth devices in the area.

I had no problem triggering Siri, even on a busy street. Just don’t wait for the music to fade as Siri acknowledges that it’s listening. Say “Hey, Siri,” and then immediately follow it up with your command, without pausing.

You charge the Powerbeats Pro the same way you do AirPods, with a Lightning cable. They even come with a slick black USB-A Lightning cable. (Wouldn’t it be great if black iPhones did?) The earbuds charge pretty quickly—just 15 minutes will give you

almost a half-charge, and a full charge takes about 90 minutes or so. The case holds another 24 hours of charge, just like the AirPods case. There’s no option for a wireless charging case, though.

Though the base technology is the same as that in the AirPods, you can’t expect AirPods

battery life. You can expect double. The Powerbeats Pro are rated for a phenomenal 9 hours of music playback and 6 hours of phone talk time. I didn’t listen to music for 9 hours in one sitting, but it did take several multi-hour sessions before the earbuds ran out of juice. They’ll easily make it through a long flight without having to go back in the case.



**Four eartips should be enough to give anyone a comfortable fit. And dig the black Lightning cable!**



**You're definitely not going to get the Powerbeats Pro charging case (left) in your pocket. It dwarfs the AirPods case (right).**

## BOTTOM LINE

The Powerbeats Pro are better overall than the second-generation AirPods, but there are some trade-offs. At \$249, they're \$90 more expensive, for starters. And if you really want wireless charging, it's not an option.

Part of the reason AirPods don't sound as good is because they rest lightly in your ears, instead of making a tight seal with rubber ear tips. This means more of your environment's sounds make it through, which can be valuable in some situations and undesirable in others.

AirPods are also much smaller and lighter. The earhooks

on the Powerbeats Pro make them too bulky to fit in a tiny dental-floss-style case. The big clamshell case just won't fit in your pocket. And their stay-put design make them a little cumbersome to take on and off frequently. If you just want to answer short phone calls with your wireless earbuds, the AirPods are much more convenient.

If you want to block

outside noise, wear your earbuds during rigorous activity, listen for long periods without recharging, or if you really care about sound quality, the Powerbeats Pro are a better choice. If you need to hear your surroundings, or

you put a premium on pocketability and quickly placing or removing your earbuds, or just if price is a critical factor, you'd be better off with AirPods.

Now that Apple's own Beats subsidiary has officially one-upped Apple's true wireless headphones, I look forward to Apple returning the serve. Maybe with a pair of noise-cancelling studio headphones? ■



### Powerbeats Pro

#### PROS

- Good sound quality.
- Comfortable fit.
- Epic battery life.

#### CONS

- Pricey.
- Case is too big for your pocket.

#### PRICE

\$199.95

#### COMPANY

Apple





# Urbanears Rålis Bluetooth speaker: Rich, smooth sound emanates from this big, heavy speaker

It uses a sophisticated technique to make the sound quality very consistent in just about any direction.

BY SCOTT WILKINSON

According to its website, Urbanears is “a collective out of Scandinavia” that is most widely known for its high-quality yet affordable headphones. But the

company also offers a portable Bluetooth speaker called the Rålis, which offers sumptuous sound and a surprisingly consistent tonal quality no matter where you are within its sound field. (TechHive

reviewed Urbanears' Baggen and Stammen Wi-Fi speakers in May 2018 [[go.macworld.com/bagn](https://go.macworld.com/bagn)].)

## FEATURE SET

The Rålis is quite substantial, measuring 7.7 x 7.2 x 5.4 inches (H x W x D) and weighing in at a hefty 6.2 pounds. A thick canvas carrying handle lets you schlep it anywhere, though it's fairly bulky and heavy, making it somewhat less convenient than other models. Its simple, streamlined visage epitomizes classic Scandinavian design, and its IPX2 water-resistance rating means it will survive a bit of splashing.

Behind metal grilles within a rear-ported cabinet, two 2.0-inch mid/tweeters are powered by 5 watts each, and one 4-inch woofer gets its own 10W amp. One mid/tweeter faces forward, while the other one faces rearward; the woofer faces forward with a port on the back. The frequency response is specified from 50Hz to 20kHz (no tolerance given).

The Rålis uses what Urbanears calls a "Blumlein technique," which is based on the work of audio pioneer Alan Blumlein. The onboard DSP compares the left and right channels of the incoming stereo signal and identifies similarities and differences between them. It optimizes the common and difference signals separately before mixing them together.

Interestingly, the front and rear mid/tweeters emit different sounds, but they aren't simply the left and right channels of the original stereo signal. According to Urbanears, "The two signals coming out in the front and back differ from each other in a much more complex way." As a result, "The sound is not only different and bigger, it is also more versatile for outdoor usage and life on the road. There are no sweet spots here; this product gives you a true 360° sound experience where any angle is the best angle."

As a portable speaker, the Rålis battery provides more than 20 hours of play time on a full charge. Even better, charging



**The cabinet port on the back is joined by the AC power receptacle, a USB port that provides power for portable devices, and a 3.5mm analog-audio input. The connections can be covered with a small door when not in use.**

takes only two hours.

The primary input is Bluetooth 5.0 with support for the A2DP and AVRCP profiles; it does not support advanced codecs such as aptX or AAC. It can wirelessly connect to two different Bluetooth sources, allowing them to share DJ duties. The only other input is a 3.5mm analog-audio jack that lets you connect non-Bluetooth source devices.

In addition, a USB port lets you charge your portable audio source, which is mighty handy. I wish you could also play audio files from a USB device, which would require a built-in media player. I guess you can't have everything.

Most of the controls are found on the top of the unit. The flush-mounted physical buttons include play/pause, skip forward, skip back, volume up, and volume down. The power and Bluetooth pairing buttons are found on the side, along with a tiny LED indicator.

