

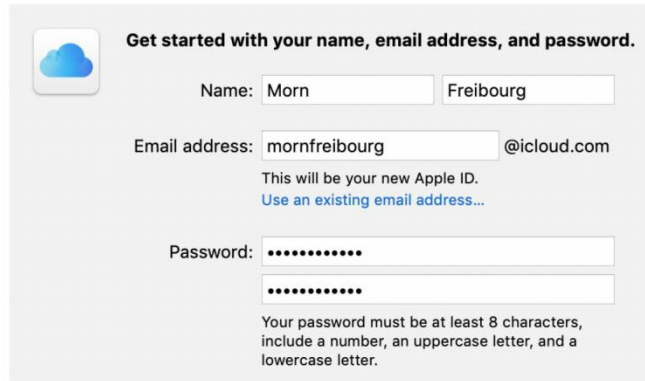
Create a new Apple ID to get an icloud.com address

You can create an Apple ID that uses as its login name an icloud.com address that you pick without switching to this new Apple ID for any other purpose.

You can only carry this out sensibly via macOS. You can't use iOS without logging out of your current iCloud account, which requires a lot of hassle with synced data. And it's not available at all as an option at iCloud.com or the Apple ID site.

Here's how to do it:

1. In macOS, open the Users & Groups preference pane.
2. Click the lock icon in the lower-left corner and enter your administrative password.
3. In Login Options, check "Show fast user switching menu."
4. Click the + (plus) sign below the account list.
5. Create a macOS account that you will then use to create a new Apple ID.
6. Select the fast-user switching menu at the upper-right corner of your macOS screen and pick the newly created account.
7. Skip the step during the account completion process to use or create an Apple ID.
8. When the account finishes initial set up, open the Internet Accounts preference pane.
9. Click the iCloud logo.
10. Click Create Apple ID at the sign-in



Get started with your name, email address, and password.

Name:

Email address: @icloud.com

This will be your new Apple ID.
[Use an existing email address...](#)

Password:

Your password must be at least 8 characters, include a number, an uppercase letter, and a lowercase letter.

You can create a new Apple ID in macOS and opt to also create an associated new icloud.com address.

prompt.

11. Click the text link "Get a free iCloud email address."
 12. The Email Address field changes to an empty field and "@icloud.com". You can now enter an address you want. (macOS will warn you if it's not available.)
 13. Click Next and provide the confirmation data Apple requires to finish creating the account.
 14. Log out of this new account (⌘ → Log Out [account name]).
 15. You can optionally disable fast-user switching.
- Now, in Mail for macOS or iOS, or in third-party email clients, you can enter your new Apple ID account information to access the associated icloud.com email address, even while using a different Apple ID account for iCloud syncing. (If you enabled two-factor authentication, you'll need to create an app-specific password for each mail client with which you use the email account.) ■

NEW AIRPODS: BEST WIRELESS EARPHONES GET BETTER

Macworld

JULY 2019

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HIDDEN iPHONE

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TO BRING US TOGETHER?

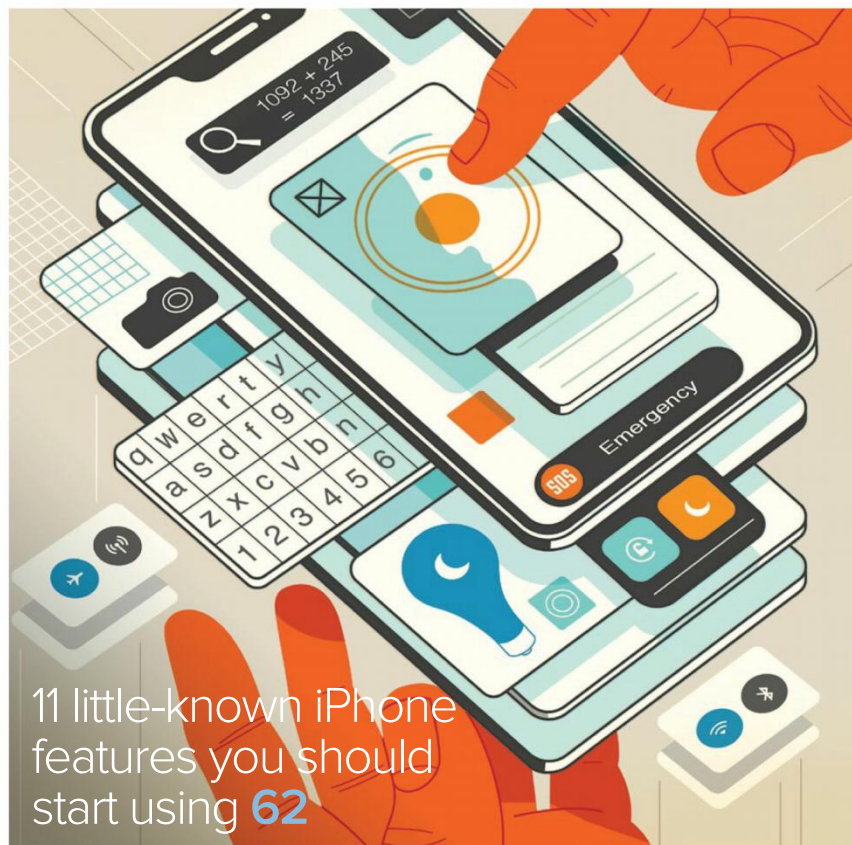
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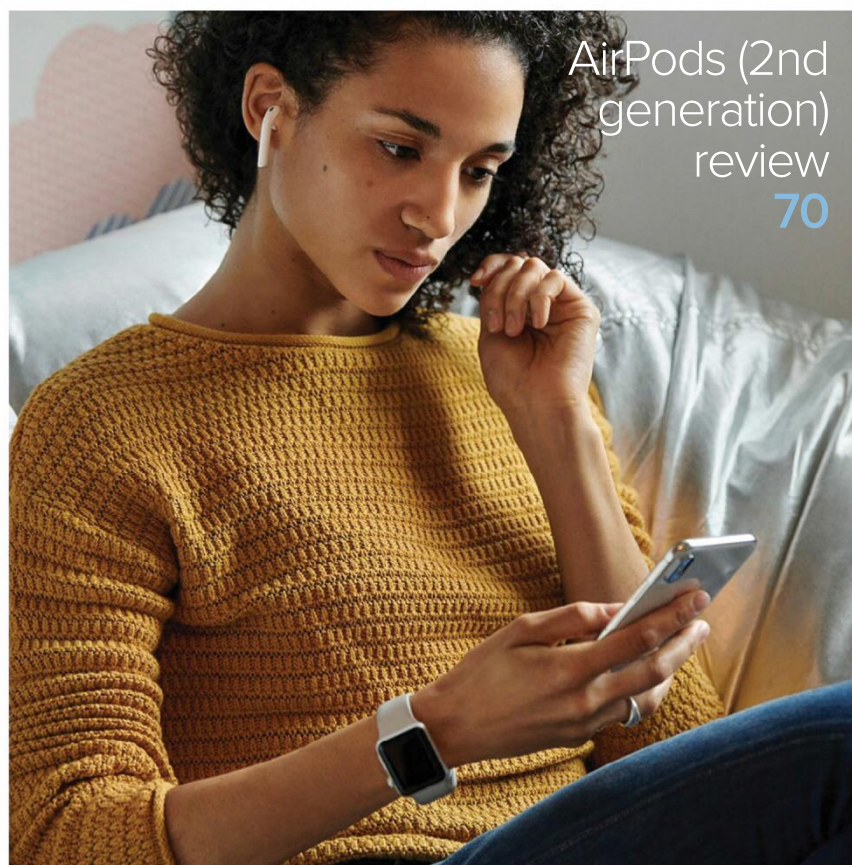


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Smokey Says...

KEEP YOUR WIT AROUND THE FIRE PIT



WHEN ASHES ARE COOL WITH



NO GLOW, YOU'RE GOOD TO GO

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Apple upgrades processors in MacBook Pro, 8-core 15-inch model now available

Apple's MacBook Pro now features eighth- and ninth-generation Intel Core processors.

BY ROMAN LOYOLA

Apple announced recently that the MacBook Pro is getting a speed boost. The company revealed that the 13-inch MacBook Pro with Touch Bar is now available with eight-generation Intel processors, while the 15-inch MacBook Pro now sports ninth-generation CPUs, including the first 8-core Mac laptop.

Apple also said that the 2019 MacBook Pro features changes to the butterfly keyboard mechanism that should help prevent the problems that users have experienced in previous MacBook models. The new models are also included in Apple's Keyboard Service Program (go.macworld.com/ksvp), which means that the company will repair the keyboard for free

up to four years after purchase.

Apple is offering the new MacBook Pro models at the same price points as those released in July 2018 (go.macworld.com/cfmp).

15-INCH MACBOOK PRO

The \$2,799 15-inch MacBook Pro (go.macworld.com/15sp) could be the fastest Mac laptop ever, with its ninth-generation 8-core 2.3GHz Core i9 processor, with Turbo Boost up to 4.8GHz. Apple says the new MacBook Pro is two times faster than a quad-core MacBook Pro, and 40 percent faster than the 6-core model that was introduced last July. Other specs include 4GB Radeon Pro 560X graphics, 16GB of 2400MHz DDR4 memory, and a 512GB SSD.

The \$2,399 15-inch MacBook Pro (go.macworld.com/15gr) now has a ninth-generation 2.6GHz 6-core Intel Core i7 processor, an upgrade from the eighth-generation 2.2GHz 6-core Core i7 CPU that was introduced last year. Other specs include 4GB Radeon Pro 555X graphics, 16GB of 2400MHz DDR4 memory, and a 256GB SSD.

13-INCH MACBOOK PRO

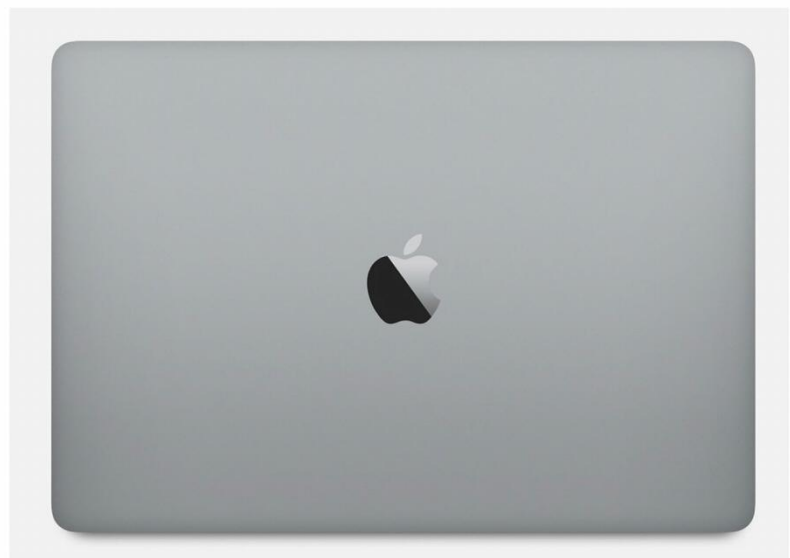
As for the 13-inch MacBook Pro, the \$1,799 and \$1,999 standard configurations get new eighth-

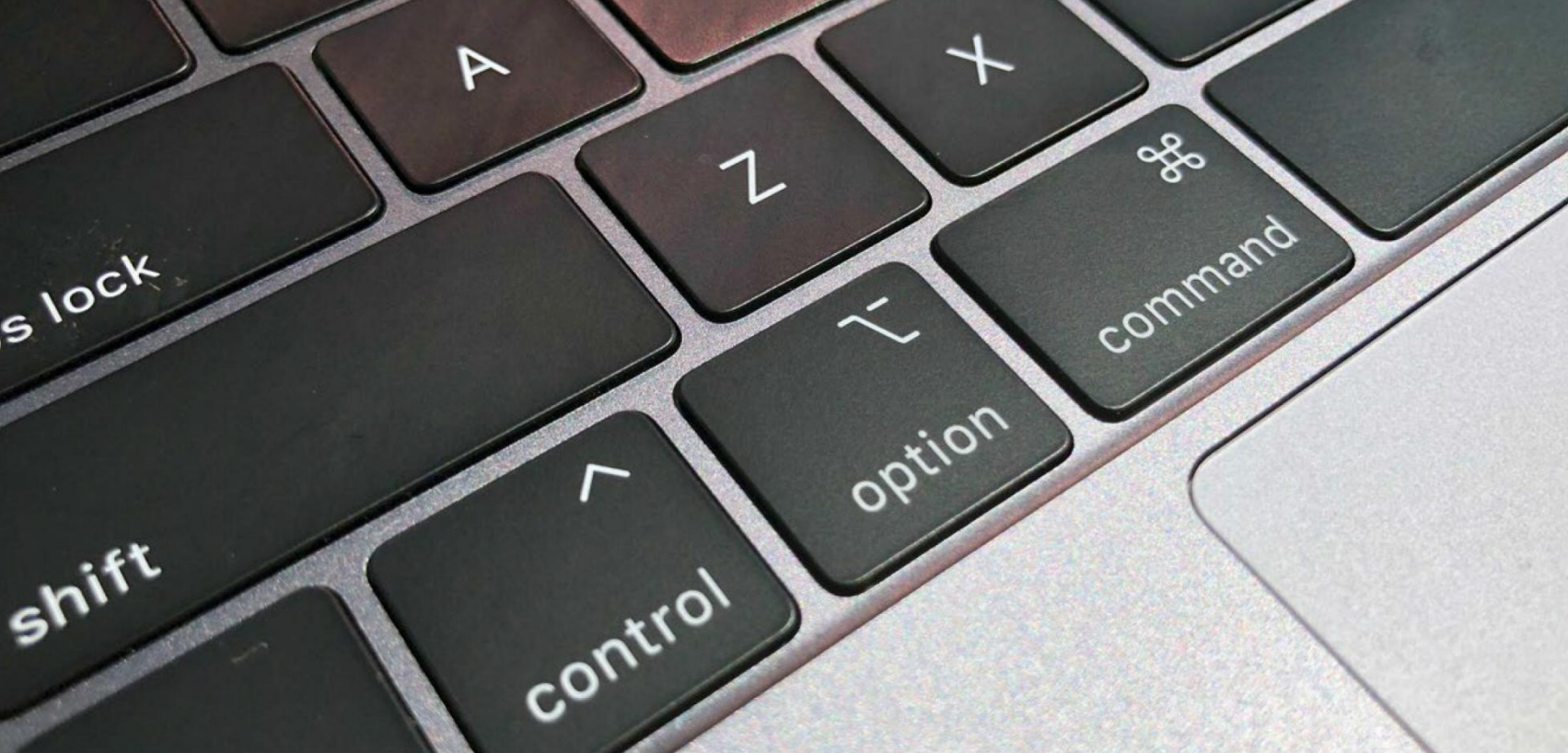
generation quad-core Core i5 processors.

The \$1,799 model (go.macworld.com/13sp) now has an eighth-generation 2.4GHz quad-core Core i5 processor, which replaces an eighth-generation 2.3GHz quad-core Core i5 processor in the model released last July. The rest of the key specs remain unchanged: integrated Intel Iris Plus Graphics 655, 8GB of 2133MHz LPDDR3 memory, and a 256GB SSD.

The \$1,999 13-inch MacBook Pro (go.macworld.com/13gr) has the same eighth-generation 2.4GHz quad-core Core i5 processor, integrated Intel Iris Plus Graphics 655, and 8GB of 2133MHz LPDDR3 memory as the \$1,799 model. The extra cost is for a 512GB SSD.

The \$1,299 and \$1,499 models remain unchanged with seventh-generation 2.3GHz dual-core Core i5 CPUs. These models were introduced in 2017. ■





Apple improves butterfly keyboard (again), offers free fixes

Apple says it has shortened the time it takes to implement repairs to the keyboard.

BY ROMAN LOYOLA

According to Apple, a vast majority of users of recent MacBooks are happy with the butterfly-switch keyboard, which was introduced in 2015. But it's not difficult to find users who are not happy (go.macworld.com/plag). So Apple is offering a solution.

Along with its recent announcement of new MacBook Pros (see page 7), Apple announced that the company will now fix any problems with the MacBook keyboard at no cost to the owner. This offer is only available for the following laptops:

- > 12-inch Retina MacBook (2015 to 2017)

- > MacBook Air (2018)
- > 13-inch MacBook Pro (2016 to 2019)
- > 15-inch MacBook Pro (2016 to 2019)

Also, to reduce the inconvenience to the user, Apple said that it has shortened the time it takes to implement repairs to the keyboard.

Apple has a support document with details on the Keyboard Service Program (go.macworld.com/kypg).

Apple also said that the 2019 MacBook Pro features changes to the butterfly keyboard mechanism that should help prevent the problems that users have experienced, such as unresponsive keys or double-typing. ■



iFixit tears down the 2019 MacBook Pro, details butterfly keyboard changes

Apple keeps trying to perfect its contentious keyboard design.

BY JASON CROSS

In May, Apple refreshed its MacBook Pro lineup (see page 7), boosting performance with the latest Intel processors but making no other significant changes.

Except one: There's now another

revision of the infamous "butterfly" keyboard mechanism, using new materials in a bid to further improve reliability. To go along with this new design, Apple extended the keyboard repair and replacement program to include virtually



The “butterfly” keyboard keeps going through minor revisions, but there’s a growing chorus of users who want Apple to change direction completely.

any Mac laptop with the butterfly keyboard (including the new ones), offering free repair for up to four years.

What exactly is new? The reliable tinkerers at iFixit (go.macworld.com/mbtd) have torn apart the newly-revised 2019 MacBook Pro. While the rest of the laptop is almost identical to previous models (earning it a horrible repairability score of 1), there are a few noticeable difference in the keyboard mechanism.

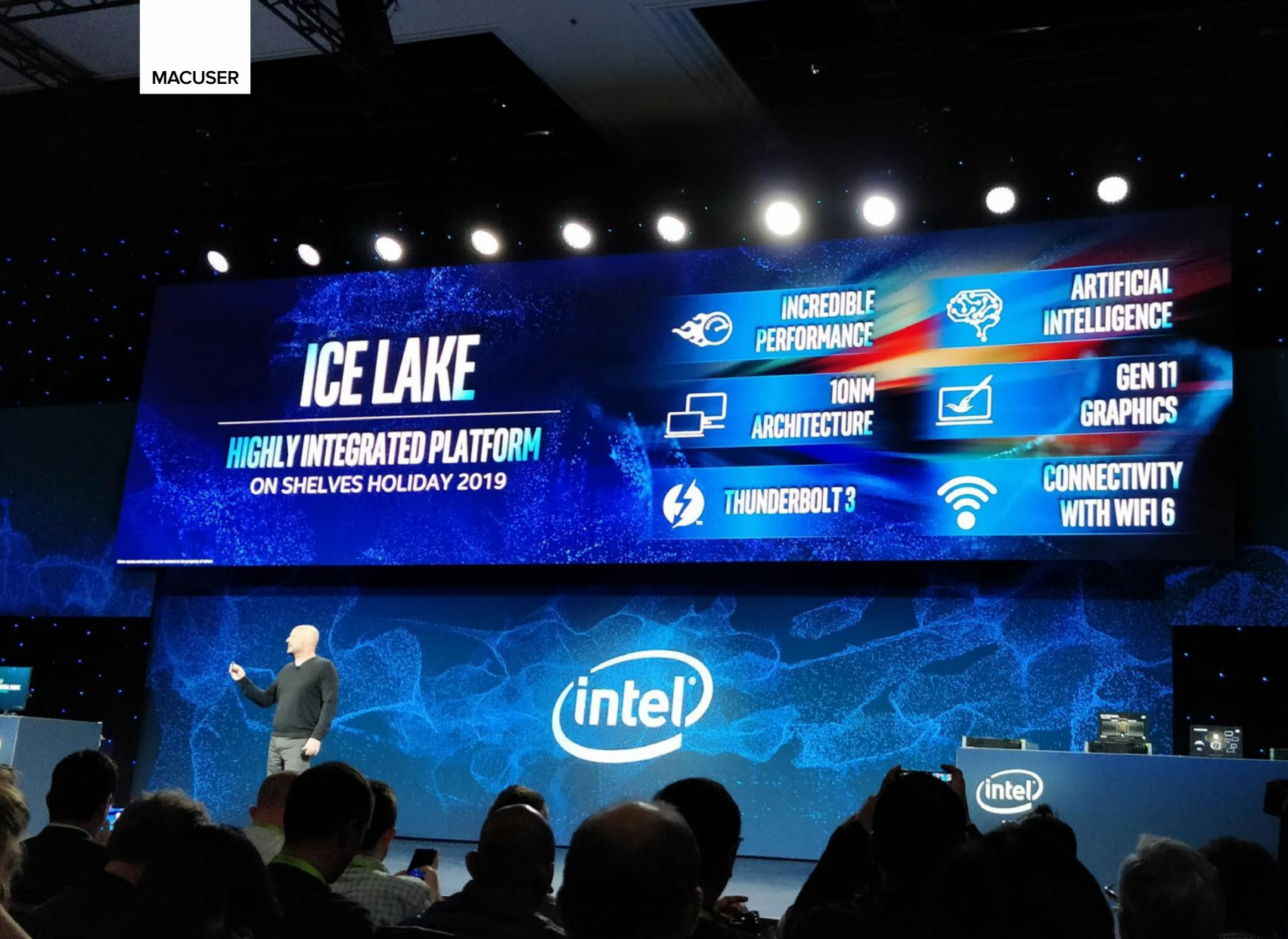
The sleuths at iFixit noticed two changes to the materials in the keyboard. First, the transparent switch cover is now clearer and smooth to the touch. It’s definitely made of a different material, as confirmed by FTIR spectroscopy. Second, the metal dome that compresses and bounces back as you press the key may be slightly revised. This metal dome gives the keys an action similar to that of

pressing in on a bottle cap, and if it cracks or bends or the contacts wear out, the key will stop working properly.

A different finish on the dome caps could mean that, “Apple may be using a revised heat treatment, or alloy, or possibly both,” as iFixit explains.

It’s not yet clear if these changes will fix the notorious reliability problems of the butterfly keyboard, but they won’t do anything to affect the other issues people have with the keyboard: its short throw and noisy operation. ■





What Intel's latest road map updates mean for the Mac

Until Apple starts using its own processors in Macs, the future of Intel is the future of Apple's laptops.

BY JASON CROSS

Apple may end up making Macs with processors of its own design, but that's not expected to happen soon. And if it does happen, it probably will take several years before the entire Mac lineup has transitioned to Apple-designed chips.

In the meantime, it's safest to assume that the Macs of the next couple years will primarily use Intel processors. So any time we can get a look at Intel's road map, we're getting a peak at the heart of the Mac.

During a recent investor presentation, Intel extended its public road map ([go](#).

macworld.com/pbmp) through 2020 and gave an update on future products and manufacturing processes. Here's what that means for the Mac.

Ice Lake processors use Intel's brand-new Sunny Cove CPU architecture, which should deliver the first real boost in single-thread performance in a long time.

ICE LAKE THIS YEAR

Intel has been struggling to bring 10nm chips to market—the 14nm process node has lasted two years longer than expected—but it will finally ship volume processors for consumers with the 10nm process this year.

The company's first large-scale 10nm consumer product is codenamed Ice Lake, and is expected to ship to Intel's

customers in June. It's aimed at laptops, from ultra-portable up to high-performance models.

Ice Lake processors use Intel's brand-new Sunny Cove CPU architecture, which should deliver the first real boost in single-thread performance in a long time. Most of Intel's speed gains over the last few years are due to boosting clock speeds

Intel Investor Meeting 2019

PROCESS & PACKAGING

10NM ICE LAKE CLIENT

Shipping in June

APPROX.

- 2X Graphics Performance
- 2.5X-3X AI Performance
- 2X Video Encode
- 3X Wireless Speeds

Disclaimer: Results are approximate and have been estimated or simulated as of April 2019 using Intel internal analysis or architecture simulation or modeling. Graphics and video - Next Gen Graphics Iris Plus Experience. Wireless - Intel's Wi-Fi 6 (Gig+) vs. typical competitive 11AC design. AI - ADAPTIVE COMPARABILITY 2. Previous: OpenVINO 2018 R5. Max. Throughput 15W WHL to 15W ICL projection.

For more complete information about performance and benchmark results, visit www.intel.com/benchmarks. Performance results are based on testing as of date specified and may not reflect all publicly available security updates. See www.intel.com/security for details. No product or component can be absolutely secure.

Ice Lake should bring big performance benefits to MacBooks.

and adding cores, but the Sunny Cove architecture is expected to make each core faster, clock-for-clock.

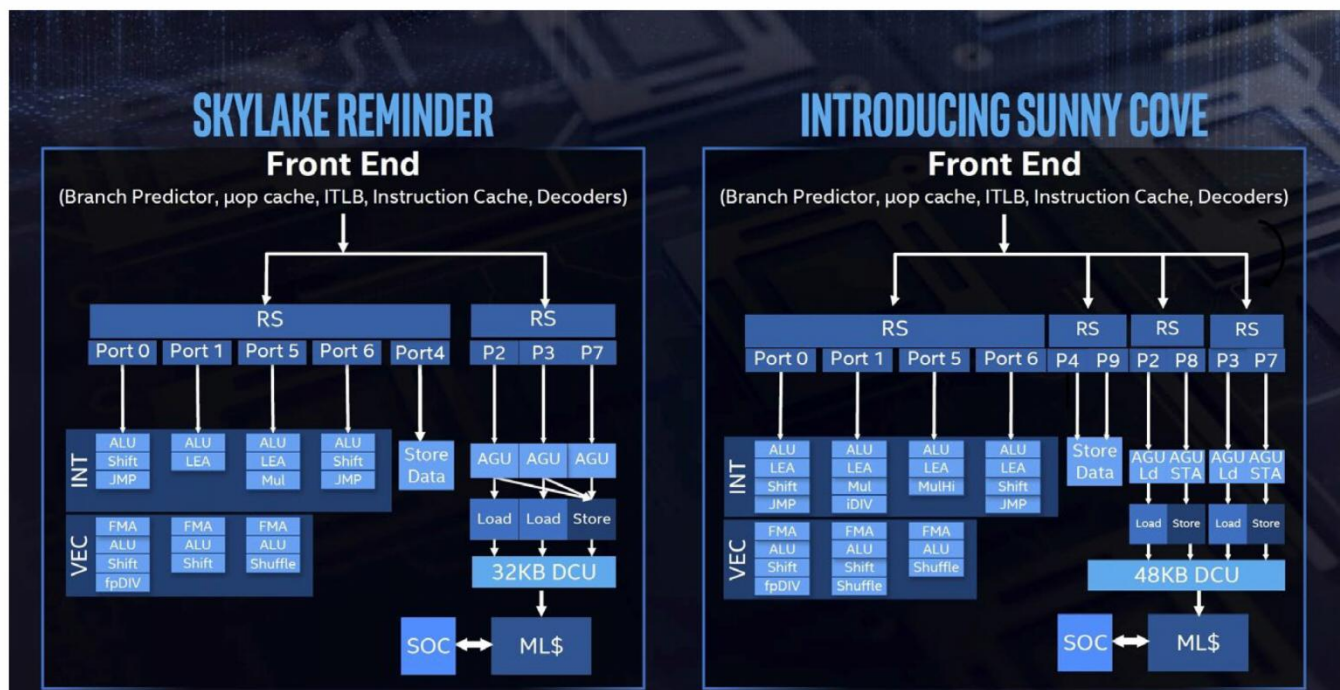
Ice Lake should deliver the biggest boost in the non-CPU parts of the chip, however. The new Gen-11 graphics core will be up to twice as fast as the graphics in today's MacBooks (except the 15-inch MacBook Pro, which uses AMD's Radeon graphics). It will also speed up AI operations by a large amount, and incorporate faster wireless networking and integrated support for Thunderbolt 3.

All told, it means a new set of MacBooks with significantly faster CPU performance and much faster graphics

performance. In particular, these chips should greatly accelerate video encoding, so video professionals are probably going to want to upgrade. Faster integrated wireless and a built-in Thunderbolt 3 controller may mean reduced internal complexity for Apple, which could mean thinner or lighter MacBooks, or maybe just more battery capacity.

As expected, laptops with Ice Lake CPUs weren't announced at WWDC this June. It's likely that Apple will have new MacBooks with these chips ready for the fall, instead.

After Ice Lake comes Tiger Lake, another 10nm chip that is expected to significantly boost performance again,



The Sunny Cove cores will feature the first major changes to an Intel x86 core since Skylake CPUs were introduced in 2015.

