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The one-year (12-issue) subscription rate is \$34.97; the two-year rate, \$59.97; and the three-year rate, \$79.97. Checks must be made payable in U.S. currency to *Macworld*. Please allow 3 to 6 weeks for changes to be made to an existing subscription.

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Starting with the June 2003 *Macworld*, back issues can be downloaded in digital format, from www.zinio.com (\$6.99; Mac OS X 10.1 or later required).

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PUBLICATION INFORMATION**January 2018, Volume 35, Issue 1**

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family's lives.

Tara Inskip



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BUZZED DRIVING IS DRUNK DRIVING.



**U.S. Department of
Transportation**



How to shop at the Apple Certified Refurbished store online and save money

BY ROMAN LOYOLA

If you're looking for a way to save some money on new Apple products, try checking out the Apple Certified Refurbished store

(go.macworld.com/dea1). You can find some good deals on Macs, iPhones, iPads, and more. Here's a quick guide with links to the best deals you can find

on the refurb store, along with a FAQ guide if you want to know more about the ins and outs of the Apple Certified Refurbished store.

WHAT'S THE DIFFERENCE BETWEEN THE APPLE CERTIFIED REFURBISHED STORE AND THE APPLE STORE?

The Apple Certified Refurbished store sells gently-used products that have been returned to the company. Apple repairs and tests these products to make sure they are in like-new condition. The Apple store, however, sells only new products that have never been opened and used.

Strangely, finding the Apple Certified Refurbished store isn't obvious. On Apple.com, scroll to the very bottom of the page, where you'll find a site directory. Under Apple Store, you'll find a link for Refurbished and Clearance (go.macworld.com/dea1).

Apple also has a Clearance store (go.macworld.com/c1ea), which is described as offering "discount prices on new products," but as of this writing, this store has nothing for sale.

WHAT DOES 'CERTIFIED REFURBISHED' MEAN?

The items in the Apple Certified Refurbished store are products that have been purchased and returned by other

customers. Apple puts these products through what they call a "stringent refurbishment process" before they are put on the virtual shelves.

Apple says that each product is thoroughly tested and any problematic hardware components are replaced. The exception is with the Apple Watch and Apple Pencil: If these items need new parts, they aren't put up for sale.

Each product goes through a quality assurance inspection, and is also cleaned, inspected, and repackaged with complete documentation, cables, and anything else that usually ships with that device. These products are essentially like new.

WHAT KIND OF WARRANTY COMES WITH AN APPLE CERTIFIED REFURBISHED PRODUCT?

Apple includes a standard one-year limited warranty. Learn more about Apple's hardware warranties at go.macworld.com/wara.

IS APPLECARE AVAILABLE FOR APPLE CERTIFIED REFURBISHED PRODUCTS?

AppleCare is available. For an additional fee, you can get two or three years of coverage and support. Read our guide to AppleCare for more information at go.macworld.com/care. ■



Apple's laptop designs are cornering Mac users

BY JASON SNELL

It's funny, Apple crowing about its biggest Mac revenue year ever (go.macworld.com/year) at a time when there seems to be quite a bit of unrest about the Mac out there on the Internet. Is the Mac doing well or is the

Mac user base frustrated at the past few years of Apple's stewardship of the platform? It might be a little bit of both.

I detailed some of Apple's controversial laptop design decisions (go.macworld.com/dtal) recently. To be

sure, there are classes of users for whom the latest generation of MacBook Pro models, introduced in October 2016, are appreciably worse than the previous-generation models (go.macworld.com/prev). But I've also talked to a lot of people who have bought new MacBook Pros and love them.

It's possible that this swirling dissatisfaction with Apple's laptop direction has a little whiff of selection bias. People who are more likely to listen to Apple-focused podcasts and read Apple-focused websites are probably more likely to be in more technical fields with specific requirements that might not be well served by Apple's design decisions. They're also probably more likely to be persnickety about the details of their computer choices than the general public.

This doesn't mean that the criticisms targeted at the MacBook Pro are invalid, though it might mean that they're not representative of how the entire Mac-buying universe feels. Record Mac revenues driven in large part by the success of the MacBook Pro suggests that they aren't; then again, sales and revenue aren't the same as customer satisfaction.

"Customer Sat" is one of Tim Cook's favorite metrics. Are the people who bought new MacBook Pros happy with their purchases? How many of them bought the new laptops because it had been years since a major laptop upgrade

and they'd take whatever they could get? Many companies are given some leeway from loyal customers; great sales today could be hiding rotten customer satisfaction rates that lead to lower sales in the future as people abandon the platform. I don't think there's about to be a groundswell of disaffected MacBook Pro owners moving to Windows, but it's worth keeping in mind that record revenues don't tell the whole story about the long-term health of a product line.

I have a pet theory that every design decision Apple makes on the Mac product line is magnified by the fact that it's the only company that can make Mac hardware. Apple does seem to like making opinionated product decisions that sometimes push design to an extreme. That can be a problem: If Apple makes an ultra-thin keyboard with reduced travel and questionable reliability, and puts that keyboard on every new laptop design, what happens if you're a Mac laptop user who just can't stand the keyboard?

Marco Arment is right when he describes the old MacBook keyboard design (go.macworld.com/prev) as "completely unremarkable, in the best possible way...neither fanatically loved nor widely despised." Apple's mistake isn't that it designed a clever new keyboard that decreases travel while increasing tactile feedback in order to make the MacBook



ultra thin—it’s that it made a keyboard without broad appeal and then forced it into all of its new laptop designs. I love Apple’s tendency to make bold design decisions, but as the single hardware vendor on the Mac platform, Apple’s designers have a responsibility to create features that don’t leave users with nowhere to turn. Better to make a keyboard that nobody loves (but everyone can use) than something loved by a quarter of users, met with indifference by half, and despised by the rest.

Does this sort of attitude lead to mediocre and timid design? I suppose it could, but another way to approach bold, opinionated design is to offer customers options. The iPhone SE, iPhone 7/8, iPhone 7/8 Plus, and iPhone X are all pretty different phones—and choice is good. This

is why I’ve argued that the Mac mini has value as a “release valve” for the Mac platform ([go. \[macworld.com/valv\]\(http://go.macworld.com/valv\)](http://go.macworld.com/valv)). It frees up Apple to make more opinionated iMacs and Mac Pros, because the Mac mini is always there as a fallback.

When I look at Mac laptop users today, they seem cornered by Apple’s design

decisions. I hope that the next generation of MacBook and MacBook Pro models show a little more diversity—designs with their own personalities and strengths and weaknesses. The more diversity in design, the more opportunity Apple has to make bold product-design decisions without cornering its most loyal users.

My daughter’s MacBook is the first Mac laptop I’ve bought in years. My go-to travel laptop is still an 11-inch MacBook Air from 2013. It’s solid, with an i7 processor and a good keyboard, but no Retina display. But the truth is, I’ve dealt with Apple’s latest round of laptop design decisions by dropping out of the game altogether. Most of the time, my “laptop” is an iPad Pro. In a way, I suppose, it has acted as my own sort of escape valve—and I get to choose which keyboard I use with it. ■



Apple's upcoming iMac Pro might have an iPhone chip

BY MICHAEL SIMON

The new iMac Pro (go.macworld.com/ipr0) will be Apple's fastest Mac by a country mile. With 18 CPU cores, Radeon Vega graphics, and 128GB of RAM, there isn't much Apple's newest all-in-one won't be able to do. But a recent discovery ([\[macworld.com/d1sc\]\(https://macworld.com/d1sc\)\) by Apple code spelunker Steven Troughton-Smith suggests an iPhone chip might be along for the ride.](https://go.</p>
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Troughton-Smith has gotten his hands on Apple's new BridgeOS 2.0 software, which will presumably be part of the

upcoming iMac Pro's software package. And while it didn't divulge quite as much as the HomePod firmware leak (go.macworld.com/leak) earlier this year that spilled the beans on the iPhone X (go.macworld.com/1phx), it does include some very interesting things. Chief among them is a reference to a version of Apple's A10 Fusion chip, the same silicon that powers the iPhone 7.

Why this matters: One of the secret weapons that makes the iPhone so great is Apple's home-grown iOS chips, and it seems to be inevitable that Apple will one day use them to power a MacBook. In fact, the A11 Bionic chip inside the iPhone 8 and X is as fast as the latest 13-inch MacBook Pros in some workloads. So, while most people probably won't even notice the A10 Fusion chip in the iMac Pro, it brings Apple one step closer to building a Mac that isn't powered by an x86 chip.

POWER MOVE

Using iOS-style processors isn't foreign to Apple—the MacBook Pro with Touch Bar (go.macworld.com/mbtb) uses a T1 chip that runs a variant of iOS—but this would mark the first time an A series chip makes an appearance inside a Mac. There has been speculation for years that Apple has plans to use its iOS chips to power mainstream MacBooks, but the

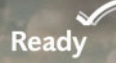
inclusion inside a \$5,000 iMac already powered by an Intel Xeon processor is certainly a surprise.

Troughton-Smith surmises that the chip will be responsible for opening up hands-free Siri support on the Mac. When we learned the new iMac will finally allow (go.macworld.com/talk) you to speak to your Mac, it was assumed that a specialized chip like the T1 would be the catalyst, not a full-fledged A10 chip. Currently, the only way to summon Apple's digital assistant on a Mac is to click the icon on the screen or Touch Bar, or set up a keyboard shortcut. Presumably, the new functionality would allow users to say, "Hey Siri," to activate the assistant.

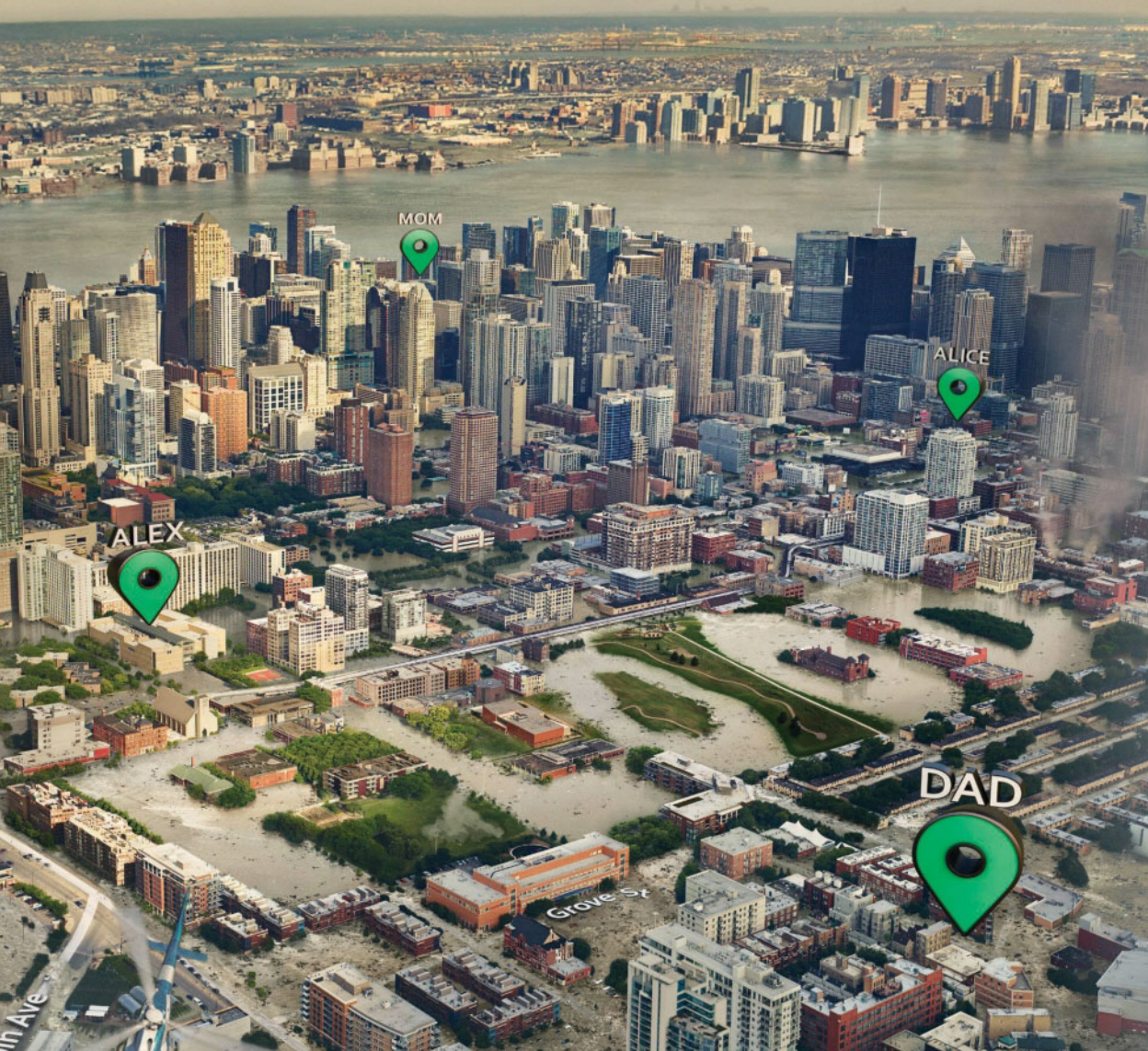
The new chip will also seemingly be used for macOS boot and security process, a move that "lets Apple experiment with tighter control without the rest of the userbase freaking out," says Troughton-Smith. Based on his findings, the A10 chip could be responsible for booting up the Intel chips, and he reckons that "it's safe to assume this A10 is in charge." Additionally, the chip could be used for controlling the FaceTime camera.

Apple's new space gray iMac Pro starts shipping in December at a starting price of \$5,000. It will be customizable with up to 18-core Intel Xeon CPUs, Radeon Pro Vega graphics, 128GB of RAM, and 4TB of storage. ■

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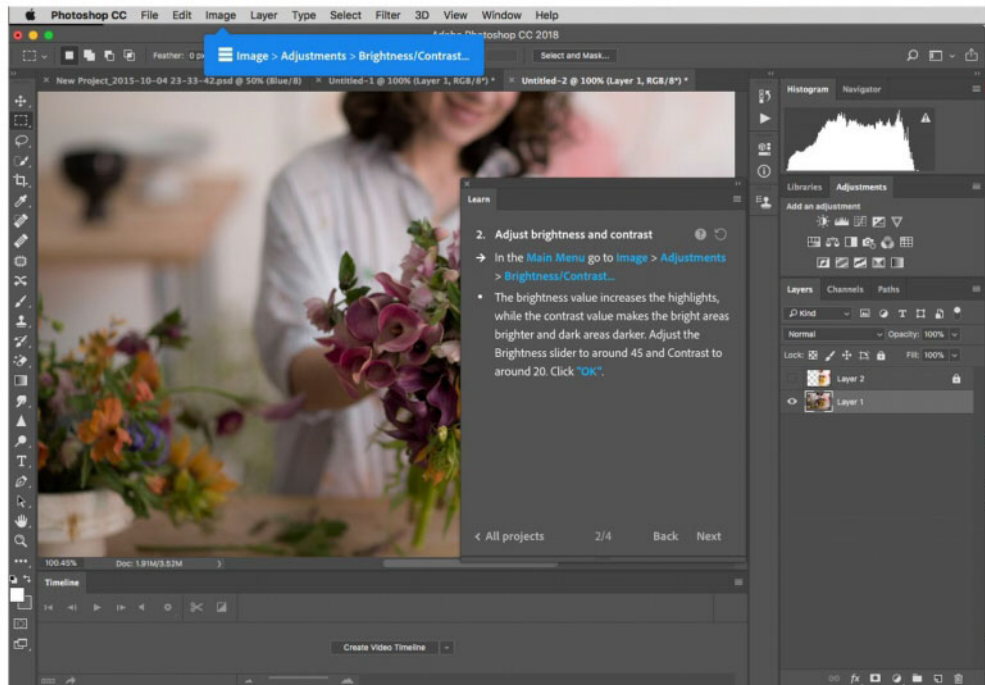
and paste, and more, Photoshop CC 2018 welcomes newcomers by incorporating training directly into the app.

IN-APP LEARNING

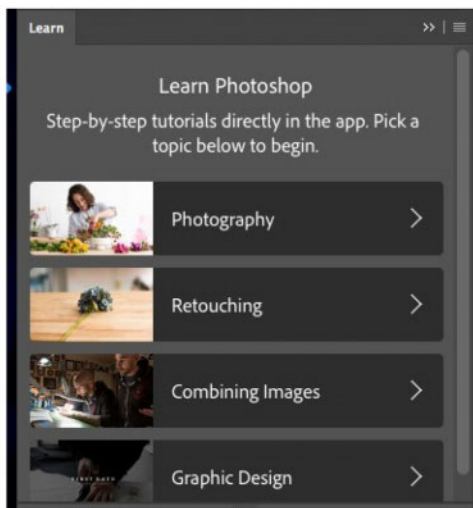
While Adobe pioneered step-by-step post-process recipes in its consumer Elements line (go.macworld.com/e1em), it always relied on photo pros to use documentation or tutorials to figure out the right moves for themselves. That changes with Photoshop CC 2018 wherein interactive software how-tos are now

incorporated into the interface via the new Learn panel. It's not exactly the same as Elements, where you can choose which photos to put through the process.

Instead, Photoshop CC 2018 provides annotated steps using its own sample images covering categories like Photography, Retouching, and Graphic Design, each containing three to five instructional modules. You can follow the steps in the example or bring up the additional text instructions, available from the Help icon. It would be even better if



You can view step-by-step instructions, but only on Photoshop's sample images.



Workflow recipes arrive with Photoshop CC 2018.

you could start with your own photos in the interactive examples, but it's a step in the right direction.

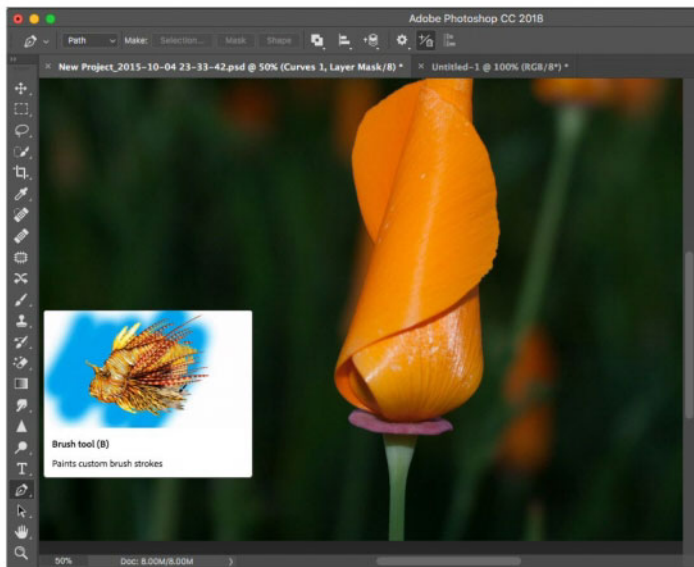
Also new are Rich Tooltips—enhanced labels complete with tiny graphics and animations—that demonstrate how each tool works, though not every tool has annotated instructions. Perhaps Adobe will build out that feature so the majority of tools have visual tips, but this is a good start. Photoshop jockeys who know every tool by heart, can disable the feature in the preferences.

EASY ACCESS TO LIGHTROOM

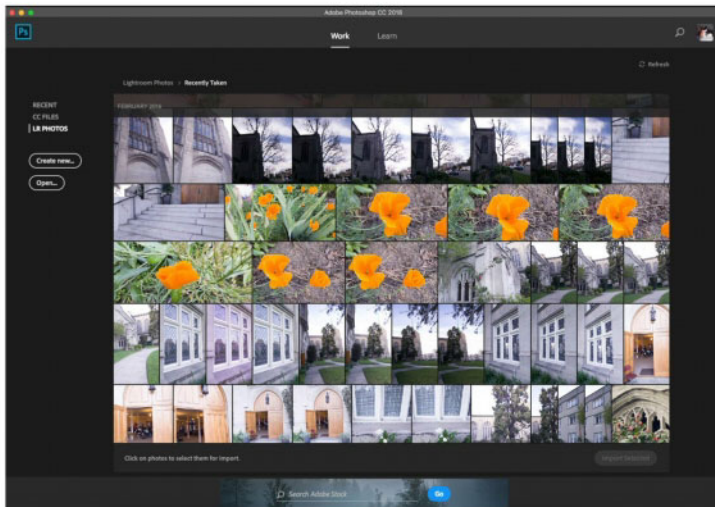
Photoshop users can now hook into their Lightroom photos via the cloud, with all

synced images accessible from the app's Start screen. All you need to do is click on the photo you want, and it will be imported directly into the app. No fuss, no muss, and a genuine time-saver. Most of the time I was able to access photos from the cloud fairly instantaneously. However, occasionally, downloading was slow or failed entirely.

Alas, Adobe giveth



Tool Tips are enhanced with tiny animations.



Your Lightroom library is now accessible from the Start screen.

and Adobe taketh away. How? For several years, Photoshop has been available only by subscription, either via the standard Creative Cloud for \$49 per month or the Creative Cloud Photography Plan for \$9.99 per month, but Lightroom was still available as a perpetual license. That has changed. With Photoshop CC 2018 and a rebranded Lightroom Classic CC for desktop, Lightroom is now subscription-only. The stand-alone Lightroom 6 will continue to be sold, but it's the last perpetual Lightroom version, with Adobe's support for camera updates coming to a halt at the end of 2017. Photography Plan subscribers get both Lightroom Classic CC and a simplified, mobile-oriented, cloud-friendly Lightroom CC (formerly Lightroom

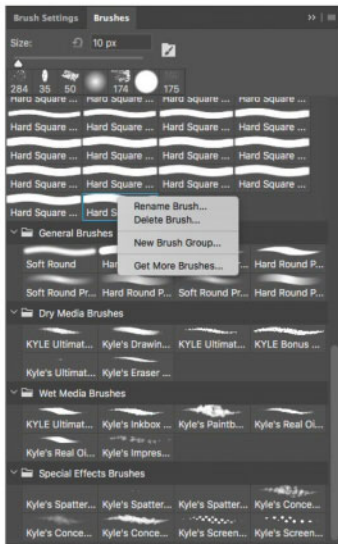
for mobile) with their subscription, along with 20GB of cloud storage and the Spark suite of cloud apps.

Adobe's Sensei (go.macworld.com/snsi) artificial intelligence engine also springs to life in the Photoshop Start screen, letting you search directly for untagged photos or visual content from

your synced images. It also automatically integrates relevant Adobe Stock content and instructional videos.

BRUSH REVOLUTION

Adobe has overhauled its brush management workflow to ease and enhance handling and organization. You can now drag and drop to organize brushes and group them into folders and subfolders for easier, more intuitive access. Say you're working on a painting for which you have gathered a specific brush collection, you can now access all those brushes in a single folder. You can now save options like opacity, flow, blend modes, color, and size within brush presets and convert all your



Drag and drop brushes to organize and access them in any order or group you want.

current brush tool presets into brush presets in one go. But you can still work the old way, if you prefer.

Photoshop CC 2018 features new brushes by designer Kyle T. Webster, whose company, KyleBrush.com Adobe just purchased. Over 1,000 of Webster's custom designed brushes are now available for free via the Get More Brushes menu.