## PERFORMANCE

With a rear-firing mid/tweeter and a port on the back of the cabinet, it's best not to place the Rålis up against a wall. I placed it on a table far from any walls.

Starting with "Dark Moon, High Tide"



**The main controls on the top (left to right): skip back, play/pause, skip forward, volume down, volume up.**

from the album *Sound Magic, Vol. 1* by Afro Celt Sound System, the Rålis sounded rich, deep, and smooth on the synth-heavy track. The bass was a bit boomy, but not tremendously, and the rest of the sound was clean and clear.

I had the same impression listening to Huayucaltia playing "Un Espejo" from *Amazonas*. This South American band features pan flutes, guitars, bass, and percussion, which sounded rich and full with slightly bloated bass. The pan flutes, guitars, and percussion were clearly rendered.

For a bass-heavy track, I listened to

Paul Simon’s “The Boy in the Bubble” from *Graceland*. Once again, the Rålis had a deep rich sound with great rendition of Simon’s vocals. The bass was a bit boomy, but the effect worked better on this track than most.

Moving on to pure rock, I cued up Jimi Hendrix’s version of “All Along the Watchtower” from *Experience Hendrix—The Best of Jimi Hendrix*. As expected by now, the Rålis sounded great on the vocals and guitar, while the bass was still slightly boomy.

Turning to classical music, I played Three Ballads from the Catskills: III. The Old Spotted Cow, written by Norman Cazden, my wife’s father. The performance was by the Oslo Philharmonic Orchestra under Igor Buketoff. Interestingly, the bass was not as boomy on

this track as I had heard on the others, and there was good delineation of the instrumental solos and sections.

Finally, I listened to the Canon in D by Johann Pachelbel as arranged for the Pachelbel String Quartet and recorded on its eponymous album. The Rålis had a nice, rich sound—a bit thick, but with good definition of the four instruments. I found myself really liking the sound of the cello coming from this speaker.

## URBANEARS RÅLIS COMPARED TO THE JBL XTREME 2

For comparison, I put the JBL Xtreme 2 next to the Rålis and played the same tracks on both. I reviewed the JBL Xtreme 2 for TechHive ([go.macworld.com/jbx2](http://go.macworld.com/jbx2)), and I like its sound very much. Also, as of this writing, its price is \$219.95 on Amazon and JBL’s website, which is very close to the Rålis’ list price of \$199.99.

In general, I found the JBL to be less boomy than the Rålis, though it still had plenty of bass. This was especially apparent on “Dark Moon, High Tide,” “Un Espejo,” and “All Along the Watchtower.” Interestingly, “The Boy in the Bubble” sounded slightly closed in with a bit less bass.

I thought the orchestral track sounded a bit strident on the JBL, while the string quartet was a bit thinner. However, these

**The power and Bluetooth buttons are found on the side near the bottom, along with a tiny status LED.**





If it wasn't covered by her sleeve, you'd likely see this model's bicep bulge as she lifted the 6.2-pound Rålis.

differences were pretty minor; it took a side-by-side direct comparison to bring them out.

As I was listening to both speakers, I moved around to see how the sound changed at different positions. The sound of the Rålis was quite consistent except near 90 degrees off axis, where the mids and highs fell off somewhat, making the bass even more pronounced.

By contrast, the sound of the JBL changed more at different positions. That speaker reproduces a stereo signal from two pairs of forward-firing drivers (tweeter and woofer for each channel), and the tonal quality varied more at different positions

than the Rålis, though it wasn't anything that would be obvious without a direct comparison.

## BOTTOM LINE

I really like the sound of the Urbanears Rålis. It's rich, deep, and smooth with good clarity. The bass is a bit boomy on most tracks I listened to, but not enough to be a serious drawback—heck, bass heads will love it! And the so-called

Blumlein technique works pretty well at making the sound consistent over a wide area around the speaker.

My only real concern is its size and weight, which are both a blessing and a curse. The large size allows for a relatively large woofer, and the weight bespeaks solid build quality. But you won't be tossing this speaker in your tote bag with a bunch of other stuff; it requires some commitment to lug along.

If you make that commitment—which includes shelling out nearly \$200—the Urbanears Rålis will rock your next gathering without calling attention to itself. ■



### Urbanears Rålis

#### PROS

- Rich, smooth sound quality.
- 20-plus hours of play time on single charge.
- Solid build quality.

#### CONS

- Slightly boomy bass.
- Large and heavy.
- Not especially weather resistant (rated only IPX2).

#### PRICE

\$199.99

#### COMPANY

Urbanears





# Polk Legend L100: Higher performance than you'd expect from any bookshelf speaker

Technological innovations help these speakers deliver smooth and accurate sound.

BY JON L. JACOBI



Sound is like food in that tastes can vary wildly. So take it with your own particular grain of seasoning when I say that I've rarely heard bookshelf speakers I liked better than Polk Audio's Legend L100. There's a particular reason I

like them, but I don't want to spoil the surprise (such as it is).

## DESIGN AND FEATURES

The smallest speakers in a family that includes two floorstanding models ([go. macworld.com/2mdl](https://go.macworld.com/2mdl)), each L100 measures



**On the rear of the Legend L100 you'll find a bass dispersion plate. What appears to be a hole is actually the inside of a cone that is aimed directly at the rear port to spread bass to the sides. It works quite nicely.**

13.64 x 7.78 x 11.29 inches (H x W x D) and weighs approximately 17 pounds. By my lights that's stretching the definition of bookshelf form factor just a mite. The unusual depth is due to the bass dispersion panel (the ribbed section in the image below) that's attached to the back of the speaker, spreading low-frequency waves emanating from the rear port.

You'll need tall and deep shelves to fit the L100, but you'd be better off placing

them out in the open, where the sound from the rear port can spread out without acoustical hindrance. Just sayin'.

