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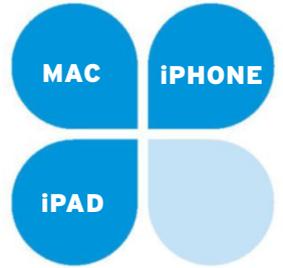
Reviewed:
The new and
larger **iPad Pro**



Rated: Apple's
more affordable
Retina 4K iMac



Mac | Life



SEPTEMBER 2017 NO.132

50 FIXES

for your Mac, iPhone & iPad

THE
LATEST ON
iPhone 8
+ THE APP
STORE

SOLVED INSIDE

- ⊕ Inaudible sound
- ⊕ Battery blues
- ⊕ Sluggish internet
- ⊕ Frozen logins
- ⊕ Fans on full blast
- ⊕ AirPlay stutters
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Future

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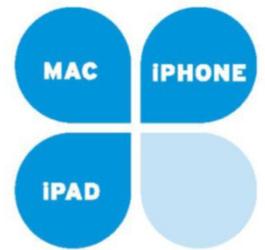
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CONTENTS

18

50 quick fixes for macOS and iOS

Something gone wrong? It's pretty likely you can fix it yourself - just follow our useful guide for macOS and iOS.

30

Dive deep into iTunes

Even if you've been using it for years, iTunes probably has some features you're not aware of, and can make your music experience better!

68

Get started with air quality monitors

Indoor air quality can affect your health, decision-making, and learning - so take control with these monitors.





62



44



54



42

START

- 06 **Digital|Life**
Head to techradar.com for the very latest news.

- 08 **Consider**
Editor Alan Stonebridge talks about screen sizes.

- 09 **Share**
Email us your thoughts at letters@maculife.com.

- 10 **iPhone 8 may get a 3D-sensing camera**
Plus, rumors of livestreaming in iOS 11.

- 12 **App Store reviews are now up for discussion**
Companies can now reply

- 13 **The Shift**
David Chartier is excited about iOS 11's changes.

- 14 **Machine Learning on the rise at Apple**
Apple's smart new blog.

- 16 **Game Loop**
Brianna Wu discusses the best Macs for games.

APP LIFE

- 40 **Affinity Photo**

- 42 **Night Sky**

- 43 **Adobe Scan**

- 43 **Documents 6**

- 44 **Old Man's Journey**

- 45 **ArtPassport**

- 45 **Sway**

- 46 **Arkanoid vs Space Invaders**

- 46 **Monument Valley 2**

- 47 **The best apps for gardening**

- 48 **Elk**

- 49 **Fidget Spinner Plus**

- 49 **Color Pong**

- 49 **How to use StepsApp as an activity tracker**

REVIEWS

- 50 **21.5-inch iMac with Retina 4K display (Mid 2017)**

- 54 **MacBook (Mid 2017)**

- 56 **13-inch MacBook Pro (Mid 2017)**

- 58 **10.5-inch iPad Pro**

- 62 **Pioneer Rayz Plus**

- 63 **HoudahSpot 4.3**

- 63 **WinZip 6 for Mac**

- 64 **Screens 4**

- 65 **MyDVD Pro**

- 65 **Softorino YouTube Converter 2**

- 66 **Everything**

HOME LIFE

- 68 **Get started with air quality monitors**
Indoor air quality can affect your health and more - so take control of your environment with these new monitors.

- 74 **Apple TV**
Apps and hardware for your Apple TV.

CREATE

- 76 **Ask**
Our Apple-loving experts answer your questions.

- 80 **Record with GarageBand**

- 84 **Publish like a pro**

- 86 **Power up the Mac's app switcher**

- 88 **Cheat sheet: Safari**

- 90 **Get iOS 11, High Sierra, and tvOS**

- 94 **Start keeping a diary**

- 96 **Get more from your albums in Photos**

- 98 **Random Apple Memory**
Apple's Company Store.