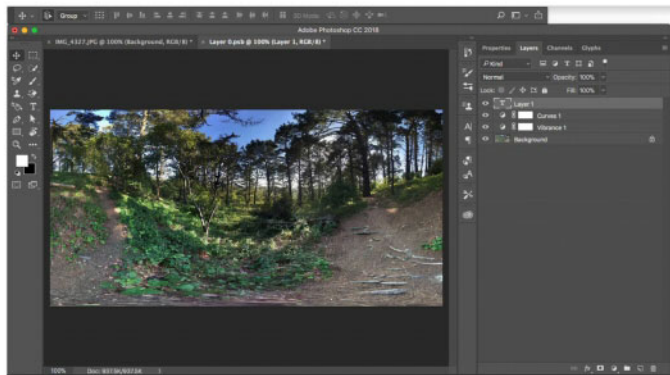
Brush stroke smoothing, which can now be controlled more granularly in the Options Bar, removes the jaggies from your brush, eraser,

pencil, and mixer brush strokes. The smoothing feature has several modes and an optional tiny marker called a leash tail so you can follow the brush path visually as you draw.

360 DEGREE EDITING FOR VR

The new Photoshop lets you open and edit 360-degree equirectangular spherical panoramas that you can export for use with VR and panoramic viewers. Editing 360-degree panos works only in Photoshop's 3D workspace, but with it you can accomplish most of the effects you are accustomed to on your 2D images, which is quite impressive.

Once you import your 360-degree pano, you can edit it by drawing, painting, adding adjustments, removing objects, hiding seams, or adding text. For non-destructive layer based edits, you can choose the spherical map, and in the



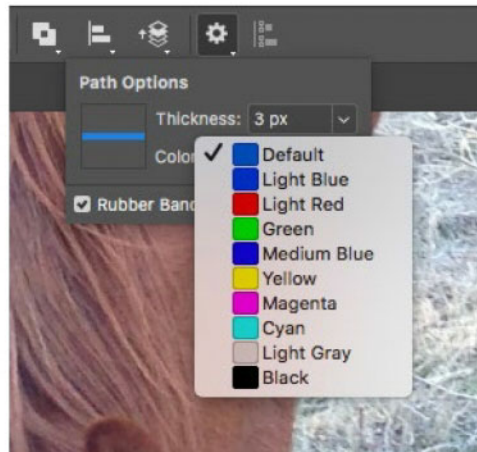
Edit 360-degree panos and export to VR and panoramic viewers.

Layers panel, add layers with various edits. When you're done, you can export and post to Facebook and other media that can display this format.

PEN TOOL LOVE

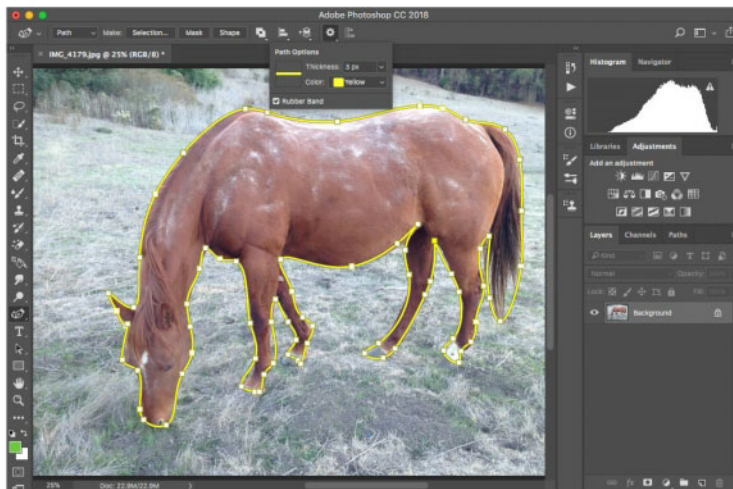
Photoshop's Pen Tool isn't going anywhere, but if you'd rather have an easier way to create paths, Adobe has introduced a Curvature Pen tool. Like the similar tool in Illustrator, it is designed to easily create curved or straight paths, path segments, or shapes by clicking points instead of adjusting Bezier curves. You can then grab any point, adjust, or add points to better fit the selection.

The Curvature Pen tool is accompanied by another ease-of-use update to path lines, which define your paths onscreen. You can choose bright colors and adjust



Ever struggle to follow the path? No longer. You can alter path thickness and color so they are easier to spot.

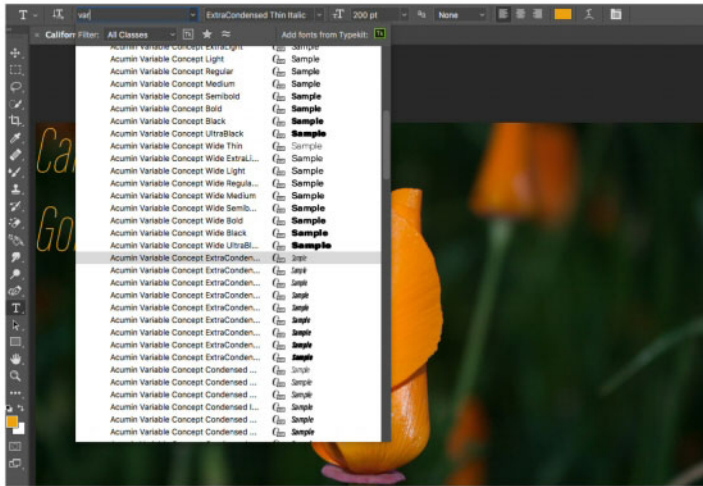
line thickness to make paths easier to see. These path updates are optional features, but ease the way for newcomers to work effectively with paths.



The Curvature Pen tool arrives on Photoshop, and not a moment too soon. Add and remove points at will.

VARIABLE FONT

For designers who work extensively with type and are picky about how type looks



You have to search for Variable in order to access these specific fonts, or check the label on the font name.



Whichever font you choose, just use the slider controls to adjust characteristics.

on their layouts (name one who is not), Photoshop CC 2018's Variable font, a new OpenType font format that has been

described as ([go. macworld.com/vari](http://go.macworld.com/vari)) “a single font file that acts like multiple fonts,” lets you control and customize parameters like width, weight, slant, or optical size. Just search for the Variable name in the Font pull-down menu.

Once you land on the variable font, it is highly visual and easy to use, offering speed and flexibility in adjusting font variations and weights on the fly.

SELECT AND MASK

This enhanced command has been outfitted with an updated algorithm that gives you quick and easy results for separating foreground and

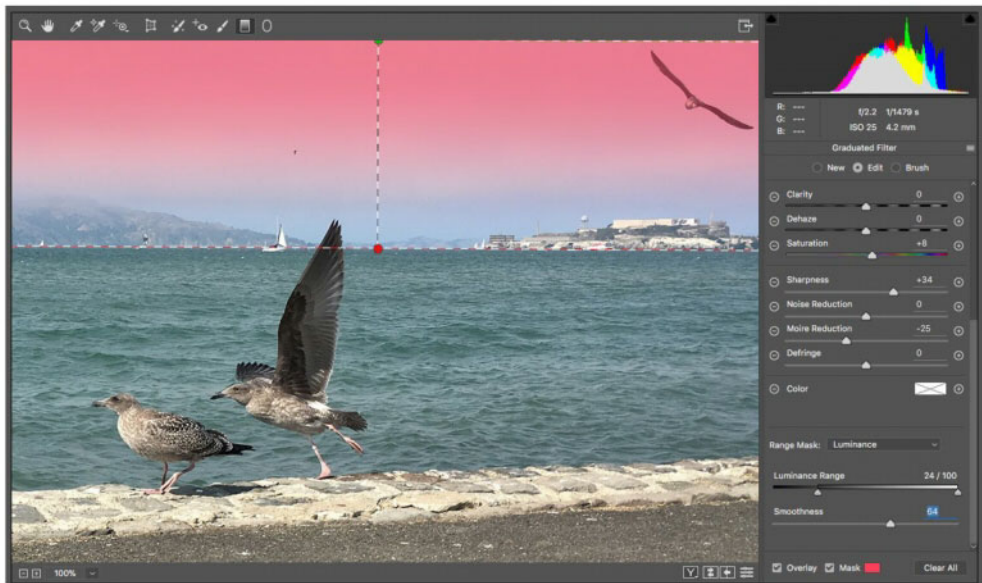
background for hard-to-select elements like hair, fur, and feathers. It does a quick, accurate job with relatively little effort.

Updated algorithms in Photoshop CC 2018 makes selections easier, faster, and more accurate.

CAMERA RAW RANGE MASKS

Photoshop CC 2018 has some updated goodies for Camera Raw 10. Color and Luminance Range Masking controls let you define more precise masking areas for local adjustments. The range masking tools use either color or tone to precisely pinpoint areas of your image according to color or tonal values. You can make quick selections with the Adjustment Brush or the Radial Filter/Graduated Filter and later refine the selection with the range masks. Slider tools let you select a wider or narrower range. All adjustments are non-destructive. This is not the most intuitive control I've ever seen, but once you get the hang of it, it offers a sure-fire





The new Camera Raw Range Masking feature makes precise adjustments by color or luminance. The red parts are the mask.

way to shield certain parts of your raw image from local adjustments.

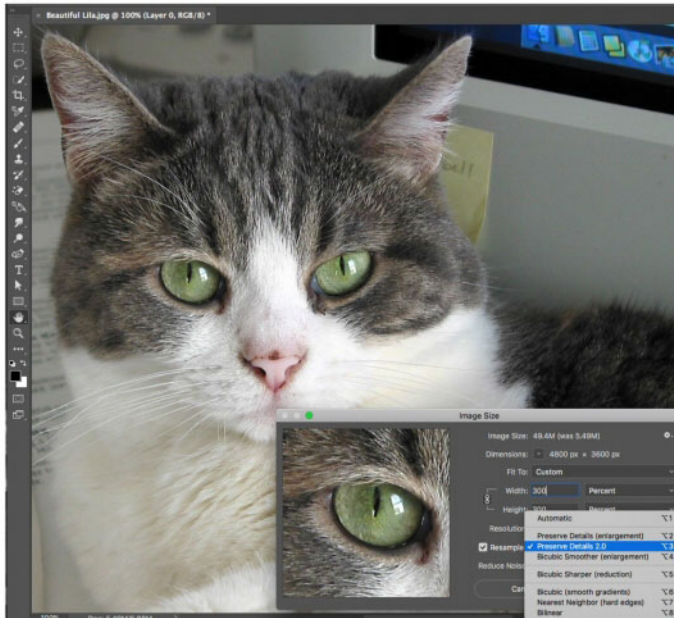
TECH PREVIEWS

Preserve Details 2.0 and Enable Paint Symmetry, both tech previews you can switch on optionally in the preferences, are powered by Adobe's Sensei AI framework. Preserve Details, on by default, uses deep learning to more accurately upscale photos without sacrificing detail, preserving texture and edge details, including hard edges and text, or hair and skin tones, and even food, that can appear soft or distorted

with previous resampling techniques.

For most images, even upscaled to 300 percent, I did not notice a huge improvement. You may start to see the effects a bit more by pushing enlargements to 400 percent and beyond, but overall, I found the improvement to be subtle for most of the shots I tried.

Photoshop now lets you paint symmetrically while using the Brush, Pencil, and Eraser tools, a feature whose ease and fluidity targets painters, sketchers, and designers. Just click the Butterfly icon in the Options bar and select from among several symmetry types,



Bump up your image size while retaining more detail.

Performance was rock solid: I noted exactly one crash for the entire testing period. The Wow headliner—360-degree editing—recruits a whole new class of users, as does the in-app training.

Photoshop's updates and new features reflect a profound thought process about meeting

which are simply preset paths. Strokes are reflected in real time across the line of symmetry. Any path can be designated a symmetry path, so you can easily create your own.

BOTTOM LINE

Photo and graphic pros and serious hobbyists should be really pumped about Photoshop's extensive variety of new tools and enhancements for a wide spectrum of creative output.



Adobe Photoshop CC 2018

PROS

- Curvature Pen tool makes creating curved paths more intuitive.
- Brush tool improvements help artist organization.
- Integrated Lightroom interface makes the workflow more fluid.

CONS

- Lightroom no longer a stand-alone app.
- Lightroom photos are not labeled in the start menu.

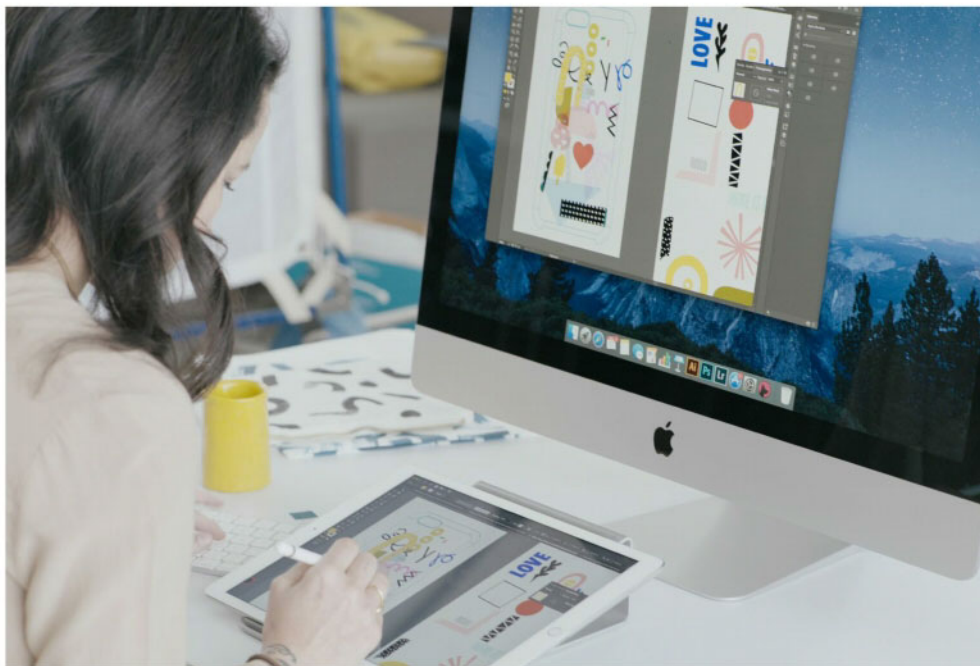
PRICE

\$29.99 per month

COMPANY

Adobe

changing user needs—from variable fonts to Lightroom integration to brush organization—that may well encourage non-subscriber pro users to fork over a monthly fee for it and its Lightroom companion apps, both desktop and mobile. That said, Adobe is targeting photo pros and advanced enthusiasts for Creative Cloud subscriptions, and is steering consumers to its Elements line of powerful, but traditionally licensed software. ■



SOFTWARE

ASTROPAD STUDIO: USE YOUR IPAD PRO AS A DIGITIZER FOR YOUR MAC

BY JEFF CARLSON

As a longtime Adobe Photoshop and Lightroom user, I periodically consider buying a digitizer, such as a Wacom tablet, to better take advantage of editing with brushes and other tools that work with pen-based input. I know photographers and artists who swear by them, but it would be a significant expense for my comparatively modest editing needs.

It turns out, though, I already have an excellent pen-based touchscreen device: an iPad Pro with an Apple Pencil. More often than not, it's usually on my desk at home or in my bag at a coffee shop.



Astropad Studio on the iPad Pro and a resized Lightroom Classic to fit Astropad's visible area at 100 percent. Instead of shrinking the application window, you could focus Astropad Studio on areas and move the view as needed.

Astropad Studio (go.macworld.com/asst; \$79.99 per year) turns that iPad Pro into a digitizer. Most Wacom tablets incorporate a pen-sensitive surface that transmits strokes and taps over a wire. If you want to spend at least \$800, the Wacom Cintiq (go.macworld.com/waci) provides a touch-sensitive screen on which to work. (Wacom tablets that don't incorporate a screen start at around \$60.)

Astropad Studio does the same on the iPad Pro you already own, wired or wirelessly. The company also sells Astropad Standard (go.macworld.com/stan), which works with non-Pro iPad models and costs \$29.99 as a one-time purchase.

The Astropad Studio app runs on the iPad Pro and communicates with a sister application on the Mac. When connected—via a Lightning-to-USB cable or with both

devices on the same Wi-Fi network—the iPad Pro displays a portion of the Mac's screen, which you can control using your fingers or an Apple Pencil.

How much you see depends on your screen resolution. When set to 100 percent view, the iOS app reveals only a section, necessitating some window resizing. You can also view the entire Mac screen on the iPad by holding Astropad's main button and tapping the Fullscreen button, but that means you're not working 1:1 with the app you're controlling, which may not be as accurate when drawing. Switching between views and repositioning the active area is simple and quick, however.

It's important to note that Astropad Studio isn't limited to specific applications, nor does it require plug-ins or other hooks. The Pencil becomes your

mouse pointer, with the ability to pass along Pencil-specific gesture data as needed.

If you're using Astropad Studio and the iPad Pro as a digitizer, you'll probably have one hand poised over your keyboard and the other using the iPad. However, you can also control everything from the iPad using an onscreen keyboard, shortcut keys (Command, Option, Shift, Control) that are easily displayed, and quick access to basic commands such as Undo, Redo, Cut, Copy, and Paste. Those are the defaults; you can set up any menu item in that space.

Further customization is possible through Magic Gestures, actions that involve both finger touches and Pencil drawing. Annoyed that you can't flip the Apple Pencil over and erase? (Even years out of school where I rarely touch a real pencil, that's a behavior that will probably never go away.) Activate a tool's erase function by holding one finger on the screen and drawing with the Pencil. Or touch two fingers on the screen and tap with the pencil to right-click and bring up the contextual menu. You can configure Magic Gestures for other actions, too.



Astropad Studio

PROS

- Nearly imperceptible lag when drawing, especially when connected via USB.
- Magic Gestures and easy screen manipulation controls.

CONS

- Yearly fee is pricey for people who use the tool infrequently.
- Slight redrawing lag when repositioning active area in the default Retina mode.

PRICE

Free (in-app purchases)

COMPANY

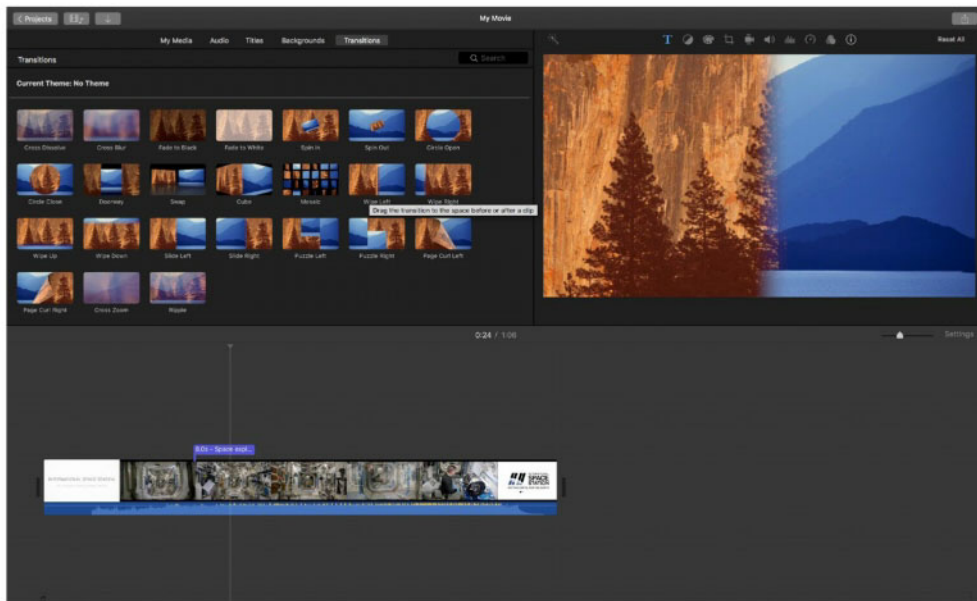
Astro HQ

All of those features are welcome, but the top consideration with a setup like this is performance. On a 10.5-inch iPad Pro, connected via USB to my late 2016 MacBook Pro with Touch Bar, the app reported a 2 millisecond response time. On my home Wi-Fi network, running at 5GHz using an Eero system, that time was 4–5 milliseconds. In both situations while I attempted some quick sketching, there didn't appear to be any noticeable lag.

Moving the active area around does introduce a slight delay while the screen re-renders; it displays a low-resolution proxy for a second and then the higher-resolution version kicks in. A setting to display a non-Retina version of the screen solves this, as long as you don't mind a softer image (which mostly manifests itself in software interface items and text).

BOTTOM LINE

Overall, Astropad Studio is an impressive way to incorporate pen input into Mac drawing or image editing. The \$80 yearly subscription price feels steep for my personal editing needs, but if you do this kind of work more regularly, it's justified. ■



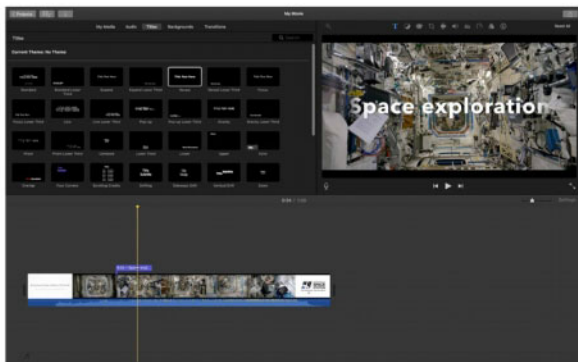
SOFTWARE

iMOVIE 10: FREE VIDEO EDITING THAT'S ELEGANT AND EASY

BY SAMUEL AXON

Apple's iMovie has been around for a long time, and it has always focused on one philosophy: ease of use in a clean and elegant interface. After many years, this hasn't changed. It's still a delight to use, if a little bit obtuse at times in its pursuit of minimalism. It lacks some of the formats and features supported in other programs, but what's there is implemented beautifully.

iMovie doesn't offer the tutorials or wizards that some other programs for beginners do—though there is a neat movie-trailer-generation tool. Rather, it keeps the interface as basic as possible while guiding you with simple tooltips as you mouse over specific buttons and



Apple's iMovie video-editing software generates beautiful titles with various effects in a couple of clicks.

features. Total beginners might end up scratching their heads a little more than they would in apps with more explicit tutorials, though.

The features are also somewhat limited. There's no 360 video, nor is there multi-cam editing. iMovie doubles down on making a very small selection of tools like transitions, backgrounds, titles, voiceover, and basic trimming and editing as straightforward as possible. It's quality over quantity here, which is in stark contrast to many other free applications.

Titles and transitions look impressively professional, and they can often be applied to satisfaction in about three clicks or less. Just be careful about using the popular ones; iMovie

is so popular that even casual observers might start to notice the same visuals popping up in home movies again and again.

iMovie has another advantage over other Mac video-editing software: performance. It's very well optimized on modern Macs, and works very quickly—especially on a MacBook Pro. We had no problems importing, editing, and scrubbing through a 4K video smoothly, where other

free editors buckled under the pressure on the same hardware.

And in general, playing nice with other Apple products is something iMovie is quite good at. It will automatically bring in photos, videos, and audio clips from iCloud. You can view your iMovie projects

on your Apple TV with minimal fuss. And it interoperates with a strong version of iMovie for iPhones.

iMovie is free to all new Mac owners, and it's a great place to start if you want to learn to edit videos, because its basic workflow is similar to that of more sophisticated programs. It would be an unequivocal slam-dunk if it just supported a few more features around the edges. ■



iMovie 10

PROS

- Clean, elegant interface.
- Well optimized, responsive, and fast on modern Macs.

CONS

- Sometimes the efforts to keep the interface simple make finding a solution obtuse.
- The user interface is not customizable.

PRICE

Free

COMPANY

Apple

Hot Stuff

What We're Raving About This Month



WYZECAM

wyzecam.com

Could a \$20 home security camera actually be any good? Turns out the answer is, yeah, it can be very good. The Wyze-Cam has many of the same features as \$200 cameras, including 1080p video, motion and sound detection, night vision, and two-way audio. It also comes with 14 days of free cloud storage—double the most generous offers of other DIY cams—for detection-alert videos and up to 32GB of local storage via microSD card.