Each speaker houses a 5.25-inch woofer and a 1.0-inch tweeter. The woofer is dimpled in an unusual pattern that the company calls "turbine," because the pattern resembles the blades of a fan. The tweeter is referred to as a "pinnacle ring radiator". That is, there's a tall (and sharp!) cone in the middle that disperses waves in a 360-degree (vertically) cupped pattern.

The L100 are 4-ohm (3- to 4-ohm, actually) speakers that will handle up to 160 watts per channel. Their gold-plated binding posts can accommodate banana plugs, spade connectors, or bare wire connections. Frequency response is rated at a somewhat ludicrous 43Hz to 50kHz. Ludicrous because only very young humans can hear 20kHz, let alone 50kHz. Indeed, as a matter of course, inaudible higher frequencies are filtered out as they can wreak havoc with the frequencies you can actually hear.

To be honest, though the L100 look nice enough, their appearance didn't shout "\$1,200 speakers!" to me right out of the box. That said, I'm also not entirely sure what \$1,200 speakers should look like. I don't like ostentatious, though, and the L100 will fit in just about any environment. They're just not conversation starters. At least not until you listen to them.

Upon said listening, I did begin to suspect I might be shooting a tad low in my financial estimates, which leads me to...

## SOUND

The L100 sound very, very good, although again—the usual caveat about differing tastes. I used a NAD M10 ([go.macworld.com/nm10](http://go.macworld.com/nm10)) streaming amplifier (rated to produce 100 watts continuous into 4 ohms) to drive the speakers, and the result was distortion-free to my ears from barely audible to 100. The sound color didn't vary unduly with loudness, though there was what I like to call the normal “graying” or lessening of apparent upper frequency reproduction at higher volumes, which is normal and varies by listener and environment.

What particularly impressed me about



**The Legend L100 are handsome, but not remarkable in appearance.**

the L100, and the reason I liked them so much (secret revealed!), was their bass reproduction. With no additional EQ, it was round and suitably punchy without being overly in your face. Absolutely dead-on for my tastes, but there's more there via EQ if

you want it.

Apparently, the aforementioned bass dispersion panel works quite nicely.

I've never heard a pair of speakers more well-tuned for my tastes out of the box. I never felt any compulsion to hit up the M10's EQ



**The L100 speakers can handle up to 160 watts per channel.**

during normal listening, at least with high-fidelity material. That said, if you're a mid-range junkie, aka, a JBL fan, you might find the L100's frequency reproduction a bit flat for your tastes. I'm talking faint impressions here, but I had that thought when listening, so I thought I'd pass it along.

I could babble on about sound field, isolation and so-on—so I will for just a bit. I found it particularly easy to pick out individual instruments in all sorts of material (orchestral, rock, dance, etc.) as well as hear what processing had taken place.

Indeed, if you're an EDM composer and want to know when you're over the top with your side-chain compression (using a signal from a second source to modulate compression on the primary material), the L100 will let you know. You won't find anything much more accurate outside of studio monitors. If all that is meaningless to you, that's my very roundabout way of saying the L100 are darn accurate (in a musical way) in their reproduction.

## BOTTOM LINE

If you have the cash, I can safely say you'll enjoy listening to Polk's Legend L100 bookshelf



Note the “turbine” dimples in the woofer. It’s a bit more difficult to discern the spire in the middle of the tweeter.

speakers, and they can handle a fair amount of volume without spoiling the party. Then again, I can say that for significantly cheaper speakers—such as

Yamaha's self-powered HS studio monitors that I use.

But those don't radiate sound around the room the way the L100 do, which is an important consideration if you're not planning on sitting dead center all the time—like when you're dancing around the room because of the L100's supremely well-tuned bass (and an appropriately catchy tune).

These are very, very good-sounding speakers from Polk. Give them a listen. ■



### Polk Legend L100

#### PROS

- Great, well-rounded sound.
- Highly accurate reproduction.
- Rear-port dispersion unit does great things for the bass.

#### CONS

- Oversized cabinets (largely due to the rear bass dispersion panel).
- Pricey.

#### PRICE

\$1,199

#### COMPANY

Polk Audio



# Etymotic ER4XR in-ear headphone: Top-notch sonics and a comfortable fit

With flanged ear tips and excellent sound, these in-ear headphones sound great.

BY JON L. JACOBI



If you have the money, the \$350 Etymotics ER4XR (Extended Range) in-ear headphone is tuned to near perfection, with just a smidgen more bass than their equally good-sounding and

like-priced ER4SR (Studio Reference) cousins.

## DESIGN

Etymotic claims on its website that the company invented the noise-isolating



in-ear headphone. But noise isolating simply means blocking your ear canal so you don't hear outside sound. This is not to be confused with active noise cancellation, a process by which ambient noise is recorded with an onboard microphone and then played back exactly out of phase with the original material to (mostly) eliminate it.

Truth be told, anything you stick in your ear will block some noise from reaching your ear drum, and some audio purists prefer that strategy over active noise cancellation. Either way, the more ambient noise you can block, the less you'll be tempted to turn up the volume so you can hear your music instead. And listening to music at too high a volume can result in hearing loss before you realize it.

Many earphone manufacturers rely on memory foam for noise isolation, because it forms a seal by expanding to fit the unique shape of your ear canal. Each of Etymotic's ear tips consist of three increasingly large soft plastic flanges, with the smallest entering your ear first, to reflect the decreasing diameter of your ear canal.

I very much liked this design, because once they're fully inserted, the ear tips stay in place without blocking all ambient noise. When you're out at and about, ambient noise helps you maintain situational awareness so you can avoid



**The ER4XR comes with a carrying case and alternate ear tips, including two sets of memory foam.**

being hit a bus (or any number of other potential disasters that could befall someone who can't hear what's going on outside their immediate field of view).