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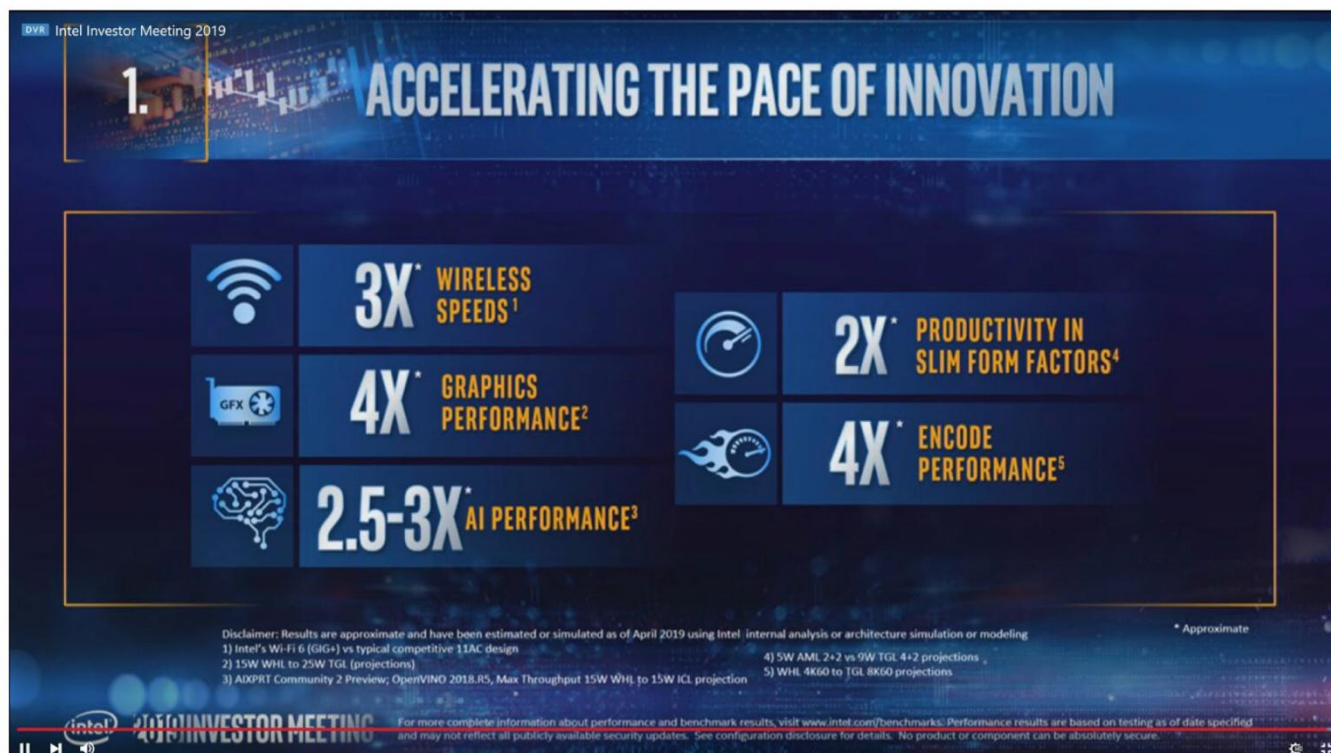
One site



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We have everything for all of your needs. Just open <https://avxlive.icu>



Tiger Lake is still 10nm, but should be a significant step up from Ice Lake. These figures are in comparison to Whiskey Lake (the current 15-watt ultraportable chips).

especially in the areas of graphics, AI computation, and video encoding. It will incorporate Intel's next-generation Xe graphics technology, which will eventually power all of Intel's graphics products, including new add-in cards for PCs and, presumably, discrete graphics chips that Apple could use in the iMac or Mac Pro. Tiger Lake is expected to land in 2020, though the exact timing is not clear. If it's later in the year, we probably won't see Tiger Lake Macs until 2021.

After Ice Lake comes Tiger Lake, another 10nm chip that is expected to significantly boost performance again, especially in the areas of graphics, AI computation, and video encoding.

LAKEFIELD NEXT YEAR (IF EVER)

Intel has another 10nm product coming up later in 2019, code-named Lakefield. It's a 3D chip-stacking technology that lets Intel stack the main processor, RAM, and platform architecture stuff like storage and USB controllers all on top of each other. The idea is to cram everything into a much smaller area.

Intel Investor Meeting 2019

INTELLIGENT AGENTS LAKEFIELD

SOFTWARE	OpenVINO
SECURITY	UFS Inline Encryption, Boot from UFS, VBS
INTERCONNECT	UFS 3.0, USB 3.0, MIPI CSI2
MEMORY	POP DRAM
XPU ARCHITECTURES	HYBRID ARCHITECTURE (Sunny Cove CPU, Tremont CPU), GEN11 Graphics
PROCESS & PACKAGING	Foveros 3D Integration, 10nm Compute Die, Low Power Base Die

Results have been estimated or simulated as of April, 2019 using internal Intel analysis or architecture simulation or modeling vs. AML product.
Disclaimer: Results are approximate and have been estimated or simulated as of April 2019 using Intel internal analysis or architecture simulation or modeling.
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APPROX
10X Standby SOC Power Improvement
1.5-2X Active SOC Power Improvement
2X Graphics Performance
2X PCB Area Reduction

INTEL INVESTOR MEETING

Lakefield will reach consumers late this year or early next year, but it may never be used in a Mac.

Apple is rarely in the first wave of products to use a new Intel processor or platform, and the very first Lakefield-based PCs are expected to come to market at the end of the year.

Lakefield isn't really aimed at traditional clamshell laptops like MacBooks. It's meant to go in convertible tablets, folding two-in-ones, and other innovative new form factors.

It's not clear that Apple would want to pursue Lakefield as a solution for the Mac. When the company wants innovative portable devices, it turns to iOS and its own processors. However, it

might be a good choice for products like the 12-inch MacBook or the MacBook Air, which prioritize portability and battery life over

top-end performance. The very small footprint of a Lakefield-based logic board would leave a lot more room inside those laptops for more battery.

If Apple does anything with Lakefield, we probably won't see it until 2020. Apple is rarely in the first wave of products to use a new Intel processor or platform, and the very first Lakefield-based PCs are expected to come to market at the end of the year.

7NM IS A LONG WAY OFF FOR INTEL

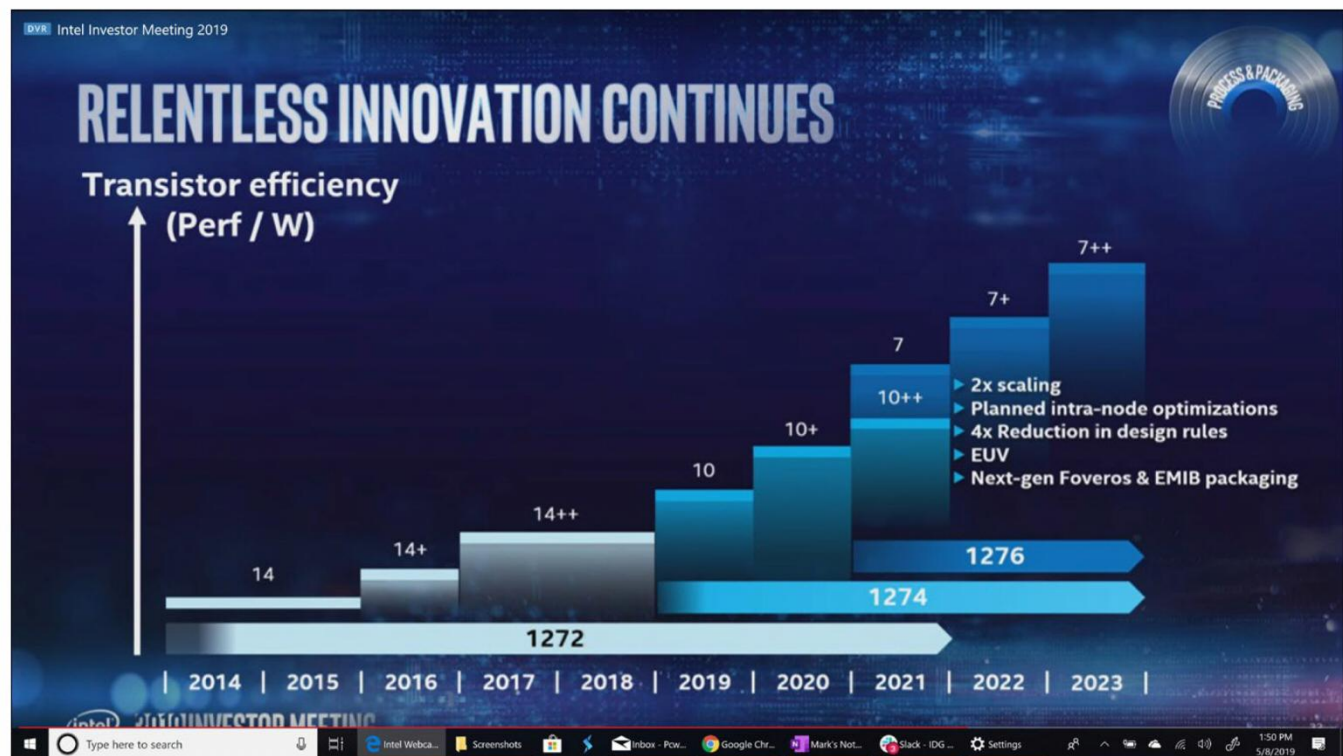
Intel cautioned that its 10nm manufacturing process, already years late, is going to be around for a while. Its lead product for 7nm is expected to come in 2021, but it's going to be for servers and data centers that do high-performance computing and AI work.

Apple's A12 is already built using a 7nm process, and by 2021 it's expected that TSMC (Apple's go-to partner for chip manufacturing) will be ready with its 5nm process. We should note that not every company measures chip feature sizes the same way, and that Intel's 10nm process is

Intel cautioned that its 10nm manufacturing process, already years late, is going to be around for a while.

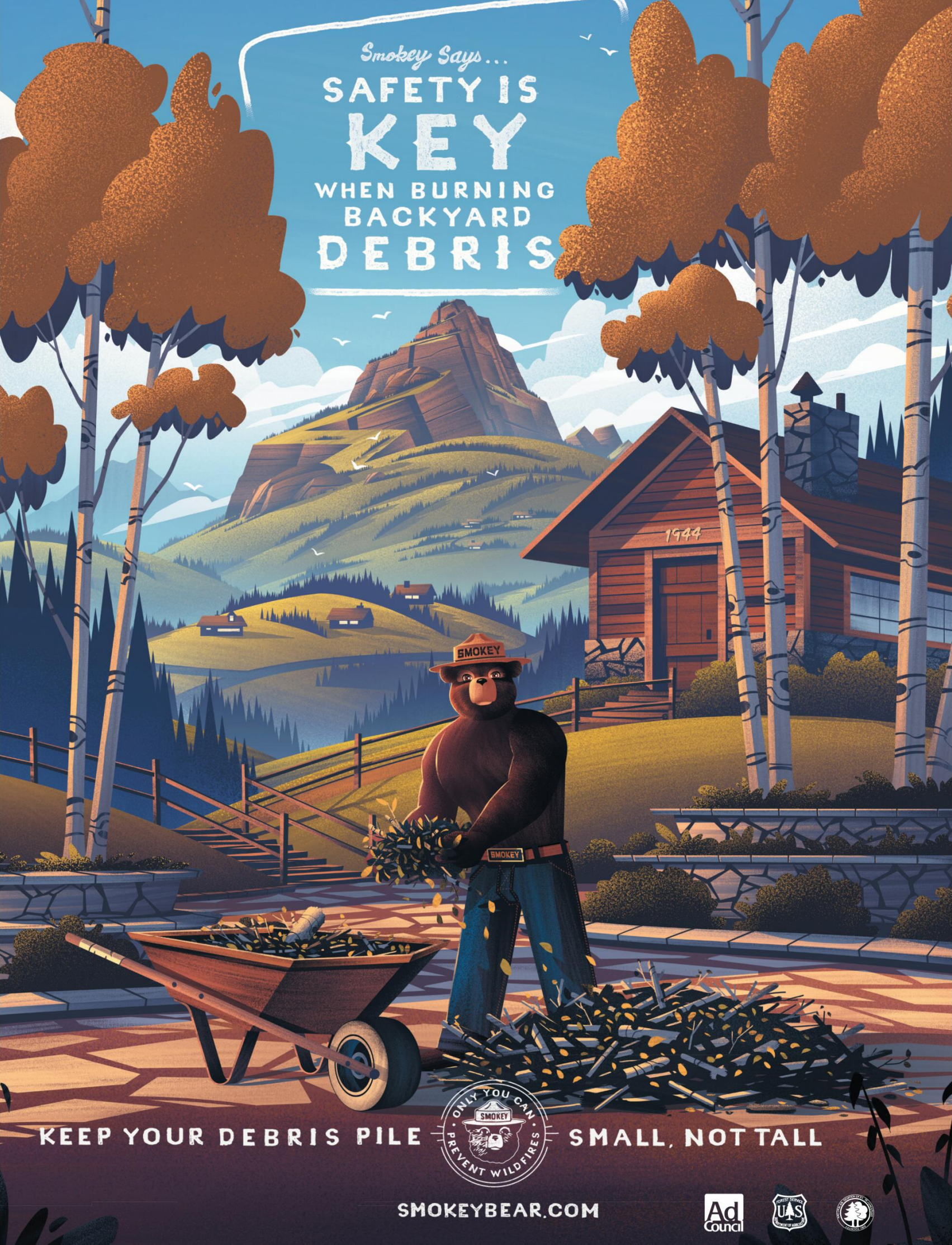
closer to TSMC's 7nm, while Intel's 7nm process will be close to TSMC's 5nm process.

Intel may not have 7nm consumer parts ready until 2022—and even if they come late in 2021, Apple may not be able to bring it to the Mac until then. That leaves a lot of time for Apple to transition the Mac to its own ARM-based chips. ■



10nm is going to stick around for a long time, but we won't be stuck with it as long as we were with 14nm.

Smokey Says...
**SAFETY IS
KEY**
WHEN BURNING
BACKYARD
DEBRIS

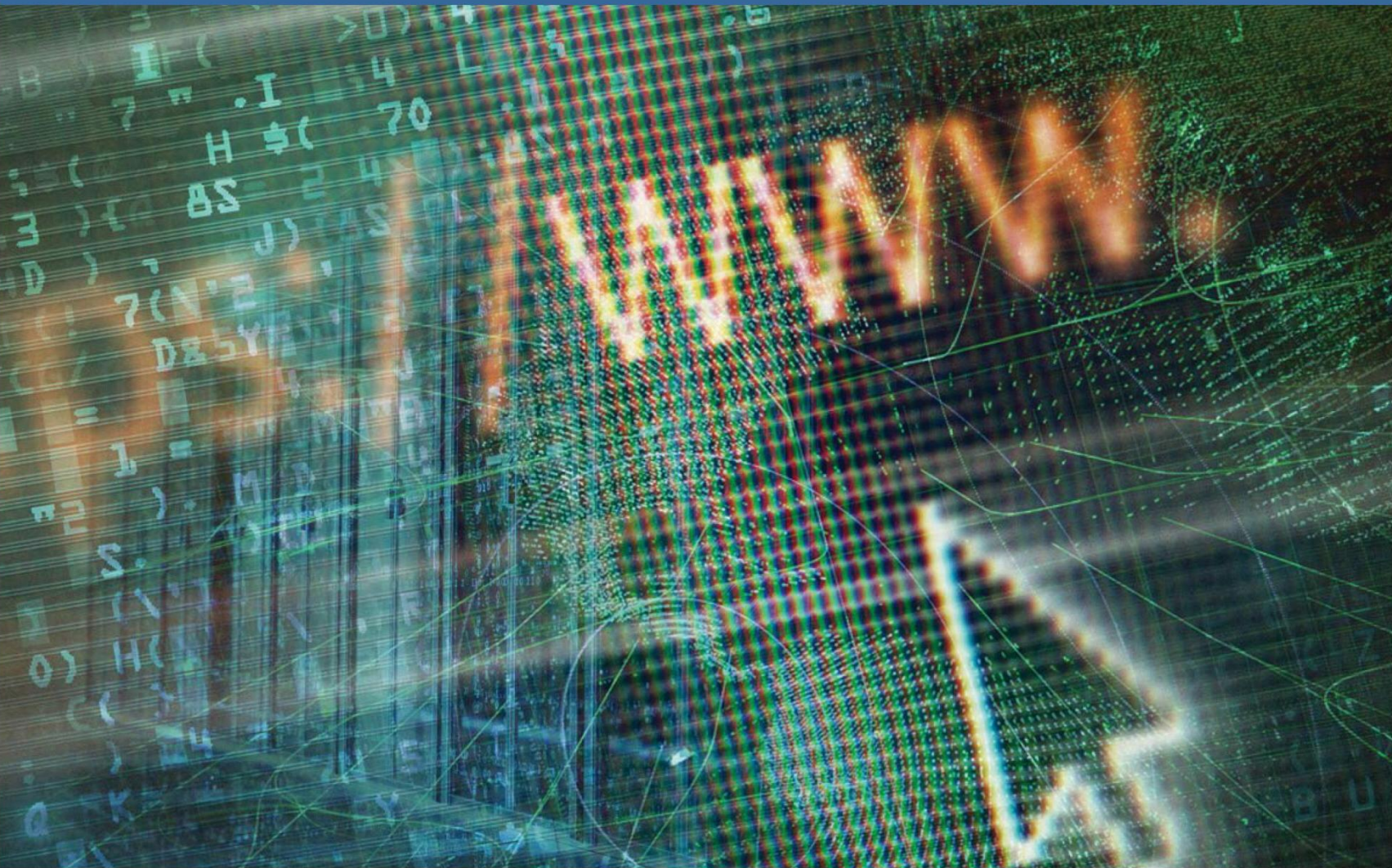


KEEP YOUR DEBRIS PILE SMALL, NOT TALL



SMOKEYBEAR.COM





VPN SOFTWARE

PRIVATEVPN BY TRUNKSPACE: NEEDS WORK, BUT WE LIKE THE PROMISE NOT TO LOG USER ACTIVITY

BY IAN PAUL

Trunkspace Hosting is an interesting company. It offers virtual private server (VPS) and website hosting, music bots for the Discord chat service, and even game servers for titles such as *Minecraft*, *CS:GO*, and *Team Fortress 2*.

The company also has its own VPN service dubbed PrivateVPN—not to be confused with PrivateVPN.com ([go. macworld.com/prvp](https://go.macworld.com/prvp)). It's a very straightforward and simple service that promises not to track your actions online, and delivers connectivity options for 48 different countries.

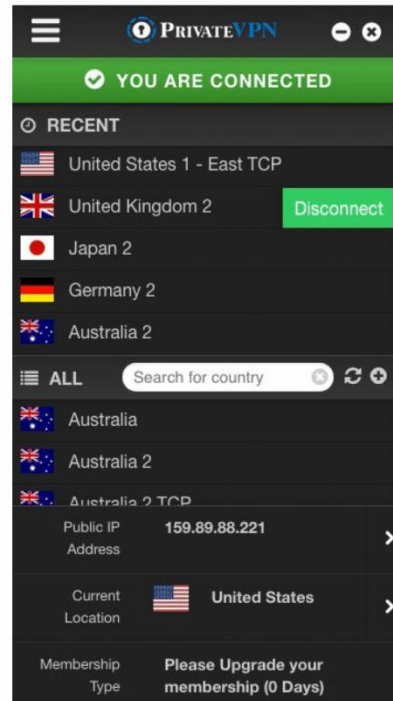
SECURITY, SOFTWARE, SERVERS, AND SPEED

Trunkspace says it does not log any of your information at all when connected to its service. And according to its updated Privacy Policy (go.macworld.com/trpr), “IP addresses, connection timestamps, disconnect timestamps, bandwidth usage, and DNS requests are not at all logged. We achieve (and guarantee) this by having all log data output to /dev/null, so no data is stored anywhere for any length of time.” The company is based in Montreal and its CEO is Atif Khan.

Trunkspace uses the same interface on Windows and Mac for its service. It’s a single panel that lists all the various locations available in the 48 countries Trunkspace supports. Select the country location you want and click the Connect/Disconnect button. As PrivateVPN connects, the banner toward the top of the window changes from red (no VPN connection), yellow (connection in process), to green (connected).

Click the “hamburger” menu icon in the upper left corner to access the app’s settings. There’s a Stealth VPN option to help users get around firewalls that block VPN connections, and the Mac app has a special Switch Driver option for compatibility with older Macs.

Under Advanced Config, there’s an Internet kill switch option called Disable Internet On Disconnect. Finally,



Trunkspace PrivateVPN with an active connection.

Trunkspace offers a Routing section that sends traffic from only specified domains over the VPN, such as email, for example.

Overall, the app is fine. It’s simple enough to use and understand, but if there’s one thing I don’t like, it’s that the app itself doesn’t sit on the Dock. Instead, there’s a nondescript circular icon in the status menu area at the top right. This is not particularly uncommon for VPNs on Mac, but I believe the status icon should be unique and recognizable so that you understand what you’re looking at.

As for speeds, taking a look at the average speeds across five locations (USA, United Kingdom, Germany, Australia, and Japan) during three different testing periods, Trunkspace retained 19.56 percent of my baseline bandwidth speeds overall. Few of the speeds I

experienced were particularly bad, and most should be serviceable. But overall they weren't as high as we've seen with other VPN services.

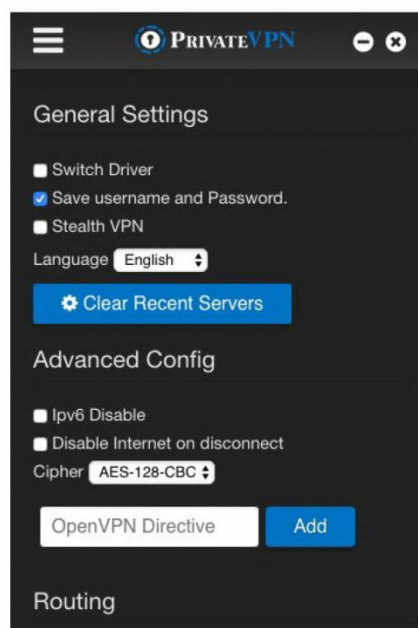
Trunkspace's PrivateVPN uses OpenVPN as its protocol. It also uses the following for encryption and authentication:

- > Data encryption: AES-128-GCM (Default) / AES-256-GCM / DES-CBC (for backward compatibility with older routers)
- > Data authentication: SHA1 for HMAC authentication
- > Handshake: TLSv1.2 ECDHE-RSA-AES256-GCM-SHA384, 2048 bit RSA

PRICING

Trunkspace currently charges \$50 per year, or you can get a six-month commitment for \$31.50, or pay month-to-month at \$6.50 per month. As for the yearly charge, that's middle of the road for a VPN service. TunnelBear (go.macworld.com/tber) charges \$60 per year, Mullvad is around \$70, and Private Internet Access is just \$40. For context, one of our favorite Mac VPNs, NordVPN (go.macworld.com/nOrd), costs \$84 a year but has a number of extra features, such as double-hop connections and a guarantee to work with Netflix, that arguably justify the greater cost.

PrivateVPN is available as a download directly from the



The VPN's settings.

company's site. The company says it plans to add its app to the Mac App Store in the future.

BOTTOM LINE

Trunkspace is a perfectly respectable VPN service. The PrivateVPN app isn't hard to use, but doesn't offer much in the way of added features. The no-logging promise is a good

option for privacy, though during sign-up Trunkspace asks for your name, address, and phone number, which is not great if you're trying to remain as anonymous as possible.

For the average person not trying to hide their tracks but wanting to remain private, Trunkspace's PrivateVPN should be fine, but you can find more feature-rich alternatives, and VPNs with faster speeds. ■



PrivateVPN by Trunkspace Hosting

PROS

- Company doesn't keep logs.
- Easy to navigate interface.

CONS

- Requires more personal data than other services.
- Lower speeds.

PRICE

\$50

COMPANY

Trunkspace Holding



MAC UTILITY

DRIVEDX: MAC UTILITY PROVIDES HINTS AND WARNINGS WHEN YOUR DRIVE IS ABOUT TO FAIL

BY GLENN FLEISHMAN



Your hard-disk drives (HDDs) and solid-state drives (SSDs) “know” quite a bit about how well they’re functioning.

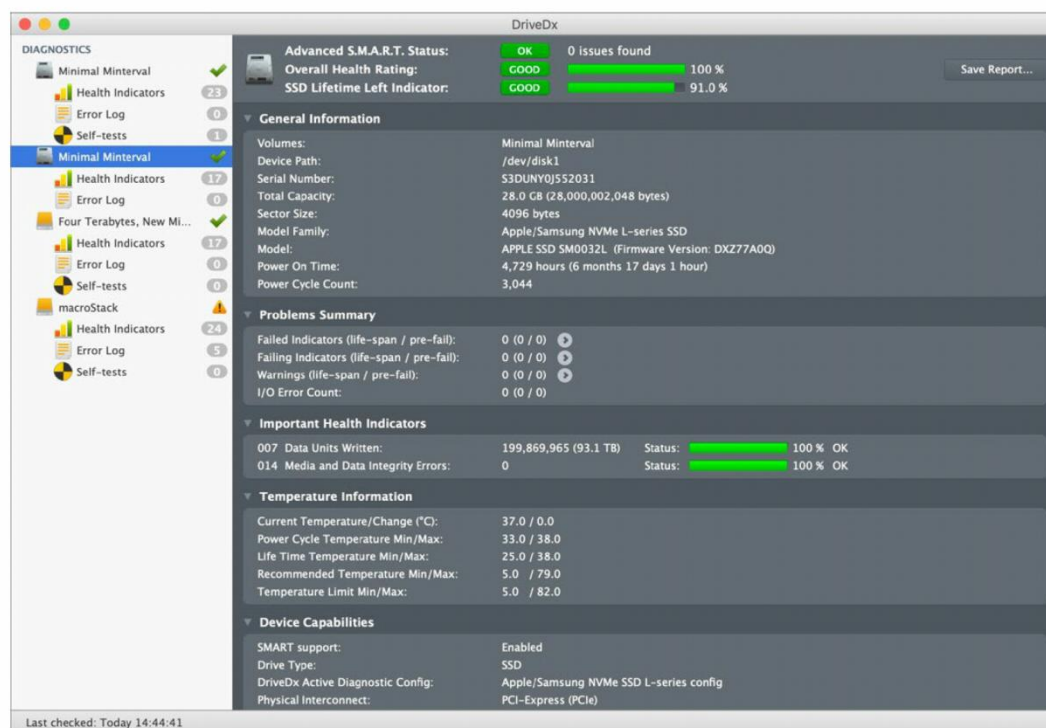
Nearly all modern drives of both kinds have internal diagnostics and track other information about usage and wear. But it can be hard to surface that without Terminal commands, and tough to interpret the context, especially for SSDs.

DriveDx (go.macworld.com/dvdx) from Binary Fruit puts a friendly face on complicated data, and can offer critical information about the state of your drives

before a failure. With a database of drive information that the company has compiled, it offers insight that would take far longer to assemble for anyone but a technical expert.

The app reads S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) information that a drive's internal operating system records. This can include read and write errors, reassigned sectors (an automatic process if a spot on a disk can't be successfully written to), unexpected events, and incremental counters for items like how much data has ever been written to the drive.

While you can access S.M.A.R.T. data in other ways and with other software, DriveDx provides the details with context that's useful to a broad swath of users. It typically shows the raw data (such as number of errors or bytes) along with a status bar that provides a graphical visualization and some text, like "OK."



DriveDx exposes diagnostic and routine data about your connected drives.

DriveDx presents other information it gathers or the results of its analysis in a similar fashion. The label or status on nearly every item can be clicked to bring up detailed information about the property. You can also find out some peculiar and interesting data points, like how often a drive has been powered up and down (whether an internal drive that might be powered down to preserve battery life or an external one you switch on or off),

HEALTH STATUS

If there are errors that need to be addressed or the drive is failing, the software summarizes the problems and offers a Diagnosis button that, when

The screenshot displays the DriveDx application interface. At the top, there is a 'Problems Summary' section with a list of metrics and a 'Diagnosis' button. Below this is the 'Important Health Indicators' section, which lists various drive health metrics with their current values and status indicators (percentages and warning icons).

Problems Summary			
Failed Indicators (life-span / pre-fail):	0 (0 / 0)	>	
Failing Indicators (life-span / pre-fail):	4 (3 / 1)	>	
Warnings (life-span / pre-fail):	0 (0 / 0)	>	
Recently failed Self-tests (Short / Full):	0 (0 / 0)	>	
I/O Error Count:	0 (0 / 0)		
Time in Under / Over temperature:	0 (0 / 0) minutes		

Important Health Indicators				
005 Reallocated Sector Count:	800	Status:		99 %
187 Reported Uncorrectable Errors:	302	Status:		1 %
197 Current Pending Sector Count:	344	Status:		98 %
198 Offline Uncorrectable Sector Count:	344	Status:		98 %
199 UDMA CRC Error Count:	0	Status:		100 % OK
241 Total LBAs Written:	47,225,343,844 (22.0 TB)	Status:		100 % OK

DriveDx details the severe efforts on a failing external drive.

clicked, explains each error and how bad it is.