58
10.5-inch iPad Pro

50
iMac with 4K Retina display



matias
wireless
aluminum
keyboard



*Silver, **Gold**, Space Gray, **Rose Gold***

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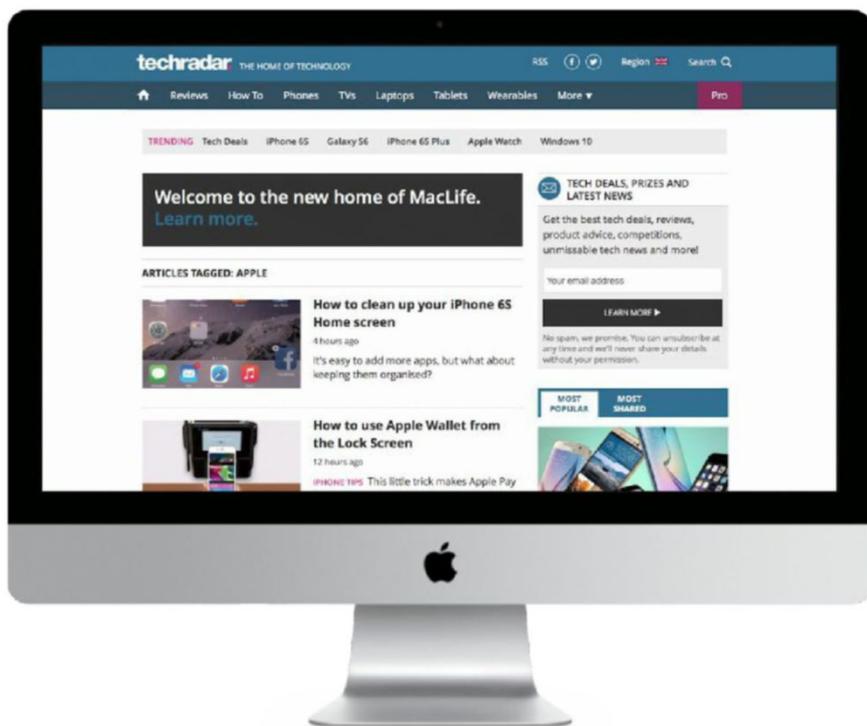
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CES 2011: BEST OF THE BEST

The number one destination We combed the gargantuan show floor to bring you the early word on this year's most exciting Mac and iOS gear.

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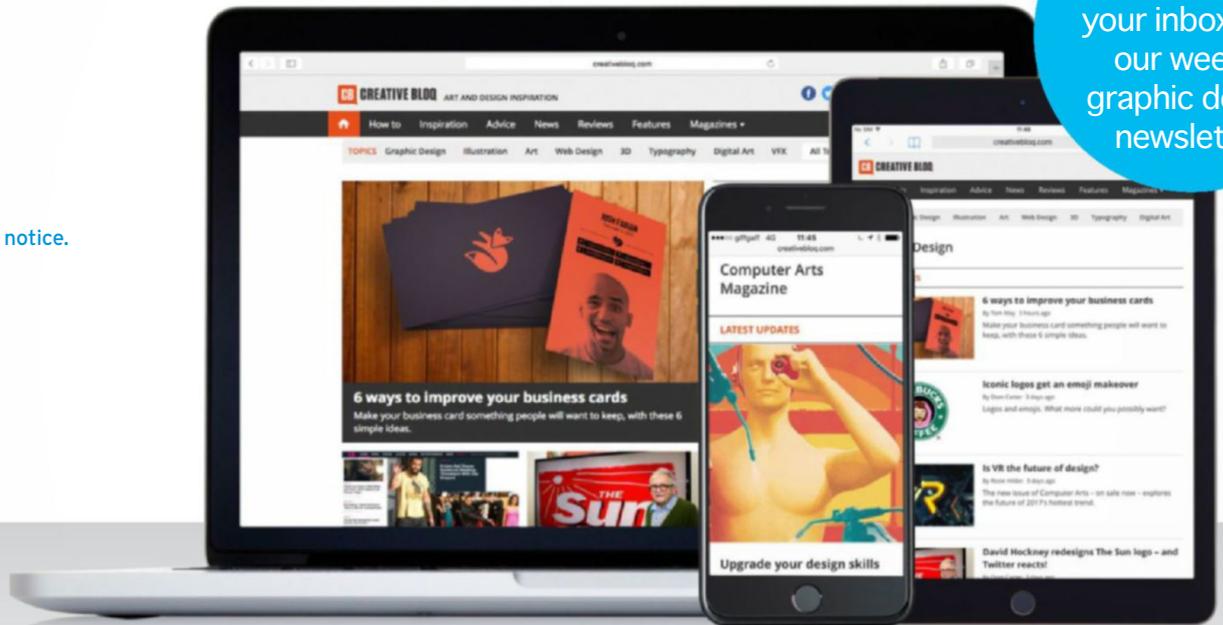
CES is a royal flush of nerdy gadgets and gear—but most of it isn't exactly tailored to Apple fans. You can see everything from TVs to washing machines to flashlights in the grand halls of the Las Vegas Convention Center. That's why we spent most of our time in the Apple-centric iLounge, which