—MICHAEL ANSALDO

ANKER POWERCORE FUSION 5000

anker.com

The epitome of a portable battery pack, the Powercore Fusion 5000 (\$26) includes an AC wall plug to pull double duty as a multi-port wall charger. When sitting in an airport near an outlet, you can use the Fusion to charge your iPhone without using any of the internal 5,000mAh (18.5Wh) battery. Then when an outlet is nowhere to be found, the same device can still charge your devices. In testing, we found the pack to charge in 2.5 hours. —**JASON CIPRIANI**



Hot Stuff

JAYBIRD RUN

jaybirdsport.com

For \$20 more than you'll fork over for a pair of Apple's AirPods, you can invest in a significantly better true wireless headphone listening experience. With a customizable equalizer settings, the \$180 Jaybird Run True Wireless Headphones sound great, are sweat- and water-resistant, and come with a number of fit options to ensure comfort.

These headphones sound better than Apple's AirPods and you can modify their sound profile at a firmware level through the use of the free Jaybird app. —SEAMUS BELLAMY





YOUR BODY YOUR HOPE

Your immune system may be the key to beating cancer.

Immunotherapy, a new approach to cancer treatment, is bringing hope to cancer survivors everywhere. Immunotherapy works by empowering your body's own immune system to correctly identify and eradicate cancer cells. This approach has been used to effectively fight many types of cancer, with new research leading to greater hope each day. Speak with your doctor and visit standuptocancer.org/immunotherapy to learn if immunotherapy may be right for you.

Jimmy Smits, SU2C Ambassador
Photo By: Timothy White



Stand Up To Cancer is a division of the Entertainment Industry Foundation (EIF), a 501(c)(3) charitable organization.

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Got an iPhone X? Do these 10 things first!

Before you even peel the plastic off your new iPhone X, read this setup guide.

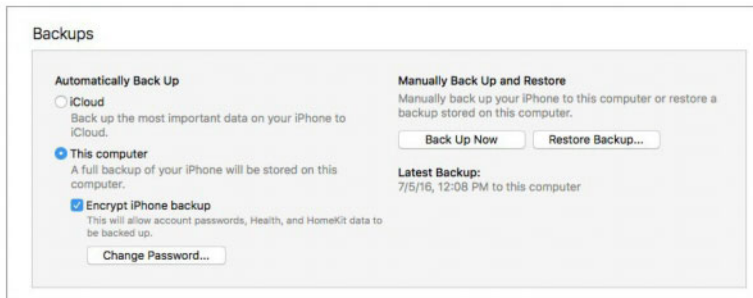
BY JASON CROSS

So that \$1,000+ sticker shock didn't put you off from buying the phone that Apple calls "the future," did it? We don't blame you—we bought the iPhone X, too. I know you want to dive right in the moment you get the box in your hands, but slow your roll! We have a little setup advice you're going to want to pay

attention to. Sure, it seems like a drag right now, but this stuff is going to save you time and frustration later.

1. BACK UP AND RESTORE

That's right, you'll want to back up your old iPhone *after* you have your new iPhone X in hand, so the backup is as up-to-date as possible. Back up via iCloud or iTunes:



setting up your new iPhone X, you can restore your iPhone from this backup once you've logged in to your new device with your Apple ID.

For an iTunes backup: Connect your old iPhone to your Mac, launch iTunes, select your iPhone by clicking the little phone icon in the toolbar, and under Backups, choose This Computer. Checking *Encrypt iPhone Backup* is a good idea, so your account passwords and Health data gets backed up too—just choose a password you won't forget. Click the button to Back Up Now.

When the backup is done, connect your new iPhone X, then tell iTunes you want to restore from the backup you just made. Or, skip to step 2 and use Quick Start. Later, you can switch back to iCloud backups if you prefer, in Settings → iCloud → Backup. But it never hurts to run a backup on your own Mac every now and then.

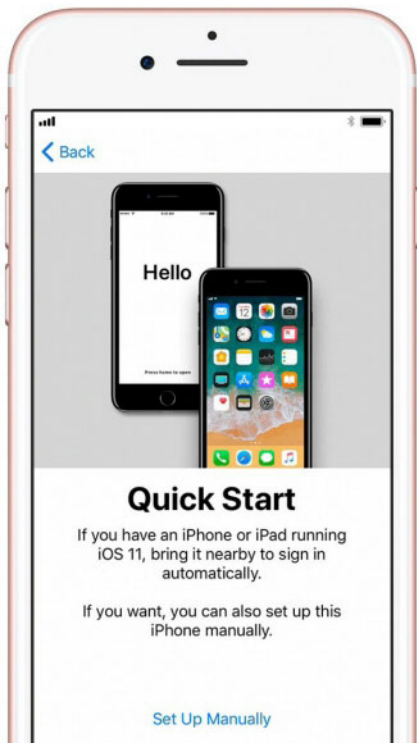
For an iCloud backup: No need to connect your iPhone to your Mac. Just launch Settings and tap on your Apple ID profile listing at the top, then go to iCloud → iCloud Backup and select Back Up Now. When

If you happen to be coming from an Android phone (hey, welcome to the garden!), there's a Move from iOS Android app (go.macworld.com/ioaa) that can assist you with setting up your Google account data in Mail, Calendars, and Contacts, moving your camera roll over, and even transferring your Chrome bookmarks to Safari.

2. UPDATE YOUR OLD IPHONE AND USE QUICK START

iOS 11 introduces a really great new feature called Quick Start. It's sort of like magic. You just hold your new phone next to your old phone, and a little card pops up asking if you want to transfer all your stuff to the new device. You'll then point your old phone's camera at your new phone (which displays a cloud of little dots) and enter your old phone's 6-digit passcode.

You'll go through the rest of the setup process, like enabling Face ID, and then your phone will be ready to go, set up just like your old iPhone. It'll even prompt you



Quick Start makes setting up a new iPhone fast and easy.

to update your old iPhone's backup if it hasn't been backed up in awhile.

Setting up your phone this way transfers over most of your settings, the arrangement of your Home screen, and more. It's a huge time-saver. But it requires iOS 11, so if you haven't updated your old phone to iOS 11 (go.macworld.com/upda) for some reason, you might want to do that ASAP. You don't want to have to wait through a big update process once you

have your iPhone X in hand.

After setting up your phone this way, you'll want to give it a few minutes to re-download all your apps. Initially, your phone will show placeholders for your apps, all arranged and stuffed into folders exactly as on your old iPhone. But every time you download an app from the App Store, your phone actually grabs a unique version specifically optimized for that iPhone model. So your new phone has to download the apps again, but your user data and settings get transferred over.

As fast and easy as this is, we still recommend backing up your phone as described in step 1. If anything goes really wrong during your setup process, you'll be glad you did!

3. SET UP FACE ID AND APPLE PAY

Yes, you should use Face ID for maximum security—it's the quickest way to unlock your iPhone X, and will let you set a more complicated passcode, since you don't have to type it in every time. Setting up Face ID is much faster than Touch ID, too—the setup screen will prompt you and ask you to slowly look around in a circle a couple times. It's a lot quicker than tapping the Home button dozens of times to register a fingerprint.

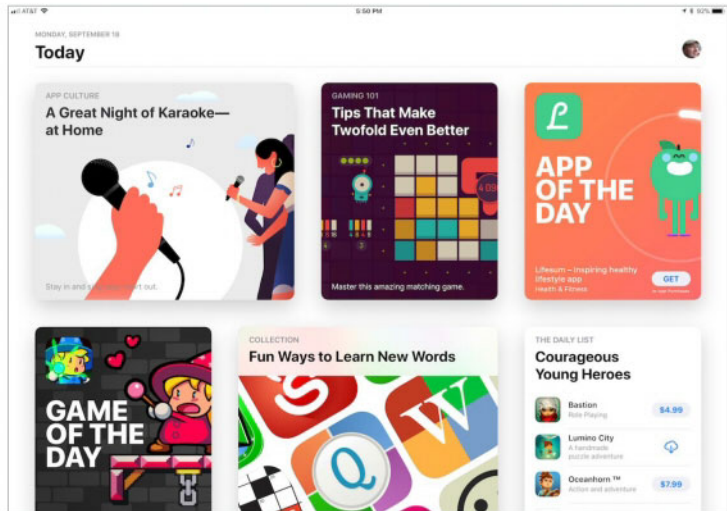
Worried about your privacy with Face ID? Don't be. No photos of your face nor

any other biometric data ever leave your phone—Apple doesn't get any of that. And it isn't accessible by other apps, just as other apps weren't able to access your fingerprints with Touch ID. You can read all about it in our Face ID FAQ (go.macworld.com/faid).

Since you need to have Face ID enabled in order to use Apple Pay, this would be a good time to jump into Apple's Wallet app to set that up. If you're new to Apple Pay, just follow the instructions within Wallet to add a credit card or two. If you already had Apple Pay on your old iPhone, you'll notice that your credit cards have disappeared on your new iPhone. Why? For your security, of course. Your Wallet history will still be there, but you'll have to re-enter any payment cards you'd like to use with Apple Pay. (For more on Apple Pay, check out our guide at go.macworld.com/appa.)

4. UPDATE YOUR APPS

Great, now you should be on your Home screen at last. Hit up the App Store first—



This is the new App Store on an iPad. Fancy! You get these nice editorial app packages on the iPhone, too.

you'll want the latest versions of all of your apps in order to take advantage of all the new abilities Apple has given developers in iOS 11. If you've used Quick Setup, most of your apps should be up to date already, so this will be, er, quick.

While you're there, check out the App Store's new iOS 11 redesign (go.macworld.com/rdsn). You'll find collections of cool apps curated in magazine-style articles, interviews with up and coming app developers, game trailers, and more goodies over in the Today section. This changes daily, so you can come back tomorrow to see what else is new.

Don't forget you can have your apps auto-update by flipping the Updates switch

in Settings → iTunes & App Stores. Or, you can manually update your apps and just check out the What's New release notes to see what changed.

5. PAIR YOUR APPLE WATCH

If you use an Apple Watch (or maybe you just bought a brand-new Apple Watch Series 3 [go.macworld.com/aw53] to go with your future-phone) you'll need to pair it to your new iPhone to keep the Activity data flowing to your Health database, and keep your new phone's notifications flowing to your watch. First you have to unpair your watch from your old iPhone, either in the Apple Watch app on your old iPhone (tap your watch, then the *i* icon, then Unpair Apple Watch, then enter your iCloud password when prompted), or on the watch itself (Settings → General → Reset).

Then, launch the Apple Watch app on your new iPhone X, which will walk you through the pairing process, including setting a passcode, unlocking behavior, and Apple Pay.

If your Apple Watch isn't already running watchOS 4, you'll want to update it. Read more about watchOS 4 here (go.macworld.com/wos4). To upgrade, your Apple Watch needs to be connected to its charger, in range of your iPhone, and at least 50 percent charged. Then look for the Software Update option in the Apple

Watch app. Upgrade your watch all the way to watchOS 4.1 (go.macworld.com/wo41), which adds awesome new music features for Series 3 watches and important security updates for everyone.

6. LEARN THE NEW GESTURES AND COMMANDS

As you may have noticed, your iPhone X has no Home button. Where the Home button used to be, you now have an extra half-inch or so of glorious OLED display!

So how do you do all that stuff you used to use the Home button for? How does the app switching work? Or taking a screenshot?

Here are a few basic commands you'll need to relearn now that your iPhone is "home free."

Return Home: Just swipe up from the bottom of the screen. Easy!

Jump between apps: Swipe left or right along the bottom edge of the phone to jump back and forth between apps. You can sort of "flick" from the bottom corners, moving your finger up and over, to "bounce" between the apps, or just slide directly side-to-side along the bottom edge.

App switcher: Swipe up from the bottom edge and pause for a second with your finger still on the display. App cards will quickly pop up, and you can lift your finger off and swipe around through them.

Close an app: If you need to kill an app from the app switcher, you do it a little differently. On other iPhones, you swipe up on the app card. On the iPhone X, you press and hold on the cards until red minus (–) symbols appear in the corners. Tap those to close the apps.

Take a screenshot: Simply press the side button and the volume-up button at the same time.

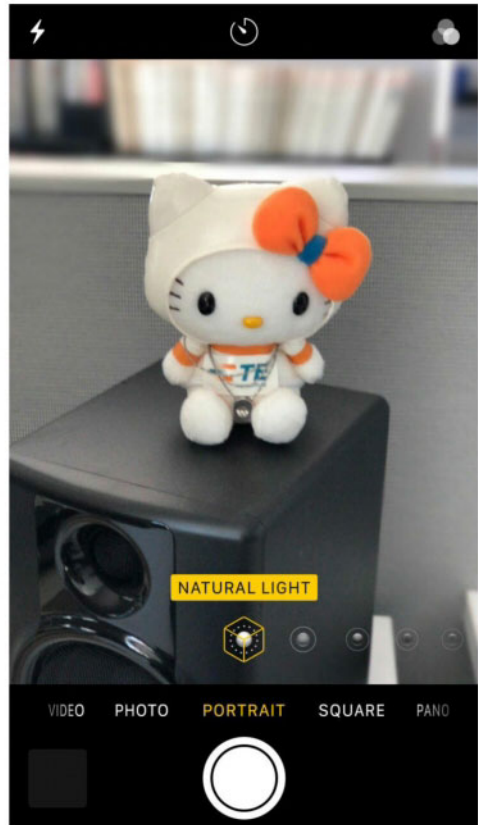
There are a lot of other commands and gestures to learn, and you're in luck because we have a guide for that at go.macworld.com/cmnd!

7. TRY OUT PORTRAIT LIGHTING

The iPhone 8 and X support a brand-new camera technology called Portrait Lighting. It's in beta, but you can still give it a shot (get it?). Just launch the Camera app and select Portrait from your camera modes at the bottom of the screen, and then swipe through the different lighting options at the bottom.

On the iPhone 8, portrait mode (including Portrait Lighting) is only available on the back cameras. But on the iPhone X, the front-facing selfie camera can use it, too!

The iPhone X has most of the same camera improvements as the iPhone 8 Plus—better low-light performance, more accurate color, and up to 4K 60fps video.



Portrait Lighting will take your iPhone X portrait shots to the next level. Hello Kitty agrees.

But the iPhone X has optical image stabilization (OIS) on both the regular *and* the telephoto rear cameras.

8. CUSTOMIZE YOUR CONTROL CENTER

Control Center is one of the biggest changes in iOS 11. Instead of spreading



iOS 11's Control Center is customizable (the default configuration is at far right). Individual items can be expanded to reveal additional controls.

your utilities out over three sliding pages, Apple condensed them into one screen with a uniform-looking set of icons. On the iPhone X, you access Control Center by swiping down from the top of the screen, to the right of the sensor notch. Apple's default Control Center utilities include your camera, flashlight, calculator, and alarm clock; you'll also find two sliding controls for your volume and screen brightness, plus toggles for rotation screen lock, Do Not Disturb, screen mirroring, and all of your wireless controls (like Bluetooth, Wi-Fi, and Airplane Mode). This is also where you'll find your iPhone X's remaining

battery life percentage, since it can't fit on the screen anymore (thanks, Face ID notch).

One of the best parts about iOS 10's Control Center was the full page of controls just for audio playback, like when you're listening to a podcast or streaming from Apple Music. In iOS 11, your audio controls are condensed into a small box featuring just a play/pause button and some skip controls. However, if you 3D Touch on the audio control box, it will expand and reveal a full suite of options for better control.

In fact, several of your Control Center utilities have hidden 3D Touch features—

just long-press on any control to expand it. A light tap will turn that feature on or off, but a longer 3D Touch gesture will expand it some more.

There are a boatload of other features you can add to your Control Center panel, too—head on over to Settings → Control Center → Customize Controls, and add any feature that seems interesting. Looking for something new? Check out Do Not Disturb While Driving, a feature that automatically enables Do Not Disturb once your iPhone detects that you're in a moving vehicle, and Screen Recording, which lets you record what's on your iPhone's screen and then share it.

For more on what Control Center can do, check out our deep dive (go.macworld.com/hccw).

9. CHARGE IT UP, QUICK!

There's a reason your new iPhone X has that shiny glass back, and that's not because it's a throwback to the iPhone 4. No, that glass back is for wireless charging support. To use this feature, you'll need a compatible wireless charging pad that utilizes the Qi standard (Apple sells two—one from Belkin [go.macworld.com/blkn] and one from Mophie [go.macworld.com/mphi])—but we've tried others that work fine too). If you have one of those, set your iPhone onto the pad and watch it

start to power up. Say goodbye to the jumble of Lightning cables on your bedside table!

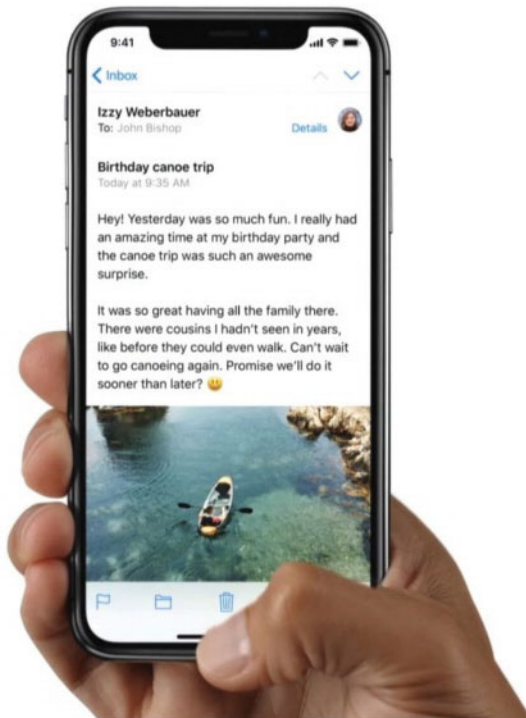
Of course, you can charge your iPhone X via Lightning if you want to. In fact, this is still the fastest way to charge your phone, provided you use the right adapter and cable.

The iPhone 8 and X support fast charging using the USB-C Power Delivery (USB-PD) standard. You can use Apple's own 29W USB-C power adapter, or the USB-C power adapter for a modern MacBook Pro. But third-party USB-C power adapters should work as well, as long as they support the USB-PD standard. You'll need to buy a lightning-to-USB-C cable and a new adapter, because you'll only find that same old slow 5W adapter and a USB-A lightning cable inside your iPhone X box.

10. SEND ANIMOJI TO YOUR FRIENDS

I know it's silly, but the best way to brag about your new Future Phone is to send someone an iMessage that shows the Poo Emoji perfectly lip-synced and following your facial expressions as you sing “Bohemian Rhapsody.” They will be so *jealous*.

Animoji are found in Messages, as an iMessage app at the bottom of the screen. ■



iPhone X: Learn all the new touch gestures and commands

Now that there's no Home button, how do I...?

BY JASON CROSS

The Home button has been the one constant on the iPhone over the last decade. From day one, you would press the Home button to return to the Home screen. As Apple added features to the

iPhone, the Home button took on more capabilities.

But it's time for a new era, one that kicks the Home button to the curb. With the iPhone X, Apple pushes the display right up to the very edge of the phone

and eliminates the Home button. If Apple says the iPhone X is “the future,” the Home button is ancient history.

How do you even use an iPhone without a Home button? Here’s a quick guide to all the new gestures and button combinations you’ll need to relearn as you acquaint yourself with the iPhone X.

Return Home: Let’s start with that most basic of Home button features: returning to the Home screen. Just swipe up from the bottom of the screen. Easy!

Wake it up: You can still raise the phone to wake it like you can on other modern iPhones, or tap the side button. But the iPhone X also supports tap-to-wake. Just tap the display to wake it up.

Jump between apps: Swipe left or right along the bottom edge of the phone to jump back and forth between apps. You can sort of “flick” from the bottom corners, moving your finger up and over, to “bounce” between the apps, or just slide directly side-to-side along the bottom edge.

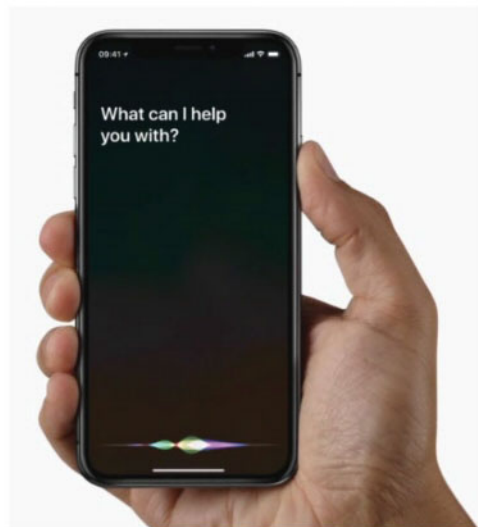
App switcher: Want to see all your running apps? Swipe up from the bottom edge and pause for a second with your finger still on the display. App cards will quickly pop up, and you can lift your finger off and swipe around through them.

Close an app: You shouldn’t have to do this often, but if you need to kill an

app from the app switcher, you do it a little different. On other iPhones, you swipe up on the app card. On the iPhone X, you press and hold on the cards until a red minus (–) symbol appears in the corners. Tap those to close the apps. It’s very similar to the way you delete apps from your Home screen.

Take a screenshot: Simply press the side button and the volume-up button at the same time.

Reachability: This isn’t enabled by default on the iPhone X. You’ll have to go into Settings to turn it on. Once you do, swipe down from the bottom edge of the screen—the little dark bar that indicates where the gesture area is. Your entire display will shift downward so you



Siri



Apple Pay

can reach the top of your apps more easily.

Notifications: You still swipe down from the top of the screen, just as with other iPhones. But with the iPhone X, there are two “swipe from the top of the screen” gestures, so you gotta swipe from the left side of the sensor notch to get to your notifications.

Control Center: With the bottom of the screen consumed with other home gestures, the swipe for Control Center has moved to the top of the screen. Just swipe from the right side of the sensor notch. The right “horn,” if you will. The left side is Notifications.

Invoke Siri: Just press and hold the side button. Of course, you can still use your voice by saying, “Hey, Siri!”

Apple Pay: Tap the side button twice. You’ll have to authenticate the purchase with either Face ID or your passcode. You’ll notice that with Siri and Apple Pay, you just use the side button as you used to use the Home button, so it should be pretty familiar.

Power off and S.O.S.: To get the power-off slider and S.O.S. button, press and hold the side button and either volume button for a few seconds.

Force reset: Quickly tap the volume-up button, then the volume-down button, then press and hold the side button.

Accessibility: If you’ve turned on the Accessibility Shortcut feature in Settings → General → Accessibility, you invoke it by triple-pressing the side button.

Generally, most of the gestures that have you swiping from the edge of the screen don’t require a lot of precision. As long as you’re somewhere in the general vicinity of the edge, they should work. Apple indicates the bottom “gesture area” with a horizontal bar. Some apps have their own screen-edge gestures (games, in particular, are known for this). If you’re using an app that has a screen-edge gesture the same as a general iPhone X command, just repeat it. The first swipe should perform the game’s command, but the second swipe should perform the iOS system command. ■



Animoji FAQ: Everything you need to know about Apple's adorable animated emoji

Are you just dying to record Animoji Karaoke? We've got you covered.

BY JASON CROSS

A talking fox. A pig doing stand-up. A singing pile of poo. A robot reciting slam poetry. You're going to see all these things and more all over your iMessages and social media feeds in

the coming months. They're called "Animoji" and they're Apple's frivolous, fun, and downright addictive way to show off the capabilities of the TrueDepth camera in the iPhone X (go.macworld.com/ip0x).

If you want to know how they work and what you can do with them, read on. Once you learn a few tricks, they're a lot more flexible and fun than just sending an iMessage to your friend as a talking pig.

WHAT ARE ANIMOJI?

The word Animoji is a portmanteau of “animated” and “emoji,” and that's exactly what these are. It's a feature exclusive to the iPhone X that uses the front-facing TrueDepth camera to scan your face and make an emoji follow your facial expressions and mouth position.