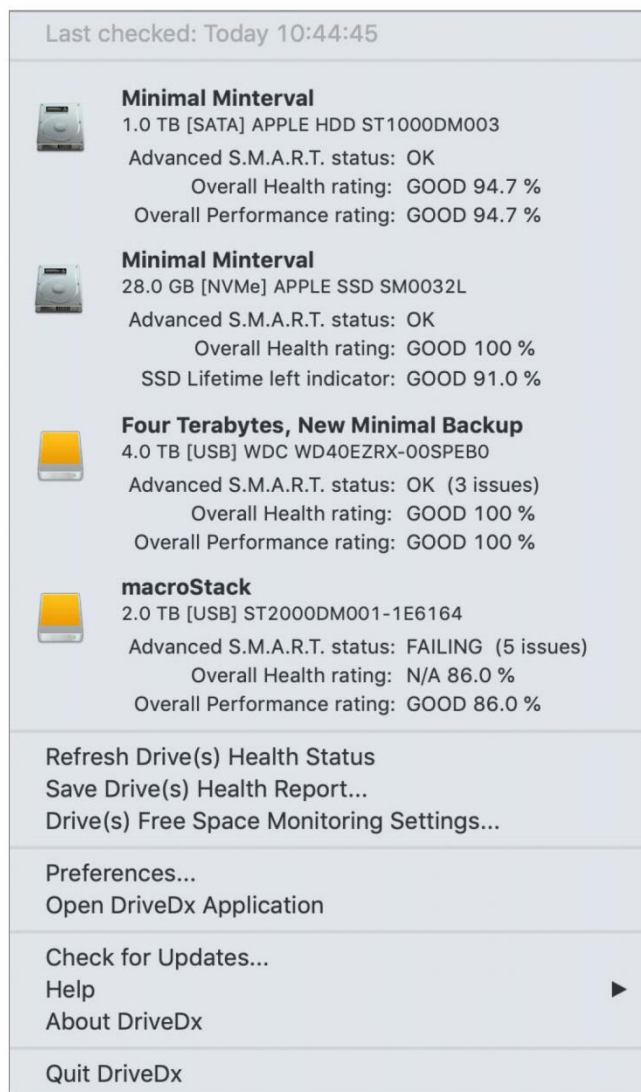
This can be as severe as “there is a high probability that [the] drive will fail soon,” along with advice like “Backup your data immediately!”

If you’re actively concerned about drive health, the app can be kept running in the background, and a system menu-bar item reveals current drive health status. You can also configure email alerts, if it’s running and you’re away from your Mac. It also monitors available free space to alert you before a drive is full.

The software also offer a “self-test” on many drives in both a long and short format. Instead of relying on reported errors, DriveDx can run it briefly or at length through its paces and see if new errors emerge.

For SSDs, DriveDx is particularly useful, as it calculates the remaining lifetime of the drive. The data cells in SSDs can be read an effectively unlimited number of times, but only written a finite number before they wear out. SSD firmware coupled with operating system support (as in macOS) ensure that new data is written evenly across all available storage to prevent early failure of portions of the drive. (This feature has to be manually enabled in macOS for SSDs added internally.)

Even with this in place, SSDs will ultimately run out of juice, but the time it takes for a drive to no longer be safely writable varies enormously. SSDs with high capacity, like 1TB, have so many potential locations that may be written, that even with heavy continuous writing, it



A drop-down menu reveals the current status of all drives.

could last centuries.

Small-capacity SSDs are the problem. Drives under 256GB, especially the small 28GB drives found in Fusion Drives (such as the one in my iMac), can wear more readily under routine to heavy use. A Fusion Drive pairs an SSD with a high-capacity HDD, and macOS continuously rotates data that's most frequently

accessed into SSD storage.

In my iMac's nearly two years of use with a 28GB SSD and a 1TB HDD, DriveDx calculates that it's already gone through 10 percent of its expected lifetime. If this keeps up, the drive should far outlast my Mac. However, some users find their particular data patterns put more pressure on SSD writing, and may have just a few years left on a relatively new machine. While most modern Macs can't have their SSDs swapped out, at least you'd be able to be forewarned as the potential end of life approached.

EXTERNAL DRIVE SUPPORT

To use DriveDx with external drives, you have to install an included driver. A hardware driver is rare for any modern Mac software, but necessary to access the S.M.A.R.T. data as Apple doesn't provide another path, according to the developer. You have to approve the installation of the driver via macOS's Security & Privacy preference pane, and typically restart your Mac to have the data become available.

As with any third-party driver, you should be alert to whether you see any odd system behavior after installation that might indicate compatibility problems with other software or macOS. (In my testing, I saw no issues.)

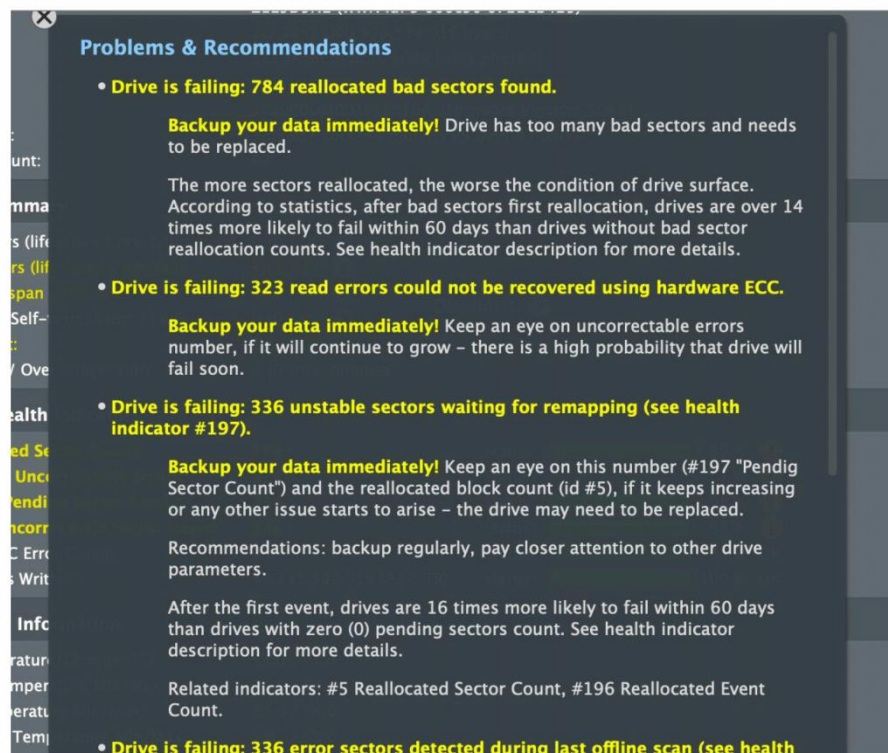
The proof of diagnostic software is when it tells you something's wrong before

you're aware of it. That happened in testing DriveDx. One of my external drives, used to store iTunes and Photos libraries, had quietly generated a huge number of write errors, which were automatically corrected, but are an extremely bad indication of the drive's future reliability.

DriveDx provided detailed information about what was wrong, and suggested an immediate backup. I was able to transfer 1.5TB of data successfully, averting a potential failure. Yes, I have a backup, but averting failure is better than relying on a backup.

Just days later, my other external drive to which I'd just used to transfer all that data to? It started generating less-severe errors, but ones that hinted at an upcoming failure. I began shifting data from it, only to have malfunctions during copying.

Had I not been running DriveDx, I likely would have lost both drives without



You can drill down and get more details and recommendations about problems.



DriveDx 1.8.2

PROS

- Surfaces diagnostic information your drives already produce.
- Presents details in an easy-to-digest format.
- Lets you know remaining estimated lifespan of SSDs.
- Offers a driver to monitor externally connected drives.

CONS

- Occasional false positives about a change in status for a drive that was in perfect health.

PRICE

\$20

COMPANY

Binary Fruit

advance notice. (Both drives were four years old. They don't make them like they used to?)

BOTTOM LINE

The best thing you can do to preserve data is to have multiple backups in different places. But the best option to prevent data loss before a drive fails is to run DriveDx. It's affordable for a single copy and in a family license, and can prevent loads of wasted time or erratic performance that far outweighs its cost. ■

Hot Stuff

What We're
Raving About
This Month

FITBIT INSPIRE HR

fitbit.com

The Inspire HR is a fitness band that tracks the bare essentials—steps, sleep, calories, distance—but it also brings a few tricks that you wouldn't expect in a \$100 device. Apps aren't central to the Inspire HR experience, but you do get a few: Exercise, Relax, Timers, Alarms, and Settings. On the device's Today screen, you'll see all of your stats, including sleep, weight, menstruation, and anything else you've set up. The Inspire HR nails the basics so well, you'll be OK with the things it doesn't do, like app support, music playback, or GPS. —MICHAEL SIMON



Hot Stuff

NARWAL ROBOTIC CLEANER

narwalrobotics.com

Equipped with smart sensors and LIDAR navigation technology, the Narwal automatically sweeps and then mops laminate, linoleum, tile, hardwood, and other hard floor surfaces. And when it's done, it even cleans itself! The Narwal was generally adept at getting around furniture and doorways, and though its turret will prevent it from getting under some couches and low chairs, the front of its body was slim enough to get under kitchen and bathroom cabinets to give those kickspaces a much-needed cleaning. —MICHAEL ANSALDO



SAMSUNG'S 8K UHD Q900

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

Samsung's best TV to date gets darn close to the life-like detail that's been the goal of high-definition TV from the start. The LED-array-backlit, quantum dot LCD TV features 7860 x 4320 pixels; pack four times the pixels in the same space as a 4K UHD TV can and you get that "retina" effect Apple is so proud of. It's the same level of detail, but smoother and clearer detail. There's some very mild blooming here and there, but it's

only really noticeable under extreme conditions. Color is absolutely top-notch: rich, saturated, and accurate. Motion was very smooth, and with auto motion on, really didn't require any tweaking of settings. —**JON JACOBI**



Smokey Says...

MAKE IT YOUR
GOAL
TO EXTINGUISH
HOT
COALS



IF IT'S TOO HOT TO TOUCH,



IT'S TOO HOT TO LEAVE

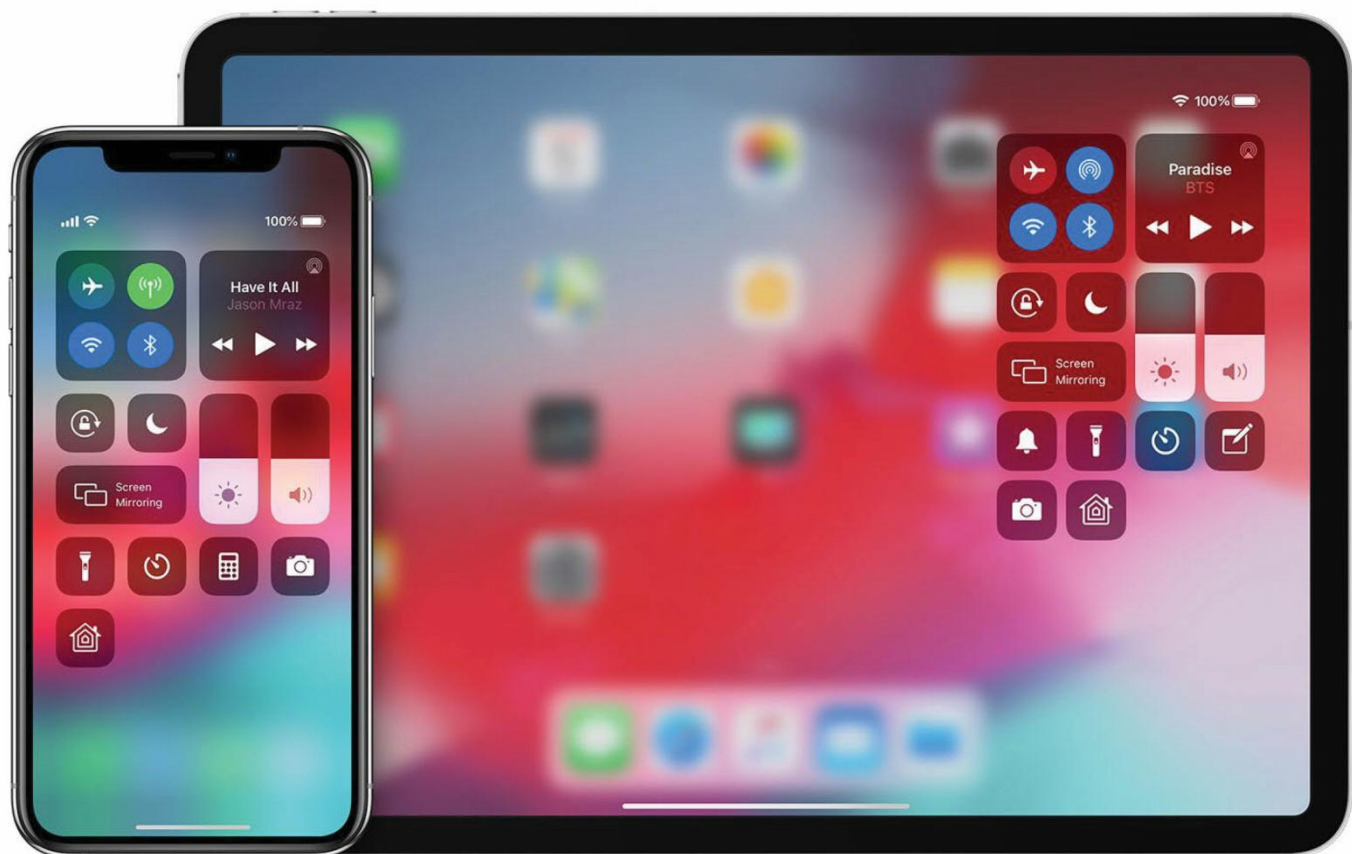
SMOKEYBEAR.COM



9 useful Control Center shortcuts for iPhone that you should be using

Your iPhone lets you use a calculator, takes notes, and more—without unlocking the device.

BY LEIF JOHNSON



If you're not using the customizable controls in your iPhone's Control Center, you're simply not getting the optimal experience. There's a good chance you're not, as personal experience has taught me that many people don't even know Control Center exists.

In fact, iOS now includes 20 different Control Center shortcuts to key Apple

apps and features on your iPhone, all of which are better uses of your time than sifting through the pile of apps on the home screen. Even better, you don't even need to unlock your phone to get to them.

You can add all 20 if you wish—at least on the iPhone, as Apple doesn't include a couple of them on the iPad for whatever reason—but you'll get the best experience

if you use the ones listed below.

First, a quick primer on how to use these. To access (go.macworld.com/acss) Control Center on the iPhone X, XS, XR, and the iPad, place your finger in the upper right-hand corner of the display and swipe down. On an older iPhone, swipe up on the display from the bottom edge of the screen.

To add the shortcuts below to your Control Center, go to the Settings app, then press Control Center and then Customize Controls. While the Camera and Flashlight shortcuts are super useful, I didn't include the Camera and Flashlight shortcuts here because they stay on the lock screen of the iPhone XS and iPhone XR, where they're far more convenient.

1. CALCULATOR

This one doesn't need much explanation. At the swipe of a finger, you get access to Apple's built-in calculator app on the iPhone. (As a reminder: You can get many more options if you turn the calculator to landscape mode.) It's probably the Control Center shortcut I use the most—which is why I'm shocked that Apple still doesn't have a version of Calculator on the iPad. This one's iPhone-only.



Seriously, though: How can you call the iPad a “pro” device and then not include a calculator?

2. LOW POWER MODE

If you know you're going to be away from a charger for most of the day, switching your iPhone to Low Power Mode early on is a good way to squeeze as much life out of it as possible. Press the shortcut from your Control Center, and your iPhone will disable “Hey, Siri,” minimize some visual effects, stop checking for new email, and disable both automatic downloads and background app refreshes. It'll also pause iCloud Photos and turn on your iPhone's auto-lock. While you're in the Control Center, you might as well manually dim the display a bit, too.

3. VOICE MEMOS

I'm constantly taking voice notes, whether to record ideas for stories while I'm away from my keyboard or to make little notes for myself when I'm in a rush. Apple's built-in Voice Memos app (go.macworld.com

[com/vmmo](https://www.macworld.com/vmmo)) is perfect for this kind of thing—especially since Apple overhauled it for iOS 12—and a smart placement in the Control Center means you can capture that stray thought before it disappears.

4. NOTES

If you have time to type something more substantial, this shortcut takes you straight to a blank page in Apple’s Notes app. This convenience gives the Notes app a big leg up over third-party competitors.

5. MAGNIFYING GLASS

Press this shortcut, and iOS turns your camera into a magnifying glass! It’s a pretty good one, too. You can zoom in, activate the camera’s flash for more light, or change the image’s tint (which is helpful for making small objects stand out more visibly than they would with the naked eye). In my line of work, I find this is helpful for reading tiny, hard-to-see serial numbers, such as the one inscribed on the inside of the AirPods’ charging case.

6. APPLE TV REMOTE

This shortcut lets you jump to the Apple TV’s remote control app. Considering how long many of us spend looking for a normal remote, this is a good way to make sure you’ve always got one on you—and only a swipe away, at that.

7. ALARM

If you use your iPhone as an alarm clock like I do, you’ll find this especially helpful. With a tap of a button, you can add new alarms, deactivate others, or set multiple alarms at once. Why isn’t this one higher? Honestly, I usually set alarms with Siri. Saying, “Hey, Siri, wake me up at 6 a.m.” beats even this for simplicity.

8. HEARING

The Hearing shortcut activates Live Listen, which essentially transforms your AirPods into hearing aids by using their microphones to pick up the sound from the world around you. You’re not going to get medical-grade hearing augmentation this way, but I’ve found it’s useful for hearing friends across the dinner table in crowded restaurants. (Just be prepared for a slight delay, which can be jarring.) For a more in-depth explanation of how to use it, check out our how-to ([go.macworld.com/lstn](https://www.macworld.com/lstn)).

9. SCREEN RECORDING

We use this a lot at *Macworld*. Once you press the shortcut, your iPhone will start recording what’s on the screen after three seconds. For us, it’s a good way to show games or apps in action; for you, it might be a good way to preserve a video you can’t download. One catch: Apple will usually stop you from recording a video from Netflix or a similar service. ■



Apple's 'courage' to remove the headphone jack has created a brave new world

It's time to admit that Apple was right.

BY MICHAEL SIMON

It was barely two years ago when we lamented the loss of the headphone jack on the iPhone. The iPhone 7 had just arrived with a gorgeous jet black color, a solid-state home button, and a dongle in place of the 3.5mm headphone jack. At the iPhone 7 introduction, Apple

VP Phil Schiller talked about having the “courage” to make the change, to leave the headphone jack behind.



VIDEO: **APPLE RIGHT ON HEADPHONE JACK**

Watch now at go.macworld.com/hdj

At the time it was kind of cringe-worthy. Rather than try to convince the audience of the benefits of wireless charging or the annoyances of wired earphones, Schiller basically told the audience that they might not understand now, but one day they will. You could hear the snickers in the audience when he said that removing the headphone jack required the “courage to move on and do something new that betters all of us.” It sounded ridiculous. All we could see was the inconvenience ahead.

But you know what? He was right.

It might have sounded like the reality distortion field on steroids, but Apple’s decision to remove the headphone jack from its most popular product wasn’t a flippant design whim. It was the start of a new strategy that would bring convenience, simplicity, and downright delight.

A WIRELESS STRATEGY

When Apple killed the headphone jack on the iPhone 7, it offered a consolation prize to anyone buying one in the form of a pair of Lightning EarPods and a free Lightning to 3.5mm Headphone Jack Adapter. It wasn’t the greatest solution. Not only did



AirPods were the thing that no one saw coming, even after they arrived.

you need to carry an extra cable, but plugging it in also meant you couldn’t charge your phone and listen to music at the same time.

Apple solved that problem by quickly bringing wireless charging to the iPhone the very next year with the iPhone 8 and iPhone X. But the biggest pawn in its wireless strategy was released alongside the iPhone 7: AirPods. Within a year, the AirPods were well on their way to becoming a worldwide phenomenon, selling out as fast as stores could stock them. It wasn’t that they necessarily sounded better than other true wireless earphones. Rather, Apple prioritized convenience over fidelity with the AirPods

to, in its own words, “provide a wireless audio experience not possible before.”

And again, we doubted Apple. At their unveiling, the AirPods looked goofy and seemed far too easy to lose, and the world wasn’t quite ready for them. We had just found out that the headphone jack was going away, and now Apple wanted us to buy into a \$159 accessory that looked like it could get lost in a coin purse and fall out of our ears when the wind blew.

But neither was the case, because Apple designed the AirPods to be better than our old wired headphones. Easy syncing. Smart ear detection. All-day battery life. Removing the headphone jack wasn’t solely for design purposes (although that surely played a part). Apple wanted its users to get on board with its wireless plan as quickly as possible, so what better way to do that than by making the old way seem clunky and antiquated.

STAYING THE CABLE-FREE COURSE

Now that we’re a couple of years removed from the shock of the headphone jack’s removal, Apple has proven that its plan was smart—so much so that no one even batted an eye when the iPad Pro arrived without a 3.5mm port. It’s just like it was with USB or the optical drive. Apple didn’t wait for the mass adoption of the technology, it took a risk and it paid off.

Eventually the rest of the industry caught up, and we never looked back.

One day it’ll be the same with the headphone jack. Plenty of Android phone makers are trying, but they don’t quite have the discipline and sticktoitiveness that Apple has. Google stripped the headphone jack from the Pixel 2 (go.macworld.com/pxl2), but the \$159 Pixel Buds (go.macworld.com/pbud) aren’t a worthy replacement, even with built-in translation. Essential (go.macworld.com/essn) never even sold a phone with a headphone jack, but months later it capitulated and made a \$150 Audio Adapter HD (go.macworld.com/adhd) with a “high-resolution ESS Sabre DAC with MQA support to deliver master quality authenticated audio.” The only company that’s really made a legitimate set of wireless earphones is Samsung with the Galaxy Buds, but its newest phone, the Galaxy S10 (go.macworld.com/sm10), is still clinging to the past with a 3.5mm port on board.

It’s not unlike the notch. When the iPhone X came out, people all around the net pointed and laughed at Apple’s brazen design, but barely a year later, it’s hard to find an Android phone that doesn’t have one. And soon enough it’ll be the same with the headphone jack. Apple has shown us all how much better living in a wireless world can be, and once everyone else figures out how to make their own version

of AirPods that are as seamless and simple as Apple's, we'll wonder how we ever lived with wires sticking out of our phones.

A BRAVE NEW WORLD

The AirPods are the rare product that exploded immediately and don't really need regular updates to stay relevant. Part of it is because Apple is so far ahead of its competitors with the AirPods, but it's also because Apple kind of nailed it on the first go. Like the iPod, which made everyone want white cords dangling from their ears, the AirPods make us all want to cut the cord for good.

For the second generation, which took more than two years to release, Apple

didn't change much. A new H1 chip makes connectivity faster, talk time was extended by about an hour, and tap-free "Hey, Siri" was added. And most importantly, the long-awaited wireless charging case arrived, just in time for rumors that the next iPhone will have a feature that lets you wirelessly charge another device by resting it on the back of your phone.

And when it arrives, Apple will make it sound like it's a brand-new feature. Samsung and Huawei fans will laugh and remind everyone that they've had the same feature on their phones for months. But Apple's wireless strategy is bigger than charging (insert AirPower joke here). The fact is, every other phone maker wants to



The Galaxy Buds are similar to Apple's AirPods, but Samsung hasn't really given S10 owners a reason to buy them.

offer the same wireless experience that Apple does with the AirPods and iPhone. But only Apple had both the courage and foresight to execute it. Now, if only they would include a pair with the iPhone XI. ■



Apple should bring back the iPhone SE and model it after Google's Pixel 3a

The price ain't bad either.

BY MICHAEL SIMON

At its annual I/O developer's conference in May, Google took the wraps (go.macworld.com/wrap) off a pair of brand-new phones that are Pixels through and through. They've got big screens, great cameras, and all-day battery life. They run

the latest version of Android and promise three years of updates. And they have a headphone jack.

But the Pixel 3a and 3a XL aren't \$900 phones—they're cheaper than Apple's iPhone 7. Google has built a pair of handsets that retain the heart of their

flagships but dispense with the luxury. In short, they're Pixels for those who can't afford a Pixel 3. Apple should follow suit.

I'm not talking about throwing a new processor in the iPhone 8 (go.macworld.com/ipn8) as has been rumored. What Google has done with the Pixel 3a is craft an entirely new phone that delivers the core Pixel experience at a significantly lower price. There's no confusion or cannibalization: it's a cheaper phone with clear sacrifices. It's not an iPhone XR, it's a better class of iPhone SE.

A BARGAIN AT HALF THE PRICE

Apple may technically offer a less-than-premium handset in the iPhone XR, but the Pixel 3a goes a step further. At \$750, the iPhone XR could hardly be classified as affordable, but the \$399 Pixel 3a is straight-up cheap. Even when Apple did sell a new iPhone at this price in the \$399 iPhone SE, it wasn't really a cheaper version of the top-of-the-line iPhone. It was a repackaged iPhone 5 in an iPhone X world. And it had to go.

The problem is, Apple hasn't truly replaced the iPhone SE. Sure, it sells an iPhone 7 for \$449 and an iPhone 7 Plus for \$569, but that's hardly a substitute. What made the iPhone SE such a great phone wasn't its 4-inch display or retro design. It was that it was an inexpensive iPhone that

wasn't old. At the time of release, it had the same A9 processor as the iPhone 6s, along with several features the iPhone 5s didn't have: a 12-megapixel camera, NFC sensor, a second-generation Touch ID sensor, and a new rose gold color.

When the iPhone SE was retired last year, it was hopelessly outdated and cramped. The chip was several generations old, the camera lacked any of the modern portrait features, and the screen was barely able to keep up with iOS 12's new navigation. Whatever was special about the iPhone SE was long gone, and Apple's decision to kill it came as a surprise to no one, especially in the wake of the iPhone XR launch.

But Google has shown with the Pixel 3a that \$399 phones don't have to miss out on the latest features to keep their price down. At half the cost of the Pixel 3, the



The iPhone SE was both new and old when it launched, but by the end of its run, it was just old.

\$399 Pixel 3a more than holds its own against the \$799 Pixel 3, but both justify their price tags. For the extra money, you get a faster processor, wireless charging, water resistance, a dual selfie camera, and premium materials, but the cheap one still has what matters most. And it could be the same with a new iPhone SE. Here's what I'm thinking:

Display: 5.5-inch 1920-by-1080 "Liquid Retina" LCD

Processor: A12 Bionic

RAM: 3GB

Storage: 64GB/128GB

Rear camera: 12MP, f/1.8, OIS

Front camera: 7MP, f.2.2

Biometrics: Touch ID

Design-wise, it could be a trimmer iPhone 8, with the fingerprint sensor on the back or built into the power button. The back would be plastic instead of glass, and it would include all of the computational photo tricks in the XR. At \$450, that would be a killer iPhone for people who can't or just don't want to afford an iPhone with a notch. Apple wouldn't have to worry about eating into iPhone XS sales, not that it would need to keep around the old models anymore. The choice would be clear.

AN 'A' FOR EFFORT

What makes the Pixel 3a special is that Google isn't merely selling last year's phone at a discount, like Apple does. The



Yup, that's a headphone jack on the Pixel 3a.

3a starts with the Pixel's strengths and wraps them in a less-premium case with downgraded but still respectable specs. Anyone who buys Pixel 3a won't mind the loss of wireless charging and water resistance, and they won't miss the 3 XL's notch or the extra speed in the Pixel 3. All they'll care about is that they're getting one of the best smartphone cameras they can but for half the price of most flagships. And that will only strengthen the Google and Pixel brand.