That said, the ER4, when fully inserted, do block an awful lot of noise. Etymotic claims a 35- to 42dB reduction, and while I don't have the laboratory equipment to verify that claim, I don't doubt it, either. I also found the three-flange design spreads the pressure on my ear canal more comfortably than a single piece of memory foam, and I didn't grow weary of them nearly as quickly.

Two alternate-sized ear tips are provided so you can choose which fits your

ears best. Etymotics also includes two pairs of foam tips if your experience with the comfort of the flanges doesn't match mine.

The ER4 are modular, so you can use any MMCX cable or Bluetooth adapter in place of the stock cable. Etymotic doesn't offer its own Bluetooth adapter right now, but the media relations contact told me one is in the works.

A replaceable filter inside the unit prevents ear-wax intrusion and also balances the sound. A removal tool is provided. Also in the box are a zipper carrying case, those extra ear tips, a shirt clip, and a 1/8-inch to 1/4-inch stereo adapter.

## SOUND

For \$350, any headphone had better sound very good. The ER4XR do. I A/B-tested them with several other headphones, plus several sets of speakers and they came off very well—better than I'd expected to tell the truth, and as musical to my ears as the best of my stuff. The XR stands for extended range, though the only thing that's extended compared to the like-priced ER4SR is the bass. And the range is extended with taste—just a nice dose to get the bass instruments more

involved in the mix.

If I had to be picky, I'd say I'd like a wee bit more high-end sparkle, but that's just a matter of taste, and sparkle can get tiring over the long run. The ER4XR are still parked in my Focusrite audio interface, which is rare when a review is over. I normally switch back to my full-sized, closed-back Sony MDR-7506 over-ear's almost immediately when a review is done. But the ER4XR sound as good and take up a lot less space!

## BOTTOM LINE

If you hadn't noticed already, I like Etymotic's ER4XR—a lot. They sound nicely balanced throughout the frequency

gamut, with just slight boosts where most people, including myself, like them. And as I said, I find the flanges far more comfortable for the long haul than memory foam—at least for me. You could spend a lot more and not get better.

You could also spend a lot less and get almost as good, something I feel compelled to say about any headphones priced more than a hundred bucks. Money aside, Etymotic, in my book, has pretty much nailed sound and comfort with the ER4 series. ■



### Etymotic ER4XR

#### PROS

- Nicely tuned, with slightly emphasized bass and mid-highs.
- Flange-style ear tips block most ambient noise.
- Very comfortable to wear for long sessions.

#### CONS

- Wired connection only (though MMCX connections mean you could use a third-party Bluetooth adapter).
- Pricy for the average user response.

#### PRICE

\$244

#### COMPANY

Etymotic



## TaoTronics TT-BH046 noise-cancelling headphone: Effective noise cancellation

Audio performance improves with ANC on, but it's still somewhat congested and veiled, especially in noisy environments.

BY SCOTT WILKINSON

In this noisy world, finding a quiet haven in which you can get lost in your favorite music is a godsend. One way to achieve this elusive dream is by wearing headphones with active noise

cancelling (ANC). Among the many such models available today is the TaoTronics TT-BH046 wireless headphone. It turns out to provide excellent isolation from your environment, but its sound quality leaves

something to be desired.

The TaoTronics TT-BH046 is an over-ear headphone with soft “protein” earpads and headband. It’s relatively lightweight at less than eight ounces. Each earcup holds a 40mm driver that is said to reproduce a frequency range from 20Hz to 20kHz (no tolerance given). The press release touts “HD sound with intense bass;” we shall see.

Like most such headphones, the primary audio input is Bluetooth—in this case, version 4.2 with support for the A2DP, AVRCP, SBC, and AAC profiles. It does not support the aptX codec. If you want to listen to a non-Bluetooth source—or the battery is dead—you can use the supplied 3.5mm cable that plugs into the bottom of the right earcup.

As I mentioned earlier, the TT-BH046 provides active noise cancellation (ANC). In this process, ambient sound is sampled by one or more built-in microphones, phase inverted, and mixed with the unaltered ambient sound, reducing its perceived level thanks to phase cancellation. This is generally most effective in the low frequencies.

TaoTronics calls its version “hybrid” ANC, which combines feedforward and



**The TT-BH046 incorporates a 40mm driver in each earcup.**

feedback techniques. Feedforward ANC orients the microphone to face away from the driver, and it can reduce the level of frequencies as high as 1kHz or so. It has no way to self-correct, however, because it does not detect the output of the headphone driver. Also, it covers a relatively narrow range of frequencies, so if it’s tuned to, say, 1kHz, it might not reduce the level of low frequencies.

By contrast, feedback ANC orients the mic to pick up sound from the headphone driver, which allows for self-correction—for example, if a user wears the headphone in an odd way that doesn’t completely cover their ears. Also, works in a wider range of frequencies than feedforward designs, but it can’t reduce the level of frequencies as high as the 1kHz range.

By combining both feedforward and

feedback ANC with two microphones in each earcup, TaoTronics' hybrid approach is designed to provide the best of both—reducing the level of a broad range of frequencies, correcting errors, and exhibiting less sensitivity to how a user wears the headphone. The company claims it can reduce ambient low-frequency sound by up to 96 percent.

Bluetooth and ANC both require power, of course, which the TT-BH046 provides with a 550mAh lithium-ion battery. Charging time is remarkably fast: 45 minutes to full charge, after which it will operate up to 30 hours with Bluetooth or 11 hours with Bluetooth and ANC. Even better, a quick five-minute charge will provide two hours of playing time with Bluetooth and ANC. This is undoubtedly thanks to a USB power capacity of 5V/2A rather than the more common 5V/1A capacity of many headphones. Of course, you need a 5V/2A USB power adaptor to get the fastest charge, which TaoTronics



**The soft “protein” earpads swivel 90 degrees for increased comfort and to fit within the included carrying case. The length of the headband is, of course, adjustable.**

does not supply.