When you talk, or squint, or shake your head, the Animoji will do the exact same thing. It's more fun than it sounds!

DO ANIMOJI USE MY FACE ID DATA?

No. *No apps* can use your Face ID data. The operating system doesn't even have access to it. It's locked away in the Secure Enclave on your iPhone (a separate piece of silicon from the main processor), and is never sent to Apple nor shared with any apps at all.

But developers do have access to the TrueDepth camera through the ARKit interface, which takes the

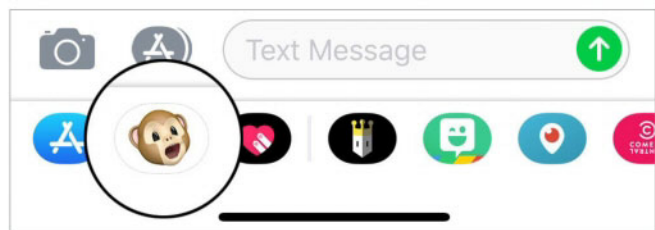
regular front-facing camera input and combines it with a course 3D mesh of your face. Developers can't use this info to unlock your phone, or analyze it to produce a set of data that could unlock your phone. In practice, it's no more dangerous than taking a selfie.

In other words, Animoji (and other apps) use the same hardware as Face ID, but Face ID is a different, totally separate set of data.

WHERE DO I FIND THEM?

Animoji are found in the iMessage app, built right into iOS 11 on the iPhone X. Just launch Messages, and then start a new message or open a thread to reply to someone. Look for the little monkey face at the bottom (if you don't see it, tap the grey App Store icon next to the message line). Tap the monkey to get into Animoji.

Once you start up the iMessage app, you'll notice that the animated character begins tracking your facial expressions and mouth movement. Press the red



This is where the magic happens.

button to record, or scroll through the list on the left to change characters. Tap the up arrow to make the Animoji app window bigger, so you can more easily see all the available emoji.

WHICH EMOJIS ARE AVAILABLE AS ANIMOJI?

Apple hasn't made every emoji into an animated 3D cartoon. Only a dozen (so far). They are:



ALIEN



CAT



CHICKEN



DOG



FOX



MONKEY



PANDA



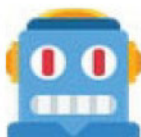
PIG



POO



RABBIT



ROBOT



UNICORN

Given the popularity of Animoji, I'm sure more characters will come.

HOW LONG CAN AN ANIMOJI RECORDING BE?

Animoji recordings are limited to just 10 seconds. That's enough for a quick message to your friend, but not nearly long enough to sing a song.

CAN I SWITCH ANIMOJI CHARACTERS AFTER I RECORD?

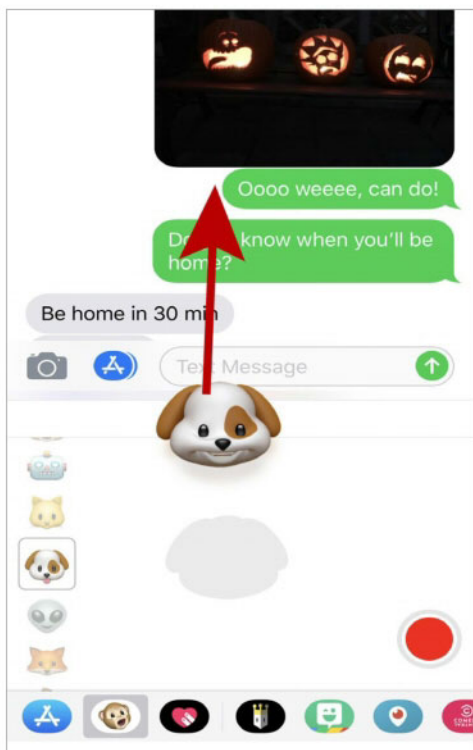
Yes! After you record, but before you send, just tap a different Animoji character and it will apply your recorded voice and expressions to that one.

WHAT ABOUT STICKERS. I LOVE iMESSAGE STICKERS!

Well lucky for you, you can use Animoji as still image stickers in the blink of an eye. Just bring up the Animoji interface, pick your character, make a face, and drag the Animoji up into the messaging window like you would any other sticker. BOOM. Smiling dog sticker.

HOW DO I SAVE MY ANIMOJI RECORDINGS?

Once you have sent an Animoji message, or if you receive one, tap on it to play it. You'll notice a Share button in the lower left.



To use Animoji as a sticker, make a face and then drag it up into your conversation.

Tap the Share button. Then tap Save Video. Now it's in your camera roll!

HOW DO I USE ANIMOJI IN OTHER APPS?

You'll do the same thing as the above step, only instead of pressing Save Video, you'll press the share icon of whatever social media or other app you want to use.

If the app doesn't have a share icon, no problem—just Save Video, then open up the app you want to use and deploy your Animoji recording exactly as you would any other video.

HOW DO I MAKE ANIMOJI KARAOKE?

Animoji Karaoke (go.macworld.com/kara), where people lip-sync to their favorite tunes using Animoji and share them on social networks, is a hot fad. But how do you sing along to your favorite song if Animoji recordings can only be 10 seconds long?

You go around the time limit using iOS 11's built-in screen recording!

Step 1: Find a song and play it from a source other than your iPhone X. Music playback stops when the Animoji interface comes up, so you'll need to play it from another sound source, loud enough for your iPhone's microphone to clearly hear.

Step 2: Open up Messages and the Animoji interface. Pick your Animoji.

Step 3: Open Control Center (swipe down from the upper-right edge of the screen) and tap on the screen recording button. You may want to press firmly to open the 3D Touch interface for it, and make sure the Microphone Audio option is On.

Step 4: Close Control Center and perform your lip-sync. Don't bother



Record your Animoji Karaoke performance with screen recorder, and edit it later.

pressing the Animoji record button.

When you're done, press the side button (which stops screen recording without opening Control Center).

Step 5: You now have a full-screen capture stored to your iPhone. You'll need to edit it down, though. You can trim the ends easily enough using Photos on your iPhone,

or iMovie. But if you want to really crop out the Animoji and remove all the interface stuff, you'll need to download another app.

That's the quickest and easiest way to make Animoji Karaoke. If you really want it to look and sound great, you should use a video editing program to replace the audio track with a quality recording. And you can use a split-screen

effect to use multiple Animoji recordings to do duets, too. ■

If you really want it to look and sound great, you should use a video editing program to replace the audio track with a quality recording.



Why Face ID makes security on the iPhone X invisible

BY JASON SNELL

There are a lot of new features and changes rolled into the iPhone X (go.macworld.com/if0x). But after using the iPhone X for a few days (go.macworld.com/days), the one that I think will make the biggest impact on the way we use our iPhones day-to-day is definitely Face ID (go.macworld.com/fcid). It's a huge feature that takes advantage of groundwork

Apple has been laying for some time in iOS, but in the end it will triumph.

Face ID changes the game by separating the act of unlocking the iPhone from physical interactions with the phone's screen or buttons. Put together with the Raise to Wake feature introduced with iOS 10, the natural act of lifting the iPhone X and glancing at it performs two tasks that used to require

interaction: waking up the device and unlocking it. When I pull the iPhone X out of my pocket and look at it, it's already on and unlocked. I can decide what to do next.

This adds a new dimension to how I can use the iPhone X. Previously, when I looked at the lock screen of my iPhone, I could see my notifications, or swipe to access widgets or the camera controls. But interacting with notification bubbles, Siri, widgets, and the photo library (via the camera app) were necessarily constrained by security concerns. Tapping on a notification bubble or interacting with widgets will often require you to unlock the phone before continuing.

With Face ID, all those barriers vanish. Notifications open the relevant apps automatically. The camera shortcut provides you with access to your entire photo library. Siri has access to all your data. And all without having to take any additional steps to

authenticate, because the authentication has already happened while you were seeing what was on the screen.

NO MORE BAD HABITS

I'll be honest: The combination of the Touch ID sensor with the iPhone's Home button led me to bad behavior. My habit was always to lay my thumb on the sensor and then push the button, a combination that invariably led me to unlock the phone and send it to the Home screen. The idea of gently laying my thumb on the Home button and then taking it off in order



to browse notifications rarely, if ever, occurred to me.

This is not to say that I didn't frequently pick my phone up just to check something on the lock screen. I'd do that too, to check the time or see if something big appeared in my notifications. But when I'd do this, I'd keep my thumb entirely off the Home button. Then if there was a notification I wanted to tap on, I'd need to move my thumb to authenticate before continuing.

Face ID eliminates all these issues. When I pick up my phone, it's on and

Face ID takes a multi-step process and eliminates it entirely. When I take the iPhone X out of my pocket, I'm not preparing to move through a multi-step unlocking process.

unlocked. I can read notifications and tap, or swipe up to return to the currently active app. That's why articles like this one by Mark Spoonauer at Tom's Guide (go.macworld.com/tomg) miss the larger point. Face ID may not be as fast as Touch ID in the singular act of unlocking the phone (though I've never really felt that Face ID was slow at all), but Face ID makes the act of unlocking the phone largely an afterthought.

Face ID takes a multi-step process and

eliminates it entirely. When I take the iPhone X out of my pocket, I'm not preparing to move through a multi-step unlocking process. Instead, I'm considering what I want to do: glancing at the screen to see if there are any notifications, or swiping to widgets or the camera, or swiping up to go back to my most recent app. The unlocking step just disappears.

This happens in third-party apps, too. Opening 1Password, or my home security video app, or my banking app, no longer requires a mode shift where I need to move my thumb onto the Home button in

order to authenticate.

It's not that moving my thumb a few inches was a huge imposition, so much as it requires a break in concentration to do a little bit of book-

keeping in order to get me where I wanted to go. With Face ID, I just go where I wanted to go all along, no readjustment required.

Touch ID is a feature that makes it easier to unlock your phone; Face ID is a feature that makes you forget you need to unlock your phone. In fact, there's almost no point in trying to quantify how fast Face ID is when compared to Touch ID. How fast does it take to do nothing? The answer, you'll find, is no time at all. ■



How Apple's unconventional iPhone X marketing strategy will make you want one at any cost

And you'll like it.

BY MICHAEL SIMON

The iPhone X is here ([go](http://go.macworld.com/ip10). macworld.com/ip10). Mind you, if you haven't staked a spot in line at an Apple Store you probably won't be able to get one, but technically

iPhone X is finally available for purchase. And based on its unconventional marketing push, Apple really, really wants you to want to buy one, even if you don't actually intend to plunk down \$1,000-plus dollars.

Not that it didn't want you to lust over the iPhone 7 or iPhone 6, but there's something different about the way Apple is hawking iPhone X. With iPhone 8, Apple is selling a new phone: better processor, better camera, new color. With iPhone X, it's selling an experience. From the YouTube first impression videos to celebrity retweets and rolling reviews, iPhone X is being presented not as a device but a phenomenon. Like a summer blockbuster, iPhone X is the new thing that everyone's talking about. And if you're not buying it, you need to see it. And once you see it, you'll want one.

FEATURES FIRST

In some ways, Apple is treating iPhone X more like Apple Watch than a phone. With its first wearable, Apple wanted to sell it to customers as a piece of jewelry rather than a piece of technology. It was about fashion and connection rather than battery life and speed, and that mentality propelled Apple Watch to become the best selling watch—not just smartwatch, overall watch—in the world.

Of course, the iPhone is already the best selling

smartphone on the planet, but iPhone X represents a whole new animal. Much like the original iPhone, iPhone X represents the next 10 years of Apple's mobile strategy, but this time around it's not just "a revolutionary mobile phone." iPhone X is a lifestyle device, the first iPhone in years that needs to be seen.

So, Apple took a very different tack with the lead-up to the iPhone X launch. It encouraged lines at Apple stores. It gave a small faction of YouTube stars hands-on access before traditional outlets. It gave most reviewers a 24-hour window to organize their thoughts. And in perhaps the most un-Apple move of all time, it collected the most glowing comments and put them out in a press release (go.macworld.com/prss).

Now, you could say Apple is



Apple spotlighted snippets of iPhone X reviews in a glowing press release.

desperately trying to control the iPhone X conversation with this strategy, and maybe it is. Most of the reaction we've seen has been after short stints with the device, and problems are far more likely to crop up after days rather than hours. Plus, with a slow rollout it can avoid a pile of issues like it experienced with Apple Watch Series 3's cellular issues. But I'd argue the opposite, that Apple is more confident in iPhone X than any other product its released. Above all, Apple wants to show that there isn't a steep learning curve with iPhone X, and the shortened window for reviews helps illustrate that point, however subtly.

But Apple's main motivation with all these iPhone X first looks is to put a focus on its fun features rather than specs. That's plain to see in the YouTube videos that were heavy on entertainment and light on examination. But even the

Most of the reaction we've seen has been after short stints with the device, and problems are far more likely to crop up after days rather than hours.

transitional outlets focused more on Face ID and the new design rather than battery benchmarks and speed tests. Apple needs the core features of iPhone X—buttonless navigation, hands-free

unlocking, and yes, the notch—to become ingrained in its culture even before most people are able to buy one. And even before iPhone X releases, Apple is already laying the groundwork for it to take over.

With three flagship models this year, Apple doesn't need to move large numbers of iPhone Xs. Based on its first quarter guidance, Apple plans to move a metric ton of iPhones over the next couple months, and a lot of those sales will be due to the appeal of iPhone X, even if they end up buying an iPhone 8 instead.

SHUT UP AND TAKE MY MONEY

The whole point of iPhone X is to showcase the future of Apple's smartphone strategy. It's not about me-too features like the OLED screen, to the edge-to-edge design. It's a sneak peak, albeit one you can buy for \$999.

For many buyers, money won't be an object. The cost of a top-of-the-line iPhone X on the iPhone Upgrade Program versus a top-of-the-line iPhone 8 Plus is \$16 a month, a premium for sure, but not nearly as painful as the \$400 up-front cost. Based on the 5- to 6-week delay in



Apple dispelled all naysaying. Face ID works. The screen is amazing. And it's worth the extra money if you can afford it.

Even if you don't buy an iPhone X today, tomorrow, or next month, Apple has planted the seed of desire. It

shipments on Apple.com, Apple has already sold millions of its new iPhone X, and there are millions and millions more in the pipeline.

But whether Apple sells more iPhone Xs in the holiday quarter than iPhone 8s isn't the issue. It's about impressions. When iPhone X was first announced, the reaction was somewhat muted. There were concerns about Face ID. People wondered if it was worth such a premium over iPhone 8 Plus. Some even started questioning whether Apple's "all screen" claim was even accurate.

But that, too, plays right into Apple's marketing strategy. Apple knew there would be questions about iPhone X. But with one fell swoop of first impressions,

doesn't matter if you watched Booredatwork's video (go.macworld.com/batw), read Matthew Panzarino's review (go.macworld.com/mapa), or followed Recode's discontent (go.macworld.com/recd). People who were already going to buy an iPhone X really want one now. But more importantly, a whole group of people who normally might not care about an iPhone launch weekend will go to the Apple Store anyway to get a glimpse of the new iPhone. They'll try it out. They'll tweet out pics. And they'll tell their friends that they need to go see it too.

And if they have \$1,000 burning a hole in their pocket, they'll buy one whenever it's available. ■



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MOBILE ACCESSORY

MOPHIE POWERSTATION PLUS XL: SLEEK DESIGN AND FULLY CAPABLE

BY JASON CIPRIANI

Mophie made a name for itself with its battery-pack cases for smartphones years ago. As the company grew, so did its product line. Portable batteries are a natural extension of Mophie's product offering. We tested the Powerstation Plus XL, a 12,000mAh (46.056Wh), lightweight battery pack. The \$99 pack includes a cable that's dual purpose, with a removable Lightning adapter for Apple devices and a Micro-USB adapter for everything else. There's also a standard USB-A port on the pack.

The built-in cable tucks into the edge of the pack, wrapping around roughly half of its perimeter. Removing the Lightning adapter to convert to Micro-USB is a breeze. A single Micro-USB port on the opposite end of the cable is used to charge the pack itself.



A power button and four indicator lights make it easy to quickly check on the charge level of the pack, and see how far along it is when being charged itself.

Included in the box is the battery pack and a short Micro-USB cable you can use to charge another device via the standard USB port, or charge the battery pack.

Using our testing procedure, we found the Powerstation Plus XL to have an amazing 93.41 percent efficiency rating. This is the highest rating we've seen on any of the battery packs we've tested. We were able to verify the 5V/2.1A output with testing equipment.

You won't find official Qualcomm QuickCharge 2.0 or

3.0 support, sadly.

The downside is that our testing revealed a pack that doesn't always charge at its advertised 5V/1.8A rate. Instead, the unit we tested charged at 5V/0.8A, taking a total of 12 hours to reach capacity. For a pack of this capacity, it shouldn't take that long to refill. A secondary test showed the pack charged at the advertised rate, cutting charge time in half.

BOTTOM LINE

At \$99, the Mophie Powerstation Plus XL isn't the least expensive battery pack we tested, and slow charging of the pack itself is disappointing. But it's the most efficient pack we've ever tested. ■



Mophie Powerstation Plus XL

PROS

- Lightweight and portable.
- Charging cable with dual charging tips included.
- Stand-alone USB port for additional device charging.

CONS

- Fickle charging input.

PRICE

\$99

COMPANY

Mophie



SECURITY CAMERA

GUARDZILLA 360: THIS SECURITY CAM MONITORS AN ENTIRE ROOM, BUT ITS UNPOLISHED APP SPOILS THE EXPERIENCE

BY MICHAEL ANSALDO

Home security cameras have a couple of ways of maximizing the amount of room real estate they can cover. Ultra-wide-angle lenses are the most common solution, but they often cause distortion as they squeeze the image to fit. Cameras with motorized pan-and-tilt features let you sweep the room, but this leaves you turning your back on one part of a room to see what's happening in another. The Guardzilla 360, as its name suggests, pulls off the neat trick of monitoring an entire room all at once.



The Guardzilla 360's camera points up from the top of the body to give you a panoramic view of the entire room.

The Guardzilla 360 uses the same pyramid design as the original Guardzilla All-In-One HD Security Camera ([go. macworld.com/all1](http://go.macworld.com/all1)), but this model is equipped with 1712p HD camera on the top pointing up. It also includes 360-degree PIR (passive infrared) motion sensors to detect movement from any angle, along with night vision, two-way talk, and an ear-splitting 100dB siren that can be set to go off when motion is detected. Three programmable call buttons on the body of the 360 allow

people in the house to send push notifications to users' smartphones.

When the Guardzilla 360 detects motion, it records an eight-second video clip of the triggering event. These clips are saved for free for up to two days in Guardzilla's Video Cloud Storage, from where they can be downloaded to your phone. You can upgrade to a seven-day storage plan for \$5 per month or \$50 a year, or a 30-day plan for \$9 per month or \$90 a year. Both subscriptions also extend video recordings to 30 seconds each.

Guardzilla also offers its own professional monitoring service as an add-on for \$10 a month.

SETUP AND USAGE

The Guardzilla 360 works with the companion app, which walks you through the steps of connecting to your Wi-Fi network. The process takes only a few steps and I didn't encounter any issues.

Because of the unique nature of the 360, placing it requires a little more thought than standard fixed-angle cameras. Ideally, you want an unobscured view from all angles, which eliminates mantles, bookshelves and the other spots where you'd typically park a camera. For testing purposes only, I settled on the dining room table. This also solved another potential issue—because the camera is on top pointing upward, you risk cutting off the view of a lower portion of the room if you place it too high.

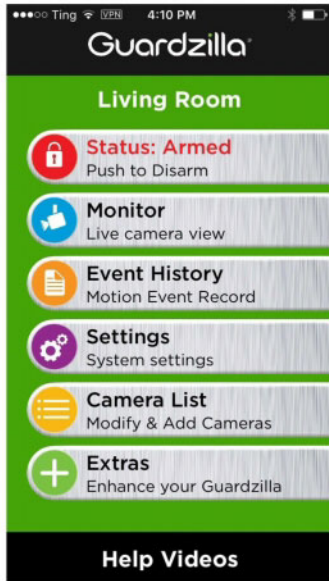
The Guardzilla app livestream displays a panoramic view of the room that you can view by either panning with your finger on your device's screen, or by leveraging your phone's accelerometer and moving the phone left or right. Both work, but panning was smoother with the latter method.

When viewing a static view of the room, however, the image shakes slightly from side to side. This was more

pronounced when I panned with my finger, shaking more violently between swipes. I eventually determined this is a byproduct of the accelerometer involvement, because it would stop when I set the phone down on a table. It might sound like a minor annoyance, but it can be a significant hindrance when you're trying to focus in on a certain area of the room.

The 360 worked well in other regards. Motion detection was accurate—thanks largely to its use of PIR sensors to detect warm bodies and ignore movement by non-corporeal objects—notifications were timely, and the auto-arm feature, which activates/deactivates the camera based on your proximity to home, operated as intended.

The Guardzilla app was more problematic. I used the iOS version, and while the dated design can be overlooked, other quirks are harder to ignore. While some camera features—like the livestream, arming and disarming, and event history—are visible and clearly labeled on the home screen, others are obscurely nested in the settings menu. The controls for adjusting the sensitivity of the motion and audio sensors, for example—a feature you usually fiddle with over time—are buried in the Other Settings submenu of the general settings menu, along with set-and-forget features like your time zone and account info. Ditto for night vision.



It's not instantly clear what some of the app's controls, like these POV buttons, do which can make using the 360 a frustrating experience.

It's also not clear what some features do. A settings icon on the live-stream screen opens a mini control panel with two prominent buttons labeled Show POV and Set POV. It's not at all clear from context what these buttons do. It turns out they let you set a starting point from which the camera will start panning.

In my case, it hardly mattered because the buttons didn't work. Neither did the one that's supposed to let you take a screenshot of the live stream. And the app crashed a lot, sometimes when I tried to change screens

and other times for no discernible reason at all. Guardzilla warned that there were "infrequent" app crashes on certain phones, and to just relaunch the app if you encountered them, but that solution wasn't effective for me.

The 360 works with Nest, Samsung SmartThings, and IFTTT, as well as with Amazon Alexa and Google Assistant voice commands. I used it with an Echo Show to arm the camera by saying "Alexa, tell Guardzilla I'm leaving." This requires you to set up a PIN that you're prompted to enter each time you ask Alexa to arm or disarm the camera.

BOTTOM LINE

The first thing to consider is whether you really need a 360-degree view of the room you want to monitor. Most security camera

users really only want to keep an eye on small areas of their home—points of entry like front porches and back doors or the rooms where their pet is corralled or their baby sleeps. For uses like this, a fixed-angle camera will suffice. If you decide you really want or need whole-room coverage, the 360 will give you complete coverage, but be aware you'll likely have to contend with its subpar app until Guardzilla can work out the kinks. ■



Guardzilla 360

PROS

- Provides a 360-degree view of the whole room it monitors.
- Uses passive infrared sensor to detect motion and reduce false alerts.

CONS

- App has dated design with unintuitive layout.
- App crashes frequently.

PRICE

\$229

COMPANY

Guardzilla

WHAT'S NEW AT THE APP STORE



GRID AUTOSPORT

There's no shortage of great racing games on iPhone and iPad, and we picked our faves over the summer—but we might have to tweak that list after playing GRID Autosport (go.macworld.com/gas). It's billed as a console-quality mobile game, and that's absolutely true since it's a port of a 2014 console and PC game. And it really hasn't suffered in the transition to touch devices

GNOG



Games like The Room try to challenge and befuddle players with its puzzle boxes, while

GNOG (go.macworld.com/gno) instead seems content to entertain more than confound. It too gives you a series of puzzling boxes or devices to try and unlock and explore, but it has a very loose and light feel to the exploration, encouraging you to poke and prod until something new happens.