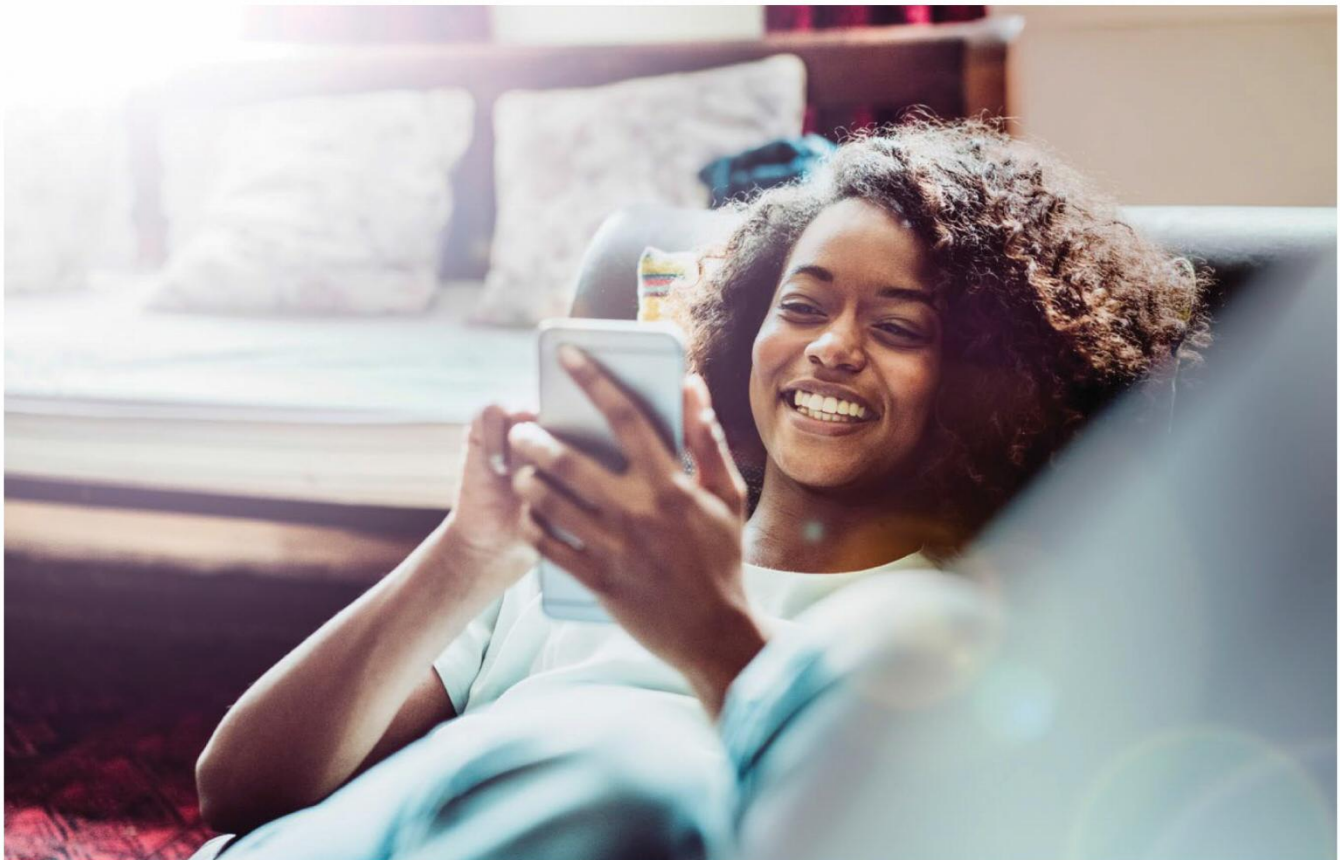
Apple could do it too. If it can pull off a \$749 iPhone XS in the XR, then it can make a new \$399 or \$499 iPhone SE that doesn't merely recycle a boring old design—I don't want an iPhone 7 or an iPhone 8, I want something new.

As iPhones have gotten more expensive, sales have leveled off, and a new iPhone SE could be the thing to get them moving again. Google has shown us that it can be done. Now it's Apple's turn. ■

3 easy ways to create an animated GIF on your iPhone

Express yourself with silent, looping, low-color animations!

BY JASON CROSS



The ancient GIF format isn't going away anytime soon. With the birth of social media and memes, the three-decade-old format for lightweight, looping, sound-free animation has found a new lease on life. There are better formats for capturing animation, but none so widely supported.





You don't need fancy editing software

on your PC or Mac to make a GIF. All you need is your iPhone. While there are lots of ways to make a GIF with your iPhone, these three should cover most of your needs.



VIDEO: MAKE A GIF ON AN iPhone

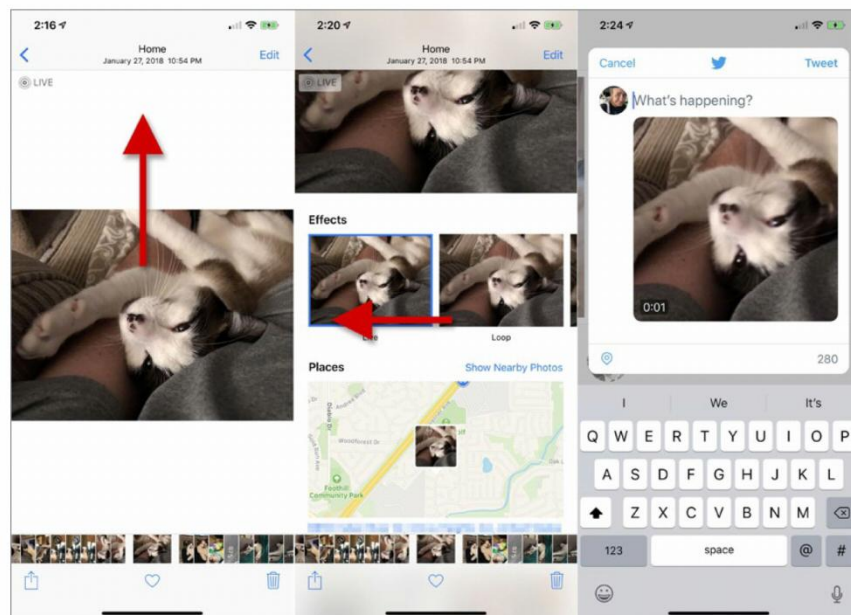
Watch now at go.macworld.com/gif

Media Types		
	Videos	154 >
	Selfies	118 >
	Live Photos	580 >
	Portrait	90 >
	Panoramas	17 >

You can easily find all your Live Photos by browsing your Albums.

1. SAVE LIVE PHOTOS AS GIFS

Live Photos capture a couple seconds of animation on either side of the picture you take. Hold down on them, and you can see it animate. To capture Live Photos, press the concentric circles at the top of the camera app.



Drag your Live Photo up, select Loop or Bounce, and share. It's that simple.

You can turn these into GIFs using the Photos app that came preinstalled on your iPhone.

1. Open the Photos app and find the Live Photo you wish to turn into a GIF. You can find them easily by choosing Albums at the bottom of the app, then scrolling down to the list of Media Types. Live Photos is one of the selections.

2. Once your live photo is selected, drag it upward. You'll see a list of Effects, a map showing where the photo was taken, and related image categories.

3. Select either the Loop or Bounce animation.

That's all you need to do! If you open the Share menu to send the GIF in an email or use in a Tweet, it will send it as a GIF. Back in the Albums screen, under the

Media Types header, you'll see Animated as one of the options. You can find all the Live Photos you've turned into GIFs there.

2. USE A SHORTCUT TO CREATE GIFS FROM VIDEOS OR BURST PHOTOS

If you hold down the shutter button on your iPhone's camera app, you'll take a very rapid succession of still images at full resolution. It's

not quite as smooth as a Live Photo, but the images are much higher quality and you can keep shooting for several seconds.

There's no built-in way to turn a burst shot into a GIF, but you can easily do it with the Shortcuts app.

1. Make sure you have the Shortcuts app (go.macworld.com/scut).

2. Download this Convert Burst To GIF (go.macworld.com/cbst) shortcut.

3. Run the shortcut. It will show a list of all your burst photos. Select one, and wait for a few seconds while it is turned into a GIF.

4. Select Done and you will be prompted with either Share The GIF or Save To Photos.

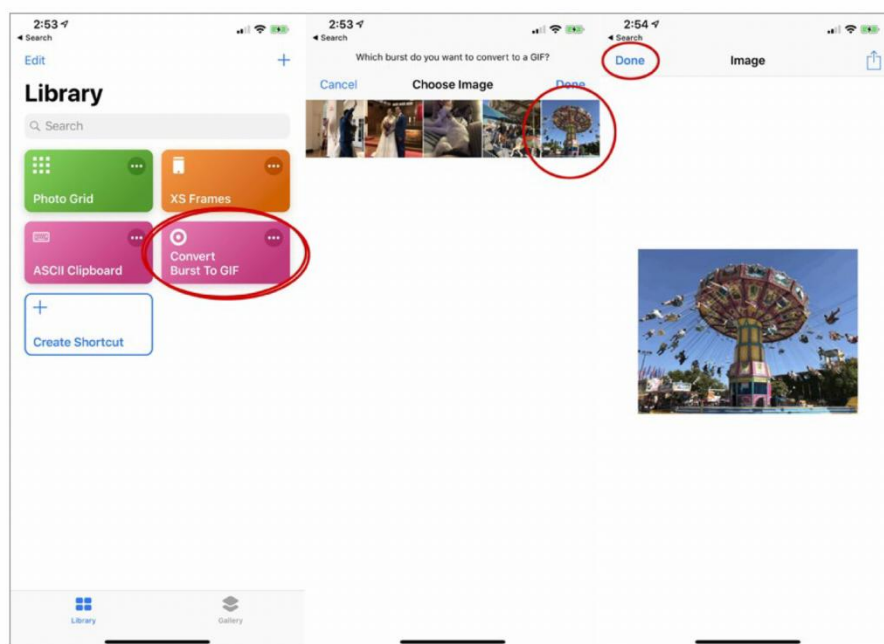
Want to do the same thing with a video instead of a burst photo? Try this.

1. Grab this Video To GIF (go.macworld.com/vgif) shortcut.

2. Run it. You'll be presented with a list of qualifying videos (over one second long and not a Live Photo).

3. Video too long? No problem—an editing window will pop up to let you trim it down to just the part you want to make a GIF from.

4. Press Save. Then press the Share button at the top of the screen to save the



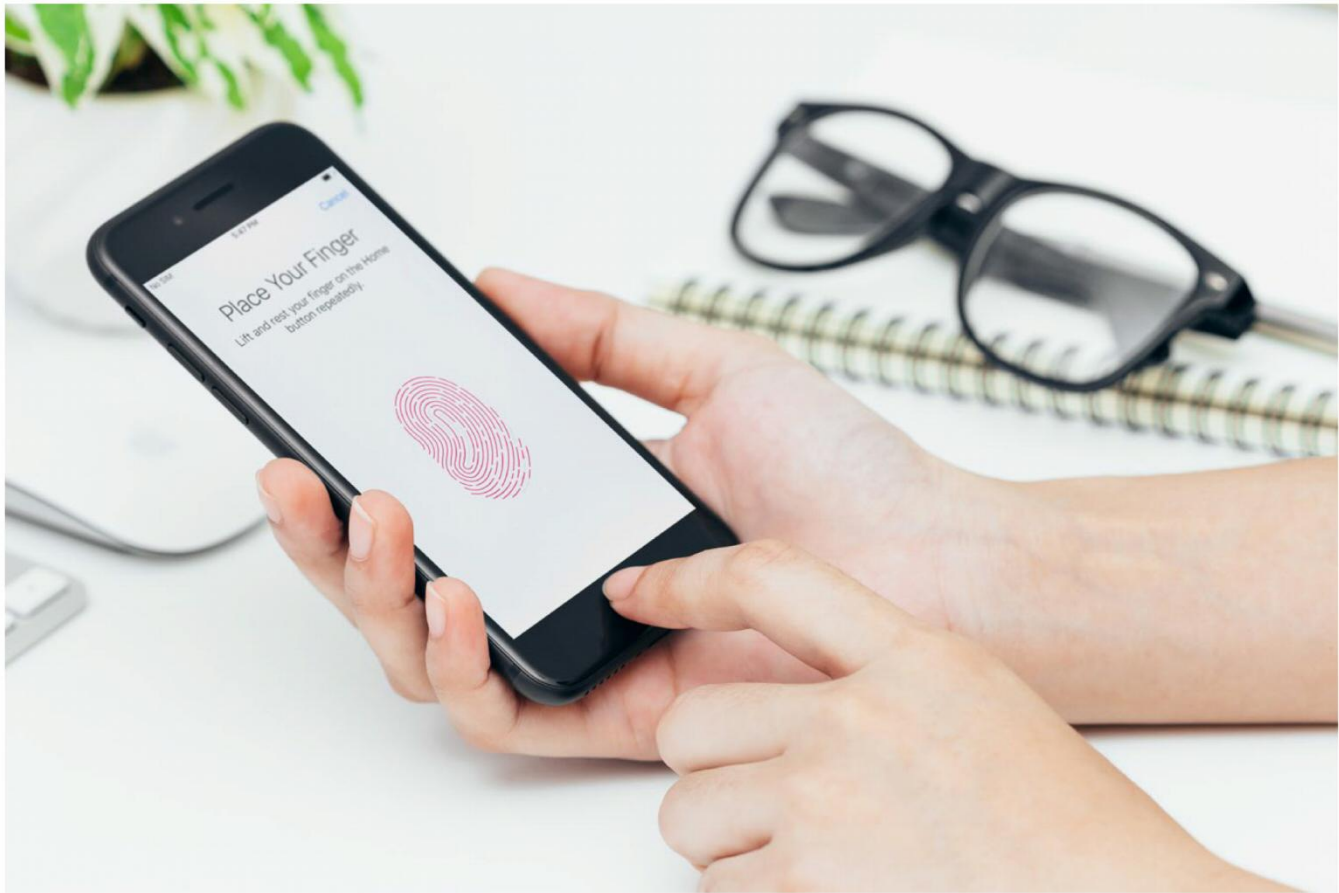
To convert burst photos or videos to GIFs, all you need is the Shortcuts app (which you should probably have, anyway).

image or send it to a social media app, email, message, or other service.

3. USE AN APP LIKE GIPHY

Of course, there are other ways to make GIFs. Dedicated GIF-making apps let you shoot new videos, add stickers, text, and AR effects, and more.

One of our favorites is Giphy. It lets you browse and share from the site's huge library of GIFs, pull images or videos from your phone's Photo library, or shoot and edit new videos. Giphy (go.macworld.com/giphy) used to have a separate app for all the GIF-making stuff (Giphy Cam [go.macworld.com/gfcm]), but it hasn't been updated since 2017. Since then, all of its features were rolled into the main Giphy app. ■



How to add other people's fingerprints to Touch ID

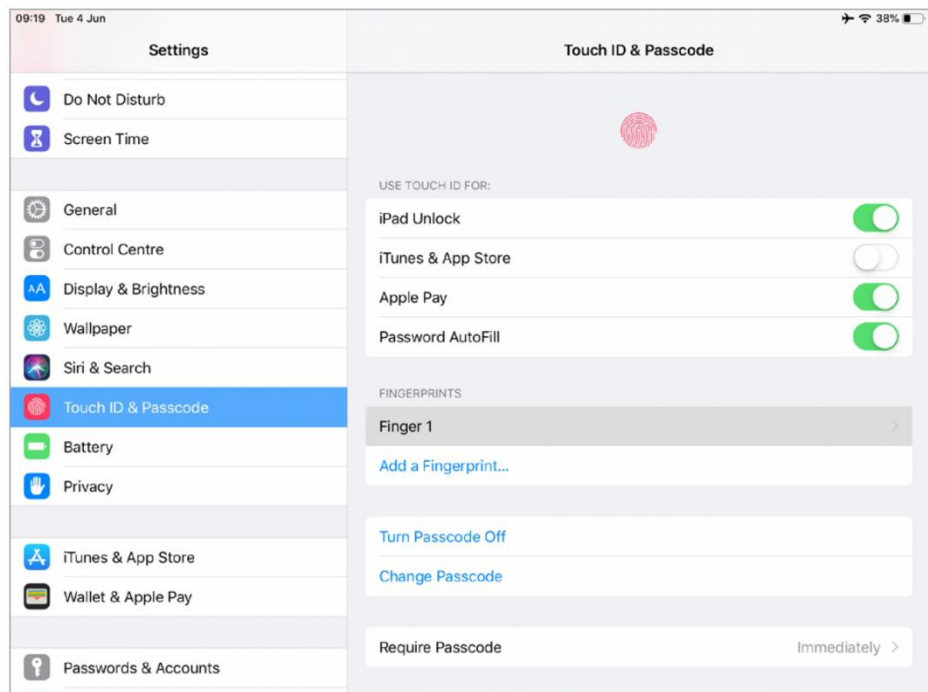
It's a great way to allow casual use within a family.

BY GLENN FLEISHMAN

Touch ID is old hat, having first appeared in 2013 with the iPhone 5s. However, some features still remain obscure, based on reader email and conversations I have. A key one is that you don't have to use only your own fingerprints for Touch ID for a device that is nominally yours.

Touch ID allows you to set up to five fingerprints total, including one you enroll initially when first configuring the phone, tablet, or laptop. In Settings > Touch ID & Passcode, enter your passcode, then tap Add A Fingerprint to enroll more. On a MacBook Air or MacBook Pro with Touch ID, open the Touch ID preference pane.

While this has been possible since the start on each model and platform, it's clear that many people think of these fingerprints as locked to their hand. But if you have someone else in your family or a loved one or other party you want to also have access, simply enroll one or more of their fingertips, too.



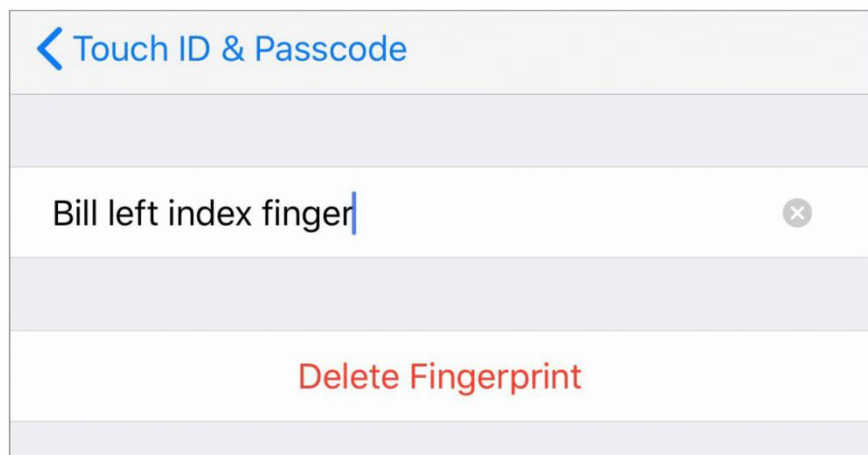
What's critical here is to use the label feature to identify whose print belongs to whom. By default, Touch ID just adds a generic label, like "Finger 2," to any additional fingerprint. Tap or click the entry and change it to something descriptive: "Bill left index finger," for example. Otherwise, if you want to remove that person's access, or add more of your own fingerprints in the future instead, you won't know which fingerprint except the first was yours. (That's always the fingerprint of the person setting up the device.)

Of course, Touch ID has a variety of cases in which you have to enter a device passcode or password, such

Touch ID lets you set up to five fingerprints.

as having a fingerprint not recognized five times in a row or restarting a device.

In that case, you need to consider if the other person is also worthy of your device's passcode or password—otherwise, they'll need to find you to unlock it. ■



Use a descriptive label for other people's fingerprints.

Smokey Says...

DON'T KEEP IT

LIT,

EXTINGUISH

IT



FOLLOW THE RULE, STAY



UNTIL ASHES ARE COOL

SMOKEYBEAR.COM





GAME CONTROLLER

ROTOR RIOT GAME CONTROLLER FOR IOS: THE HERALD OF A NEW AGE OF iOS GAMING

BY LEIF JOHNSON



Game controllers have been a part of the extended iPhone experience for years, but Apple's older certification requirements kept them from fully mimicking the same experience you get from an Xbox One controller or Sony DualShock 4. Even with the best ones, there's usually a catch. Sometimes you need to mash the buttons before they register. In other cases the latency is awful (particularly when the controllers run on

Bluetooth). Worst of all, you usually can't press down on either of the controller's thumbsticks, which effectively makes some games all but unplayable.

That's why I'm so happy to see the Rotor Riot Game Controller. It's the first MFi (Made for iPhone) controller that takes advantage of Apple's looser restrictions that dropped with iOS 12. It has a handful of its own drawbacks, but it doesn't fall into any of the traps mentioned above, and its new support for the thumbstick buttons makes it particularly well-suited to PS4 Remote Play at a time when it's a fairly hot item on iOS. Considering gaming's outsized presence on the App Store, I'm just a little surprised that a company that's best known for making drone parts was the first one to pull it off.

DOPPLEGAMER

The Rotor Riot even gets the look and feel right. Toss it in a box with your other controllers, and you'll likely accidentally pick it up when you mean to reach for your



I'd worried I wouldn't like the disc-style D-pad as much as the cross on the SteelSeries Nimbus, but it usually did what I wanted.

Xbox One controller. The thumbsticks are in the oddly satisfying staggered position you find on the Xbox controller as opposed to the side-by-side design of the Sony DualShock 4. It feels a little light when it's on its own compared to controllers that have batteries, but it feels just right when you're holding it with the phone attached in its case.

Indeed, you don't even need to charge it as a 25-inch Lightning cable extends from the controller so it can plug directly into your iPhone, thereby giving you better latency than you'll get with a controller that connects through Bluetooth. (Of course, this also means you can't charge the iPhone while you're playing a battery-

battering game like *Fortnite*.) The cord is long enough that you can also hook it up to an iPad other than the UBC-C equipped 2018 iPad Pros, but I wouldn't really recommend it. In heated moments, I'd be afraid it'd cause me to accidentally yank the entire tablet off the table and shatter my self-esteem, my display, and possibly my bank account all at once.

The optional plastic phone holder keeps that from happening with your iPhone. I say "optional," but it's silly to play without it as it keeps your phone anchored to a convenient spot. Its extendable clamp is just big enough that it can hold my iPhone XS Max while it's still in its silicone case, although I'm a little bummed that I can't adjust the slightly steep angle. I'm also bummed that the phone holder adds

an extra step when I want to use it on the road. The entire controller takes up a lot of room when I slip it in my bag with the holder still attached, so every time I go somewhere I find myself unscrewing it so I can pack the pieces separately. I'm almost certain this will lead me to lose the phone holder one day.

WORTH THE WAIT

Those concerns melt away once you see the Rotor Riot controller in action (and you'll see that action soon, as it asks for permission to pair the very second you plug it in). Unlike some other controllers, every button here does exactly what I want to—and when I want it to. As far as iOS games go, this is true enough for everything from minimalist artsy

adventures like *Alto's Odyssey* (which really only uses one button) to complex, frantic multiplayer shooters like *Fortnite*. It boasts a familiar placement of buttons, and most importantly, it lets you press down on either of the two thumbsticks so you can use them as two



See what I mean?

additional buttons. These are typically known as true L3 and R3 buttons on console game controllers like the Sony DualShock 4, and no other MFi controllers currently support them because of Apple's weirdly restrictive old certification rules. Even *Fortnite*, unfortunately, doesn't support them yet—although I'm hoping that Epic Games can fix that in an upcoming patch.

For that matter, the Rotor Riot controller itself didn't actually support the L3 and R3 buttons at launch, but that changed with a recent update. There's a good chance you'll have to install that update yourself, but fortunately it's not hard; the update process begins the very second you first

plug the Rotor Riot into your iPhone. First it asks for permission to pair. Then it asks for permission to download the affiliated Ludu Mapp app that lists compatible games. After that the Ludu Mapp app (go.macworld.com/ludu) asks for permission to download the firmware.

And that's it. Boom. You don't even need to restart the phone. After that, you can play *God of War* on the PlayStation 4 through PS4 Remote Play better than any other MFi controller at the moment. The secret sauce is all in those thumbsticks. Press the left one, and *God of War's* protagonist Kratos starts sprinting. Press on the right, and the mad Spartan locks on to an enemy.



You can't adjust the angle, but fortunately it feels perfect for playing games in bed.

It sounds so simple—so necessary—but other MFi controllers were forced to scrap this functionality for years. In fact, if you watch me trying to play *God of War* with Remote Play with the Gamevice in a recent how-to video (go.macworld.com/h2pl), you can see Kratos flailing about at a lethargic pace because the Gamevice can't let me use two of the most important buttons in the game. There's no way I would play the entire game like that.

Mind you, the Rotor Riot controller doesn't provide corresponding buttons for every button on a DualShock 4, but fortunately the Remote Play app itself makes up for that. Along the bottom of the app's display, you'll see a digital bar that delivers access to the Options, Share, and PlayStation buttons and I've rarely felt a pressing need to have them on the controller with this setup. The one exception would be the Options button, but fortunately the big central button on the Rotor Riot automatically remaps to that.

Short of playing with a DualShock 4—which is impossible on an iPhone, if you're



In case I wasn't clear, being able to use this without taking off my case is a really big deal.

wondering—it's as close to a seamless experience as you're going to get.



Rotor Riot Game Controller for iOS

PROS

- Support for L3 and R3 buttons on thumbsticks.
- Responsive buttons.
- Plugs directly into iPhone, and so delivers better gameplay.
- Works great with PS4 Remote Play.

CONS

- Can't adjust phone holder.
- You'll likely need to update firmware upon purchase.
- L3 and R3 buttons currently don't work with Fortnite.

PRICE

\$50

COMPANY

Rotor Riot

BOTTOM LINE

Not every game currently supports the L3 and R3 buttons on the Rotor Riot controller—including *Fortnite*—but the design of the gamepad is such that functionality could be unlocked with a patch. Right now, though, it's the only MFi controller that supports them. With PS4 Remote Play, it lets me play everything from *God of War* to *Persona 5* as easily as I might play it on an actual PlayStation 4 (so long as my internet is up to the task). Until its competitors catch up, this is the controller I'll be reaching for. ■



BATTERY PACK

RAVPOWER 6700MAH EXTERNAL BATTERY PACK: CONVENIENCE ONLY GETS YOU SO FAR

BY JASON CIPRIANI

The \$27 RAVPower 6700mAh External Battery Pack fulfills its promise of providing a single wall adapter, two USB ports, and a portable battery pack all in a tidy design. The pack is very similar to Anker's Powercore Fusion 5000 (go.macworld.com/pwrc), only RAVPower's fails to deliver in overall performance and has one design quirk I just can't look past.

Included in the box are a carrying case and a microUSB cable. The square footprint of the pack easily fits into a

backpack or purse.

On the front of the pack you'll find two USB ports, each one capable of 5V/3A of output, or 5V/2.4A max output when you're using both ports at the same time. There's also a single microUSB port for charging the battery pack itself, four indicator lights, and a power button.

On the backside of the pack are the standard wall outlet prongs, which makes charging the battery pack convenient since you simply plug it into the wall and don't have to fuss with finding a charger for your charger. But, this is where the design of the pack frustrates me—the outlet prongs are difficult to fold out of the battery pack. There isn't any sort of button, switch, or lever to make it easier to rotate the prongs in either direction. In fact, at times I've had to resort to using a pen to get under a prong to move it.

As for overall performance, the pack has a 6,700mAh/24.12Wh capacity. In testing, we were only able to get an output of 15.72Wh or 65.17 percent of the total capacity. That's the lowest efficiency of any battery pack we've tested, and it's not even close—the nearest efficiency percentage is 72.71



A power button, microUSB, and two USB ports occupy one side, while a pair of outlet prongs are on the other.



RAVPower 6700mAh External Battery Pack

PROS

- Built-in wall adapter.
- Two USB ports.

CONS

- Terrible efficiency.
- Poor design.

PRICE

\$24

COMPANY

RAVPower

percent, with an average score of 84 percent for all packs we've tested.

BOTTOM LINE

Typically RAVPower products are some of the best, but this particular battery pack lacks an easy way to access the wall prongs, and its efficiency is the worst we've seen. ■

WHAT'S NEW AT THE APP STORE



PIGEON WINGS STRIKE

If tilt controls strike you as so last decade, pick up *Pigeon Wings Strike* and you'll find they're alive and well. But this game is a rabbit to *Rolando's* turtle. Here you're a pigeon in an endlessly side-scrolling rocket car who's racing at breakneck speeds through narrow urban passages, all while tilting your phone back and forth to move up or down. Later on, you'll even have to balance that action while firing guns at drones. It's intense, and I wish it offered more than local co-op for a multiplayer option.

Rolando: Royal Edition



In 2008, *Rolando: Royal Edition* (go.macworld.com/rre) vanished from the App Store for a few

years in the wake of architecture changes to iOS, but it's still wonderful enough to justify the near-perfect score we gave it in our original review.

Cultist Simulator



I'm hesitant to recommend *Cultist Simulator* (go.macworld.com/csi), even though it's easily

the most remarkable game to hit the App Store last month. There's intentionally no tutorial, for one thing, which means you may spend hours just figuring out this barely describable roguelike card-based narrative adventure. It's fairly involved, for another, and the gameplay board gets so busy that you'll probably want to play it on an iPad rather than on the tiny display of an iPhone.

Distraint 2



The story in *Distraint 2* (go.macworld.com/di2) wastes no time getting dark. The main character

of this 2D psychological horror adventure game may have a passing resemblance to the hero of the colorful early indie game *Braid*, but the action kicks off with him contemplating suicide after he evicted a disabled old woman—who then died. And then things start getting weird.