Another nearly universal feature of Bluetooth headphones is the ability to accept or reject phone calls while listening to music. The TT-BH046 also lets you redial the last number and mute the call. The microphone for phone calls is separate from the ANC mics.

## USER INTERFACE

All controls are found on the right earcup. On the back of the earcup, the power on/off button performs several functions. Naturally, it turns the power on and off by holding it for a couple of seconds. It also





**Controls and most connections are on the right earcup. Back to front: (1) power on/off, play/pause music, answer/hang up, redial, Bluetooth pairing; (2) volume up/skip to next track; (3) volume down/skip to previous track; (4) 3.5mm aux input; (5) power/Bluetooth LED indicator; (6) one of the microphones; (7) ANC switch with green LED. On the left earcup: (8) Micro-USB port and (9) LED charging indicator.**

The only other control is the ANC switch on the front of the right earcup, which slides down to engage ANC. Interestingly, you can turn on ANC even if the headphone's main power is off, which I assume would extend the battery life if you just wanted quiet without music.

serves are the play/pause button by pressing it once, which also answers and hangs up phone calls. Hold the button for three seconds to reject a call, or press it twice to redial the last phone number. Finally, hold the button for five seconds to enter Bluetooth pairing mode.

Also on the back of the earcup, the volume up and down buttons form the ends of a rocker switch; they are slightly raised, making them easy to find by feel. Press one or the other to increase or decrease the volume, or hold one or the other to skip to the next or previous music track. Press both simultaneously to mute the music or phone call. All this multifunctionality can be confusing, but it is an efficient use of limited space.

The 3.5mm input for a wired connection to the source is located at the bottom of the right earcup, along with a tiny LED that indicates power and Bluetooth status. A Micro-USB port on the bottom of the left earcup lets you charge the TT-BH046's battery with the included cable, and an LED next to it indicates the charging status.

## AUDIO PERFORMANCE

The TaoTronics TT-BH046 paired to my iPad without a problem. When I first put the headphones on, I noticed that the opening in the earcups is larger than many over-ear models, making it seat easily on my head. Also, the swiveling earcup gimbals rotated to match the angle of my head near my ears.

Before playing any music, I turned ANC on and off in a quiet environment. As I've heard from other ANC headphones, the TT-BH046 produces a soft hiss when ANC is on. It is more pronounced than others I've heard, but I still think it's insignificant when playing music—or with no music in a noisy environment.

I started my listening with “Europa” from the album *Caminos* by Latin-fusion group Alturas. The instrumentation includes acoustic guitar, electric bass, Latin percussion, synth strings, and pan flute. With ANC disabled, the overall sound was somewhat congested and veiled with boomy bass, though the guitar was nicely rendered. Turning ANC on cleared up the sound, and the bass was better balanced with the rest of the instruments, though the sound was still slightly veiled.

Next up was “Tropical Breeze” from *Freedom at Midnight* by pianist David Benoit. Aside

from piano, the instrumentation includes electric bass and drums as well as soprano sax. Without ANC, the sound was quite rich but slightly closed in with bloated bass that obscured the drums. Engaging ANC cleaned up the bass and made the overall sound somewhat thinner but with better balance and clearer drums.

Turning to some country music, I listened to “Voice Inside My Head” from *Taking the Long Way* by the Dixie Chicks. This is a great mix that's heavy on guitars with electric bass, drums, and pedal-steel guitar as well as solo and background



The TT-BH046 comes with a hard-shell travel case as well as a dual-pin airline-audio adaptor. I haven't needed one of those adaptors for many years, but most travel-headphone manufacturers still include them.

vocals. With ANC off, the sound was thick and heavy with boomy bass, while turning ANC on produced much better, more balanced sound with cleaner bass and more upfront vocals. There was, however, still a slightly veiled quality to the sound.

Eric Clapton's "Change the World" (in this case from *Clapton Chronicles: The Best of Eric Clapton*) is a beautiful tune that the TT-BH046 does not serve well with ANC off. As I'd come to expect by this point, the bass was quite bloated, more so than the other tunes I had listened to, with a congested sound that obscured Clapton's vocal.

With ANC engaged, the overall sound was still somewhat thick, but the bass was better balanced with the rest of the instruments, and the vocal was more present.

For a bit of world music, I played "Atlantic Bridge" from *Out of the Air* by Davy Spillane, a master of the Irish uilleann pipes. These pipes are related to the Scottish bagpipes, but they are supplied with air from a bellows under the arm rather than the player's lungs. The track



**Like most Bluetooth headphones, the TT-BH046 lets you accept calls on the connected phone.**

includes a rhythm section with electric guitar and bass. As before, without ANC, the sound was congested with bloated bass, whereas with ANC engaged, the sound really opened up with tighter bass and the pipes more upfront.

Moving on to classical music, I listened to "Selig sind die Toten" from *Ein Deutsches Requiem*, Op. 45 by Brahms as performed by the Monteverdi Choir and Orchestre Revolutionnaire et Romantique



The openings in the TaoTronics are larger than you'll find on many over-the-ear headphones.

under the direction of John Eliot Gardiner. With ANC off, the overall sound was still a bit thick but better than it had been with the previous selections: the choir sounded rich, and the dynamic range was very good, though the low end was still a bit boomy. Turning ANC on, the sound had more air and the low end was better balanced.

Gardiner is one of my favorite conductors of Baroque music, so I listened to the Symphony (instrumental introduction) from *The Messiah* by Handel as performed by the English Baroque Soloists under his direction. With ANC off,

the overall sound was somewhat thick, especially in the bass, but the dynamics were quite good. Turning ANC on, the sound became tighter and drier with better balance between and rendition of the instrumental sections.