design to its new Juice Pack Plus (\$99.95, mophie.com), which combines a blinged-out two-day battery with a grippy rubber coating. And its new iPod touch-only, gaming-focused Pulse case (price TBA) rumbles, giving you the kind of force feedback that you're used to on your Xbox or PlayStation.

And speaking of style, we saw more snazzy cases than we knew what to do with. Amidst the piles of cases, plentiful as poker chips, we found a couple that

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notice.



with a mountable one you can screw

or PlayStation.

of force touch-only, gaming-focused Pulse case (price TBA) rumbles, giving you the



CREATIVE BLOQ

Cinema Display. Our favorite little extra is an optional white LED backlight that gives your mounted mini some ground-effects

deserved a shout-out. Both Speck (speckproducts.com) and Trtl Bot (trtlbot.com) had sleek cases with pull-out tabs

cases too, but we were most impressed with its new heart rate monitor. The MyTrek attaches to your arm, instead of

Graphic design

Art

Web design

3D

Digital art

as poker chips, we found a couple that deserved a shout-out. Both Speck (speckproducts.com) and Trtl Bot (trtlbot.com) had sleek cases with pull-out tabs for stand-up viewing. Mophie brought ace

coating. And its new iPod touch-only, gaming-focused Pulse case (price TBA) rumbles, giving you the kind of force feedback that you're used to on your Xbox or PlayStation.

with all sorts of beeps. It can also harness the iPhone's built-in GPS to tell you how far you ran or biked and how many calories you burned in the process. When we left Scosche, we could hear

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BIG SCREEN, BIG MONEY



WHILE WE WERE taking the latest Macs for a spin for our reviews in this issue, in particular the 12-inch MacBook and 13-inch MacBook Pro, something about Apple's lineup of portable Macs struck me as a little odd, verging on annoying. There's an inherent assumption that if you want a larger screen, you must also want a beast of a machine.

My own MacBook is a 15-inch Pro from the end of 2016. That isn't because I have real need of its four Thunderbolt 3 ports, the most powerful graphics processor Apple puts in a portable Mac, or its Touch Bar (though

I do like that feature). The primary reason I bought it was for a larger display. While testing the smaller portable Macs, I got to wondering how many people – office workers, in particular – would benefit from a more affordable 15-inch MacBook in the slightly smaller, thinner, and lighter body introduced in 2016.

As with the 13-inch Pro, Apple sells a "low-end" 15-inch model, though it costs \$1,999, and is actually based on the old, slightly heavier design with Thunderbolt 2 ports. Even then, it's a bit better specified than I have in mind.