#WeAreAmerica

love
has
no
labels



5 GREAT iOS GAMES FROM THE PAST MONTH

Enjoy a good puzzler? Then you may find something to love among this month's drop of standout iOS games. Regardless of your preferred pace, this month's games remind us that puzzlers work so well on the iPhone because they thrive on touch controls in ways that genres like platformers and action games do not. **By Leif Johnson**



VERY LITTLE NIGHTMARES

go.macworld.com/vln

Little Nightmares left a big impact when it crept into what seemed like every gaming system apart from the Mac back in 2017, as its tense 2D stealth spawned more scares than many of its 3D cousins in the horror genre. And now, at last, that experience has made it to the iPhone with *Very Little Nightmares* (\$6.99), right down to the yellow-slick-ered hero who stays a step and a shadow ahead of the monsters. The main difference is that she's now sneaking her way through a mansion rather than a scary ocean facility.

ORDIA

go.macworld.com/ord

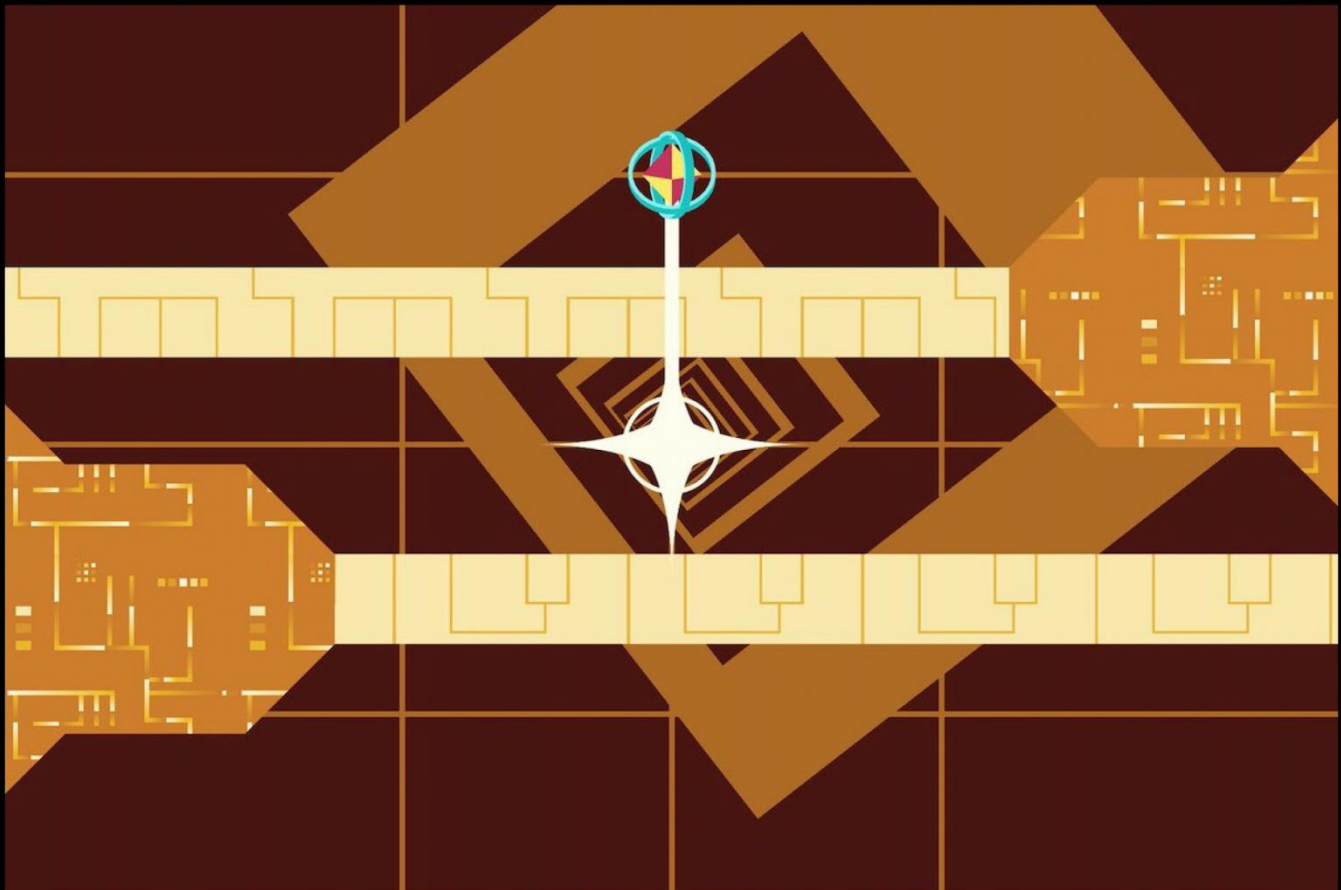
Ordia (\$3.99) plays a lot like *Angry Birds*: Pull back on your avatar with your finger, and it fires off in the direction you aimed in. But that's about where the similarities end. Here you're a gloopy eye-like blob ascending through the primordial ooze, and so you do your platforming vertically rather than horizontally. Along the way, you plop over to other gloopy blobs for support and calculate catapults over spikes, until at last you break through the surface at the end of the stage—and, perhaps, to the next stage of evolution.



JUMPGRID

go.macworld.com/jump

Jumpgrid (\$2.99) is aptly named, as it's about shuffling a gamepiece around a grid with swipes of your finger, all while collecting an assortment of nodes before you swipe over to the portal leading to the next level. Don't expect to zone out, though, as *Jumpgrid* is frickin' *intense* (although you can slow the speed if needed). The whole time you're collecting these nodes, you're also dodging sliding and rotating barriers, either by vaulting past them or simply staying ahead of them. You've got to be quick, too, as some of these can slam into you barely half a second into a round.

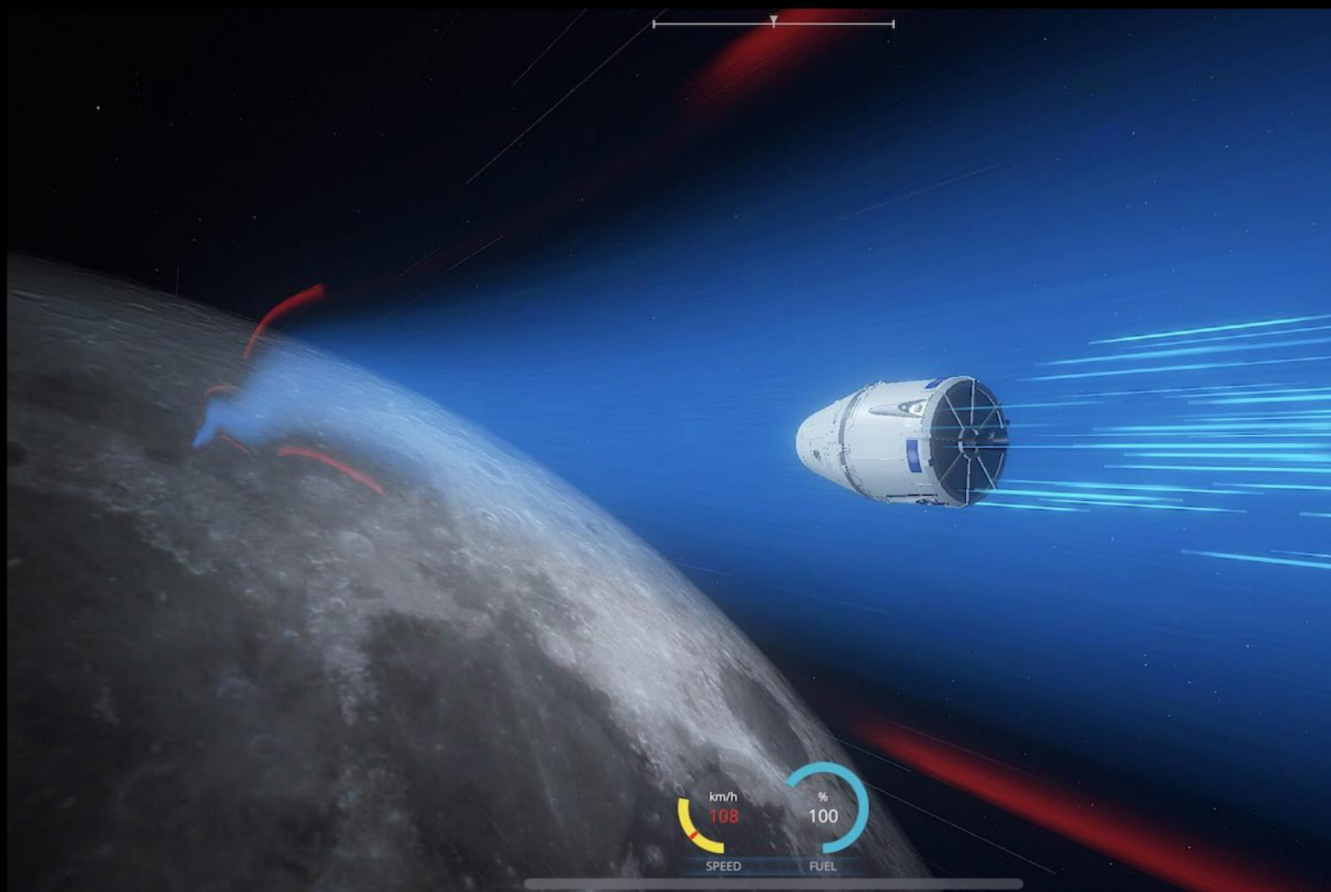




MAGNIBOX

go.macworld.com/mbox

Magnibox (\$3.99) may sound a bit like an electronics manufacturer, but it's actually an entertaining 2D platforming puzzler featuring boxes and magnets. You spend all 160 levels tumbling a box across the screen, and then you use magnets to pull that box to various platforms until you're able to roll through the goal. It's simple, but it presents challenges that feel rewarding but never exasperating. Success lies in figuring out how to roll into the right position, which sometimes involves clever use of the magnets or the assorted conveyor belts and movable boxes.



SOLAR EXPLORER: NEW DAWN

go.macworld.com/send

If you ever need to be reminded why the expression “It’s not exactly rocket science” exists, you should spend some time with *Solar Explorer: New Dawn* (\$2.99). It’s worlds away from the difficulty of landing a module on a moon or another planet, but *Solar Explorer’s* need for arcadey precision does a good job of capturing the tension. It’s basically a modern spin on 1979’s *Lunar Lander*, but developer Dwarf Cavern has updated it with lovely animations for the three phases of entry—and, more grimly, a message about the need to settle on other planets once Earth starts running out of room and resources in the 2040s.

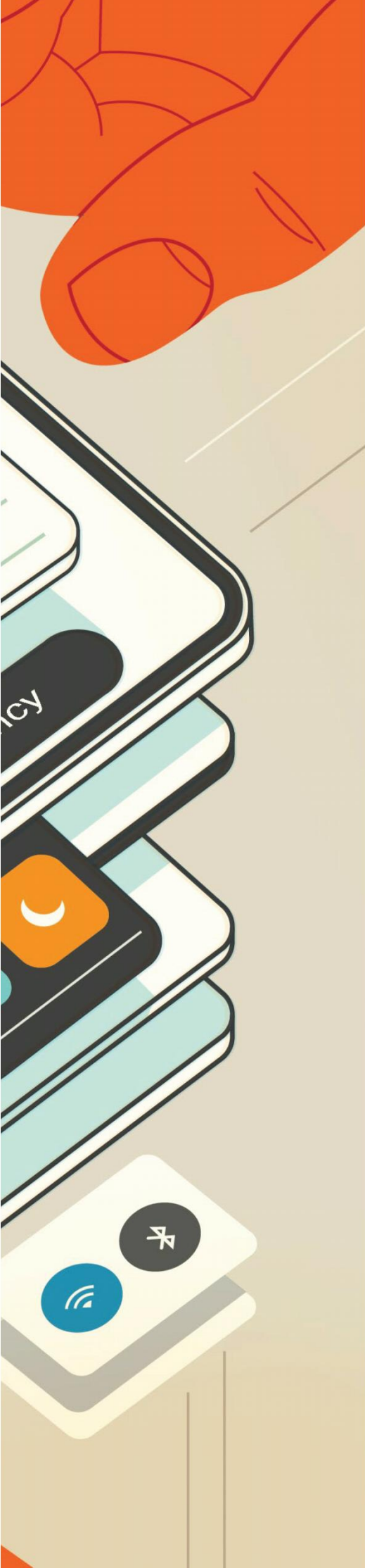


**If you love them enough
to sit through their
favorite movies,
then surely you'll check
to make sure they're
in the right car seat.**

[NHTSA.gov/TheRightSeat](https://www.nhtsa.gov/TheRightSeat)







11

IOS IS PACKED WITH LOTS OF COOL LITTLE FEATURES THAT DON'T GET THE LOVE THEY DESERVE. HERE ARE 11 OF OUR FAVORITES.

LITTLE-KNOWN iPhone FEATURES YOU SHOULD START USING

////////////////////////////////////
BY LEIF JOHNSON ILLUSTRATION BY HARRY CAMPBELL



You probably think you know your iPhone well. After all, these days we probably look at our phones more than we look at our loved ones. But the truth is, even those of us who've remained loyal to Apple's handset since 2007 can still be surprised by the tricks in each new version of iOS. The biggest ones get explained in the tutorials for the heftiest patches, but many others must be coaxed out of the Settings app.

Below, you'll find our favorites. If you also want to see the tricks your iPad is capable of, we've made a guide for that, too (go.macworld.com/10ip).

1. TURN ON SMART INVERT FOR AN IMPROMPTU iOS DARK MODE

iOS doesn't have a true Dark Mode yet—although believable rumors suggest we'll be getting one in iOS 13—but you can approximate one with an existing Accessibility setting. This isn't the regular Invert Colors that makes everything look like a psychedelic fever dream; instead, Smart Invert Colors changes elements like the background to black but keeps the colors of app icons, photos, and similar graphical elements. (It does, however, make colored graphics look duller.) The catch is that it only consistently works well

with Apple's own apps, so you'll have a better time using it on, say, Safari instead of Chrome.

To turn it on, go to Settings → General → Accessibility → Display Accommodations → Invert Colors. Press it, and then select Smart Invert. iOS will immediately paint it black. I wouldn't keep it on all the time, but it's a great temporary solution for making nighttime reading more pleasant.

2. QUICKLY DISABLE FACE ID IN CASE OF AN EMERGENCY

I'm a big admirer of Face ID, but unfortunately it makes it easy for someone to unlock your iPhone against your will by merely holding it up to your face. If you know you're about to be in a situation where this might be an issue, you can disable Face ID in about three seconds.

To do this, hold down at the same time

the side button (on the right) and either the up or down volume buttons on the left for about two seconds. Even if you're not looking at your phone, a sharp vibration will let you know it worked.

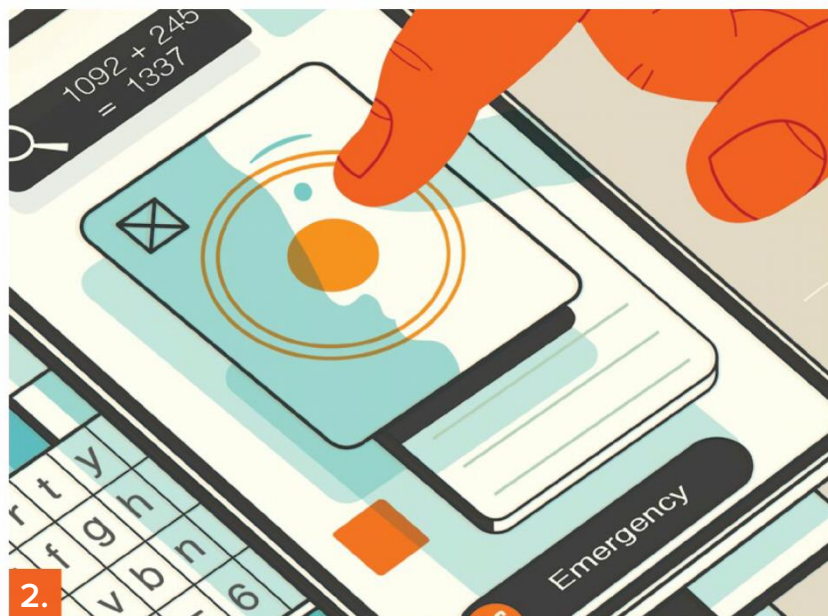
Anyone who wants to get into your phone after this will be forced to enter the passcode. (This is also how you access the Emergency SOS and your Medical ID.) For detailed information, be sure to check out our how-to (go.macworld.com/dsfc).

3. CUSTOMIZE WHAT FACE ID UNLOCKS

You may think Face ID completely replaces the passcode when it's active, but Apple actually grants a huge degree of control over what Face ID unlocks. If you're worried about a situation like the one I just described, for instance, you can set Face ID so it works for things like Apple Pay and

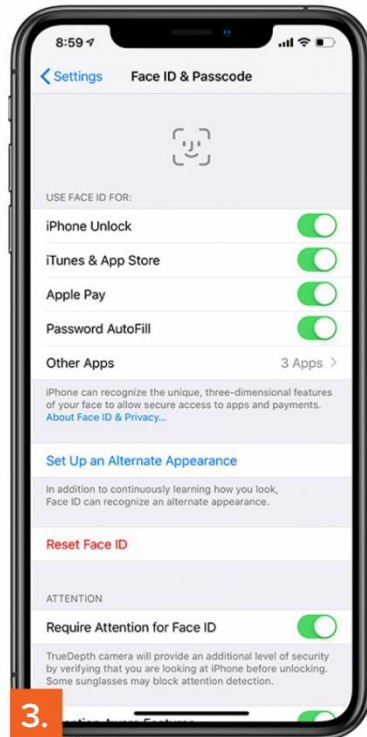
Safari passwords but doesn't actually unlock the iPhone itself. Anyone wanting to unlock the phone will still need the passcode.

To change what Face ID unlocks, go to Settings → Face ID & Passcode. At the top, you'll see the "big picture" options that lets you choose whether to use Face ID for things like iPhone Unlock, Apple Pay, and the App Store.



There's more if you scroll down.

Scroll to the bottom, and you can decide whether Face ID allows access to features such as the Control Center, Notification Center, or even Siri when the phone is locked.



3.

4. HIDE PHOTOS FROM YOUR MAIN PHOTOS FEED

Many of us have images in our Photos feeds that we don't want parents or coworkers to see when we're showing them photos of our vacation (or whatever). Thankfully, iOS lets you hide those photos from the main feed by putting them in a special folder.

To hide a photo, go to the Photos app and open the offending photo. Then press the Share button—the box with the arrow pointing upward—in the lower left. Along the bottom bar that pops up, scroll right until you see Hide. Press it. The photo will



4.

In the Photos app, the Hidden folder also won't have a photo-based thumbnail.

vanish from the main feed and be viewable only from a new Hidden folder.

You can't protect the Hidden folder

with a password, unfortunately, so anyone who knows about this feature will still be able to find the hidden shots.

5. USE REACHABILITY TO REACH UPPER-SCREEN ELEMENTS FROM THE BOTTOM

I love my iPhone XS Max, but even I admit that pressing options at the top of the display gets annoying when I'm holding the phone with one hand. That's where the Reachability feature comes in handy.

When you've got an app open, swipe down on the (usually white) digital bar at the bottom of the screen, and the top part of the app will shift halfway down the screen so you can more easily press the



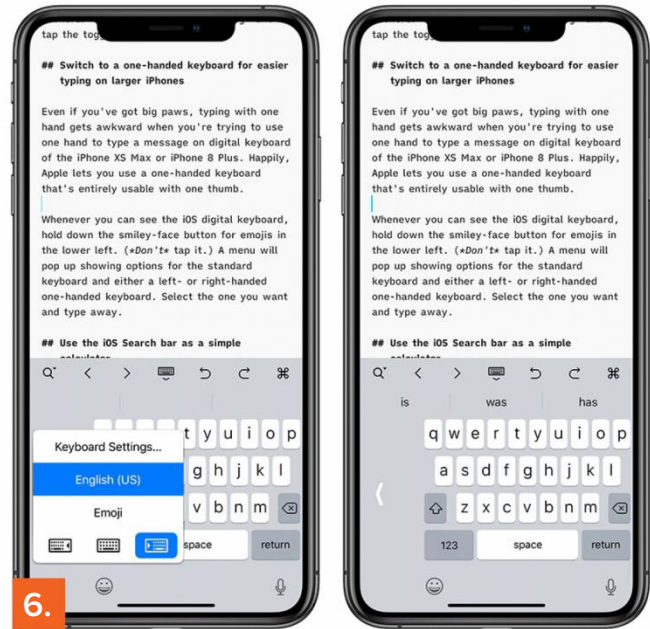
You can do this anywhere except for the home screen.

buttons there. To turn on Reachability, go to General → Accessibility → Reachability and tap the toggle there.

6. SWITCH TO A ONE-HANDED KEYBOARD FOR EASIER TYPING ON LARGER IPHONES

Even if you've got big paws, typing with one hand gets awkward when you're trying to use one hand to type a message on the digital keyboard of the iPhone XS Max or iPhone 8 Plus. Happily, Apple lets you use a one-handed keyboard that's entirely usable with one thumb.

Whenever you can see the iOS digital keyboard, hold down the smiley-face button for emojis in the lower left. (Don't tap it.) A menu will pop up showing options for the standard keyboard and either a left- or right-handed one-handed keyboard. Select the one you want and type away.



You can easily switch the keyboard to the left-hand side, too.

7. USE THE iOS SEARCH BAR AS A SIMPLE CALCULATOR

Apple's built-in calculator app works great, but it's not your only option if you need to make a quick calculation. You can also use the standard iOS Search bar, which you can easily find by swiping down on the home screen.



It's relatively awkward, but it's quick and it works.

Instead of entering standard text in the search bar, change the digital keyboard over to numbers and then you can make simple addition, subtraction, multiplication, and division calculations with the +, -, *, and / keys, respectively.

The Calculator app is better for more complex reckonings, but this works fine if you want to know a simple sum or calculate a tip.

8. TURN ON THE GRID FOR BETTER-FRAMED PHOTOS

Good photography takes real skill, but you can instantly make your photos much better by turning on the grid on your iPhone’s camera and heeding some simple arranging tips. To turn on the grid, go to Settings → Camera and then toggle Grid to green. When you open your Camera app again, you’ll now see a faint grid with nine squares.

At the most basic, this helps keep your

Not the most artistic photo, but you get the idea.



8.

subjects centered, but for the real artsy stuff, you should place the focus of your shot along one of the points where the lines intersect. I’m oversimplifying, but basically this is the “Rule of Thirds.” For more information, check out this guide (go.macworld.com/rul3) from our sister site that still holds up.

9. OPTIMIZE YOUR CONTROL CENTER

If you only think of your iPhone’s Control Center as the place where you do things like adjust the volume and brightness and turn on Airplane Mode, you’re not getting the most out of it.

Apple lets you add some excellent shortcuts for Control Center that can greatly improve your iOS experience,

whether by turning your camera into a magnifying glass or switching on Low Power mode or quickly accessing Notes



9.

You can include all the available shortcuts, but you’ll have to scroll to see them.

or Voice Memos. I compiled a selection of my favorite options here (see page 31).

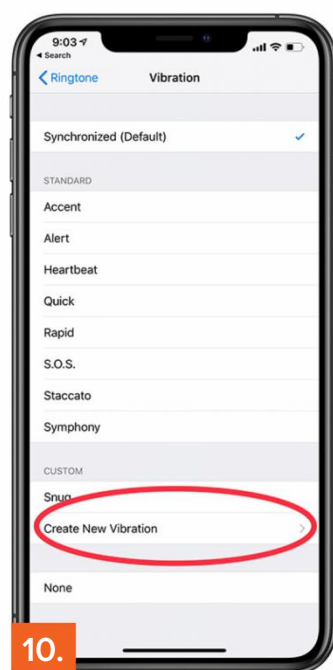
10. MAKE CUSTOM PHONE VIBRATIONS FOR FRIENDS AND FAMILY

Many of us keep our phones on vibrate, which means it's now harder to tell who's calling than it was in the heyday of custom ringtones. But hope isn't lost: Apple lets you make and set specific vibrations for friends and family in order to differentiate them from calls from other people.

To set up a custom vibration for a specific contact, open that person's page in the Contacts app. Press Edit in the upper right, then Ringtone → Vibration → Create Custom Vibration. Once you're happy with it, press Save in the upper right and give the file a name. When you're done, it'll

automatically save as the default ringtone for that Contact. (Unfortunately, this also replaces any ringtones.)

You can also choose from preset vibrations.



11. USE TEXT REPLACEMENT TO FIX INCORRECTLY AUTOCORRECTED WORDS

There's a popular word that autocorrect likes to change to "ducking," even when that's not what you ducking meant to say. A lot of folks wrongly believe there's nothing you can do about it.

Oh, but there is. The feature's called Text Replacement, and you can find it by going to Settings → General → Keyboard → Text Replacement. Normally, the idea behind Text Replacement is to let iOS automatically expand abbreviations such as "omw" to "On my way!" And you can do that, sure.

But it also effectively allows you to add words to the dictionary, or at least it makes it so autocorrect won't change them. Take our "ducking" word that begins with an "F." Hit the + sign in the upper right, and then enter the "F

word" (or any other word) into both the Phrase and Shortcut entries. Press Save.

From now on, whenever you write that other word, iOS won't correct it to "ducking." ■

This, but with an F instead of a D.



APPLE'S MEGA-HIT HEADPHONES GET A FEW MODEST IMPROVEMENTS

AIRPODS

(2ND GENERATION)

REVIEW

AIRPODS TOOK OVER THE WIRELESS HEADPHONE WORLD, AND NOW THEY'RE A LITTLE BIT BETTER. **BY JASON CROSS**



When AirPods (go.macworld.com/ap1r) were first announced in 2016, people were skeptical. Apple

wants us to pay \$160 for EarPods without wires? What's with those sticks sticking out of your ears? The case looks like dental floss!

But then, everyone who actually used them fell instantly in love. Easy pairing, auto-pausing, lightweight comfort, and rock-solid connection—Apple took all the pain points of Bluetooth headphones away. AirPods flew off the shelves and were backordered for months as Apple ramped up production to meet demand.

So what does Apple do for an encore? We'll have to wait for a while to find out. Apple's new AirPods are just that—new AirPods. They're not AirPods 2 or AirPods X. They're not a revolution or even a new design. But if you rely on Apple devices, they're still the best true wireless earbuds around.

EVERYTHING OLD IS NEW AGAIN

If you go to the Apple site and look up AirPods, you will find this new model (go.macworld.com/7ap2) and nothing else. The old model has been completely replaced by this new one, still simply called "AirPods." When Apple really needs to make a distinction between this new



VIDEO: AIRPODS (2ND GENERATION) REVIEW

Watch now at go.macworld.com/ar2

model and the old ones, it calls them "AirPods (2nd generation)."

The implication is clear: You should not expect these to revolutionize the wireless earphones market all over again. You should expect AirPods, as you've always known them, just a little bit better. Refined, you might say.

They have the same look, the same shape, the same glossy white finish. The case has the same design. You still pair them with your iPhone by simply holding the case open nearby, just as before. You use them just as you used the old ones:



Can you tell the difference between the old AirPods and the new ones?

Double-tap to skip tracks forward/back or invoke Siri. Music pauses when you take one out of your ear and starts playing again when you put it back in.

In fact, with the exception of a new optional Wireless Charging Case that has a tiny LED on the front, you'd be hard-pressed to notice any difference between the new AirPods and the old ones.

The new AirPods have the same battery life as the old ones, too: about five hours of music playback, with the case holding enough power for four recharges. The sound quality is also the same—slightly better than Apple's wired EarPods, slightly worse than most \$150 wired earphones.

THE H1 CHIP: FASTER SYNC, HANDS-FREE SIRI

The second-generation AirPods may look and sound the same, but they've changed inside. They use a new custom-designed H1 chip that Apple says is “developed specifically for headphones” and allows for improved efficiency.

The chip enables the one truly new feature of the AirPods: the ability to invoke Siri by simply saying “Hey, Siri” instead of double-tapping (though double-tapping still works). In my testing, it worked quite well, even on a fairly noisy street. Sound playback will dim after a couple of seconds to let you know Siri is listening, but you don't have to wait for that. As with your



The new Wireless Charging Case has the reset/sync button in the middle, so the charging coil fits around it.

iPhone, simply say your entire command without pausing for best results.

We still think Siri needs to get a lot better, and desperately needs the ability to fully function with third-party music services just as well as it does with Apple Music. But AirPods are best in situations where your hands are occupied: at the gym, riding a bike, bundled up in freezing cold weather. I didn't realize how useful it would be to use Siri with my phone in my pocket and my hands full until I had the ability to.