Finally, I took the TT-BH046 on a drive around my neighborhood to test its ANC with more ambient noise than I have in my house. The ANC worked wonderfully well with no music on, reducing engine and road noise dramatically. However, when I played some music, the sound was veiled and closed in—less so than with ANC off, but still clearly

noticeable. I also tried the Edifier W860NB ([go.macworld.com/w860](https://go.macworld.com/w860)) that I recently reviewed for TechHive, and it definitely sounded more open with its ANC on.

## COMPARISON WITH THE PSB M4U 8

I recently reviewed the PSB Speakers M4U 8 headphones for TechHive ([go.macworld.com/m48u](https://go.macworld.com/m48u)), and I consider it my reference for Bluetooth headphones with ANC. So, I compared its sound with that of the TT-BH046 by listening to the same selections on both models.

In terms of comfort, the M4U 8 is quite a bit heavier than the TT-BH046—nearly 13 ounces versus less than eight ounces. Also, the opening in the PSB earpads is smaller than the TaoTronics, making them slightly more difficult to seat on the head. However, the PSB earpads have more room within the opening, so they are completely comfortable once they are seated properly.

The first thing I noticed about the sonic difference was that the M4U 8 is a lot louder at a given volume setting. Fortunately, the iPad remembers the volume setting for different Bluetooth devices, so I was able to set roughly equal volumes for the

two headphones (60 percent for the TT-BH046, 50 percent for the M4U 8) as I switched between them.

Listening to various tunes, it was immediately apparent that the M4U 8 sounded much better with ANC off than the TT-BH046 in the same condition. The PSB's sound was rich, full, and much better balanced without congestion or bass bloat. This was especially evident on the Dixie Chicks' "Voice in My Head" and Clapton's "Change the World," but it was clear during all my listening.

Turning ANC on, the bass became a bit boomy, as I had observed in my review of the M4U 8. By contrast, the sound quality of the TT-BH046 improved when I engaged ANC, though it was still slightly

closed in. I prefer the sound the M4U 8, even with ANC on, but the PSB costs four times as much as the TaoTronics, so it's no surprise that it performs better.

During my road trip around the neighborhood, I also listened to the M4U 8 with ANC on to compare it with the TT-BH046. (Of course, I pulled over each time I switched headphones!) The PSB was much cleaner, clearer, and more open. It also sounded better than the Edifier W860NB, which sounded better than the TT-BH046. ■



### TaoTronics TT-BH046

#### PROS

- Battery charges very quickly.
- Very comfortable.
- Low cost.

#### CONS

- Veiled, closed-in audio performance unless ANC is engaged.
- Bloated bass performance with ANC disabled.
- Confusing multifunction buttons.

#### PRICE

\$79.99

#### COMPANY

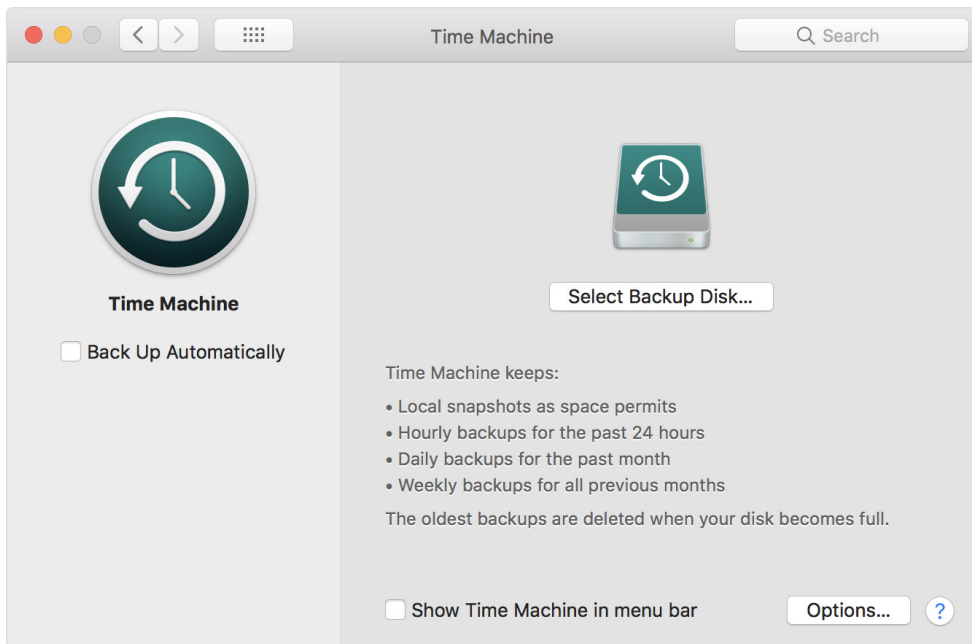
TaoTronics



## Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN



### DON'T USE CLOUD BACKUP SERVICES TO MAKE COPIES OF YOUR TIME MACHINE VOLUMES. HERE'S WHY

Time Machine is a simple and generally effective way to make an ongoing archive of a Mac's files and folder structure. But it's only a single copy of your data. The same goes for third-party apps that can clone a drive (make an exact duplicate) or make

incremental archives that let you retrieve a snapshot of the current state of a volume or older versions of files that have been modified. These packages include Arq, Carbon Copy Cloner, ChronoSync, and SuperDuper!, as well as many others.

That single, on-site copy is a problem. It's why I've recommended for many years that people also use a cloud-based backup service that has robust encryption.

My current top pick for home use for price, performance, and encryption options is Backblaze, but Carbonite and iDrive are also contenders depending on the features you need. CrashPlan's makers, Code42 Software, shut down its personal backup offering, but has an option for small-to-medium-sized businesses that some people transitioned to.