FlipFlop Solitaire



Zach Gage is a prolific game designer, but lately he's been focused on tweaking classic

games into something fresh and exciting for mobile. He did that with the great Sage Solitaire and last year's Really Bad Chess, and now he's remixing the former card game classic again with the new Flipflop Solitaire (go.macworld.com/ffs).

Tower Fortress



Nitrome publishes some of the best pixel-packed games on the App Store, so the release of Tower

Fortress (go.macworld.com/twf) certainly caught our attention. It's a bit like Downwell in reverse, albeit without the sort of frantic helplessness of falling into an unknown darkness filled with things that can kill you. —ANDREW HEYWARD

iPHONE X CASES

THE FLASHIEST, BEST-LOOKING YOU CAN BUY

Prevention is definitely key, but you don't have to wrap your phone in layers of ugly foam and rubber. Here are 12 stylish cases to check out—some might even be prettier than the iPhone X itself **By Sarah Jacobsson Purewal**



CASE-MATE MOOD

go.macworld.com/cmm

Who needs a mood ring when you can have a mood case? Case-Mate's dual-layer Mood case (\$50) has two parts: a flexible, shock-absorbing sleeve with metallic purple button covers, and a rigid backplate adorned with temperature-changing film. When you're not touching the case, it's mostly blue—the bumper is a bright metallic turquoise, and Case-Mate's signature metal accent is at the bottom is an oil-slick of blue-purple-pink. When you touch the film on the back of the case, it changes from blue to purple-pink (depending on the temperature). Temperature-changing film is definitely not new, but if you fiddle with your phone frequently I think you might get some neat results.



SPIGEN CRYSTAL HYBRID GLITTER CASE

go.macworld.com/sch

Spigen's Crystal Hybrid Glitter case (\$35) is sparkly, see-through, and has a built-in kickstand! This dual-layer case comes in two parts: a flexible, glitter-infused translucent sleeve, and a rigid bumper that snaps around the edge of your phone. Spigen says this is a rugged case, so don't worry if you drop your phone—the case has been tested to protect your iPhone from drops of up to four feet. You can pick this case up in three colors—gold (clear glitter-infused sleeve with a gold bumper), rose (pink glitter-infused sleeve with a pink bumper), and “space” (black glitter-infused sleeve with a black bumper).

CASETIFY IPHONE X IMPACT CASE

go.macworld.com/cip

If glitter and bling aren't your thing but vintage botanical drawings are, Casetify has a gorgeous selection of hand-picked art for its iPhone X Impact cases (\$45). The Impact case is a rigid translucent case lined with Casetify's trademarked shockproof "qitech" material. According to the company, this material allows for extra protection, and the case has been tested to protect your phone from drops of up to 6.6 feet (two meters). The Impact case is clear, but you can pick the color of the qitech lining: black, baby pink, "tart" (coral/orange), or "frost" (clear/translucent).





INCIPIO HAVEN LUXE CASE

go.macworld.com/ihl

Incipio's Haven Lux case (\$35) is simple and understated—an elegant version of that cheap plastic case you bought off Ebay. This case is lined with shock-absorbing material and has a thick edge that surrounds your phone's screen, so even if you drop your iPhone face-down there's a chance your screen will be saved. The Haven Lux case has been tested to withstand falls of up to six feet, and it has a glossy finish that feels awesome and resists scratches. This case comes in four chic colors: black, merlot, navy, and rose gold (shown here).



NOMAD CLEAR CASE

go.macworld.com/ncc


Nomad's Clear case (\$40) is perfect for those who want something a little rustic...but not too rustic. This snap-on case is made of clear polycarbonate fused to a rubber thermoplastic bumper, which adds a little lip around the edge of your phone and gives you something to grip onto. If you do happen to drop it, the case should do a good job of keeping your phone from exploding—it's been tested to protect against drops of up to six feet. However, don't be deceived by the name: the Clear case isn't totally clear. Part of the back plate is covered with a square of dark brown vegetable-tanned Horween leather, which will develop a cool vintage-y patina as you use it.

ROXXLYN MARBLE CASE

go.macworld.com/rtmc

Have an extra \$200 lying around and feel like buying something frivolous? Instead of getting that cheap marble-printed phone case from Urban Outfitters (although it does look pretty cool), splurge on the absurdly luxurious Marble case (\$186) from Roxxlyn. This hand-made case is made of “sun-polished” anodized aluminum and genuine gray marble stone from the Antolini facilities in Verona, Italy.





I DARE YOU
TO BE THE
Teacher
I NEVER FORGET

Dare to find a career where you can truly make a difference. Your skills and talents could be exactly what we need to build the next generation of great teachers. Get resources to explore whether teaching is right for you at [teach.org](https://www.teach.org).

TEACH  



iPHONE X: The thrill is back.

Apple delivers more than just a great phone: it's the rush of holding the future in the palm of your hand.

By Roman Loyola

This is it—the iPhone that longtime Apple users have been waiting for. The iPhone X (go.macworld.com/phox) brings back the thrill of the original iPhone, which was introduced 10 years ago. It breathes new life into the product line with an eye toward the future, while providing plenty of functionality for today.

What makes the iPhone X exciting? First, there's the TrueDepth camera, used for Face ID (Apple's new security feature), as well as augmented reality. Then there's the OLED display, which is so good-looking, you may make the iPhone X your

primary device to look at pictures and watch video. And last but not least, there's the A11 Bionic processor, which brings the iPhone to a new level of performance.

The iPhone X also has a bunch of other great features: new cameras, a bigger screen in a smaller form factor, and a new beautiful physical design. In all, the iPhone X is a remarkable achievement by Apple—and at \$999 (64GB) and \$1,149 (256GB), one that you'll pay a pretty penny for.

Let's go over the main features of the iPhone X. I've ordered them according to what I think buyers will want to know about most.

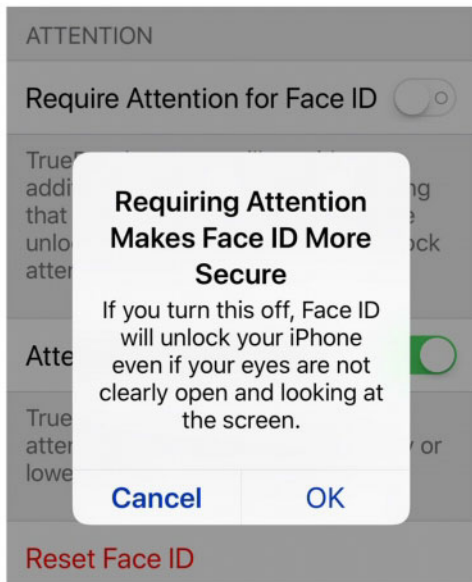
FACE ID

The iPhone X feature that's gotten the most attention is Face ID (go.macworld.com/face), Apple's technology for unlocking the iPhone X and authenticating your ID. It replaces Touch ID, Apple's fingerprint technology that served the same purpose. I'm not going to dive into the details on how it works in this review, as we have a Face ID FAQ (go.macworld.com/faq) that covers that information.

Setting up Face ID is easy. In a process similar to Touch ID, where the Home button records several impressions of your fingerprints, the Face ID setup has you move your head in different angles as the TrueDepth camera system records different spots on your face. It takes a few



Setting up Face ID is very easy and takes a couple of minutes.



By default, Face ID requires your eyes to be open in order for it to work, but if you go into Settings → Face ID & Passcode and turn off the Require Attention For Face ID setting, Face ID will work when you have your eyes closed.

minutes, and then it's ready to go.

Face ID only allows a single person to register his or her face. Touch ID, conversely, allows you to register different fingers, which means you can register the fingerprints of other people who you want to have access to your device. This is handy if you're OK with, say, your significant other having access to your iPhone. Maybe Face ID's one-face limitation will change if Apple decides to use Face ID on the iPad, a device that's

more likely to have multiple users.

I had some concerns about Face ID because Touch ID has become seamlessly integrated into how I use my iPhone. But as it turns out, there was nothing to be concerned about. In fact, Face ID delivers more seamless integration than Touch ID.

When it works, Face ID works really well. At first, I had a tendency to wait for the lock icon on the screen to unlock, but the key is to not wait. You should swipe up to get to the Home screen as you're looking at the iPhone X. It takes some practice, but before too long, unlocking the phone feels effortless.

I've had conversations with Android users who've tried the iPhone X, and their main beef with Face ID is that it's too slow compared to a fingerprint scanner. But in their limited time with the iPhone X, they're not accessing the Home screen in the manner I described above—and since they're not invested in the iPhone, they're not willing to learn, either. It's still true that access to the Home screen using Face ID isn't as fast as using a fingerprint scanner, but it's maybe a half-second slower at most. If that half-second is all the difference to you, then I hope you're using that time wisely.

Using Face ID with some third-party apps is done in a manner similar to that of Touch ID. For example, with the app for my bank and with Dropbox, the login screen

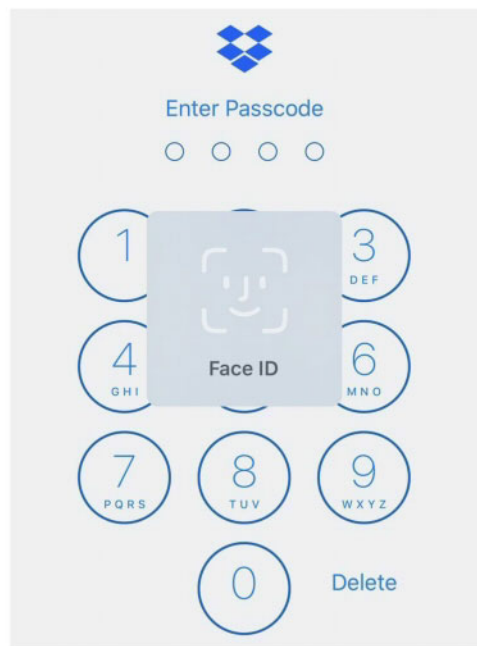
appears, and then a Face ID icon appears, and then the app unlocks. It's really no different than how Touch ID was implemented in those two apps, thus, it's no more convenient.

Face ID has a certain viewing angle you need to be within to work, which is where I have a very minor issue with the technology. I try to keep my personal correspondence on my iPhone when I'm using my work laptop, and the iPhone X lays on my desk to the side. When I get a text, I can see it on the iPhone's lock screen. On the iPhone 6s Plus, I use Touch ID to unlock my iPhone while it's still at my side. But with the iPhone X, my face is out of range of the TrueDepth Camera. The solution to this minor issue: Move the iPhone X in a new location so it's within range of my face. I have also found that Face ID works when the iPhone X is in my car mount, which is attached to an air vent to the right of the steering wheel.

Apple is very confident in Face ID's security, stating that it's much more secure than Touch ID. Many other publications have tried to see if they can trick Face ID, with their results matching what Apple has said: that twins can bypass Face ID. Since I don't have access to twins, I didn't test this, but Face ID wasn't fooled when I tried to have my two sons access the iPhone X. A recent Wired story (go.macworld.com/brke) says that hackers have been able to

crack Face ID by creating a mask, which essentially means that a nefarious person needs to pull off some *Mission: Impossible*-type antics. Likelihood of this happening to you? I'd say almost nil.

Apple has said a lot about how it believes augmented reality is going to be a big deal, and we've seen AR apps, like Ikea (go.macworld.com/ikee), The Machines (go.macworld.com/mach), and AR MeasureKit (go.macworld.com/armk). There are even rumors of Apple working on an AR wearable (go.macworld.com/wear). The TrueDepth camera will have a



Third-party apps like Dropbox have updated its apps with Face ID support.

big role in AR, and Apple demonstrated how it can be used with its recent release of Clips 2.0 (go.macworld.com/clip). Clips uses the TrueDepth camera so it can filter out background objects for its Selfie Scene feature, and the app can use you in the foreground for a virtual scene. Other than some issues with clipping your foreground image, the Selfie Scene implementation works quite well. Expect to see a lot of fun and innovative apps that use the TrueDepth camera coming soon in the App Store.

THE SCREEN, THE NOTCH, AND HEAD GAMES

The other feature that demands your attention is the iPhone X's screen. It's the first iPhone with an organic light-emitting diode (OLED) display. It's also the biggest iPhone display, measuring 5.8 inches diagonal.

I can't emphasize enough how much I love the iPhone X's screen. I can say it's gorgeous, but that feels like an understatement. The colors are rich and pop, text looks clean and sharp, and the black is so deep that I actually find it mesmerizing. I've seen lots of screens that



With black wallpaper (included in the iPhone X), you barely notice the notch.

don't look black—more like a 98 percent gray—and as stupid as it sounds, I like to gaze at the black gap on the second page of my Home screen. This is the best screen I've seen on an iPhone.

OLEDs are currently susceptible to burn-in, the effect where you can see a shadow of an image when something else is on screen. This was evident in Google's Pixel 2 phone, which also uses an OLED. Apple has even stated in a knowledgebase article that burn-in on the iPhone X's display is "expected behavior" and that the company has done what it can to minimize burn-in. I haven't noticed it in the nearly two weeks since I've had the iPhone X, but it is something I'll keep an eye on and will update this review accordingly should anything change.

When first using the iPhone X, I had to get over the false impression that the iPhone X's screen is smaller than what I'm used to on the iPhone 6s Plus. Based on diagonal measurement (the standard used for screens, TVs, computer displays, etc.), the iPhone X is bigger (5.8 inches) than the iPhone 6s Plus (5.5 inches, the same as the iPhone 7s Plus and the iPhone 8 Plus). The iPhone X's screen is slightly narrower, though, and noticeably taller. Overall, it's a bigger screen.

But it's not the screen that gave me the impression that the iPhone X's is smaller. It's the bezel on the Plus iPhones. The black border on the Plus iPhones, even though they aren't part of the screen, unconsciously became part of the screen in my head. It took me a few days to clear this psychological hurdle (or optical illusion, if you will). While showing the iPhone X to other people, some of them also were fooled into thinking that the iPhone X's screen is smaller, so I think this could be a



The notch does get in the way when watching a full-screen video. In this video, a person is obscured by the notch. You have the option of resizing the video so that the picture avoids the notch.

phenomenon experienced by many new iPhone X owners.

What didn't take me long to get over was the notch. Yes, the notorious notch, the one that houses the TrueDepth camera system. I found it a distraction at first, but it was yet another head game I played on myself—what really bugged me wasn't the actual notch, but that I feel like the notch goes against Apple's design aesthetic. But I was able to realize that in typical use, I don't notice the notch at all. Even with full-screen videos, the notch doesn't bother me. (There is an option to resize videos so as to avoid the notch, but that means video is smaller than full-screen.)

GESTURES AND THE LEARNING CURVE

Apple had to come up with a new set of gestures to make up for the lack of a Home button on the iPhone X. I learned these new gestures quickly—you use them a lot, so if you need “practice” for the muscle memory to kick it, you’ll get it.

We have a complete list of the new gestures (on page 43) you’ll need to learn. Most of them are simple, like swipe up from the bottom to get to the Home screen, or swipe down from the top of the display’s right side to get to Control Center.

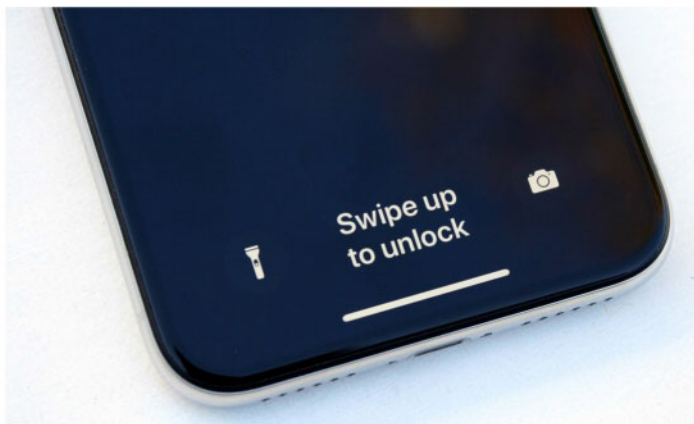
Speaking of the Control Center swipe, it’s the one new gesture I don’t like—you really need to reach to the top of the screen area next to the notch, and this requires more effort than the previous

Control Center gesture (swipe up from the bottom of the screen, which works on the iPhone 8 and older iPhones).

The iPhone X’s lock screen has two quick access buttons—one for the flashlight, and another for the camera. They’re easy to get to at the bottom of the screen, but simply tapping each button doesn’t activate it. You need to do a hard press, like you do for 3D Touch. A hard press is necessary, because you don’t want these buttons activating while in your pocket, and these lock screen functions don’t require Face ID verification to work. But there’s nothing in the included documentation that tells you how to use these buttons.

People’s tolerances for interface changes varies, and I can see how someone would absolutely hate not

having a Home button. If you’re one of those people, then the iPhone X is not for you. But keep in mind, the Home button is probably not in the iPhone’s long-term plans. It could be five or six years before we see Apple completely abandon the Home button, but it will happen eventually.



To use the Flashlight or Camera from the lock screen, you perform a hard press on each button, similar to a 3D Touch.

THE CAMERAS

The iPhone X's rear camera has a 12-megapixels dual lens camera with a $f/1.8$ wide-angle aperture, $f/2.4$ telephoto aperture, optical zoom, 10x digital zoom, and optical image stabilization on both lenses.

The pictures from the iPhone X are excellent, with vibrant colors and great sharpness. The iPhone X seems better at handling a wide array of lighting situations compared to other iPhones I've used in the past. As someone who has no skill at adjusting camera settings and prefers to rely on automatic settings, the iPhone X produces results that make me very happy.

The camera feature that I really want is the optical image stabilization on both lenses. My lack of a steady hand (or my heavy-handedness with pushing the shutter) often results in



Shot with no flash at 1x zoom.



Landscape shot at night, no flash, 1x zoom.

jitter that creates blur, and I found that with the iPhone X, I had more good pictures than blurry, unacceptable ones.



Portrait Lighting mode on the iPhone X can be hit or miss.

The iPhone X comes with the new Portrait Lighting mode, a special camera mode that applies different lighting effects to portraits. (On the iPhone X, this feature is available on both the front and rear cameras.) The results you'll get with Portrait Lighting are mixed. I found that the Natural Light setting worked the best, producing even results and nice bokeh. Contour Light and Studio Light seemed to create hot spots depending on the angle of the subject, but emphasized different detail elements to change the emotion of a picture.

Two of the Portrait Lighting modes, Stage Light and Stage Light Mono, are just... well, I'll say that I'm not going to use them. The pictures I took using these settings—as well as a vast majority of the pictures I've seen from other people—look cheesy, and they'd be used as examples of bad image editing. Apple decided to label Portrait

Lighting mode as beta, seemingly as an excuse for the mixed results, so let's hope we see improvements in the near future.

The rear camera is capable of shooting 4K video at 24 frames per second, 30 fps, or 60 fps. Shooting 4K video at 60 fps feels overindulgent, and if you have only 64GB of storage, it's probably a setting you will seldom use. But gosh, it looks so buttery smooth and the detail is amazing. If you have a 4K TV and love shooting your own videos, 4K at 60 fps is the reason why you need to get 256GB of storage. If you don't want to shoot any kind of 4K video,

you'll be happy with the 1080p and 720p video from the iPhone X.

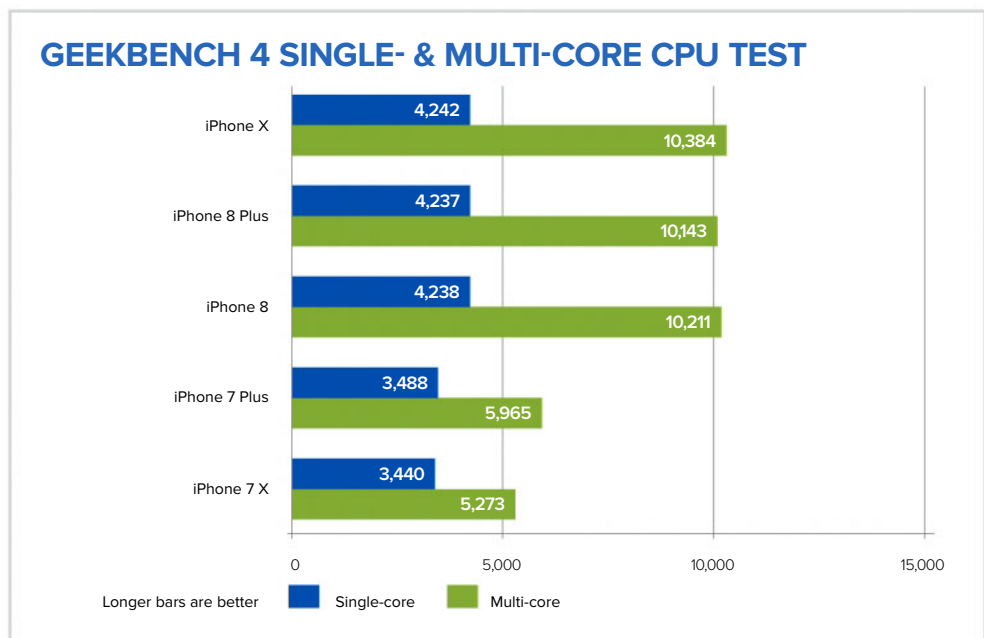
My favorite new feature of the video camera is the Super Slo-mo mode, which captures video at 240 fps at 1080p resolution. It's another space-hogging camera mode, but it's oh-so-fun.

Speaking of fun, I have to mention the new Animoji, since they're exclusive to the iPhone X (for now). Animoji uses the TrueDepth camera to sync your head and facial movements to an animated emoji. You've surely seen them all over the Internet, and it's guaranteed to make you laugh. You can learn more in our Animoji FAQ on page 46.

PERFORMANCE AND BENCHMARKS

The iPhone X sports Apple's new A11 Bionic processor, a 64-bit six-core beast. It has a pair of performance cores that Apple says are 25 percent faster than its predecessor, the A10 Fusion. And Apple says the A11 Bionic's four efficiency cores are 70 percent faster. We used the Geekbench 4 (go.macworld.com/gkb4) app (\$1) to get an idea of the speed of the A11 Bionic in the iPhone X.

Obviously, the A11 Bionic is faster than the A10 Fusion, but what's of note here—and not surprising—is that the iPhone X essentially performs the same as the



iPhone 8 and iPhone 8 Plus. These three phones have the same processor, so if all you want in a new iPhone is faster performance and you could not care less about new features like Face ID or the cameras, get an iPhone 8 and save some serious cash.

Overall, the iPhone X feels like a snappy phone when launching apps, unlocking the phone, playing videos (streaming and stored on the iPhone), and other tasks. When I tried doing simple video edits in iMovie, or when I created a short video in Clips, the iPhone X rolled along smoothly, though the higher the resolution of the video, the more performance was hit—but never to a point where I was left frustrated.

BATTERY LIFE

Apple states the following statistics for battery life:

- > Up to 21 hours talk time
- > Up to 12 hours Internet use
- > Up to 13 hours wireless video playback
- > Up to 60 hours wireless audio playback

No one performs only a single task on their phone. When was the last time you spent a day using your iPhone just for

phone calls? What's important is whether or not you can get through a day on a single battery charge, using your phone for different tasks. And the more power you have left on your phone at the end of the day, the better.

The day I decided to keep a close eye on battery life was a particularly busy day for the iPhone X. I used the phone for email, texts, and a phone call of five minutes. I looked up a recipe on the

Overall, the iPhone X feels like a snappy phone when launching apps, unlocking the phone, playing videos (streaming and stored on the iPhone), and other tasks.