The H1 chip enables a few other minor improvements, too. The new AirPods switch from one device to another twice as fast, connect to phone calls up to 50 percent faster, and offer slightly lower latency (up to 30 percent less). These may sound like big improvements, but in practice, taking two to three seconds to switch from my iPhone to my Mac isn't all that different from taking four to five seconds. Gamers crave lower latency, but the difference is quite small. You have to be really sensitive to that sort of thing to notice it, and the new AirPods still don't compare to wired headphones in that regard.



The 2nd-gen AirPods do everything the original AirPods do, plus hands-free “Hey, Siri.”

Remember when I said battery life was the same? There's one important exception to that. The battery life when making calls has risen from 2 hours to 3 hours. If you make lots of long phone calls with your AirPods, that's a huge benefit you'll immediately notice. Long dial-in meetings would regularly decimate my old AirPods' battery life, while the new ones have plenty of power left.

WIRELESS CHARGING CASE OPTIONAL

Together with refreshed AirPods, Apple introduced a Wireless Charging Case. It was meant to go with the AirPower charging mat before Apple cancelled it (go.macworld.com/arpw). It does work with

any Qi-compatible wireless charger, though.

The new case is optional—you can still get AirPods with the standard Lightning-only charging case for the same \$159 price the old ones cost. If you want the ability to juice up your AirPods by setting the case down on a little pad, you can get the Wireless Charging Case together with your AirPods for \$199. It works with the old AirPods, too,

so you can buy just the case alone for \$79.

In my experience, the case charges more slowly on a wireless charging pad than plugged in. Given the relative infrequency of charging up your AirPods case (compared to, say, your iPhone) and the inability to work with wireless charging stands (which don't lie flat), I would say it's probably not worth the extra money. It's a curiosity, but it doesn't solve a pressing need.

BOTTOM LINE

If you already own a pair of AirPods, you probably shouldn't upgrade to the latest model. The



For this particular product, wireless charging isn't a big deal. It's probably not worth \$40 extra.

improvements in switching speed and latency aren't game-changers, and the ability to use Siri hands-free, while useful,

isn't worth the cost alone. Those who make a lot of long phone calls will love how much longer the battery lasts, but everyone else will notice no real difference in longevity.

If you haven't bought AirPods yet, the improvements in this second-generation model make them a little more compelling. Still, we can't help but anxiously await a true successor to Apple's near-ubiquitous wireless headphones. ■



AirPods (2nd-generation)

PROS

- Hands-free 'Hey, Siri'.
- Optional wireless charging case.
- Excellent comfort and ease of use.

CONS

- Sound quality is just okay.
- The best features only work with Apple devices.

PRICE

\$159

COMPANY

Apple



Ad
Council

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love
has
no
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FOR THE JOB ISN'T ALWAYS
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**LEARN HOW TO FIND, TRAIN AND CULTIVATE
A GREAT POOL OF UNTAPPED TALENT.**





6 powerful utilities that make the Mac feel like home

The Mac is good without all of these software utilities. But with them, it's great.

BY JASON SNELL

I love using my Mac. And yet when I am confronted with a fresh new device running macOS, I am taken aback by the barren expanse that is the default Mac experience. That's not on the Mac, that's on me—I have become incredibly

reliant on some fantastic utilities that enhance the Mac experience in countless ways.

Every now and then I mention these utilities to friends who are Mac users, or they see me using them, and they are

often completely baffled. This reminds me that, quite shockingly, there are lots of Mac users who never take advantage of utilities to make the Mac far more powerful than it comes out of the box.

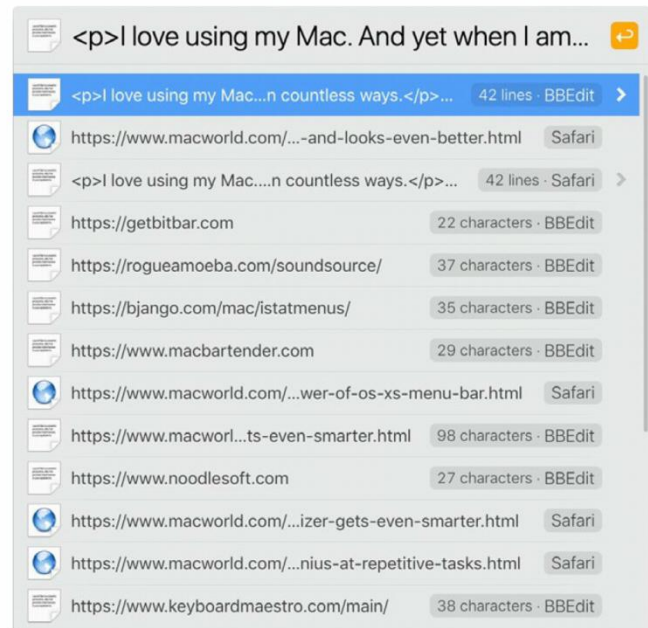
Here, then, are some of the utilities that make the Mac feel like home for me.

GO BEYOND LAUNCHING APPS

A few years ago, there was a surge of utilities that provided quick access to your Mac apps by typing a few keystrokes. LaunchBar (go.macworld.com/lbr6), Alfred (go.macworld.com/alf), and Quicksilver (go.macworld.com/qksv) were the most prominent examples. Then Apple came and (quite rightly) added quick app launching to Spotlight, eliminating the original reason all those other utilities existed.

No worries. The quick-launcher apps have managed to stay relevant by adding all sorts of other features. I know a lot of people who rely on Alfred, but I've been a user of Objective Development's \$29 LaunchBar (go.macworld.com/lbrv) for years and my Mac feels empty without it.

Yes, I use LaunchBar to launch apps and open files—its algorithm for guessing what you're looking for as you type is still superior to Spotlight's—but I'd have probably dumped it if I hadn't come to rely on so many other features. I use



Among LaunchBar's many features is a clipboard history.

LaunchBar to find the right emoji to insert into an iMessage, make quick math calculations on the fly, launch automation routines, and open specific Google Docs.

Perhaps most commonly, I use LaunchBar as a clipboard manager. There are lots of apps out there that will convert the Mac's traditional single-use clipboard into a large, accessible stack of clipboard items. Since it's a feature LaunchBar includes, I haven't needed anything else.

Regardless of whether you use LaunchBar or something else, I highly recommend using one of the Mac's many great clipboard managers (go.macworld.com/clpb). Being confident that everything you copy to the clipboard remains accessible can be a huge productivity

boost. Tasks that used to require toggling back and forth between different apps can be done in a more linear fashion—you copy all the stuff you need, one by one, and then switch to the other app and paste it all in, one by one.

AUTOMATE YOUR TASKS

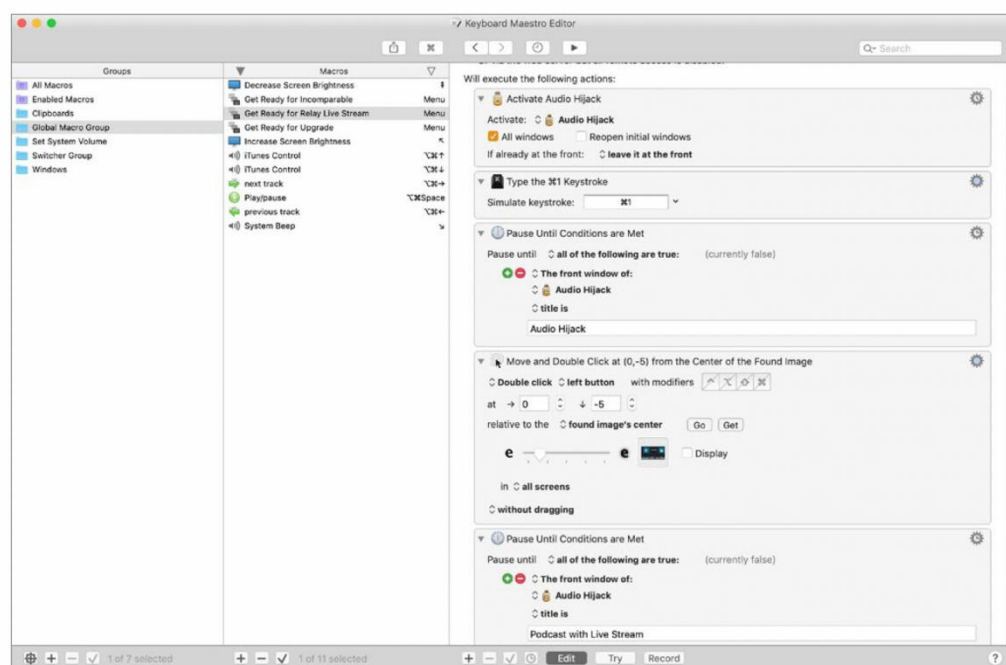
I'm a huge fan of user automation, because if there's anything that computers are good at, it's doing repetitive tasks that are utterly boring to human beings. If you're stuck doing a boring, repetitive task on your computer, you are ripe for the time savings that automation can bring.

The problem is, a lot of user automation solutions are extremely hard for most people to understand. Once you're asked to write code, the jig is up. Fortunately, there are some easy to use Mac automation tools out there that provide amazing amounts of power without requiring you to write code (although you can if you want).

I'm constantly amazed at what Starways

Software's \$36 Keyboard Maestro (go.macworld.com/kybm) can do. You can automate opening apps, issuing menu commands or keyboard shortcuts, clicking on buttons, and pretty much anything else you can think of. It's not reliant on the built-in automation features of individual apps, either—if you need to automate something by clicking on a specific item on the screen somewhere, Keyboard Maestro can be told specifically what to look for and where to click. It's a bit like magic.

I've used Keyboard Maestro (go.macworld.com/kyrv) to automate repetitious actions I do on my Mac in order to start or end specific types of work. For instance, when I am about to record a podcast, I need to launch several apps,



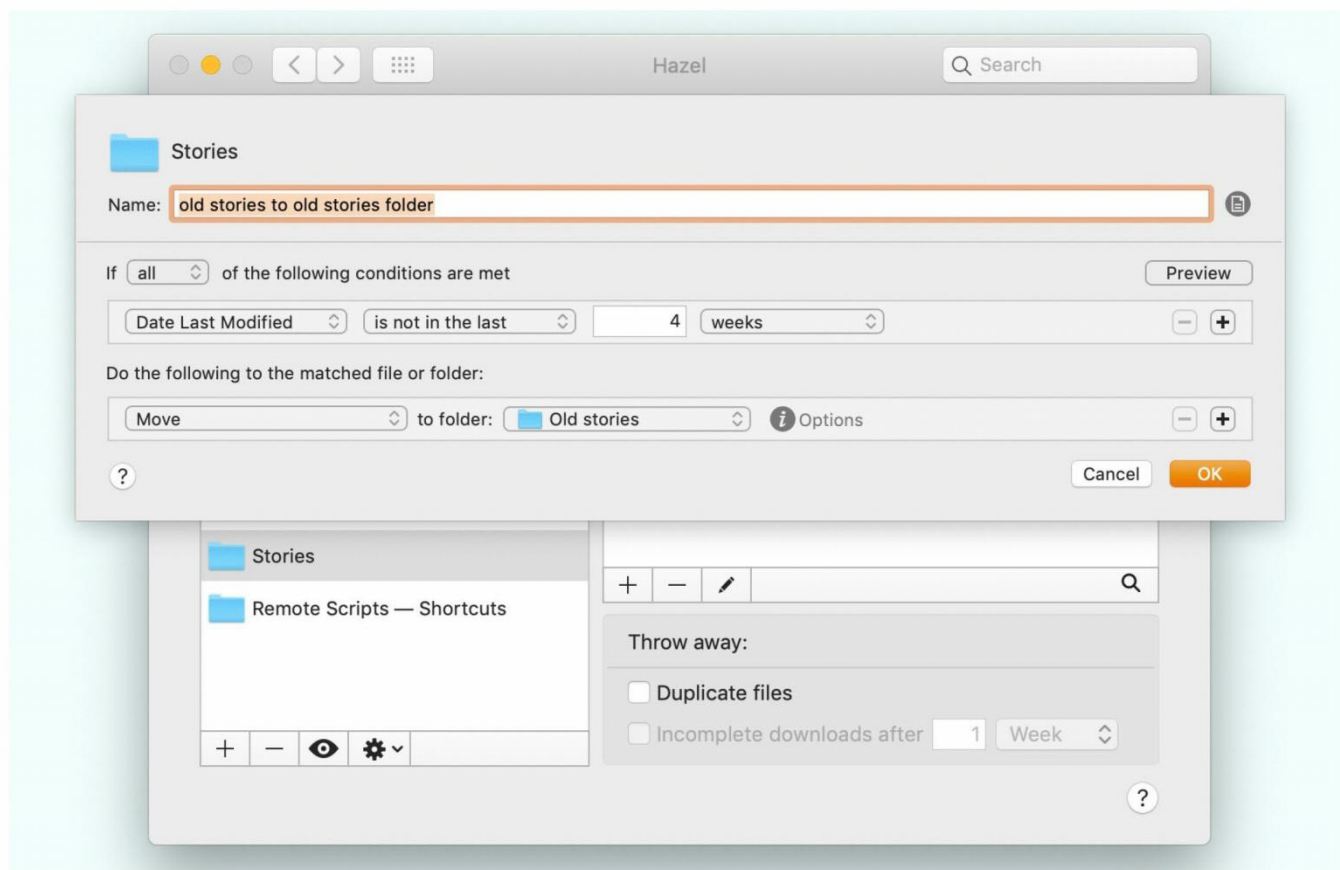
Keyboard Maestro lets you build automations that interact with any Mac app, even if it's not scriptable.

open specific pages in Safari, and configure several features of an app by clicking on various interface elements and typing related keyboard shortcuts. It's something like a 30-step process that I have to do more or less the same every week. With Keyboard Maestro, that process can be reduced to a single click or keyboard shortcut.

I consider time spent moving files around in the Finder to be time wasted. But my files still need to be managed! So I rely on Noodlesoft's \$32 Hazel (go.macworld.com/hazl) to manage my files for me. Hazel works by watching folders on

your Mac and making changes to files based on a series of rules. For instance, I've got a rule that looks at the folder where I save all my tech writing, and after a few weeks, moves unmodified stories to an archive folder. Another rule takes old podcast files and compresses them so they take up less space. And yet another looks at a shared Dropbox folder used to pass audio files back and forth and deletes any of them older than a couple of weeks.

I used to do all of that file maintenance by hand, but with Hazel (go.macworld.com/hzrv) I don't have to anymore. If you find yourself going through the mental



Hazel lets you set rules to move files around your Mac.

gymnastics of deciding which files need to go into which places, you might be able to reduce those thoughts into a basic set of Hazel rules and let the computer do the work automatically.

POWER IN THE MENU BAR

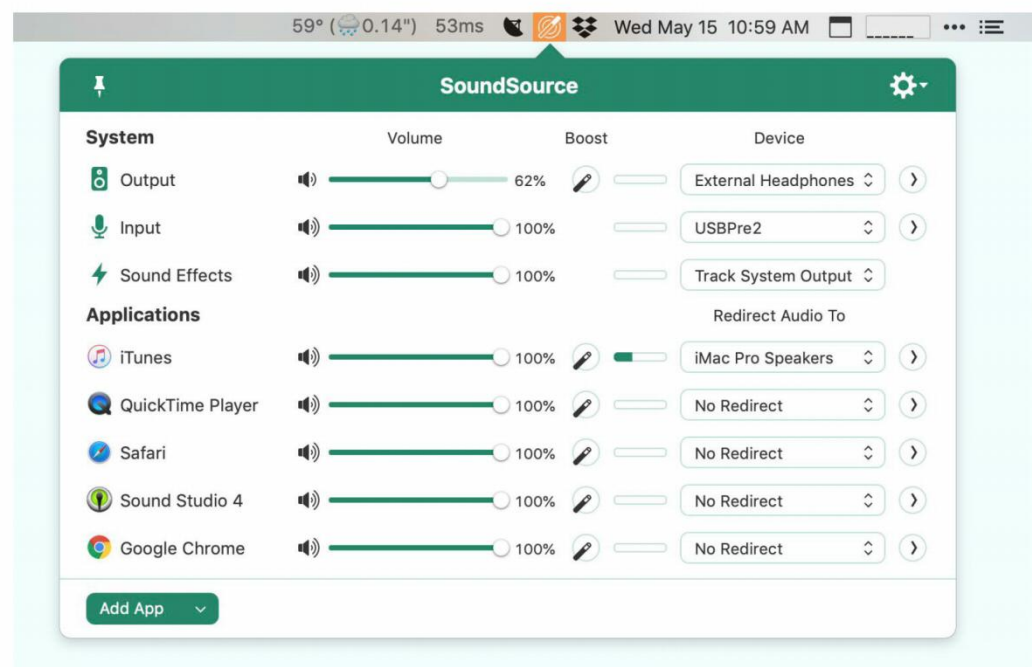
I've extolled the virtue of the Mac's menu bar (go.macworld.com/menu) in this space before, but my menu bar is made a lot better by the addition of a few clever utilities.

The \$15 utility Bartender (go.macworld.com/bar3) lets me clean up my menu bar, hiding icons I don't use as often beneath a single item. That leaves room for more items that I actually want to see, like the graphs from Bjango's \$12 iStat Menus (go.macworld.com/ista). iStat Menus provides you with glanceable information about your Mac's current status, from processor temperatures to the work being done by individual processor cores.

Rogue Amoeba's \$29 SoundSource ([\[macworld.com/snds\]\(http://macworld.com/snds\)\) gives me complete control over where the audio on my Mac is going. I can quickly reroute iTunes from my external speakers to my headphones, and adjust the output volume, right from its drop-down control panel.](http://go.</p></div><div data-bbox=)

And the free utility BitBar (go.macworld.com/btbr) lets me put more or less anything I want into my menu bar, via an extensible plug-in system. I've got the current weather status at my home weather station, the speed of my local network, and even the number of live listeners to my podcasts, all displayed in the menu bar via small BitBar extensions.

Sure, the Mac is good without all of these utilities. But with them, it's great—and it feels like home to me. ■



SoundSource lets you route audio from different apps to different outputs, all from the menu bar. (Also pictured: Other useful menu bar items.)

How to find out if your Mac's software is 32- or 64-bit

If you plan to use macOS beyond Mojave, you need to upgrade any 32-bit apps on your Mac to 64-bit.

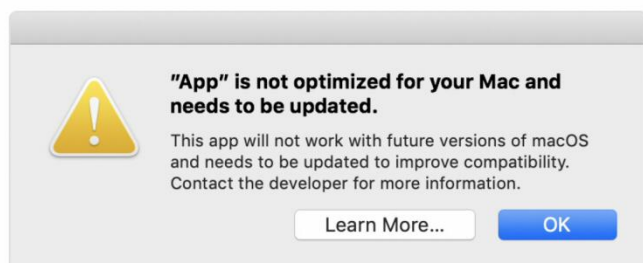
BY ROMAN LOYOLA



One of the major announcements (among many) at Apple's 2018 WWDC was that macOS 10.14 Mojave, the current version of the Mac operating system, is the last version that supports 32-bit software (go.macworld.com/32b). With macOS 10.15, only 64-bit software will be supported.

The clock is ticking. We'll probably see macOS 10.15 this fall, after it's previewed at WWDC this June. If you decide to upgrade to the new macOS, you need to do a bit more than usual to prepare your Mac—you need to make sure your apps are 64-bit versions. If your app is a 32-bit version, it will not work.

Apple actually started to warn people about the change with macOS 10.13 High



Sierra. If you launch a 32-bit app in High Sierra, an alert pops up to tell you that your app needs to be updated.

The alert appears only once in High Sierra, and in Mojave, it appears every 30 days.

If you can't recall whether an app needs to be upgraded or not, there are a couple of ways to find out besides the launch alert. Here's how.

FIND 32-BIT APPS ON YOUR MAC THROUGH SYSTEM REPORT

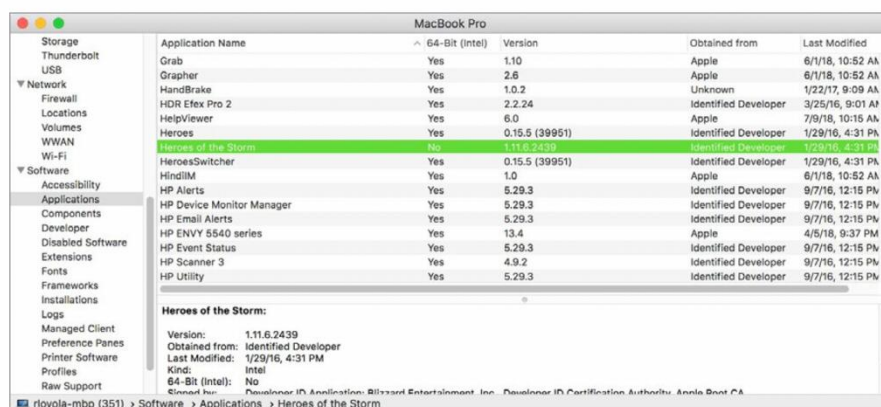
1. In the Finder, click on the Apple menu and select About This Mac.



2. In the Overview section, click on the *System Report* button.

3. In the left column of the System Report, scroll down to the Software section. Then select *Applications*.

4. The section on the right may go blank for a moment. This is because your Mac is compiling a list of software on your Mac. When the window appears, it will have two sections. The top section is the list of soft-



ware. The bottom section shows more details about an item if you click on it in the list.

If you click and hold the dot in the divider between the two sections, you can resize the window so you can see more of the list, or more of the details.

5. In the list, there is a column called "64-Bit (Intel)" that is located to the far right of the top row. If you don't see it, try expanding the window by clicking and dragging the right edge, or you can scroll the window to the right. Once you see the 64-bit (Intel) column, you can click, hold, and drag it to the left to reposition it closer to the app names.

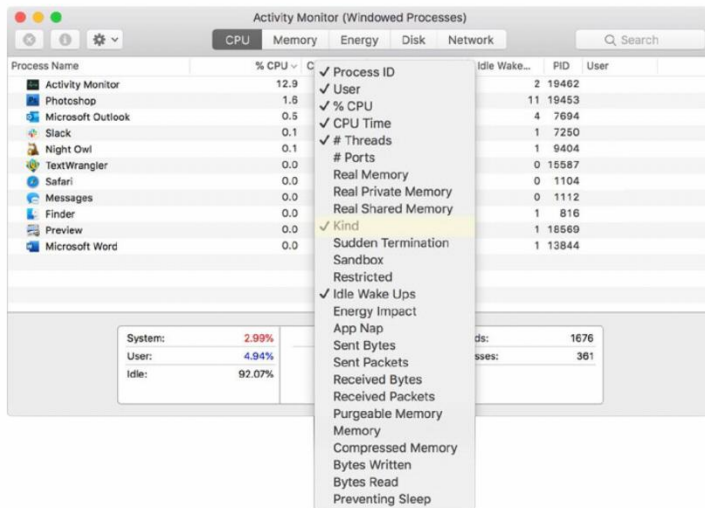
6. Now you can see if a particular app on your Mac is 64-bit or not. If it's listed as Yes, it's 64-bit. If it's No, it's a 32-bit app, and you need

to upgrade it before using macOS 10.15.

FIND 32-BIT APPS ON YOUR MAC THROUGH ACTIVITY MONITOR

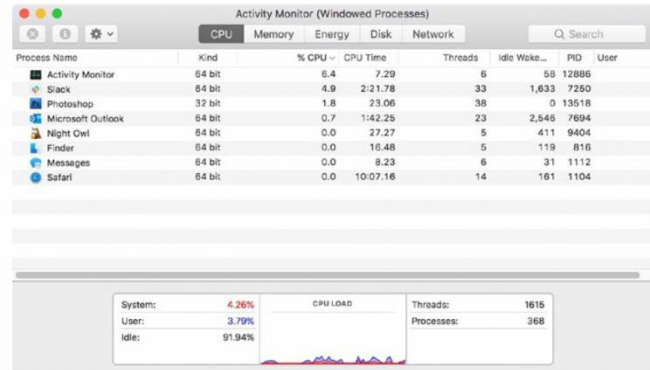
There's an app called Activity Monitor that you can use to identify if an app is 32-bit or 64-bit. But it only works when an app is launched and running.

1. Launch Activity Monitor, which is in Applications → Utilities.
2. In the CPU section, you see a list of apps running on your Mac. Right click the top row of categories. In the pop-up list that appears, select *Kind*.



3. At the right end of the top row, a new column called "Kind" should appear. You can click, hold and drag it to a new location if you wish. Like, say, next to the application names.

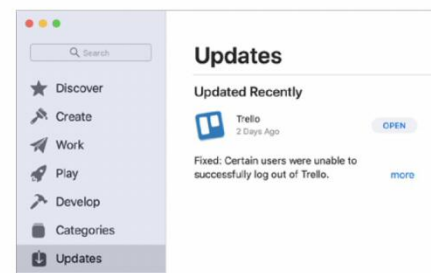
4. The Kind row will tell you if a running app is 32-bit or 64-bit. You'll need to upgrade 32-bit apps before using macOS 10.15.



HOW TO UPGRADE 32-BIT APPS TO 64-BIT

Once you've identified a 32-bit app, you need to upgrade it, or it will not work in macOS 10.15. Upgrading it usually involves downloading an update created by the developer.

> If you bought the app in Apple's App Store, check it for



any updates. Click *Updates* in the left column of the App Store app. Available updates appear in the larger window on the right.

> Check the developer's website for an update.

> Some apps can look for updates within the app. Launch the app, and look for "Check for Updates" or something similar in the Help menu, or in the menu named after the app (for example, the Safari menu in Safari), or in the app's preferences. ■

Is your router's Wi-Fi working but ethernet has gone bad?

Here's how to check.

BY GLENN FLEISHMAN



The indicator lights for active Ethernet connections might help you troubleshoot problems with a Wi-Fi router. While Wi-Fi and Ethernet may seem like two utterly different pieces of technology, they combine in a wireless router, in which the device's software interconnects networking traffic across the two types—and on some models, across a third via DSL or cable standards.

That can provide a problem if the Wi-Fi part of the gateway remains active and healthy, meaning that client devices, like smartphones and laptops, can connect to the network and report back that everything's fine, but the Internet connection appears dead.

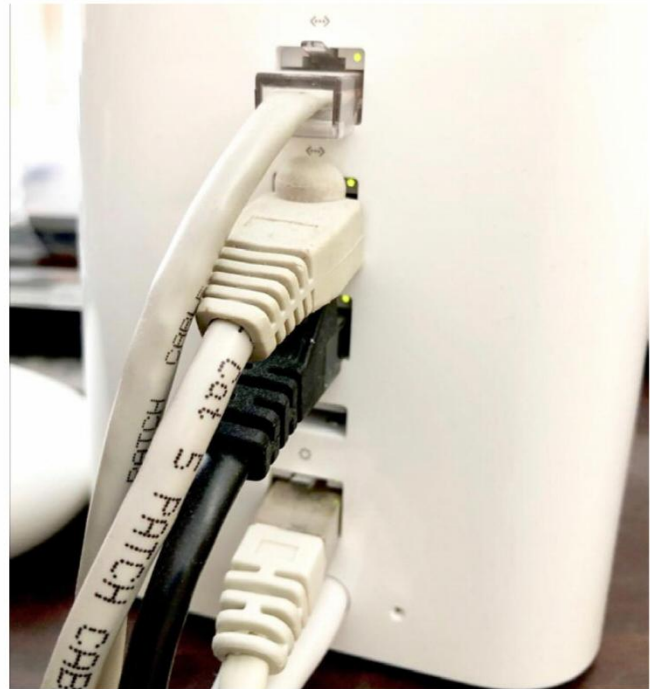
I've found frequently that when a Wi-Fi router appears at fault, Ethernet is the actual culprit. While Ethernet is an extremely reliable and long-running

technology, cables fail through wear (if you move them around) and over time. It's especially a difficult issue when Ethernet is threaded through the walls of your home. (Some homes were also wired long enough ago that they use an older standard of Ethernet cable that can't consistently support gigabit Ethernet signaling.)

One reader recently described a problem in which their Time Capsule was chained to another router for their network, and it would maintain a green LED status light on its front even when it would routinely drop the Internet connection. They could connect to the base station and configure it, too. They tried resetting and reconfiguring everything to no avail.

The AirPort Extreme Base Station, Time Capsule, and other Apple gateways may be discontinued, but they still shouldn't show a green LED on the front if the Internet can't be reached. In the reader's case, their Time Capsule is connected to another router that serves the home, and its assigned network address would switch to a "self-assigned" address, one that a network adapter on a computer, mobile device, or base station will employ when it can't obtain a legitimate network address.

The issue did turn out to be a faulty in-wall Ethernet cable, but there's a way you can try to diagnose this without swapping all your cables. Apple's AirPort line and many modern routers incorporate



The Ethernet jacks on an AirPort Extreme Base Station have green LED status lights next to them.

some kind of LED or indicator symbol that's directly tied to each Ethernet port.