Now you might think that on top of that belt and suspenders (Time Machine or a local copy plus cloud archives), you should back up your Time Machine volume to an online cloud service too. This would give you the best of both worlds, right? An Apple-native Time Machine volume you could restore via macOS's deep support, and an extra copy of your data. And you'd have three extra copies (albeit across just two locations) of the same data.

Unfortunately, it doesn't play out in practice. Backblaze ([go.macworld.com/bkbl](https://go.macworld.com/bkbl)) specifically omits any volume that's marked as a Time Machine backup, while Carbonite discourages it ([go.macworld.com/cbnt](https://go.macworld.com/cbnt)) and Code42 explains the drawback ([go.macworld.com/cptm](https://go.macworld.com/cptm)). iDrive is rather neutral ([go.macworld.com/idrv](https://go.macworld.com/idrv)) on the matter. Some of this is business model: Backblaze includes unlimited storage as does CrashPlan, while Carbonite and iDrive have maximum storage amounts and options to purchase more.

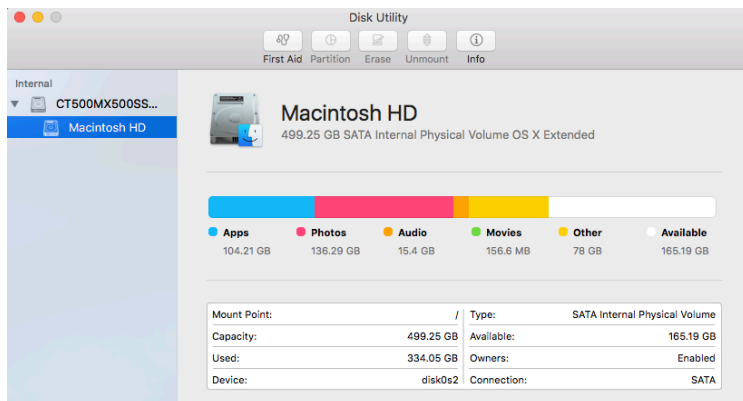
## The issue with Time Machine and online backup

The primary issue is that Time Machine uses a special kind of alias, called a hard link, to create complete snapshots for each point in time that a backup operation happens. That omits making a fresh copy of any file that remains the same between those backups. These hard links can appear multiple times in a volume, but all refer to a single file.

It's clever, but it only works within a single volume. If you back up files from that volume using file-based archiving software, hard links are copied each time they appear. (This also makes it difficult to copy a Time Machine backup from one volume to another without bloating the size.)

Code42 tested how quickly Time Machine archives grew with a 53GB volume on a Mac. Over a week, that Mac's Time Machine backup reached 63GB. However, CrashPlan's archive grew to 303.5GB. If you have caps or throttles on your broadband data upload, Time Machine backups can easily push you over, too, for this reason.

You can wind up with a compounded problem: If your Time Machine volume contains other data besides the Time Machine container, some of the cloud archiving services won't back up that non-Time Machine data! (This column was prompted by a reader who hit that issue



**Use Disk Utility to add a new partition (HFS+) to the drive that contains your Time Machine backup.**

with Backblaze.)

Here's some strategies on how to enhance and solve these situations:

**Segregate your Time Machine backup.** Use Disk Utility to add a new partition (HFS+) or volume within a container (APFS) to the drive that contains your Time Machine backup. APFS is easier than HFS+ in this regard, because a new volume in a container shares all available space, giving you flexibility. Once split, move your non-Time Machine data to the new volume or partition, and then you can have the cloud service back up that data.

**Rotate Time Machine backups off site.** I recommend using disk encryption for backup drives (Control-click the drive and choose the Encryption item), because at rest a macOS-encrypted volume is extremely secure. That can avoid you

worrying about the drive being stolen or examined when you're not around. macOS can automatically back up to multiple Time Machine destinations if they're connected at once, but it will also catch up destinations that you plug back in

after they're removed. Put one in safe-deposit box—though the New York Times warns that's not as secure as we thought—or at another location to which you have regular access.

**Add a clone to your mix.** Time Machine works best in my experience and opinion as an archive—retrieving older or deleted versions of individual files or the contents of folders—than for restoring a drive. It's also great for migrating from one Mac to another. With external drives so inexpensive, add one that uses one of the packages mentioned earlier that can clone the contents of your startup drive. These all offer “smart” updates, so that only files that need to be replaced or deleted on the clone are modified each time it runs. I have a nightly clone on my desktop computer, and a weekly one for my laptop.

## HOW TO CONVERT A CASE-SENSITIVE MAC HFS+ PARTITION INTO A CASE-INSENSITIVE ONE

Apple has long offered two versions of the same HFS+ partition formatting scheme used to create a filesystem for a Mac-mountable volume: “Mac OS Extended (Journaled)” and “Mac OS Extended (Case-sensitive, Journaled)”. With the addition of APFS formatting, that flavor is also available in case sensitive and insensitive versions. What a difference that “case-sensitive” makes!

Case-sensitive filesystems can allow multiple files to have the same human-readable name using different capitalization. **Blue dolphin.pdf** and **blue dolphin.pdf** and **bLuE dOLPhIn.PDF** are all considered different items to a case-sensitive filesystem. With the opposite, a case-insensitive filesystem, the default option for macOS in HFS+ and APFS, those files can’t co-exist: They’re all effectively the same name with a different appearance.

In olden Unix days, case-sensitivity

made sense in some contexts, and Apple offered a case-sensitive version of HFS+ for compatibility’s sake for those people who required it.

However, some Mac software—notably that made by Adobe and Valve—balks at case sensitivity. I’ve heard from and read of people who accidentally chose “case-sensitive” when setting up a drive, not realizing what they were getting

themselves into. They’d like to shift off that into the more standard case-insensitive format.

While there was software in the past that could convert a case-sensitive partition to a case-insensitive one in place without copying the data off, the firm that made that software has shut down.