Internet, tracked my fantasy football team throughout the day, and got driving directions for a 30-minute trip through downtown San Francisco. I shot 129 photos and 9 short videos, and uploaded them via Wi-Fi to my Dropbox account. I watched a couple of streaming YouTube videos (one over Wi-Fi, the other over LTE) for a total of about 30 minutes. And at the end of the day, I took my dog for a walk for over an hour and played Pokémon Go (which is a battery killer).

After all that, the iPhone X's battery life was at 52 percent—before I went on my Pokémon Go dog walk, the battery

was at 71 percent. Typically, I'm not this busy with my phone, so I can get through a working day without worrying about charging the iPhone X. Of course, your mileage may vary.

MOSTLY GLASS DESIGN

With the 2017 iPhones, Apple decided to go back to a glass front and back. The main reason for this is so that the phone can support wireless charging. The iPhone X works with wireless chargers that adhere to the Qi standard (go.macworld.com/qist).

I don't have a wireless charger to work with the iPhone X, and frankly, I think wireless charging is overrated. Sure, it's convenient; just place the iPhone X on the charging pad (if it's in a non-metal case, you can keep it on), and that's it, the pad does all the work and charges the phone. Of course, you have to place the iPhone X properly; if it's slightly off to the side, it won't charge. To me, it's not that much of an effort to plug a Lightning cable into the iPhone X. And you have to pay extra for a wireless charger, whereas the iPhone X comes with a 5-watt adapter and a

Lightning cable. Finally, there's no speed advantage (as of yet) to using a wireless charger. But hey, just because it's not something I'm interested in doesn't mean it's not right for you. I just don't see wireless charging as something you need to think about when deciding if you want to buy an iPhone X or not.

The glass construction feels nice in the hand, and on the silver iPhone X that I have, the silver steel frame between the two pieces of glass sparkles and dazzles—it looks so good that it's a shame that I keep my iPhone X in a case. (Glass, even as strong as the glass on the iPhone, still isn't as strong as metal and can shatter after a fall.)

The back of the iPhone X, like other iPhones, is still saddled with a camera



The back of the iPhone X uses glass to allow for wireless charging.



The camera bump.

bump. As I mentioned earlier, I often use my iPhone by my side when I'm on my work computer, and the phone can't lay flat on its back, rocking in a teeter-totter motion when I tap on the screen. Fortunately, the case I use provides enough thickness to compensate for the camera bump and let the iPhone X lie flat. But it sure would be nice if the bump went away, either by advancements in camera technology, or by making the iPhone thicker (maybe add more battery?).

BOTTOM LINE

2017 marks the tenth anniversary of the iPhone. What I remember most about the first iPhone was my sense of astonishment. Sure, it had its flaws, but I felt like I was holding the future of computing in the palm of my hand.

However, with each new generation of iPhones introduced, I started to feel less and less like the iPhone was a harbinger. The new features felt more like incremental steps that

helped solve a current problem rather than giant leaps that made you wonder what incomprehensible thing will be unleashed. That's not to say that those iPhones were bad products; on the contrary, they were great. But they weren't inspirational.

And now we have the iPhone X, and that sense of astonishment and inspiration is back, for me. That's mostly because of the TrueDepth camera and the A11 Bionic—AR development could really take off, and it's going to be fun to see what comes of it.

Other features, like the spectacular quality of the OLED screen, the bigger screen in a smaller footprint, and the cameras, complete the package.

All of this comes at a big price—the iPhone X is the most expensive phone Apple has ever made. Is it worth it? If you simply want a great tool for the job, you'll probably be fine with the iPhone 8 (go.macworld.com/ifo8). But if you are a true iPhone fan, or you like the idea that the future is in your hand, you need the iPhone X. ■



iPhone X

PROS

- Gorgeous OLED display
- Face ID works better than expected
- Excellent photo quality.

CONS

- Expensive.
- Mixed results with Portrait Lighting.
- Extra caution needs to be taken with the all-glass design.

PRICE

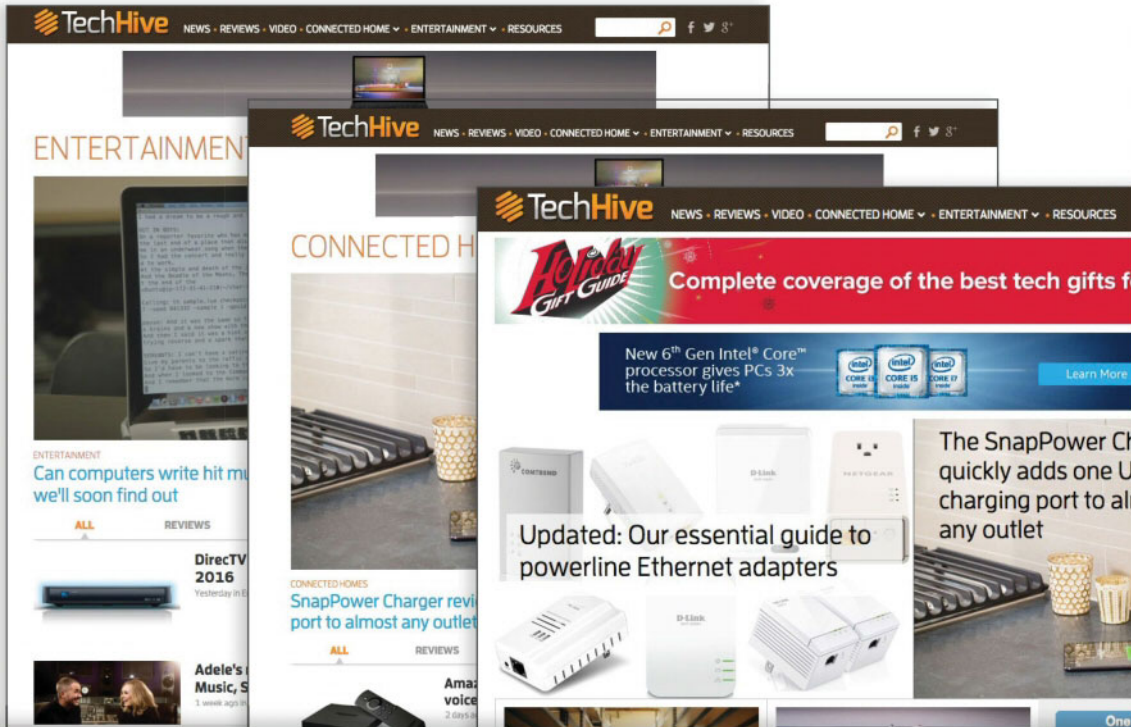
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IPHONE

POWER ADAPTERS

TESTED

IS FAST CHARGING
WORTH THE PRICE?

We tested charging speeds on the iPhone X, 8 Plus, and 7 Plus with five different power adapters. The results may surprise you. **BY JASON CROSS**

New to this year's iPhones is fast-charging capability. According to Apple (go.macworld.com/ata), you can juice up your phone to 50 percent in just 30 minutes! There's just one catch: You have to buy a new power adapter. Oh, and a new USB-C to Lightning cable, too. That's two catches, and it's starting to sound expensive.

Is it even worth it? We grabbed five power adapters and three iPhones, ran a bunch of tests, and got to the bottom of the iPhone charging mystery. The truth is, while USB-C fast charging certainly works, you're much better off buying Apple's 12W USB-A Power Adapter (go.macworld.com/pwa)—the one that comes with most iPads. It's a lot less expensive (\$19) and nearly as fast.

HOW WE TESTED

The iPhone X, 8, and 8 Plus all support fast charging from USB-C power adapters that support the new USB Power Delivery (USB-PD) specification. It's the same way the new MacBooks get charged over USB-C.

But we wanted to see how well that stands up to using the adapter that comes with your phone, and the 12W adapter that Apple includes with iPads. What's more, we wanted to see how these new phones stack up against older iPhones that do not officially support USB-PD fast charging.

We tested three phones: iPhone X (go.macworld.com/ix), iPhone 8 Plus ([go.](https://go.macworld.com/i8p)

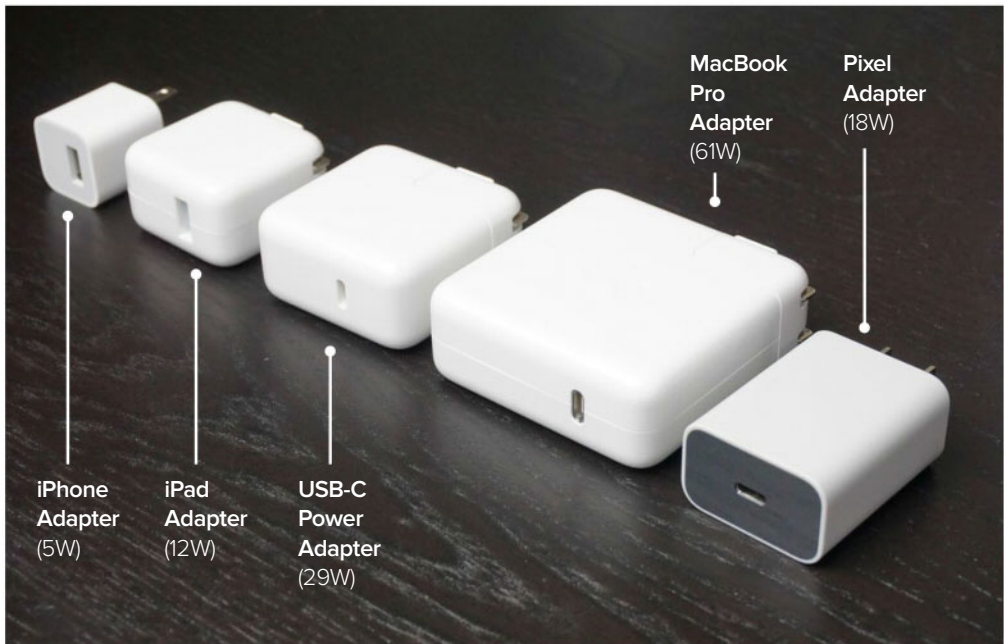
[macworld.com/i8p](https://go.macworld.com/i8p)), and iPhone 7 Plus (go.macworld.com/i7p).

The iPhone 8 Plus and X have essentially the same size battery. The former is 2691 mAh and the latter 2716 mAh—that's about a 1 percent difference, so we'll just call those 2700 mAh. The iPhone 7 Plus has a slightly larger battery at 2900 mAh. That's less than 8 percent larger, but it is enough of a difference that, even if the iPhone 7 Plus were to draw just as much power as the other phones, it would take just a little bit longer to charge up.

For each of these phones, we drained them to 1 percent remaining battery life, then made sure no apps were running and the phone was in airplane mode to prevent any background activity like app updates or photo syncing. We then charged them up with each of our five test adapters, making note of the charge level every five minutes.

The five adapters tested, along with their price and maximum output wattage, are as follows:

| ADAPTER | MAXIMUM OUTPUT | PRICE |
|---------------------|----------------|------------------------|
| iPhone | 5W | (included with phone) |
| iPad | 12W | \$19 |
| Apple USB-C | 29W | \$49 (plus \$25 cable) |
| 13-inch Macbook Pro | 61W | \$69 (plus \$25 cable) |
| Google Pixel USB-C | 18W | \$35 (plus \$25 cable) |



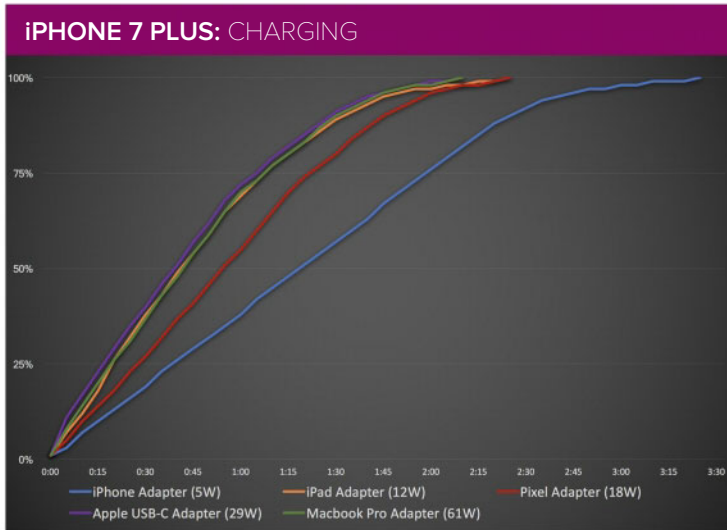
The five adapters we tested.

To be sure, Apple's 29W USB-C Power Adapter (go.macworld.com/29pa) is probably overkill, able to supply more power than the phones will accept. And that's certainly true of the 61W USB-C Power Adapter (go.macworld.com/61pa) for the 13-inch MacBook Pro. But we wanted to see how well the new iPhones use the USB-PD spec to negotiate power delivery speeds to get the most out of higher-wattage adapters.

That's the point behind testing the 18W USB-C Power Adapter for the Google Pixel. It operates using the USB-PD spec, and delivers plenty of power for a phone

at 18 watts. It should, in theory, be just as fast as Apple's USB-C adapters.

You can, of course, buy less expensive USB-C adapters than Apple's. Any USB-C adapter that supports USB Power Delivery should work just fine. Here's one for \$25 (go.macworld.com/25a, we haven't tested it). But no matter what USB-C power adapter you use, you're going to need a USB-C Lightning cable. Apple sells those for a whopping \$25 for a 1-meter cable (go.macworld.com/1m), or \$35 for a 2-meter cable (go.macworld.com/2m). That sound you hear is your wallet crying.



nearly identical performance, charging the phone to 85 percent in about an hour and 20 minutes. That's an hour faster than the in-box charger. The Pixel adapter is considerably faster than the included charger, but slower than Apple's 12W iPad

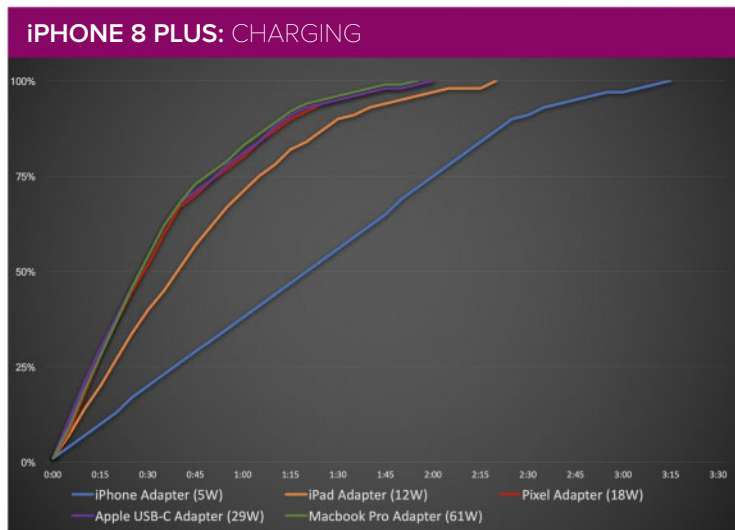
CHARGING RATES BY PHONE

Let's take a closer look at how each phone performs when charged up with each of these five power adapters.

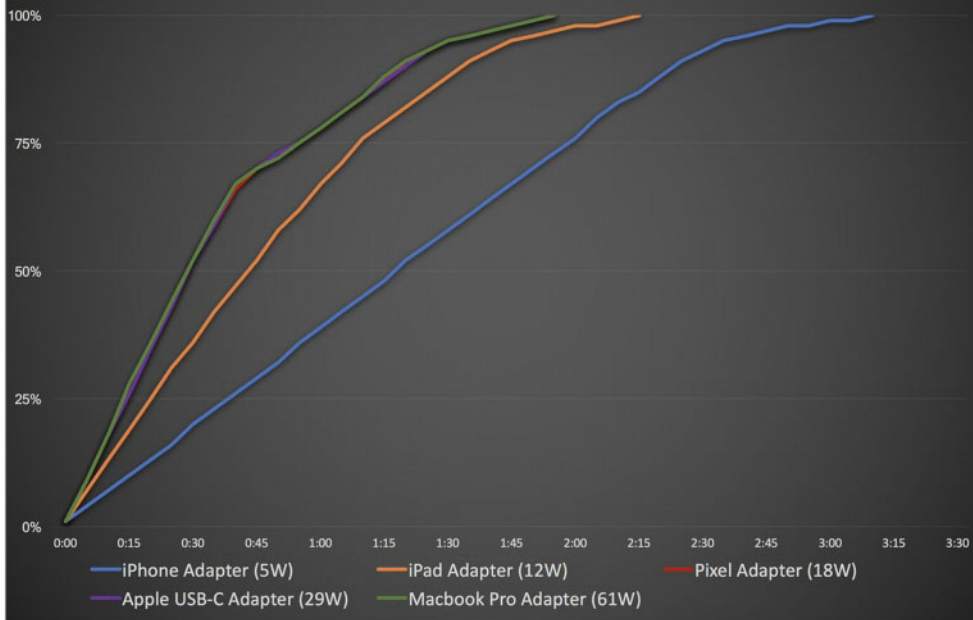
The iPhone 7 Plus, which has no official support for USB-C fast charging, delivers some interesting results. With the included 5W adapter, the phone takes almost 3.5 hours to fully charge. The 12W charger and all of the Apple USB-C chargers deliver

adapter or any of its other USB-C adapters. Weird!

The iPhone 8 Plus charges at the same speed as the 7 Plus when using the 12W



IPHONE 7 PLUS: CHARGING



IT LOOKS LIKE THE NEW PHONES DEFINITELY SHOW BENEFIT FROM USB-C CHARGERS, BUT EVEN OLDER PHONES LIKE THE IPHONE 7 PLUS CAN USE THEM AND CHARGE MUCH FASTER THAN WITH THE INCLUDED 5-WATT ADAPTER.

iPad adapter. But the USB-C adapters, including the Pixel's, all perform the same and are a bit faster. It's clear that the newer phone is negotiating proper speeds with the USB-C chargers via the USB-PD standard, and that they all deliver as much power as the phone can handle. But the big news here is that the 12W Apple adapter, which requires no new and expensive cable, gets

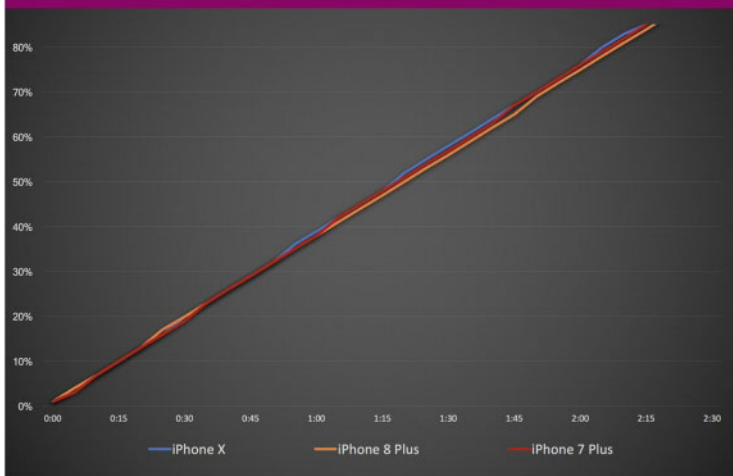
most of the way there. The USB-C chargers are maybe 20 to 25 percent faster.

The iPhone X story is essentially identical to the iPhone 8 Plus. The USB-C chargers get you just over 50 percent in half an hour, and fully charge the phone in just under two hours. The 12W Apple adapter is only about 20 minutes behind.

It looks like the new phones definitely

show benefit from USB-C chargers, but even older phones like the iPhone 7 Plus can use them and charge much faster than with the included 5-watt adapter. Still, given the high costs of the adapter and the USB-C Lightning cable you need to buy to use it, the \$19 12W Apple adapter (go.macworld.com/12w) looks like a real deal. It's much faster than the 5W adapter, works with all iPhones, and doesn't require a new cable.

5W iPHONE ADAPTER: CHARGING RATES



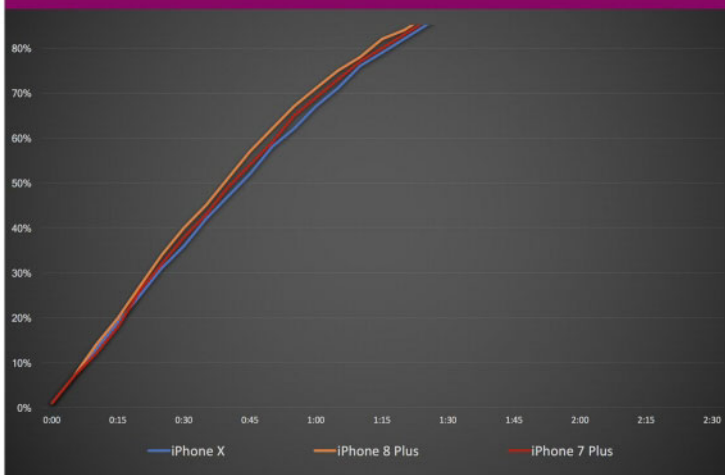
CHARGING RATES BY ADAPTER

And you can see in the charts above, no matter which phone or power adapter is

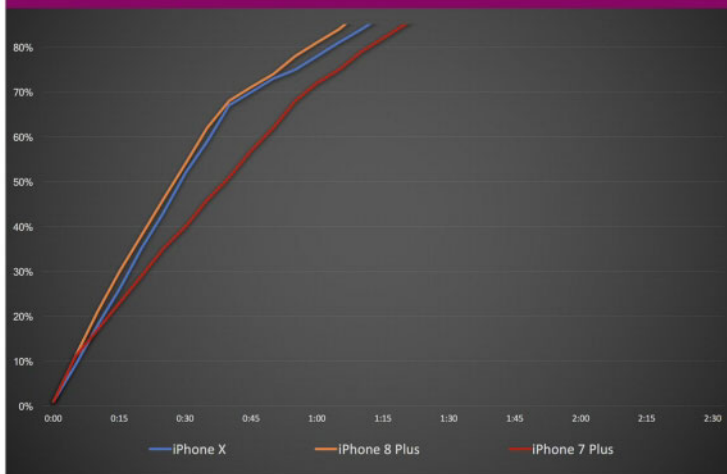
used, the charging rates become very slow after about 85 to 90 percent.

Once the phones reach that point, they climb very slowly up to 100 percent. This is perfectly normal behavior for all phones. A lithium ion battery should only be charged at a certain rate once

12W iPAD ADAPTER: CHARGING RATES



29W USB-C ADAPTER: CHARGING RATES



speed differences between the different chargers.

The 5W adapter included with each iPhone is just *painfully slow*. No matter which phone you have, it charges at roughly 0.6 percent per minute. It takes about 2 hours 15 minutes to get up to 85 percent.