On the AirPort models in recent vintages, there's a tiny LED embedded inside the port (see photo). If a solid green, there's an active link; if it flickers or is unlit, there's a poor connection or none at all. On other models, like the TP-Link Archer router I use as my main base station at home, the Ethernet lights are on the front panel: a solid green indicator indicates a connection, and it flickers to note active traffic.

If you see any errant behavior or obvious Ethernet LED or indicator symptoms, Ethernet cables are cheap and readily available: obtain another fresh one and swap it in to see if it solves the problem. ■

Convert vector artwork into different formats using Preview app

You may have an SVG, PDF, or EPS file that you want to use as a bitmap image.

BY GLENN FLEISHMAN



There's a gulf of difference between bitmap and vector graphics. Bitmap art is made of pixels and has a scale attached: each pixel represents black or white, or some gray or color tone. The resolution of the file—how many pixels wide by how tall—defines the amount of information in it. Scale it up and you start to see the individual pixels.

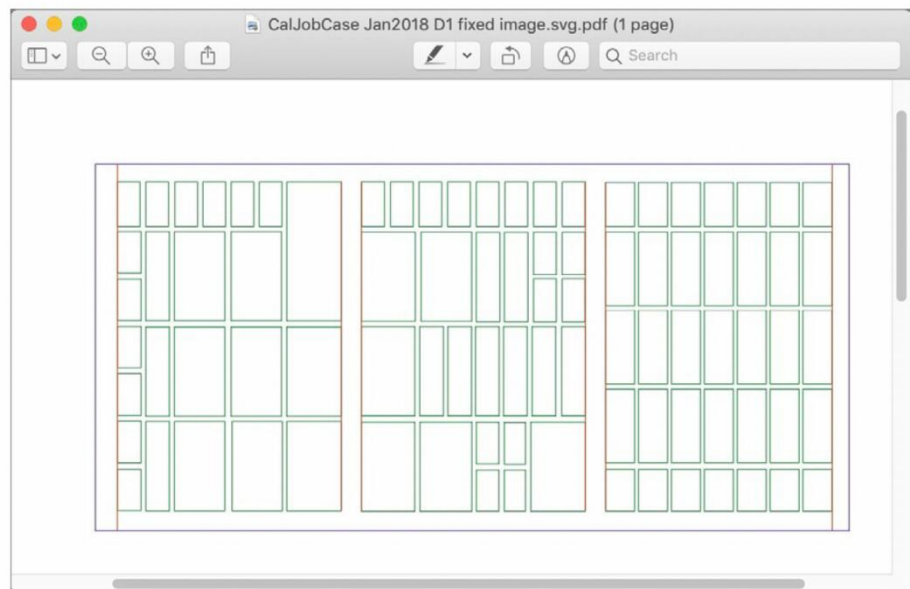
A vector graphic, however, defines just the relationship of arcs and lines, which can be colored or filled with tints or patterns, and can be scaled to any size large or small. At whatever size they're scaled, they render to the screen: the geometrical data gets converted to pixels for display. (Text included in vector files are almost always made of vectors themselves!)

It's not uncommon that you have vector art that you want to use as an image on a website or in software that can't import a given format. That vector art could be an EPS (Encapsulated PostScript) file, a format that dates back decades and is associated with Adobe Illustrator; or SVG (Scalable Vector Graphics), a newer spec developed for web display and broadly used.

(Why render an SVG when you could just include it on a webpage? SVGs take processing power and have other limitations relative to bitmaps.)

Vector art also sweeps in PDF files, which may combine type, vector, and bitmap images. PDFs are always rendered when viewed as whatever zoom ratio you're looking at.

I've been sent vector art to use as a company's logo on a project, as well as receiving PDF files that contain a mix of material that I need to flatten into a bitmap for a particular size. Sometimes the material doesn't exist in another format—it may be archival or created for a particular purpose—or you don't have time to reach the party who has the files to get another format.



An SVG file opened in Safari can be exported as PDF and then rendered in Preview.

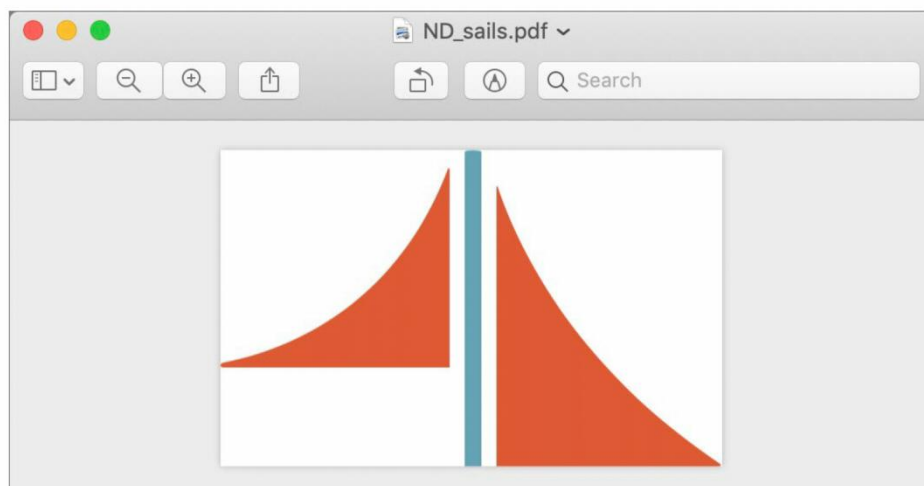
THE PREVIEW APP

The Mac's Preview app can help with all of this. While it's often seen just as a PDF viewer, it can read vector formats, render them, and let you either export flat bitmaps—or you can take a shortcut I'll explain.

You can simply drag an EPS or PDF file onto Preview or choose it from File → Open. SVG files have to first pass through Safari, which will render them, and then you choose File → Export as PDF to create a file that can be read in Preview.

With the file open in Preview, simply select File → Export, and then choose the type of output you want from the Format pop-up menu.

> For the common formats of PNG, JPEG, and TIFF, choose an output



An EPS file opened in Preview automatically converts to a PDF.

resolution by considering the final size at which you want to reproduce the resulting image. For Retina display on a web page, you want the file to be 144 pixels per inch at 100 percent of its intended size. To find the scale, choose **Tools** → **Show Inspector**, and then choose **Edit** → **Show Markup Toolbar**. Click the selection rectangle at upper-left, and wherever you drag, the Inspector will show the size at scale, as in inches. You can also use it to crop by choosing **Tools** → **Crop** with an active selection.

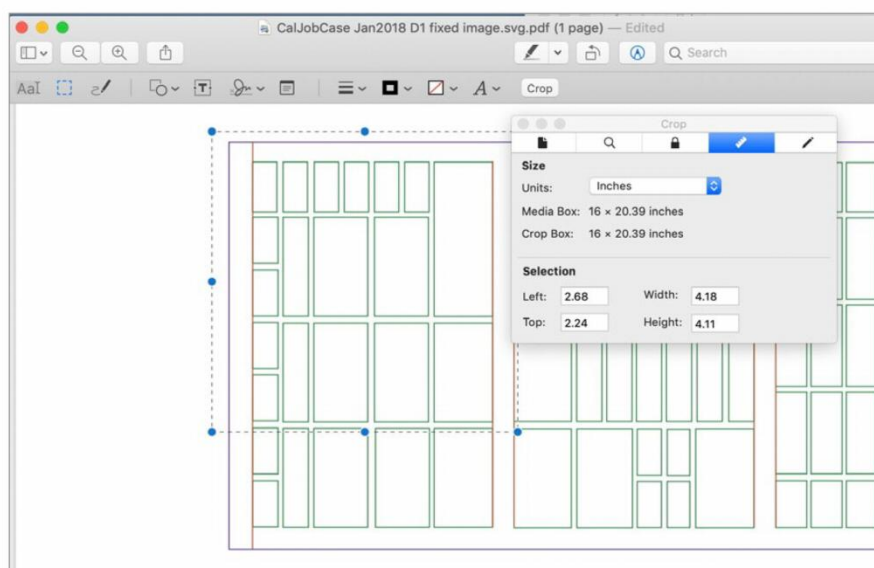
> With JPEG, you can move a Quality slider from Least to Best to control how much detail and color fidelity are preserved. By testing different settings, you can slide towards Least

and see how much smaller a JPEG export is while preserving the degree of accuracy and clarity you want.

> Preview doesn't let you pick individual pages when exporting a multi-page PDF file. For a PDF with many pages, you might want to copy individual pages to

another PDF before exporting.

If the Export option is too fussy, there's a quick shortcut: use macOS's built-in screen selection screen capture. Press **Command-Shift-4** and drag the selection rectangle around the portion of the image in Preview you want to use. The resulting image is saved to the Desktop. ■



Using the Markup selection tool, you can see the unit scale of an image and crop it to size.

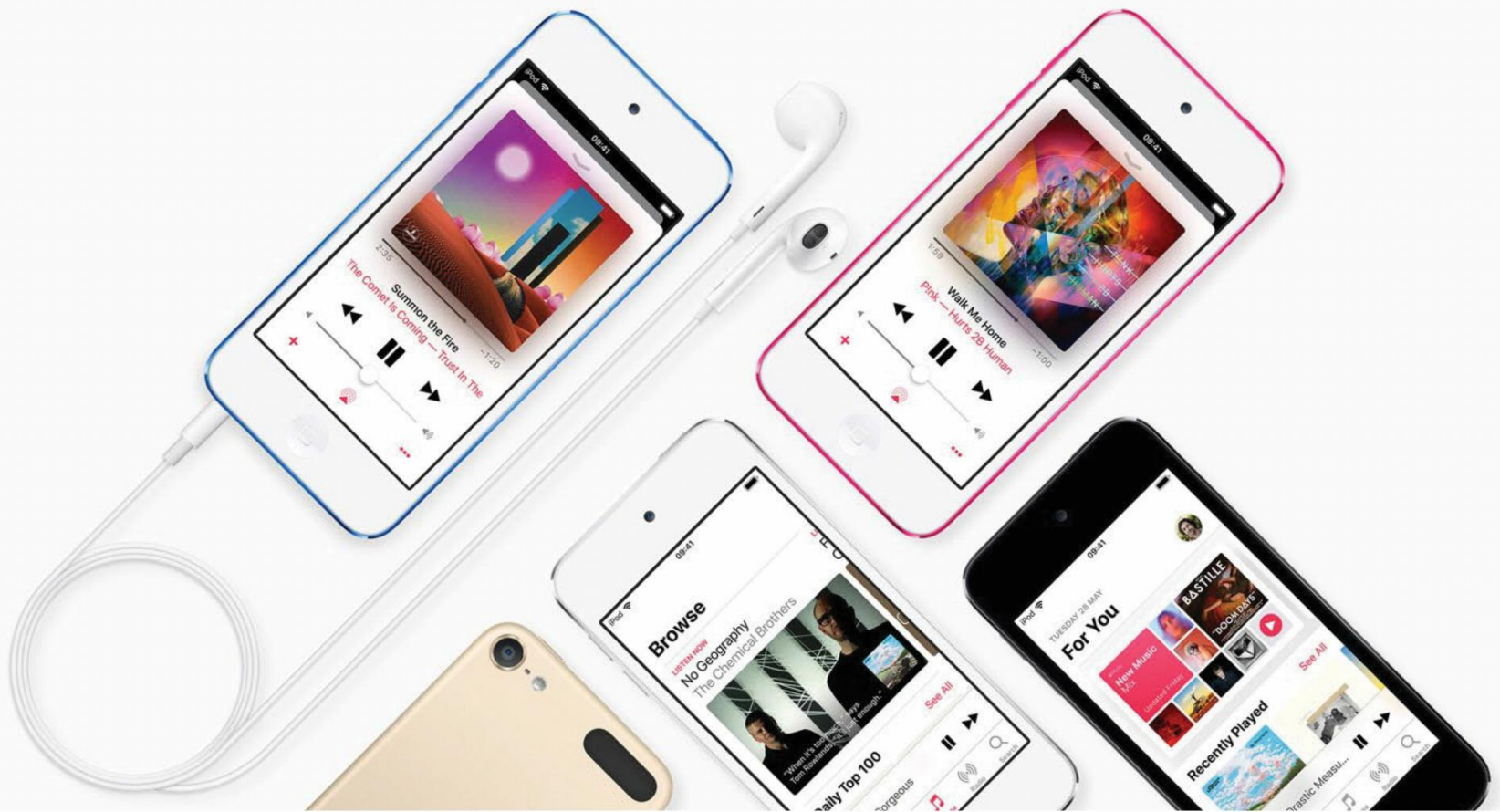


**HE HAS TWO JOBS
BUT ONLY GETS PAID
FOR ONE.**

Caregiving is tougher than tough.

Find the care guides you need at [AARP.org/caregiving](https://www.aarp.org/caregiving)





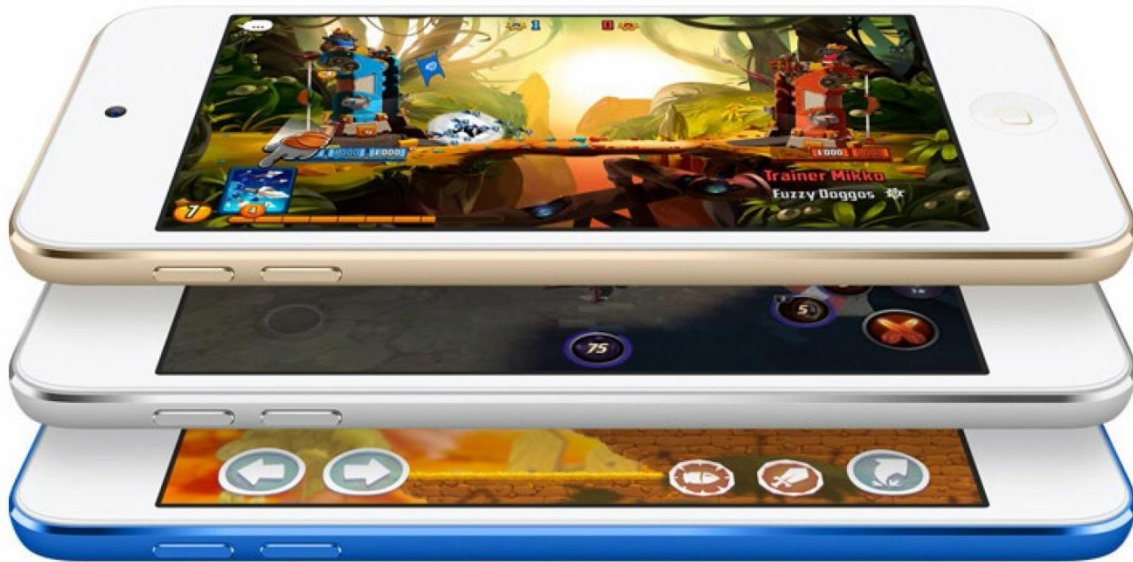
Apple's surprise iPod touch refresh has a faster processor, more storage, same everything else

The seventh-gen iPod touch has an A10 processor and a new 256GB storage option.

BY MICHAEL SIMON

For the first time since 2015, Apple has announced a new iPod touch (go.macworld.com/nwpc), but you wouldn't know it by looking at it. It has the same 4-inch screen, color selection, and bezel-heavy outdated design. But now it's fast enough to run AR apps and Group FaceTime.

Apple has updated the A8 processor in the iPod touch with an iPhone 7-era A10 Fusion chip, the same silicone that powers the low-end iPad. That's still nowhere near as fast as the A12 Bionic chip in the iPhone XS, but it's definitely an improvement. Like the old model, the new iPod touch starts at \$199 for 32GB, but there's an extra 256GB



option now for \$399, in addition to the \$299 128GB model.

Unfortunately, the new iPod touch ignores many of Apple's newer features, including wireless charging, dual cameras, and Animoji. But it does include a 3.5mm headphone jack.

Apple introduced the iPod touch following the launch of the iPhone in 2007, and it received regular updates until 2012,

when it began to lag behind Apple's more popular products. With today's refresh, the dreams of an iPhone X–styled iPod touch are dashed, and we can probably expect this model to stick around until at least 2021.

The new iPod touch is available in six color options: space gray, silver, gold, blue, pink, and red. It is available for shipping today through the Apple Store (go.macworld.com/byit). ■





Change your music files' metadata information using iTunes for Mac

You can fix errors or set information, but it's a one-way street. Here's how to prepare.

BY GLENN FLEISHMAN

With all the features Apple has crammed into iTunes for macOS, it's a Swiss Army knife of an app (or maybe more like 20 pounds of potatoes in a five-pound bag). But despite all of its

non-audio parts, iTunes can help you with music files. Notably, you can correct or modify metadata—information about the files—in bulk.

But beware! These changes are made to the files, not just within iTunes, and

there's no warning and there's no undo.

My strong suggestions before you make bulk metadata changes in iTunes:

> If you have iCloud Music Library enabled (via iTunes Match or Apple Music), make sure all the files you want to modify have been downloaded to your Mac and aren't stored in the cloud. (See this September 2018 column on how to make sure your music is locally downloaded [go.macworld.com/trfr].)

> Make a full backup of your iTunes Media folder. You can make sure you're backing up the right folder by looking in iTunes → Preferences → Advanced, where the iTunes Media Folder Location is listed.

Now you can proceed with an option to revert in a pinch.

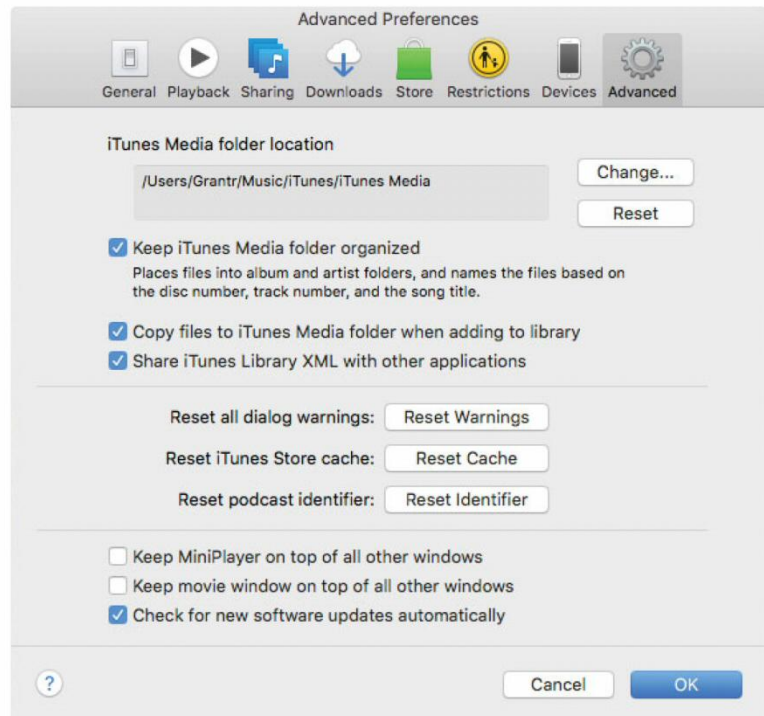
> Select multiple items in iTunes.

> Choose Edit → Get Info.

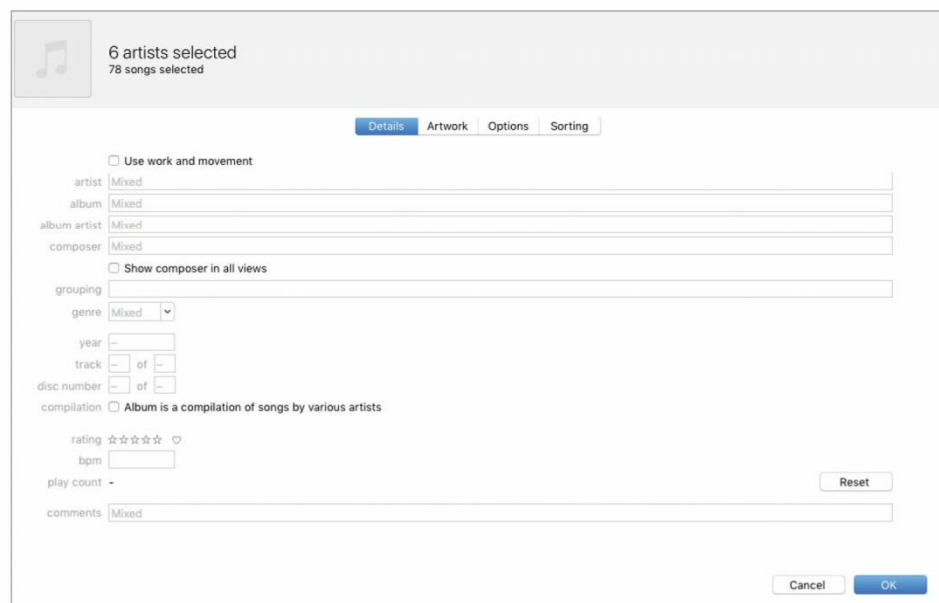
> For any field in Details in which there are multiple entries, you will see either the word "Mixed" (for text) or a dash (–) for a number. You can modify any of these entries and they

will be applied to every song you selected.

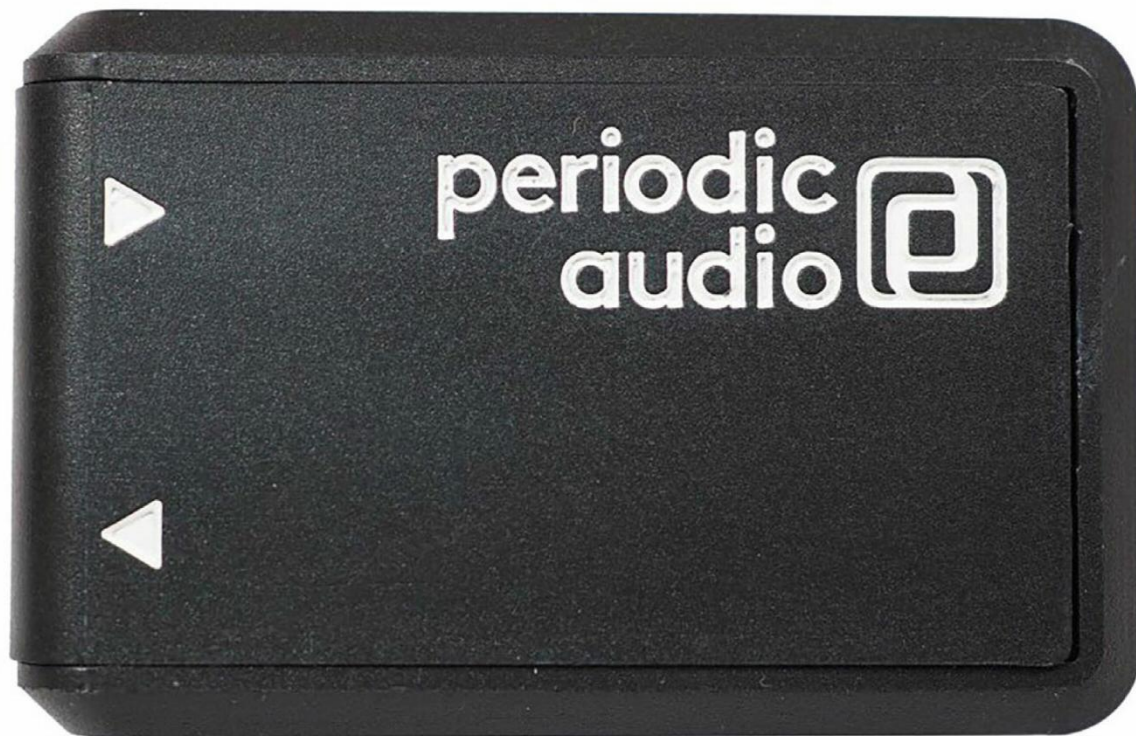
> Click OK. There's no going back: iTunes immediately updates the metadata in the chosen files. ■



Make sure you're backing up the right folder.



iTunes lets you change metadata on multiple songs at once.



Periodic Audio Nickel headphone amp: Make your smartphone sound like a high-res digital audio player

BY THEO NICOLAKIS

Macworld
EDITORS'
CHOICE

Periodic Audio's Nickel portable headphone amplifier will break you of the habit of listening to music on headphones plugged into your smartphone, tablet, or laptop.

And that's how most of us listen to music these days, right? Dedicated high-resolution digital audio players ([go](#).

[macworld.com/hirs](#)) deliver superior audio performances, but mobile devices are just so much more convenient—even when we're using the type of high-end, high-impedance cans that more general-purpose mobile devices find so difficult to drive.

Modern computers and mobile devices have much better digital-to-analog (DAC)

converters than they used to, but the headphone amplifiers on those products remain the weakest link in the audio reproduction chain. The Nickel is a high-end, battery-powered, portable headphone amp that promises to wring peak performance from just about any wired headphones, including high-impedance models.

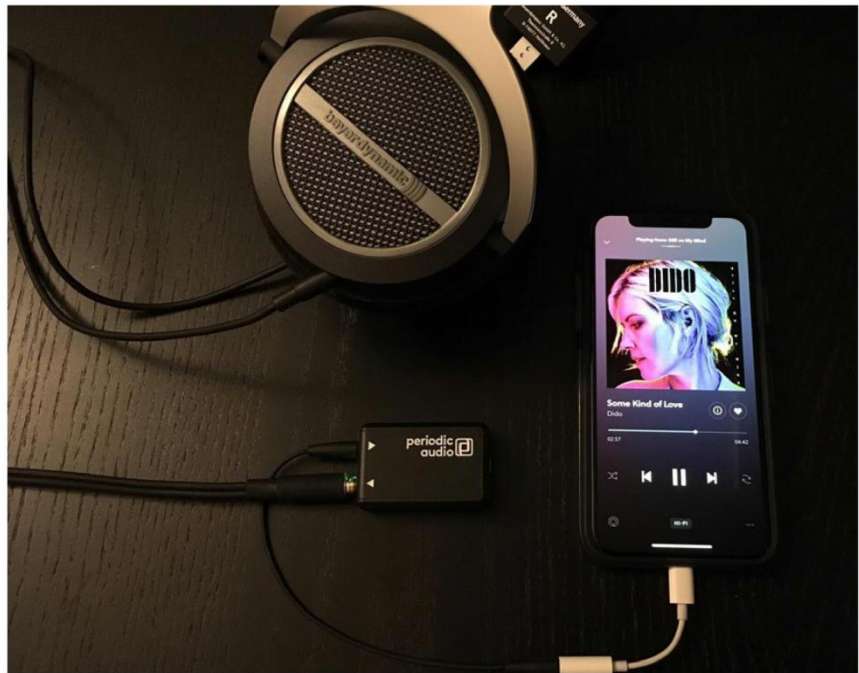
HOW IT WORKS

The Nickel is absolutely tiny—it's about the size of a 9-volt battery—and it sits between your music source and your headphones, performing a simple yet important task: Amplifying the source's audio signal with enough power to control a headphone's drivers with precision. During my listening tests, the Nickel noticeably improved the performance of headphones. Users with high-quality and/or difficult-to-drive headphones will realize the most benefit.

The Nickel is simple to use: Just plug the included 3.5mm cable into your smart device (any smartphone that doesn't have a headphone output will require an adapter), your headphone's 3.5mm

cable into the Nickel, and voilà! The Nickel turns your smart device into a preamp and does all the heavy lifting to improve your headphones' performance. The included 3.5mm-to-3.5mm analog cable has mic pass-through, so you'll be able to use an inline microphone with the Nickel.

I do wish Periodic Audio had put a headphone icon next to the Nickel's output jack and labeled both the front and back of the unit. At one point during my testing, I wasn't paying close attention while switching cables and I accidentally connected the cables backwards—producing a loud, piercing sound through my headphones.



Periodic Audio's Nickel amplifier is about the size of a 9-volt battery, shown here with an iPhone XS and Beyerdynamic Amiron Home headphones.

The Nickel is a far more elegant and unobtrusive solution than some of the larger amps out there. But it's unfortunate that Periodic Audio doesn't provide a graceful means of mounting the Nickel to your smart device—the amp will just dangle by its cable.

NO CONTROLS TO WORRY ABOUT

There's no power switch. Instead, the Nickel automatically powers on when both your smart device's and headphones' cables are plugged into the Nickel's 3.5mm input and output, respectively. Unplug either cable and the Nickel automatically powers down. A small LED between the input and output lets you know the unit's operational status and battery life. Slick and smart.

Further adding to the simplicity, there's no volume control on the Nickel. You don't need one since your smart device has its own volume control.

The Nickel is designed with 6dB of internal gain, a feature that came in handy during my tests—especially with the somewhat difficult-to-drive Beyerdynamic Amiron Home ([go. macworld.com/bydy](http://go.macworld.com/bydy)), which have nominal impedance of 250 ohms.



When input and output cables are plugged in, the Nickel automatically powers on. A green light means the amp has 75 percent or more battery life.