(Coriolis Systems was a long-time Mac developer, and they generously made all their software free on closing ([go.macworld.com/crls](http://go.macworld.com/crls)). However, the last supported version of macOS is 10.13. Because this involves filesystem-level changes, I would not use this software with 10.14 Mojave or later.)

Instead, you have to make a clone,



reformat your partition, and copy the data back. For a startup volume:

- 1.** Clone the drive that has case-sensitive formatting to another volume using Disk Utility, SuperDuper, or Carbon Copy Cloner. (You could use Time Machine, but it's an inefficient way to restore an entire disk except in a pinch.)
- 2.** Make sure you have a separate, complete backup in case the one created in step 1 fails.
- 3.** Restart your Mac, and then hold down Command-R before the Apple logo appears to bring up macOS Recovery.
- 4.** Click Disk Utility in the list of options that appears.
- 5.** Select the internal drive or boot partition in the list at left.
- 6.** Reformat it using a case-insensitive option.
- 7.** Right-click it and select Restore.
- 8.** From the Restore From popup menu, select your clone. If it's a disk image, click the Image button to find it on a mounted drive.
- 9.** Click Restore and be prepared to wait a long while!
- 10.** When the restoration is complete, exit Disk Utility and select Apple menu → Startup Disk.
- 11.** Select the drive to which you restored your clone, and then click Restart.

If you're copying an external or non-boot volume, you can omit steps 3 and 4

above and launch Disk Utility from your Mac in the Applications → Utilities folder.

By the way, you have of course noted that OS X and macOS have always retained the capitalization you use in names as you type it in or a program names it. That's because the system is case preserving: It honors capitalization, but any variation in lower- and upper-case is ignored in finding a file or overwriting it.

## HOW TO LOAD A MASSIVE AMOUNT OF DATA INTO PHOTOS ON A MAC SET TO OPTIMIZE MAC STORAGE

iCloud Photos lets you keep full-resolution versions of your images and videos in iCloud storage, while letting you choose to store just optimized versions—thumbnails and low-res video previews—on your iPhone, iPad, or Mac. That's great, especially when you have more media than storage. When you need the full image or video, you can double-click it within Photos to retrieve it for local use.

The conundrum can come when you want to load a massive amount of media data into Photos on a Mac set to Optimize Mac Storage (in Photos → Preferences → iCloud) all at once instead of adding to it over time. The trick is to stagger your import. Let's say you have—as one *Macworld* reader did—600GB of media data and a 128GB disk drive in your Mac.



After setting Photos to optimized storage, import batches of data and wait for them to upload. You can follow upload progress at the bottom of the Photos window in the Photos view. You may have to bump the scroll a little to hit the very bottom where the library size is shown and the iCloud upload status displays.

Once each chunk has uploaded, you should be able to import another tranche. As new media is imported, Photos should automatically delete the local full-resolution copy of your image and video as long as it's been uploaded to iCloud.

The thumbnails and previews take up some space, but it's typically so much less than the originals that with tens of gigabytes available on your Mac, you should be able to store a 600GB library that contains mostly high-resolution images and videos. You could run into trouble only if you have a massive number of relatively low-resolution photos, but it's unlikely you would with a collection of images that require that much storage.

Now, I've argued previously that iCloud Photos shouldn't be your sole backup ([go.macworld.com/icph](http://go.macworld.com/icph)). If you only use optimized storage on all your devices, that's what iCloud turns out to be! You may

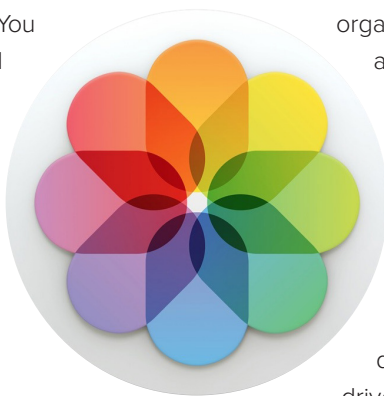
instead want to import photos onto an external drive first, then import from there to Photos, so that you always have a second local copy, even if the organization of the images into albums or folders isn't the same in both places.

You can also use a technique I described a while back, too, and occasionally do a time-consuming but useful full-resolution download using an external drive ([go.macworld.com/flrs](http://go.macworld.com/flrs)) connected to your Mac.

Apple hasn't yet fully embraced cloud storage as a "one tool in the arsenal" approach. While it does store data with redundancy, making its own multiple geographically dispersed backups of your data, it still doesn't provide a simple way to download all your stuff directly from iCloud.

## HOW TO OPEN ITEMS IN THE ENCLOSING FOLDER DIRECTLY FROM A SPOTLIGHT SEARCH IN MACOS

One might think after many years of Spotlight search being in macOS that there would be no new tricks. But a colleague on Twitter asked a reasonable question and many people chimed in with the same query: When viewing a list of results in a Spotlight search in





Spotlight can preview a path and open a file's enclosing folder with Command key combinations.

the Finder, how do you jump to see the item in the context of its enclosing folder rather than just opening the file?

The answer is simple: hold down Command and press the Return key or press Command-R. You can also hold down Command and double-click the item in the results list.

Holding down Command by itself reveals the path to the file or folder without opening the enclosing folder.

You may already know one more: press Command-Option-spacebar, and a Finder window opens with the focus on the search field so you can just start typing. ■

## Ask Mac 911

We've compiled a list of the most commonly asked questions we get, and the answers to them: [go.macworld.com/mac911faq](http://go.macworld.com/mac911faq) to see if you're covered. If not, we're always looking for new problems to solve! Email us at [mac911@macworld.com](mailto:mac911@macworld.com) including screen captures as appropriate.

*Mac 911* can't provide direct email responses or answers for every question and we don't provide direct troubleshooting advice. For that, turn to AppleCare, an Apple Store Genius Bar, or the Apple Support Communities.