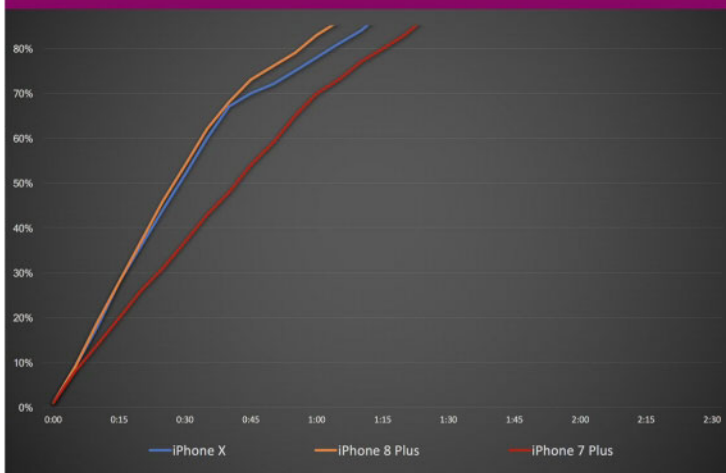
With Apple's \$19

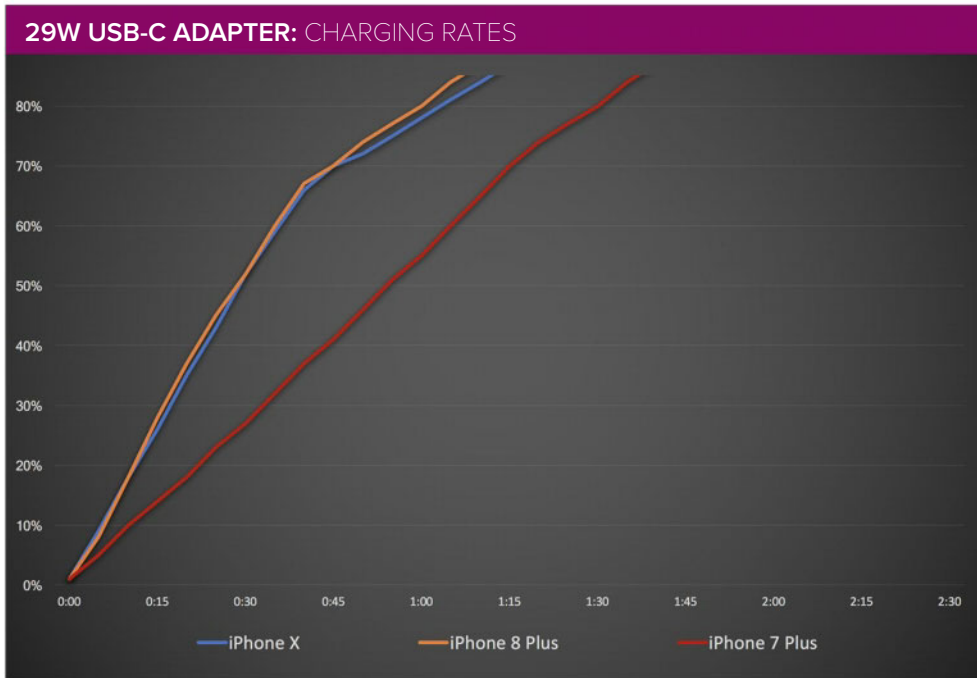
it nears capacity, both for safety and to help preserve the longevity of the battery.

Therefore, to make the differences between the various power adapters a little clearer, these next graphs will show the charging rate only up to 85 percent. After that, every adapter is so slow that the differences between them are essentially meaningless, and simply showing how long it takes to get from empty to 100 percent obscures some of the real

12W power adapter, charging speeds skyrocket on all three phones. They're quite similar—all within about 5 minutes of each other. It takes about 1 hour 20 minutes (give

61W MACBOOK PRO ADAPTER: CHARGING RATES





or take a few minutes) to charge up to 85 percent, regardless of iPhone model. That's about 70 percent faster than the included 5W charger, and you don't even need to buy a new Lightning cable!

Apple's cheapest USB-C adapter costs \$49 (go.macworld.com/cac) and requires you to buy a \$25 USB-C Lightning cable (go.macworld.com/lcai). What benefit do you get? With the iPhone 7 Plus, none at all. It's exactly as fast as the 12W adapter. If you have an iPhone 8 Plus or iPhone X, you'll get to 85 percent about 10 to 15 minutes faster. The newer phones definitely see improvement with USB-PD

compatible adapters, but it seems to taper off after about 70 percent charged.

Apple's claim of charging to 50 percent in 30 minutes with the iPhone 8 and X is absolutely true with a USB-C adapter that supports USB-PD. It takes 10 minutes longer to get to 50 percent with the 12W adapter, or with the older iPhone 7 Plus.

The MacBook Pro power adapter uses the USB Power Delivery standard, and sure enough, it performs *exactly* as the 29W adapter does. The differences are well within the margin of error. This is unsurprising: none of these phones can draw 29 watts, let alone 61 watts, so any

properly negotiated charging speed will be maxed out on both of them.

Google's 18W USB-C Power Adapter for its Pixel phones costs \$35 (though you can sometimes find it for less), and comes with a USB-C cable. So while you'll still need a USB-C to Lightning Cable (\$25 for 1 meter, \$35 for 2 meters), at least you'll get an extra USB-C cable out of the deal. The maximum power output is 18 watts and that seems enough to charge the iPhone 8 Plus and X at their maximum speeds, just like Apple's USB-C adapters.

But the iPhone 7 Plus results are interesting. While Apple's USB-C adapters charge this older iPhone at the same speed as the 12W USB-A adapter, Google's USB-C adapter (despite also adhering to the USB-PD standard) is slower. It's a lot faster than the 5W adapter included with the phone, but not quite as fast as the 12W adapter.

THE BEST IPHONE POWER ADAPTER TO BUY

Whether you have one of the latest iPhones or a somewhat older model, it's worth your while to buy the \$19 Apple 12W USB Power Adapter ([go. macworld.com/pada](http://go.macworld.com/pada)). It uses the same USB-A Lightning cable that came with your phone and it provides a huge charging speed benefit for new and old phones. It's

about 70% faster than the included 5W adapter. Buying a USB-C charger and USB-C Lightning cable will cost a lot more (the cable alone costs more than the 12W adapter!) and is roughly 20% faster than the 12W adapter.

That's a lot of money for a 15-minute advantage. The only real point to diving into USB-C on your new iPhone would be if you can use the USB-C adapter on other products as well—if you have a new MacBook, for instance. When Apple releases new iPads in 2018, they will undoubtedly support USB-PD and benefit from your investment in USB-C Lightning cables.

The real crime here is the horrible charging performance Apple gives you out of the box. Apple simply charges too much money for its phones to get away with a piddly 5-watt USB-A charger. At \$800 for the iPhone 8 Plus and a whopping \$1,000 for the iPhone X, the company should absolutely include a decent USB-C charger and cable. It doesn't have to be the 29W charger they currently sell separately, but something in the 15-18W range would let you charge your phone as fast as it can go. What's more, Apple charges too much for its USB-C adapters and accessories, but at least you can buy third-party alternatives. ■





family is why.

As a mom, we know your family is why. Why you work so hard to make healthy choices every day so you can experience more of life's precious moments together. We've got your back; to make sure more of those moments happen. But we can't do it without you. While you're serving more fruits and veggies at home, we're impacting laws that help shape healthier communities — and it doesn't stop there. You see, together we can make an extraordinary impact. Because when moms unite, real change happens.

Join other moms and together let's create a healthier generation of families. Life is Why.

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How Apple turns boring tech chores into exciting key features

BY DAN MOREN

When Apple comes to mind, it probably conjures images of slick, carefully engineered devices with innovative, envelope-pushing features. And the company's surely had more than its fair share of those, but it's also managed to pull off a subtler but far greater feat that goes underappreciated.

The company has not only figured out how to make us eat our vegetables—technologically speaking—but it's also turned those very features into selling points. Because it's one thing to sell a flashy, shiny device; it's quite another to get people excited about the mundane necessities of the technology world.

BABY GOT BACKUPS

In fall 2007, I'd only recently started working at *Macworld*, and I was assigned to cover what was the biggest of big deals in those days: the launch of Apple's latest version of Mac OS X, code-named Leopard. As these were still the days where you had to get yourself a physical disc to install a new OS (and pay \$129 for the privilege!), I hauled myself down to my local Apple Store in the Cambridgeside Galleria (go.macworld.com/leop). What I found was a decent length line of people all queued up to get their copies of the new operating system.

I talked to a few folks in the line and what surprised me was how many were eager to try out one particular new feature of Leopard: Time Machine. This was, after all, a feature that let you back up your computer to an external hard drive—nothing new in *what* it was doing, but a significant change in that it was now included as part of the core operating system. (It probably didn't hurt that it had a whizzy interface compounded with Apple's trademark simplicity.)

But the idea of people being *excited* about backing up their data was mind-boggling. This was historically a chore, the kind of thing that people knew they *should* do for their own benefit, but just ended up putting off—like flossing or cleaning the house. From Apple's perspective, it was a



feature to draw more people to the platform and perhaps even to lock them into the platform by committing their data to its own backup scheme. But it also made life easier for the company itself: for example, insuring that customers could easily back up their data before bringing their Macs in for service, or even forestall customer support questions related to data loss. Since users no longer had to go and buy expensive backup software separately, it removed a major excuse for *not* backing up.

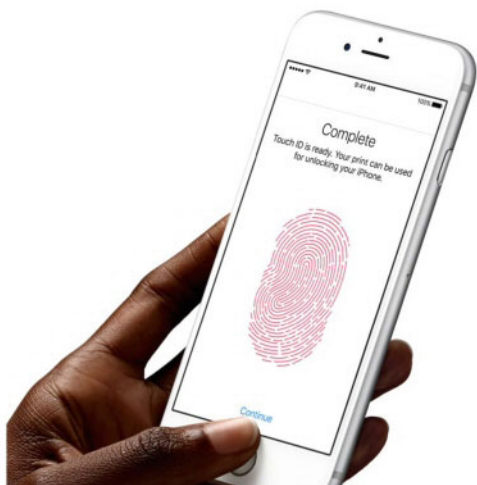
And, indeed, Time Machine paved the way for iOS's iCloud Backup feature. Now it's probably the rare person who doesn't back up their Macs and iOS devices, though Apple could still stand to increase the default iCloud space and provide a similar cloud backup service for Macs (go.macworld.com/s4rv). Thanks to Time

Machine and its successors, backing up has become a habit rather than a chore.

SECURITY TOUCHDOWN

In the earliest days of personal computing, security wasn't necessarily something that most people spent a lot of time thinking about. Mostly because it wasn't until much later that we started storing our most important information digitally or connecting our computers to networks that opened us to new threats. But it got even more challenging when we started carrying our data-laden devices around with us.

Even in those earliest days, I don't think most people bothered to put passcodes on their iPhones. Especially when the device was new, users didn't want to be slowed down by having to punch in a



Thus Touch ID was born.

four-digit code (so onerous!). As smartphones became increasing targets for theft and people started using more and more apps to access sensitive or personal data, passcodes became de rigueur—only the industry default of four-digit passcodes, which ATMs had long accustomed us to, were quickly deemed to be not secure enough.

So, what to do? You want to encourage people to use longer passcodes, but you want to balance that security with the convenience of not having to thumb-type a lengthy string of letters and numbers every time you want to access even the most basic feature on your phone.

Touch ID was the major selling point of the iPhone 5s, just as Face ID has been for the iPhone X, and once again Apple got us to all think about improving our digital hygiene practices. Because once you set up Touch ID or Face ID, you could have a lengthy secure passcode and not have to worry about entering it all the time. Of course, neither biometric security option provides perfect protection—as we've seen, people will always try to come up with ways to trick them—but if it encourages people to use longer, more secure passcodes, then Apple's still managed to pull off that impressive feat of getting us to do something we know is good for us, even when we don't want to. ■



Notes 4.5 High Sierra: How to create a table, add and rearrange rows and columns

BY ROMAN LOYOLA

In macOS High Sierra, Apple updated the Notes app with support for tables. Now you don't need to resort to Numbers or Excel if you want to create a document and want to use rows and columns to keep your data orderly.

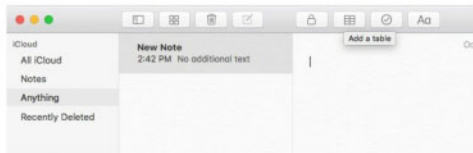
You still may want to use a spreadsheet app, especially if you are recording numerical data and want to perform functions, or you want to be able to sort

your data in different ways. Notes' tables don't have functions like those; they are very basic grids.

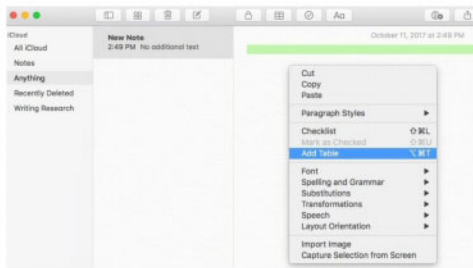
CREATE A TABLE

- > Open the note where you want the table to appear or start a new note (Command-N).
- > There are three ways to create a table in Excel:

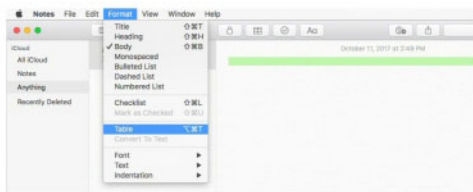
1. Click on the Add A Table button on the toolbar (the one that has a grid icon).



2. Right-click on the note to make a contextual menu appear. Select Add Table.



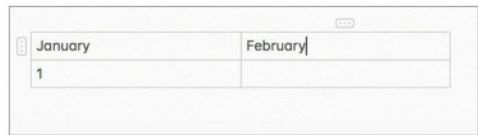
3. Click on Format in the menu bar, and then select Table.



A new table with two rows and two columns will appear.

ADD A COLUMN TO A TABLE

> Click anywhere in the column next to where you want the new column to

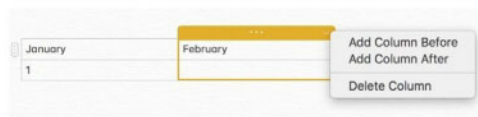


appear. It can be to the left or right of where you want the new column. You want a rectangular icon with three dots to appear at the top of the column that you clicked.

> Click on the three-dot icon that appears. It should outline your column in orange.



> Click on the pop-up menu icon in the right corner of the shaded box. A menu appears with the options to Add Column Before (to the left), Add Column After (to the right), or to Delete Column. Select the option you want.



You should now have a new column.

ADD A ROW TO A TABLE

> Click anywhere in the row above or below where you want the new row to appear. You want a rectangular icon with

| January | February |
|---------|----------|
| 1 | |

three dots to appear at the left of the row that you clicked.

- > Click on the three-dot icon that appears. It should outline your row in orange.

| January | February |
|---------|----------|
| 1 | |

- > Click on the pop-up menu icon at the bottom of the shaded box. (if you don't see it, move your cursor to that spot and it will appear.) A menu appears with the options to Add Row Above, Add Row Below, or to Delete Row. Select the option you want.

| January | February |
|---------|----------|
| 1 | |

Add Row Above
 Add Row Below
 Delete Row

REARRANGE A COLUMN OR ROW

- > Click anywhere in the row or column you want to move. You want a rectangular icon with three dots to appear.
- > Click on the rectangular icon and then drag the row or column to where you want to move it. Let go of the mouse button to place it. ■

| January | February | March |
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| 2 | | |
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What to do when breaking up a shared Apple ID account

BY GLENN FLEISHMAN

Apple's cloud services (iTunes, iCloud, etc.) require you to create an Apple ID, which is essentially your key to access. Each person using Apple's services should have a unique Apple ID, but sometimes people share IDs for convenience. That could lead to some issues, however.

For example, if an Apple ID is being shared by a couple, it can create a

problem if the couple breaks up. A reader writes in with such a story:

My partner and I broke up. We shared the same iTunes account. Everything downloaded on one phone appears on the other. How do I stop this?

While the question is about iTunes, an iTunes account is a form of Apple ID: you

can use it just for purchasing, or with iCloud for calendar, contacts, email, photos, and music, as well as macOS access and elements associated with Continuity (iOS/macOS interactions).

Before I offer the rest of my advice, can you negotiate with this former partner over custody? If so, you might be faced with different choices. If you've purchased apps, music, videos, audiobooks, and other items using this Apple ID, you might have to figure out how one party reimburses the other for stuff they want to keep and still use.

If that's the case, one person could be left with the account and simply change the password. (This is a good time to also enable two-factor authentication [go.macworld.com/e2fa] and review the phone numbers and email addresses associated with the Apple ID, to make sure they're all yours; or encourage your ex to do the same.)

Let's assume you are willing to abandon the account or have granted custody to your partner.

First, you'll want to copy all media and other items that aren't purchases that are tied to the account. If you're using the Apple ID just for iTunes, that's everything. With apps and videos, usage is tied to an Apple ID login, and you can use them without logging in. (The music files have no protection on them, but if both you and

your partner retain copies, that's a copyright violation.)

If you're also using iCloud sync for contacts, calendars, email, photos, or music, you'll want to make sure you have the copies you want of all your stuff stored locally before deleting it. The last stage of what you'll do after the below bullet points is log out of the iTunes or iCloud account you're using.

(I'm assuming no one will do something malicious here and delete media or other information that the other person has a right to have, but given the complicated nature of relationships, I'm going to let you all work out those details.)

Contacts: You can use the Contacts app in macOS to select contact entries and then use File → Export → Contacts Archive to create a file that you can import on another Mac. You can then delete those selected Contacts before logging out. Quit after deleting, because otherwise, deletion can be undone. There's no way to export contacts from iOS's Contacts app or from iCloud.com. However, you can use third-party apps that access your iOS address book to group, copy, excerpt, and delete entries.

Calendar: If you've shared a single calendar, it's harder to separate these entries and, as with Contacts, you have to use macOS (or possibly a third-party iOS app) to export entries. You may want to

use Calendar in macOS to export an entire calendar, and then selectively delete entries related to you, especially those with phone numbers, addresses, and people's names.

Email: If you're using options to store email on a server with Apple's Mail app, retrieve it on a Mac to store locally by dragging messages or mailboxes to entry under On My Mac that appear in the sidebar. All messages you drag to that section are moved from the server to your Mac. You don't need to do anything else. If you're using a different email program, consult the directions for moving messages and mailboxes from server storage to local Mac storage.

Photos: With iCloud Photo Library enabled, every photo you upload using a Mac, iOS device, or via iCloud.com while logged into that Apple ID will be copied to all other devices logged into the same one (and available via iCloud.com). Copy the files you want to retain, and then delete them from Photos in iOS or macOS or via iCloud.com. Deleting images from iCloud Photo Library deletes them from every device on which they appear. To make sure they're permanently gone, check for the Recently Deleted album. If they're still there, select them and choose delete, which removes them forever.

Music: Apple lets you sync music files in your library across devices. (This is

distinct from iTunes Match, which finds high-quality versions of any music you've ripped or purchased elsewhere, and makes those available.) You'll want to make sure to copy any music files that belong to you before logging out of the Apple ID account.

After having done all of the above, on all your devices, log out from that account. If you're using a single Apple ID for both iTunes and purchases and for iCloud, log out from both places.

> In macOS, go to the iCloud system preference pane, click Sign Out, and follow prompts.

> In iOS, to sign out of iCloud, go to Settings, tap your name, and swipe down. Then, tap Sign Out. For iTunes, tap iTunes & App Store and then tap the Apple ID: *email@domain.com* link. Finally, tap Sign Out.

> If you're using third-party contact, calendar, or email software, you may also need to sign out of or delete your Apple ID from those locations.

Assuming you don't have another Apple ID you're already using with iCloud, create a new Apple ID at appleid.apple.com (go.macworld.com/apid), then log in via Settings in iOS and the Sharing preference pane in macOS.

You can now copy all the stuff you exported and saved back into your various apps. ■



*“I want
to be
a hairbrush.
Recycle me.”*



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KEEP AMERICA
BEAUTIFUL



HomePod is looking more and more like the return of iPod Hi-Fi

It doesn't sound like something I want.

BY MICHAEL SIMON

When the HomePod ([go. macworld.com/h0p0](http://go.macworld.com/h0p0)) was announced at WWDC in June, it seemed like Apple was finally jumping head first into the smart speaker race. Introduced as a coveted “one last thing,” Tim Cook and Phil Schiller extolled the device's music playback abilities, saying the HomePod was going to “reinvent the way we enjoy music in the

home” in a device that combined the fidelity of Sonos with the fun of an Amazon Echo.

Like many others, I wanted to believe that pristine music quality was just one of many features Apple was bringing to the smart speaker space. But as more details begin to trickle out about Apple's plans for the HomePod, it's becoming clear that the new device is more of a voice-controlled

speaker than a true Echo competitor. While the HomePod will work with HomeKit to control smart home devices and respond to general knowledge queries, it doesn't appear as though it will break any ground that Google Home and Amazon Echo haven't already broken.

When Apple unveiled the HomePod, it was a unique device. No smart speaker on the market had combined high-fidelity sound with AI smarts, and even with a \$349 price tag, it seemed like a viable competitor to the \$99 Echo and \$129 Google Home for people who cared about sound quality. But the longer we wait for it, the more it seems it's going to be the second coming of the iPod Hi-Fi.

That's not the kind of speaker I want.

HELLO AGAIN, HI-FI

For those who don't remember, the iPod Hi-Fi (go.macworld.com/hifi) was a \$349 in-room speaker made for Apple's then-growing line of iPod music players. It was a top-notch speaker but it had a multitude of issues, chief among them the precarious placement of the iPod itself, which was held in place by nothing more than a 30-pin cable.



Apple iPod Hi-Fi.

It lasted about a year-and-a-half before it was discontinued, and it stands as a testament to the height of Apple's hubris. At a time when iPod sales were thriving, Apple poured its resources into an overpriced niche product that seemed to compete with accessory makers. In fact, in a statement made upon its retirement, Apple stated, "There are over 4,000 accessories in the iPod ecosystem and hundreds of speakers systems designed specifically for the iPod, which provide customers with a wide variety of options."

And 12 years later, it seems like Apple is readying to release the iPod Hi-Fi 2.0. Even if the HomePod can rival Sonos when it comes to sound quality, Apple seems to be missing the boat entirely

when it comes to what people want in a smart speaker. An early release of SiriKit for HomePod in the iOS 11.2 beta (go.macworld.com/112b) suggests that the HomePod will only be able to use Siri for messaging, lists, and notes, and a nearby iPhone or iPad will be required to work. It's kind of like the original watchOS app: Developers won't actually be writing apps that run on the HomePod, they'll be tweaking their existing iPhone apps to communicate with the HomePod.

That's a far cry from an Echo. Amazon's device does all the processing on the device itself, and with a vast library of skills, there isn't much it can't do. Same, too, with Google Home. From what we know so far, it seems like the HomePod's chief skill will be the ability to play songs through Apple Music, which is fine, but people are going to expect it to be an Apple version of an Echo, and that might not be the case. If simple things like daily briefings and ride hailing aren't available at or near launch, Apple's first smart speaker is going to look pretty dumb.

SOUNDING OFF

The HomePod's focus on sound might have been somewhat novel six months ago, but now that Google and Sonos have their own versions of the high-fidelity smart speaker in Max and One, respectively, the HomePod is going to need to have more

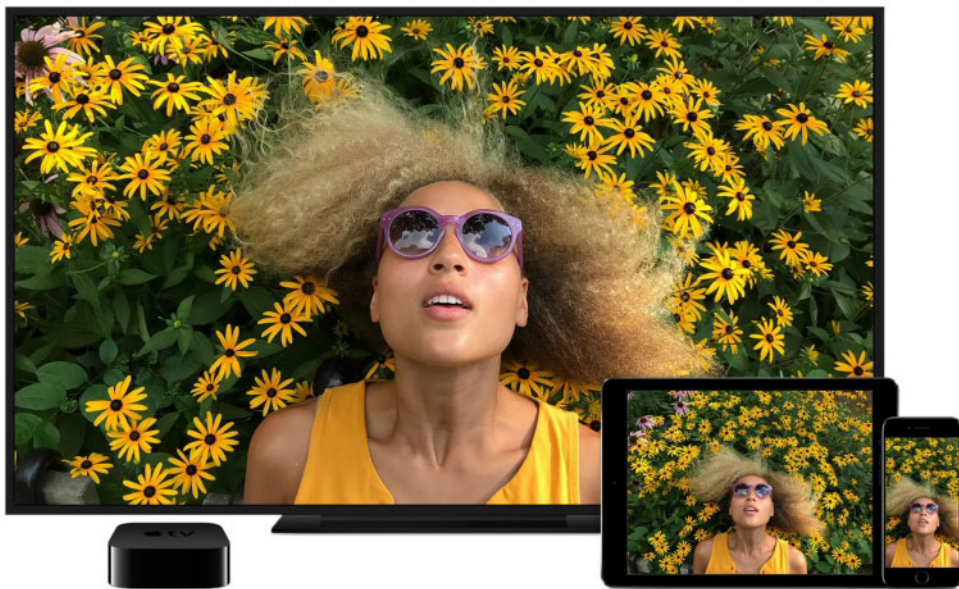
going for it than good sound. Even the new Echo (go.macworld.com/ech0) has a better speaker now.