SUPREMELY SMALL AND LIGHT

Periodic Audio claims that the Nickel—which weighs a mere two-thirds of an ounce—is the smallest and lightest high-powered analog headphone amplifier on the market. The amp's shell is fabricated from a strengthened polycarbonate material that Periodic Audio says is highly resistant to cracking.

The Nickel presents an input impedance of 10k ohms to ensure the amplifier in your smart device or computer is never stressed. Periodic Audio says that eliminates 99 percent of the poor sound you get from those sources. Nickel's inputs are AC coupled to eliminate any issues from DC offset (which can produce buzzing and other issues). The amplifier's circuit is DC coupled on the output,

providing bandwidth from 8Hz to 80kHz, a signal-to-noise ratio of 105dB, total harmonic distortion of less than 0.005 percent, and greater than 80dB of channel separation. Periodic Audio's measurements are performed at 1mW @ 32 Ohms (179mV). That's considered a typical listening level, not maximum.

The Nickel is capable of pumping out 250mW per channel of continuous power into a 32-ohm load, and nearly 500mW per channel into 16- or 8-ohm loads. A representative from Periodic Audio told me they've even tested the Nickel on high-efficiency home loudspeakers.

IT WON'T DRAIN YOUR MOBILE DEVICE'S BATTERY

The Nickel won't drain your smart device's precious battery life. Designed to be a portable companion, the Nickel comes with its own rechargeable 280mAh Lithium Polymer battery that Periodic Audio says will provide up to 10 hours run time at loud listening levels. The battery is a high-current design that completely recharges in about 30



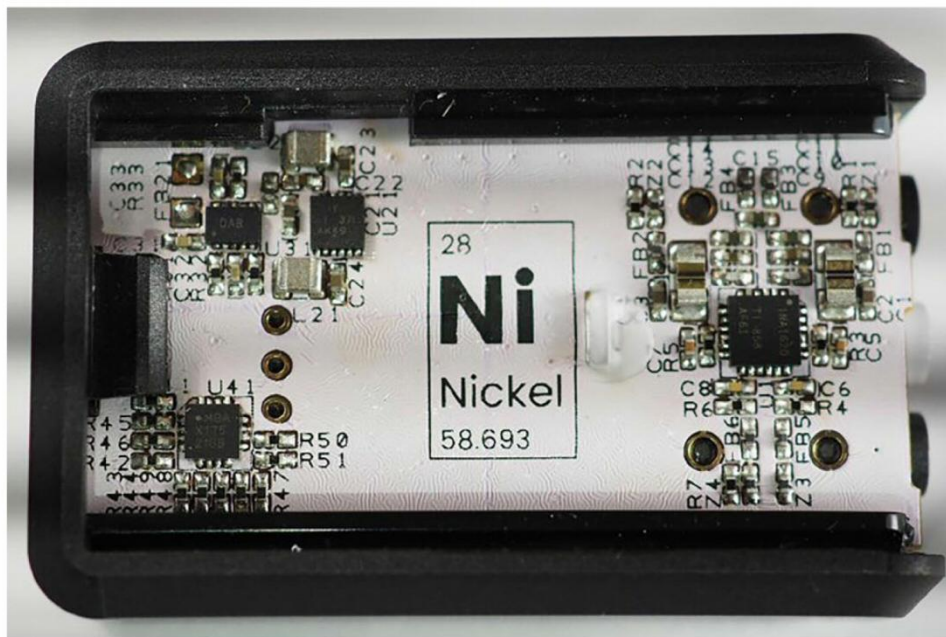
Detail view of the Nickel's battery.

minutes via a micro-USB port. You even can use the Nickel while it's charging.

The battery is completely isolated from the amplifier stage with a discrete +/- 5V power supply circuit. I used the Nickel while charging it and never heard any charging noise or interference. The Nickel's signal-to-noise ratio stays the same whether it's charging or running on battery.

IMMUNE FROM CELLULAR INTERFERENCE

Cell phones can wreak havoc on nearby electronic devices—you've most certainly experienced the audible interference. The Nickel is immune to any such interference thanks to its Texas Instruments INA1620 amplifier (go.macworld.com/ina1).



Detail view of the Periodic Audio Nickel's internal circuitry.

The TI INA1620 is EMI/RFI hardened, rendering the Nickel virtually immune to RF and GSM noise. That means you can place the Nickel right next to your cell phone with zero impact.

A REMARKABLE DIFFERENCE

I tested the Nickel with Focal Clear (go.macworld.com/fc1r) and Beyerdynamic Amiron Home headphones (go.macworld.com/bda) on an iPhone XS, using Tidal as well as high-res and lossy music streamed from my Roon Nucleus (go.macworld.com/r00n) music server. I was careful to level match during my A/B comparisons.

The Focal Clear presents an impedance of 55 ohms, with a sensitivity of 104dB. The Amiron Home's impedance is 250 ohms, with a sensitivity of 102dB.

While you can use either of these headphones with a smartphone, both will fall short of delivering their peak performance.

Needless to say, it didn't take long to hear the difference the Nickel made on the music. The Nickel immediately refined and improved the performance through

both headphones.

Playing Lauren Daigle's "You Say" was more exciting with the Nickel in the mix. Bass had more impact and control. The song's overall presentation was more dynamic, too. In particular, the chorus of voices in the song's refrain came alive as though infused with new life through the Nickel. Voices took on more definition and refinement. Taking the Nickel out of the mix and playing "You Say" straight from the iPhone XS made the song sound comparatively dull. The Nickel didn't simply change the technical performance; it affected a song's emotional impact, too.

Song after song, I noticed more detail, better control, less haziness, and—ultimately—more musical involvement. For example, on Dido's new album,



The Periodic Audio Nickel.

Still on My Mind, the bass on “Take You Home” instantly tightened up compared to the iPhone playing sans the Nickel.

I also noted that the Nickel had the ability to bring out a warmer, richer sound from the music. Dido’s “Hell After This” had far better tonal balance through the Nickel, to the point where I found myself being more emotionally drawn into the music and the artist’s performance. But it was the Nickel’s ability to breathe life and color into the guitar on “Some Kind of Love” that was the finishing touch.



Periodic Audio Nickel headphone amplifier

PROS

- Delivers noticeable audio improvement with high-quality headphones.
- Tiny dimensions renders it ultra portable.
- Automated power on/off, with excellent battery life.

CONS

- No easy way to affix to your smart device.

PRICE

\$299

COMPANY

Periodic Audio

BOTTOM LINE

Periodic Audio’s Nickel headphone amplifier has the uncanny ability to make music come alive through the headphones you love most, even on an average smart device or computer. High-quality headphones and difficult-to-drive cans will benefit most. Judge for

yourself, but the Nickel probably isn’t worth the expense if you’re using entry-level headphones or sticking with whatever came with your smart device.

That being said, I’d classify the Nickel as a must-have accessory for the music lover or audiophile who wants to use high-quality headphones without the hassle and expense of also carrying a dedicated high-res DAP. The Nickel’s tiny size, light weight, excellent battery life, and simple operation make it easy to use on the go. And the sonic benefits are simply intoxicating. ■

Nuheara IQbuds Boost true wireless earphones: Meh as both music players and hearing aids

BY SÉAMUS BELLAMY



Nuheara's IQbuds Boost ([go. macworld.com/iqbd](https://go.macworld.com/iqbd)) are expensive—even at their current street price of \$399 (\$100 off the MSRP of \$499), they still cost a lot of money. By comparison, the B&O Beoplay E8, our current pick for best-sounding true wireless earbuds ([go. macworld.com/boe8](https://go.macworld.com/boe8)), can be had for \$299.

That said, \$399 (or even \$499) isn't exorbitant for a hearing augmentation appliance. In fact, audiologist-prescribed

hearing aids often cost thousands of dollars. The IQbuds Boost are designed to boost one's hearing for a fraction of the cost of a traditional hearing aid, making them a tempting purchase for anyone who has trouble hearing, but hasn't yet committed to rigorous testing and ultra-expensive hardware.

Can the IQbuds Boost really replace bona fide hearing aids? And how do they perform as true wireless earphones for music playback? I spent a week listening

to the IQbuds Boost for several hours a day to find out.

SPECS AND SIZE

Each IQbuds Boost earbud weighs 0.28 ounces and has a dimension of 0.8 x 1.0 x 0.6 inches. This isn't svelte for a true wireless earbud, and you'll immediately notice their heft when holding both earbuds in your hand. When they're jammed into your skull, it takes a little longer to feel the weight, but you'll get there. In fact, I found that after an hour of use, the IQbuds Boost became uncomfortable to wear.

All that said, everyone's ears are shaped differently, so your mileage will vary. And should you find the IQbuds Boost intolerable to wear, you can always exercise Nuheara's 30-day return policy.

Comfort aside, I was impressed to find eight different sizes of silicon ear tips included, along with three



The Nuheara case is big. Really big. Because the earbuds themselves are really big.

different sizes of Comply foam ear tips. This made it a cinch to find a set of tips that'd provide a tight seal against outside noise.

Where many true wireless earphones come equipped with actual control buttons, the IQbuds Boost rely on touch-sensitive pads, and it's a welcome feature. A gentle tap on the right or left earbud will play or pause your music, activate Siri, change your audio volume or activate the earphone's audio augmentation capabilities. You can customize the tap triggers for these functions via a free companion smartphone app.

The IQbuds Boost are water- and sweat-resistant with an IPX7 rating. That's good enough keep them alive if you get stuck in a downpour, but you can forget about wearing them in the pool or shower.

Large earbuds require a large case, and the one that

Nuheara ships with the IQbuds Boost is friggin' huge. At 4 x 2 x 1 inches and weighing in at 72 grams, you can forget about sliding the case into your hip pocket. As half the charm of true wireless earbuds is their portability, this is disappointing. But at

least Nuheara makes good use of the case's beefy dimensions: In addition to the 8 hours of audio streaming or 12 hours of

hearing augmentation per charge that the earbuds offer, the 1140mAh battery in the charging case can extend these figures to 20 hours and 32 hours, respectively.

In order to use the IQbuds Boost to augment your poor hearing, you'll need to install Nuheara's free companion app on your iPhone. Once loaded, you'll pair the earbuds with your handset and take a hearing test that assesses your hearing.

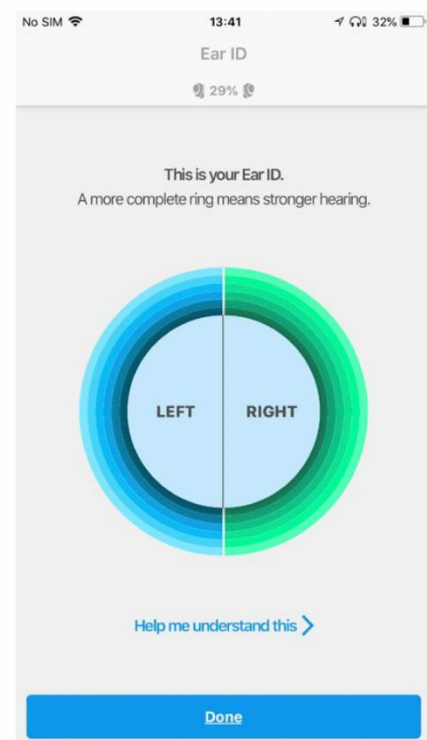
The test lasts about 10 minutes, and is similar to what you may experience when visiting an audiologist. With the earbuds screwed into your skull, you'll be fed a series of tones at various volumes and frequencies. When you hear a tone, you push an on-screen button. Done. The app then sets up the IQbuds Boost's audio signature to compensate for the frequencies that you were unable to hear during the test. Once the app has calibrated the earbuds to your personal aural needs, they're ready to be used.

AUDIO QUALITY DURING MUSIC PLAYBACK

Let's first discuss sound quality for traditional music playback. Using my audio testing playlist and other music over a 7-day period, I found the Nuheara IQbuds Boost offered better-than-average sound quality, but they weren't the best-sounding true wireless earphones I've used.

The earbuds provide an expansive

Nuheara's Ear ID test can be completed in around 10 minutes and will help improve your IQbuds Boost listening experience.



soundstage, with adequate audio separation. For example, the tenor banjo and mandolin in The Tossers' "Movin' On" each had their own voice, despite playing the same melody. Unfortunately, lower frequency audio, while lacking distortion even at high volumes, always sounded flat.

Naysayers could attribute this lack of bass to my 42-year-old ears, which have been exposed to loud, low-frequency sounds over a lifetime of loud music. But, no! According to the earbuds' companion app, my hearing is perfect. So, if you love bass-heavy music or are looking for a pair of earbuds to work out with, the IQbuds Boost may not be for you.

And here's another concern: During testing, I experienced infrequent but

lengthy signal interruptions. Audio streaming from my iPhone 7 Plus would at first stutter and then stop completely. I eventually discovered the only way to get the IQbuds Boost working again was by placing them back in their case, and power cycling them.



AUDIO AUGMENTATION

Like a number of other true wireless earphones, the IQBuds Boost boast “audio transparency,” meaning you can hear what’s happening in the environment around you while you listen to music. And just like those other earbuds, the ambient audio captured by the IQbuds Boost’s microphones sounds, well, off.

Silences are amplified into a droning buzz, and with the feature engaged, I could hear myself breathing. Tapping one of the earbuds to change a track results in a thunderous boom. It’s a problem that plagues most in-ear headphones equipped with audio transparency, but in the case of the IQBuds Boost, it’s an issue that colors almost all of its audio augmentation features, save one: When you’re not streaming music from your

smartphone, the earbuds can be used to amplify the sounds of the world around you, much like a hearing aid.

And, indeed, with the IQbuds Boost in my ears, conversations with my wife were louder. I also found that I could listen to the radio at a lower volume, and still hear the evening news. Using the IQbuds Boost’s companion app, you can even customize ambient audio with various scenario-based sound profiles, such as Home, Office, and Restaurant.

Each profile is designed to suppress different sorts of background noise while boosting the audio levels of others. The amount of sound suppression the earphones offer doesn’t come close to anything offered by a good pair of ANC headphones, but I did notice a small difference in noise levels between each of the app’s presets.

No matter which preset I used, however, I was never able eliminate the tin can quality inherent to audio transparency tech—Nuheara’s microphones are simply too small to allow for more realistic audio. On the flip side, I appreciated the IQBuds Boost’s ability to pair with Bluetooth-equipped TV sets. TV audio was clear as a bell, and almost always in sync with what was happening onscreen.

BOTTOM LINE

I can see how these earphones would be tempting, audio warts and all, for someone with impaired hearing. Again, \$499 is an absolute steal compared to the cost of many full-fledged hearing aids. And if the IQBuds Boost can give what you need—and relieve you from purchasing exorbitantly expensive hearing hardware—then they’re an incredible deal.

That said, iOS 12’s LiveListen (go.macworld.com/uslv) feature provides an even cheaper hearing augmentation solution than the IQBuds Boost, at least for iPhone users. Live Listen makes it possible to pipe microphone-boosted ambient noise captured by your iPhone through a pair of \$159 AirPods. So, if you’re hard of hearing, just pop in your AirPods, set your iPhone on the table and, boom, you’ve got amplified audio

of the conversations around you. The feature works reasonably well, and a set of AirPods can be had for half of what a pair of IQBuds Boost cost.

Beyond the IQBuds Boost’s dubious value, I was unhappy with their firmware updating requirements: You have to download an app to your Mac, as the update can’t be done via the IQbuds Boost’s mobile app. Given that many people don’t even own a computer in this age of smartphones and tablets, this feels like a serious oversight. My disdain for Nuheara’s desktop app ran even deeper when, after multiple attempts, I was unable to download a new firmware version to the earbuds.

Even if you get these buds on sale for \$399, it’s difficult to recommend the Nuheara IQbuds Boost. They’re not comfortable, and the quality of music playback they provide doesn’t justify their price. Their ability to

boost ambient sound is an attractive feature for the hearing impaired, but if you’re an iPhone user, we recommend using LiveListen with a pair of much cheaper AirPods. Sure, an Android phone user may still find value in the IQbuds Boost—but Google could soon release its own version of LiveListen.

Bottom line: The IQbuds Boost have a noble aim but just aren’t a sensible purchase. ■



IQbuds Boost true wireless earphones

PROS

- Pleasant, but mediocre sound quality.
- Long battery life.

CONS

- Uncomfortable to wear for long periods of time.
- Expensive.

PRICE

\$499

COMPANY

Nuheara

BECAUSE YOU
WERE THERE
FOR ME WHEN
I HAD NO ONE,
I STARTED
LOVING
MYSELF AGAIN.



Kailee M.

Everything you say and do
creates an impact.
becauseofyou.org



Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN



WHAT HAPPENS WHEN YOU DELETE AN ALBUM IN THE MAC'S PHOTOS APP?

Deletion seems so final, and it's worthwhile to pause a moment and reflect before clicking any Delete button or selecting any Delete menu item. In Photos for macOS, you're presented with many opportunities to delete items and collections, but Apple fortunately spells out the effects.

One area that confuses people regularly is how Photos deletes albums—both the regular static kind and “smart” albums that use criteria to select what appears within them. Surely, deleting an album might drop the photos and videos the album contains into the trash?

Fortunately, it does not. In its internal structure, Photos separates out the actual media files from all the containers and

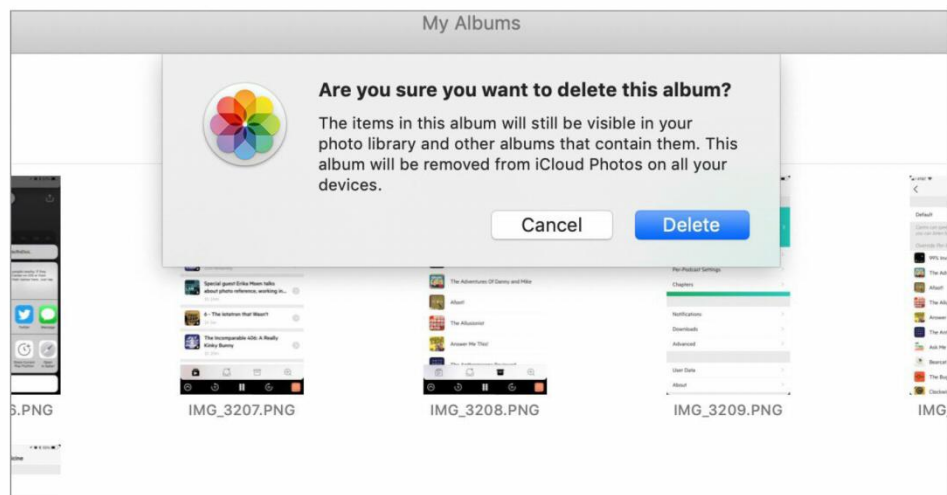
organizing structures it makes available. When you delete any album you've created, whether it's smart or static, Photos only deletes the organizing framework. The original media remains in the library untouched.

Apple even makes an effort to reassure you. When you Control-click (or right-click on a two-button mouse) any album in the My Albums list in the sidebar and choose Delete Album or Delete Smart Album, Photos brings up a prompt that explicitly tells you what's going to happen. The wording is a little quirky, saying that "items in this album will still be visible in your photo library," but I assume Apple decided on that language to be clearest to the least-sophisticated users, who don't necessarily understand file management and storage.

You can delete albums with great aplomb without worrying about the original media being deleted when you do. If you actually want to delete an image or video:

- In the main Photos view, select the image or video and choose Image → Delete Photo/Delete Video or press the Delete key on your keyboard.

- In other views, those options aren't



Media won't be deleted when you remove an album.

available. Instead, right-click an image or video in any view and choose the Delete option.

If you have iCloud Photos enabled, Photos warns you that a deleted image or video will be removed permanently from every linked device's Photos library, too. (Deleted images are held for 30 to 40 days in the Recently Deleted folder.)

DO YOU SEE A YIELD SIGN IN QUICKTIME PLAYER FOR YOUR MAC'S FACETIME CAMERA? HERE'S THE FIX

A webcam can be easily misused—and sometimes hijacked by malicious software. While macOS has been generally free of malware that can tap into the camera, and Apple has a hardware-linked green LED that can't be disabled in software when the camera is active, you may still want to prevent the camera from being used at all.

This typically comes up with kids, but it's also a tool to disable any app from making use, although macOS will always ask (at least once) before granting access. (There's a security argument to be made that you can use an account with admin access for setting things up, but in your return use, you use a Standard account, which could even have parental controls enabled for your own focus or safety that you can bypass as needed.)

In System Preferences → Parental Controls, under the Apps tab, you can uncheck the option Allow Use of Camera. If you try to use an app that requires a camera, no video source option appears or when selected it won't stream video from the FaceTime camera. (Sadly, plugging in an external webcam that doesn't require drivers to be installed bypasses this restriction.)

If you launch QuickTime Player with this parental control set, the app shows a yellow yield sign next to the FaceTime

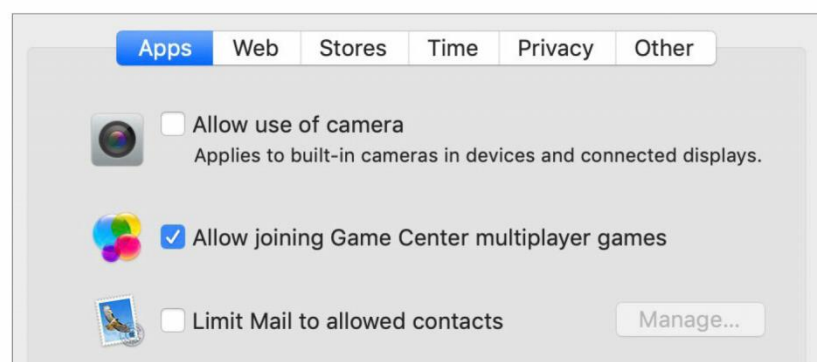
camera. Even when you turn that option back in Parental Controls and quit and relaunch QuickTime Player, the yield sign persists.

The solution? Either log out and back into the account or perform a standard restart. That appears to clear the hardware lockout.

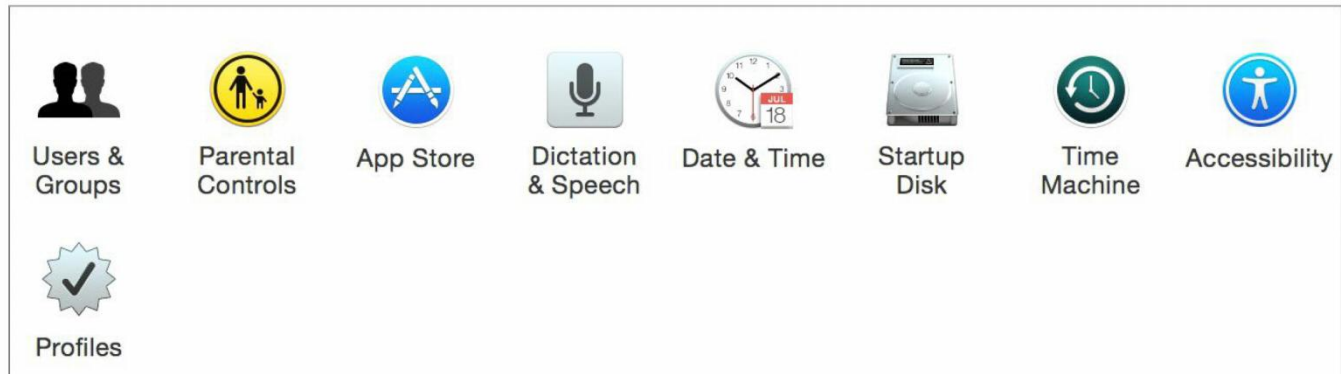
HOW TO FIX A GRAYED-OUT SAFARI HOME PAGE PREFERENCE

While malware hasn't found a fertile home on the Mac for decades, scammers keep trying. As many of you have experienced, adware and other software that delivers unwanted content or an unwanted experience abounds—like redirecting you to a specific website for searching or turning all Amazon links into affiliate links that earn the scammers a commission until they're shut down.

Even with vigilance against nasty threats, you or (more likely) someone you know may have installed otherwise reasonable seeming software that hijacks Safari in some particular way. That includes a rather nasty way in which you can be prevented from changing your homepage in Safari in Safari → Preferences → General, then the Homepage field.



Parental Controls lets you disable any Apple FaceTime cameras attached to a Mac.



The Profiles preference pane may appear due to unwantedware installing it.

This technique involves using profiles, a tool for system administrators and others to distribute specific settings files to Mac users. It's used more widely in iOS, where VPN software and other apps rely on profiles to let users opt into behavior that Apple otherwise prevents iOS apps from engaging in.

In System Preferences, look for the Profiles preference, which is a spiky badge with a checkmark in the middle. If you don't see Profiles, you have no profiles installed, and any Homepage field problems are unrelated.

To remove an errant profile, click the Profiles preference pane, select the profile in the list, and click the minus button. This will prompt you to confirm removal and may require entering an administrative password.

Others users unable to change or set a homepage in Safari have found first restarting in Safe Mode (restart and then hold down the Shift key at startup ([go](#).

macworld.com/sfmd)), and then restarting normally restored their ability to choose a homepage.

THREE WAYS TO ADD AN ICLOUD.COM ADDRESS, EVEN IF YOU ALREADY HAVE ONE

Apple gives icloud.com email addresses away at no cost, but it's not always obvious how to obtain one by itself or add one to an existing Apple ID account, or how to get additional addresses if you already have one at icloud.com.

But there are three paths, which vary by what you already have and what you want.

> If you have an Apple ID without an associated icloud.com address, you can add one (via iOS or macOS).

> If you have an icloud.com address already, you can add aliases (via iCloud.com).

> If you want a separate icloud.com address for email that isn't an alias, you

can create one by creating an Apple ID account (via macOS).

Add an icloud.com address to an Apple ID

While iCloud seems like it's integral to an Apple ID, Apple still keeps the two distinct: an Apple ID doesn't have to have an associated iCloud address, but all iCloud addresses must be associated with an

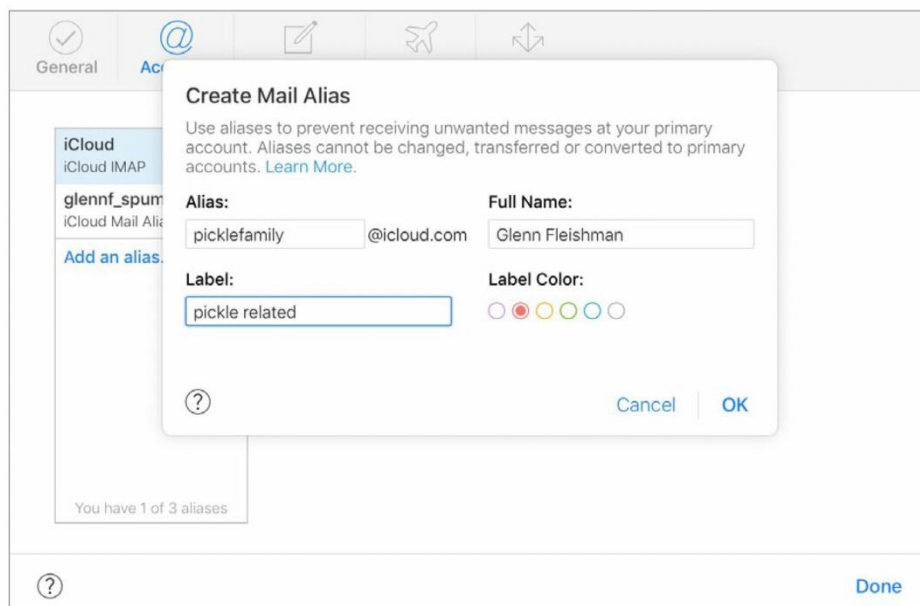
Apple ID. If you haven't used icloud.com for email yet, you might have an Apple ID that uses a non-Apple email address for its account name.

To add an icloud.com address to such an account, you must use either iOS or macOS; you can't add the address via the Apple ID site (or via iCloud.com).

> In iOS, go to Settings → [your name] → iCloud, tap Mail and turn it on, and then follow the instructions that appear.

> With macOS, open the iCloud preference pane and check the box next to Mail. macOS prompts you to create an address.

This new iCloud address becomes associated with your Apple ID account, and can be used for email and to log into iCloud.com for other services.



iCloud.com lets you add additional icloud.com addresses to your account as aliases that receive email just like your main account.

Add icloud.com aliases

Apple doesn't exactly hide this feature, but it's not that easy to find, either:

1. Log into iCloud.com.
2. Click the Mail icon.
3. Click the gear icon at the lower-left corner of the screen and select Preferences.
4. Click the Account button.
5. Click Add an Alias.

You can add up to three aliases, all of which receive email just as if they were the main address on your account. (I wrote a Mac 911 column recently on how to use an alias to filter incoming email (go.macworld.com/rtan), especially if you're receiving too much spam or unwanted email at your primary iCloud address.)