But Apple seems to have gone all-in on sound with the HomePod. A revealing report in Bloomberg (go.macworld.com/bbrg) recently laid bare Apple's struggles to bring the HomePod to market, detailing the product's years of development as an audiophile side project that grew into a smart speaker. Apple even considered selling the product under the Beats umbrella, according to the report.

That says a lot about where Apple sees the HomePod fitting into the market. Where AirPods could get away with limited Siri functionality, the HomePod needs to not just be an audible extension of Siri on iOS, but an enhancement as well. With the HomePod, you should be able to forget about your iPhone when you enter your home, nor worry whether it's within communication range. It should do more than your iPhone, not less. And you shouldn't have to think about what it can and can't do.

That's the beauty of the smart speaker: You can interact with it as if it were a person. Questions are answered as they are asked, and there's nothing else to think about it. If the HomePod doesn't offer the same experience, it's basically just a really good speaker.

And as we learned with the iPod Hi-Fi, that probably won't be enough. ■



AirPlay 2 FAQ: What it is, how it works, and which devices support it

This major update to Apple's wireless streaming protocol focuses on multi-room audio.

BY JASON CROSS

AirPlay has been with us for a long time. It's an evolution of the old iTunes protocol, which was meant only for music. In 2010, iTunes got a host of new capabilities (music, photos, video) and a new name. A year later, it gained the ability to mirror your iOS or Mac screen to a compatible AirPlay receiver. With an Apple TV, you could put your Mac desktop on

your PC in the blink of an eye!

You've seen the AirPlay logo in dozens of apps, often tucked away in the Share menu. If you want to beam content from your iOS device to the Apple TV or a set of speakers, it's delightful. But it has languished over the last several years, adding no meaningful new features while the rest of the wireless world moved on.

With iOS 11, Apple introduces AirPlay 2.

This is the first real update to the AirPlay protocol in a long time, and it seems tailor made to suit Apple's ambitions to spread media throughout your home with the Apple TV 4K and the HomePod.

WHAT'S NEW IN AIRPLAY 2?

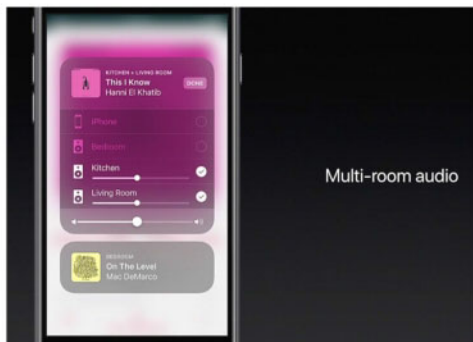
AirPlay 2 focuses on new audio features for the AirPlay protocol, and for the most part ignores the screen casting and video playback parts.

It adds the following key features:

Multi-room playback: Apps can send audio to several different devices around the home, with playback synced between them.

Enhanced buffering: AirPlay 2 compatible speakers will do a better job buffering audio to avoid skips and drops.

Multi-device control: When audio is streaming to AirPlay 2 devices, it can be controlled via multiple different Apple



AirPlay 2 adds multi-room audio and better buffering.

devices. So you can start playing content on your iPhone, and then later pick up your iPad and control playback.

WHAT DEVICES SUPPORT AIRPLAY 2?

As far as Apple devices go, AirPlay 2 will work on the iPhone 5s or newer, the iPad Mini 2 or newer, the Apple TV (4th gen and 4K), and any MacBook made in the last seven years or so.

You'll also need speakers that support AirPlay 2. Apple's upcoming HomePod (go.macworld.com/hp0d) does, as will the speakers connected to your AppleTV. Third-party brands will need to release new products or, in some cases, update firmware to support AirPlay 2. Some brands that have announced support include:

- > Bang & Olufsen
- > Beats
- > Bluesound
- > Bose
- > Bowers & Wilkins
- > Definitive Technology
- > Denon
- > Devialet
- > Dynaudio
- > Libratone
- > Marantz
- > McIntosh
- > Naim
- > Polk

Sonos fans can rejoice too, as the company has announced AirPlay 2 support starting in 2018, both on new products and in updates to existing products. Sonos has never supported AirPlay before, so that's a big turnaround.

HOW DO I GET IT?

You'll need more than just AirPlay 2 compatible gear. AirPlay 2 needs to be supported by the OS and apps, too. It was announced as part of iOS 11, but didn't make the cut when iOS 11 was first released in September. AirPlay 2 support will come in an update to macOS, tvOS, and iOS—possibly 11.2 for iOS and tvOS (go.macworld.com/iotv) and 10.13.2 for macOS.

It also needs support from app developers. You can count on Apple's apps to be updated immediately, but if you prefer to play music around the house

with Spotify (go.macworld.com/spot) or Audible (go.macworld.com/audi) you'll need to wait for an app update.

Given the benefits and the relatively low complexity of adding support, it seems most major apps will probably update quickly.

WHAT ELSE DO I NEED TO KNOW?

If you're going to beam music all around the house, you'll need to know which speakers are where, right? AirPlay 2 integrated with HomeKit, so that speakers can attach themselves to different rooms.

This means you can use them in HomeKit's Scenes to play audio in addition to adjusting the lights.

When Apple announced AirPlay 2, it showed off a feature of Apple Music called Shared Up Next. One iOS user can play

back music, but other users in the same location can all contribute to the Up Next song list. This feature will probably show up in Apple Music when AirPlay 2 and the HomePod ship. ■



AirPlay 2 requires new devices support or firmware upgrades.



Bowers & Wilkins PX wireless noise-cancelling headphones: They demand a sacrifice for silence

B&W's first noise-cancelling headphones sound so good that you'll happily live with their quirks.

BY SÉAMUS BELLAMY

Bowers & Wilkins tends to be fashionably late when it comes to rolling out new wireless products. In the time it took the company to design the \$399 PX Wireless Headphones (go.macworld.com/pxwi), companies like Sony, Bose, AKG, and

Sennheiser have dropped multiple models of active noise-cancelling models.

This is par for the course for the British manufacturer. Its iconic Zeppelin speakers (go.macworld.com/zepp) see infrequent reiterations, and the company tinkered and watched its competition for years

before releasing its first Bluetooth headphones, the sublime P5 Wireless (go.macworld.com/p5wi).

After testing the PX Wireless for a week, I can say the resulting hardware was mostly worth the wait.

HOW ARE THE B&W PX DESIGNED?

Available in gray to match an iOS device or a satin-finished gold and blue to match your Victorian-era British Admiralty uniform, the PX maintains Bower & Wilkins' unmistakable industrial design, but breaks with the company's traditional steel and plush leather good looks for a lux modern vibe. The leather's still there, though—the inside of the PX's headband and its over-the-ear cuffs are finished with luxuriously soft padding and leather that'd be at home in a Lexus or Lincoln.

As with their P5 Wireless and P7 Wireless (go.macworld.com/p7wi) headphones, the PX's controls are found on the back of the right ear cup. The buttons

are easy to get to and can be used to turn the headphones on/off or pair them with a new device, adjust the volume, play or pause your music, accept calls, and turn the PX's active noise cancellation on or off. Additionally, sensors in the ear cups make it possible to pause what you're listening to by simply removing the headphones from your ears. Slip them back on and your audio will start again. I found this feature reliable while wearing glasses, a winter toque, or with nothing more than my bare skin up against the cups.

The functionality of the headphones can also be tweaked via a free app available via Google Play or the iTunes



A plush leather headband and ear caps make the PX comfortable to wear during long listening sessions.



The Bowers & Wilkins PX's volume, track, and ANC controls are easy to landmark and use.

App Store. For the time being, the options available in-app are limited to a few simple tricks: users can adjust the level of noise cancellation, the sensitivity of the ear cup play/pause sensors, change the name of their headphones, or reset them to their original factory settings. It's possible to use the headphones without the app installed on your smartphone, but you shouldn't: Bowers & Wilkins plans to use the app to push out firmware updates and new software features to the PX.

As these are Bluetooth headphones, you should know that the PX delivers up to 22 hours of listening time with ANC engaged, 29 hours without ANC, 33 hours of use with ANC over a wired connection, and 50 hours of ANC-free listening when

tethered to your music device with a wire. I found these battery times to be roughly accurate.

HOW DO THE B&W PX SOUND?

The PX support the aptX codec and boast 40mm drivers that are very similar to those found in Bowers & Wilkins' bank-account-busting P9 Signatures (go.macworld.com/p9sg).

These drivers are angled to fire music directly into your ear canals, while at the same time, providing plenty of space for air to get pushed around. The headphones offer a frequency range of 10Hz to 20kHz and a passive-impedance of 22 ohms. B&W's spec sheet for the cans states that the PX provide less than 0.3-percent audio distortion at 1kHz/10W and have a sensitivity of 111dB/V at 1kHz. In addition to this, B&W baked a chip into the PX that upsamples any audio played through them to 768kHz. In plain English, all of this means that the PX are designed to sound very, very good.

Over the week that I tested the PX, I found that the headphones produced deep, warm bass with punchy mid- and

Wilkins Headphones app allows PX owners to adjust their headphone's noise-cancellation level: Flight mode blocks out the maximum amount of noise, City provides users with a smattering of situational awareness, and Office, according to B&W, will block out background noise but allow you to listen to your coworkers blather on in the immediate area (does anyone actually want that?). Bose's QuietComfort 30 (go.macworld.com/b030) offer similar scalable noise cancellation. Personally, I've never wanted less noise cancellation—on or off suits me just fine.

When switched to their maximum noise-cancellation setting and listening to tunes at 50-percent volume, I was unable to hear all but the most immediate noises, such as the suggestion of a conversation taking place directly next to me. Testing them against the noise made by a house full of kids hopped up on Halloween candy, the drone of public transit, and the chaos of a bustling mall food court, I found that the PX's noise-cancelling engine and plush ear cuffs were more than up to the task of keeping me sane and able to hear my music.

DO THE B&W PX HAVE ANY FLAWS?

Aside from the step-down in audio quality that engaging the PX's noise cancellation causes, there's not much to complain about. You should know that the first set of headphones that Bowers & Wilkins sent out to me had to be sent back: they refused to stay powered on for more than a few minutes at a time. The new set I was issued, however, have worked flawlessly. I'm not thrilled by the fact that, despite coming with a cable for plugging into a 3.5mm port, the PX can't be used passively. Once you've drained the batteries, you're hosed. I was also disappointed to discover that while the PX charge via a USB C connection, the USB C port in the headphone's cup can't be used to channel audio. And then there's the price: At \$400, the PX cost roughly \$50 more than

competing headphones like the Bose QuietComfort 35 or Sony's WH-1000XM2 (go.macworld.com/sxm2).

BOTTOM LINE

Provided you can live with their quirks, the Bowers & Wilkins PX headphones' excellent audio fidelity and solid noise cancellation make these a set of headphones all but the most fussy audiophiles will be happy to own. ■



Bowers & Wilkins PX

PROS

- Wide soundstage with excellent audio separation.
- Comfortable to wear during long listening sessions.
- Long battery life.

CONS

- More expensive than the competition.
- Small drop in sound quality with ANC engaged.

PRICE

\$399

COMPANY

Bowers & Wilkins

Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN



Why photo counts might differ between Photos in iOS, macOS, and iCloud.com

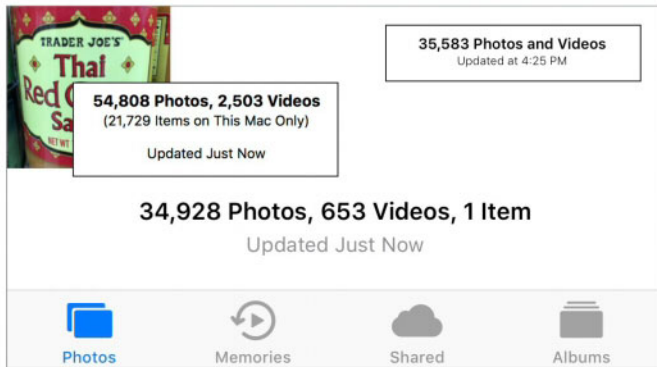
Computers are supposed to be good at counting, right? So why do the numbers sometimes not add up for photos?

Macworld reader Jeffrey asks a question that's similar to ones asked by others:

The photo count between my Mac and my iPhone are not the same. I use iTunes syncing along with My Photo Stream to keep the devices identical.

Something has gone amiss. I don't have any idea how to troubleshoot the image counts since iTunes is supposed to be syncing the images. How might I determine if a problem really exists, and if so, how do I fix it?

There are long-running discussions on Apple's forums about iTunes syncing not matching up numbers in iPhoto and Photos for macOS and iOS devices. These seem to stem from deleted photos where corresponding thumbnails remain in the



A collage of the various totals from Photos in iOS and macOS and at iCloud.com.

library databases. If that’s the case, you can rebuild an iPhoto library with these instructions (go.macworld.com/rblid) and repair a Photos library by following these directions (go.macworld.com/drct).

However, I’ve noticed even with iCloud Photo Library, which I use, there can be discrepancies. Let’s look at my library in Photos for iOS, Photos for macOS, and iCloud.com:

- > Photos for iOS reports 34,928 photos, 653 videos, and 1 “item”—35,582 total.

- > Photos for macOS reports 54,808 photos and 2,503 videos (57,311), but “21,729 items on This Mac Only” for a net of 35,582.

- > And iCloud.com reports 35,583 photos

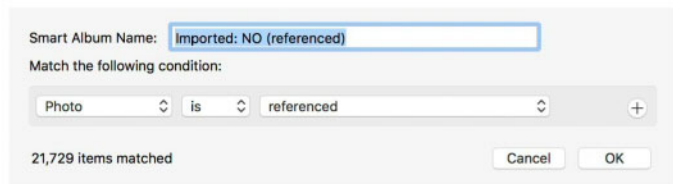
and videos as a single number.

You can see it’s mostly consistent, although confusing. Why is there one more item at iCloud.com than in iOS and macOS? What is “1 item”? (Apple offers no insight on that.)

The most explicable thing, however, is the “on This Mac Only” label:

Photos in macOS allows both imported and referenced images. In Photos → Preferences → General, if the box next to Importing is checked, whenever you drag media in or use the File → Import option, images and videos are copied to your Photos library. Uncheck that, and the image is referenced from the location on your Mac, including external drives. Referenced images are not synced to iCloud Photo Library.

If you’re trying to figure out which are referenced and which are not, Apple puts



A Smart Album lets you figure out which images are referenced in Photos.

a subtle icon in the corner of all referenced images—it looks like a rectangle with an arrow pointing to the middle right from the lower right.

But you can also create a smart album that collects all these.

- > Select File → New Smart Album.
- > In criteria, choose Photo, Is, Referenced.
- > Name the album something descriptive.
- > Click OK.

You can select any referenced media and then choose File → Consolidate, and you'll be prompted to copy the media into your Photos library, which will also re-point that thumbnail reference to the imported one.

How to upgrade a drive with High Sierra and APFS

The new Apple File System (APFS) that replaces the long-running HFS+ in macOS caused a lot of concern and confusion, because it seemed like a massive change, but the effects aren't noticeable to end users, except in improving the speed of SSD-only Macs. (Apple doesn't upgrade hard drives to APFS, and hasn't yet released a Fusion APFS update for its mixed SSD/hard-drive systems.)

APFS restructures how files are stored in a disk partition, but it doesn't change how programs access files within the



operating system. When copying individual files or cloning a drive with Disk Utility, SuperDuper, or Carbon Copy Cloner (go.macworld.com/carb; \$40), macOS continues to abstractly interact with files, so you don't have to learn anything about the filesystem to use it or to use cloning software. (That's just so long as the cloning software is up to date. Carbon Copy Cloner released a major update for APFS a while ago, and SuperDuper finished its beta testing and released an APFS-ready version 3.0 on November 8.)

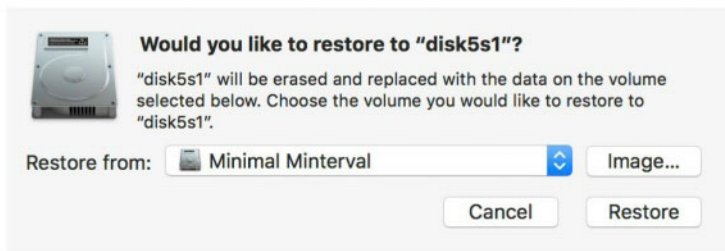
Macworld reader Doyle wonders if any of this causes issues when migrating from one drive to another. He wants to upgrade from his existing SSD to one that's larger, and he's previously relied on Disk Utility. Because Apple has provided much detail about APFS, he's concerned

that this might not work this time out. He'd prefer to use Disk Utility, but isn't opposed to buying a piece of software to clone if it would provide extra abilities.

The good news is you can use Disk Utility just as you have in previous releases to migrate a drive. You need to format the new drive with APFS before initiating the clone, and you can boot into Recovery as in the past to perform the clone.

However, there's one thing that Disk Utility cannot manage: installing a new Recovery Disk on a freshly formatted macOS drive. For that, you need Carbon Copy Cloner or SuperDuper, both of which can clone an existing Recovery Disk onto another drive. Apple only supports creating this very critical piece of macOS troubleshooting, also required for using FileVault, when you perform a full macOS installation. (SuperDuper can't use HFS+ as a destination for cloning a Recovery Disk, however. Read this blog post for more particulars [go.macworld.com/reco].)

If you want to use an all-Disk Utility method in High Sierra, you need to follow these steps:



Disk Utility lets you restore from another mounted drive or a disk image, effectively cloning a drive.

> Run macOS Installer for High Sierra and complete a full installation on the new drive.

> When finished, restart and choose Recovery (Command-R at startup).

> Launch Disk Utility from the Recovery startup list.

> Control-click the new main partition on your new drive and choose Restore.

> Select your old drive's main partition in the Restore From menu and click Restore.

With Carbon Copy Cloner or SuperDuper, you can follow either program's instructions to clone the Recovery partition, and skip step 1 above. This eliminates installing macOS, which can take some time. Then, you can follow steps 2 to 5 and complete the clone.

If you need to swap a drive out of your Mac instead of having both connected at once, I'd recommend using either SuperDuper or Carbon Copy Cloner to help with that after either installing macOS

on the external drive or using Carbon Copy Cloner or SuperDuper to clone Recovery. Then:

- > Make a clone of your current drive either as a complete partition or as a disk image on an external drive using either app (or update an existing clone).

- > Shut your Mac down and swap the internal drive for the new one.

- > Boot into Recovery.

- > Launch Disk Utility from the Recovery startup list.

- > Control-click the new main partition on your new drive and choose Restore.

- > Select the clone if it's a partition or click Image to select a disk image backup and click Restore.

Is there any way to shorten the available Wi-Fi list in macOS and iOS? Unfortunately, no.

macOS and iOS displays a list of the Wi-Fi networks in your area, whether they are private or not. This can be helpful, but how often are you able to really use a private network you can see but know nothing about?

Macworld reader Michael is irritated by the huge list of Wi-Fi networks around him whenever he tries to connect in iOS. He's



in a densely populated city, and neighbors' networks are all around him. Since he's connected to his own network and he'll never connect to any of the others, is there a way to make them not appear in his list?

It's a good question and one I honestly never thought about in 17 years of writing about Wi-Fi. The network scanning features built into Wi-Fi user interfaces on every platform I can think of that let you select a network are designed to maximize what you see. They weren't created for crowded network environments, and a re-think would make a lot of sense, since we mostly don't want to connect to any network, nor see them.

However, for now you've got to ignore it. When you click the Wi-Fi menu in macOS or visit Settings → Wi-Fi in iOS, you'll always see the currently connected

network at the top, but all the other networks will always appear.

There is one not-so-convenient-and-easy way you could solve this problem. Install a wire mesh in the floor, ceiling, and the inside portion of your home's exterior walls to create a Faraday cage ([go. macworld.com/fara](http://go.macworld.com/fara)), which blocks penetration of a lot of forms of electromagnetic fields—which includes radio signals—and you'll likely only see other networks when you open the front door.

What are offloaded apps in iOS 11 and how do they work?

Prior to iOS 11, once an app was installed on an iOS device, you either kept it or removed it. Removing it would cause iOS to prompt you first with a warning that all associated data on your device would also be removed. Some iOS apps get around this by using web-based or app-based accounts or other associations, so if you later reinstall the app, you can relink your data.

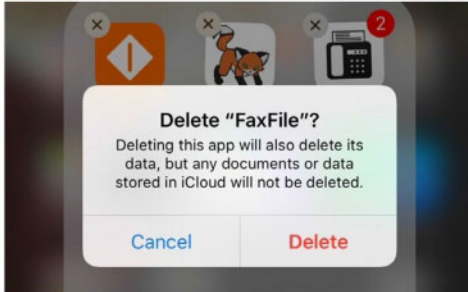
iOS 11 introduced a wrinkle that *Macworld* reader Audrey unintentionally asked a question about, because it came up in a different context when she was restoring an iCloud backup from an older phone to her iPhone 8 Plus, and she was prompted to enter the password of an Apple ID she hasn't used in six years:

Several of my apps appeared with “ghost cloud” little icons next to their names on the iPhone screen. Apple Store specialists said those were tied to that old Apple ID, but that wasn't true. Many NEW apps I recently got or paid for with my current Apple ID had those “ghost clouds” and did NOT show up on my Purchases list in the App Store app.

The old Apple ID part, I don't know what that's about. Apple should only prompt you for an Apple ID for iCloud. If you use a separate account for purchases from the App Store and other Apple stores, you may be prompted for that password, too. If you have apps or content installed registered to another account, you can also be prompted, but Audrey says that's not the case and she hasn't been prompted through years of other updates and phone transfers. Let's put that to the side, as I don't have an answer.

I can explain what's going on with the cloud icon, however. If you see an iCloud download icon to the left of an app's name, it's supposed to indicate that you offloaded the app. Offload App is a new option that I can't find Apple has documented in a support note, and it's only available if you go to a specific spot in Settings to use it.

Offloaded apps are removed, reducing the storage burden of their core program, but any associated documents and data



Deleting an app via the Home screen removes it and its associated data and settings.

remain on your iOS device. The app icon remains, which is useful for recalling it to life. You can then tap to re-install it and be returned to the state you were in when you deleted it, rather than having to reconfigure it. It's a neat compromise. (A neat extra feature: these offloaded apps show up in Siri searches, and you can tap the search result icon, and it will start downloading the app without additional intervention.)

I wondered if Apple wasn't ready to promote the feature, since I can't find a mention of it outside of developer documents and forums that are publicly reachable via a Google search.

When you normally delete an app, you know the drill:

- > Hold down on any app on any Home screen for a couple seconds. (On a device with 3D Touch, don't pop or peek, just place your finger on the app on the screen without force.)

- > All the app icons and folders jiggle.

- > Tap the X in the upper left corner of an app.

- > In the dialog that appears, tap Delete to remove it.

However, to offload an app, you have to use these steps:

- > Go to Settings → General → iPhone Storage.

- > Wait for apps to load at the bottom of the screen.

- > Scroll to an app you want to offload and then tap it.

- > Tap Offload App.

- > Confirm your action by tapping Offload App in the explanatory dialog that appears.

I'm baffled both about Apple's lack of information and Audrey's experience, but at least I can explain the ghost cloud. ■

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 to see if you're covered. If not, we're always looking for new problems to solve! Email us at 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.