I find it frustrating that there's no truly affordable 15-inch MacBook on which I can comfortably view Numbers spreadsheets, work on InDesign pages, and edit photos. I doubt it'll happen, but I'd love to see Apple recognize that regular office workers like myself, who are increasingly mobile and not near an external display, sometimes find even a 13-inch screen a tad too small.

From the responses we received when I talked about this subject in our email newsletter, some of you agree. However, one reader pointed out a likely reason Apple doesn't address this scenario, which you can read about on the opposite page.

Speaking of our weekly email newsletter, if you're not subscribed to it you can sign up at bit.ly/maclifeneews to have your say on topics like this one. Or just email us with your thoughts on all things Apple at letters@maclife.com.

A handwritten signature in black ink that reads "Alan".

ALAN STONEBRIDGE, Editor

Twitter: @maclife

>>>THE TEAM



Matt Smith

Art Editor

Matt is frantically tackling the new levels included in the recent Rider update.



Ed Ricketts

Operations Editor

Ed's keen for Twin Peaks to reach iTunes soon to weird himself out again.



David Chartier

Contributor

David has been using the iOS 11 beta. Find out what he thinks of it on page 13.

LETTER OF THE MONTH



I just saw the Satechi Premium USB 3.0 Hub in the July issue and was ready to buy one, until I went online and saw that the actual price was approaching double the price indicated. My heart is broken! **BOB GOLDEN**

We've noticed similar situations with the prices of USB-C accessories being hiked by some sellers – notably toward the end of 2016, soon after Apple refreshed the MacBook Pro.

Rest assured, Bob, that Satechi's Type-C Pro Hub can be bought for the price we quoted in our review. Were it twice the price, it's highly unlikely that it would have received 4.5 out of 5 to be deemed "Excellent." At the time of writing, you can get the product on Amazon – point your browser at bit.ly/typecprohub and you should find it for \$99.99, being sold by Satechi and with orders fulfilled by Amazon.

We sometimes see an item pop up in search results multiple times, some priced exorbitantly. If in doubt, check the manufacturer's website for what price an item should be. On Amazon, inspect the Other Sellers box, as the price initially shown may not be the most competitive.

Thunderbolt startup

I have two Thunderbolt ports on my 27-inch iMac, which I believe can run Thunderbolt 1 and 2 devices. How do I set up a Thunderbolt-connected SSD as my Mac's startup disk?.

GIACOMO PALUCCI

This is a great way to speed up a Mac with little effort, though it's costly. If you've already bought a Thunderbolt SSD, start by erasing it in Disk Utility, making sure it has a GUID partition scheme and uses the Mac OS Extended (Journaled) format.

Get the macOS installer from the Mac App Store and when it asks you to choose a destination, pick the external SSD, of course. You'll end up with a clean system this way.



Hold  after powering on your Mac to pick a startup disk.

Alternatively, make sure you have a complete backup in Time Machine of your Mac's internal startup disk, start up in macOS Recovery - hold  +  at the startup sound - and use the Time Machine option there to restore to the freshly formatted SSD. This will put a copy of your existing system on the speedy drive. If your Mac doesn't restart in the restored system, choose  > Startup Disk, pick the SSD, and then restart.

If you haven't bought a Thunderbolt drive already and your Mac has USB 3, you can save a lot of money and still get good performance from a USB 3 enclosure with a bare SSD installed in it. The most affordable Thunderbolt "enclosure" we've used, which



Using a higher "Looks like" setting squeezes more onto a Retina display.

is no longer on sale, was still about \$100. We've used the USB 3.0 version of this \$20 option to try out macOS betas in the past: bit.ly/stenclosure.

Bring back the 17-inch MacBook Pro!

In response to your newsletter: you're right, there appears to be a low-priced 15-inch MacBook Pro opportunity. The question for all manufacturers is not "will people buy this," but "will enough people buy this to make it significantly advantageous for us to build it?"

Apple does a ton of market research. Maybe their data suggests that the market for a lower-cost, 15-inch MacBook Pro isn't large enough to justify its production. By the way, I own the \$1,999 model – the one with all the old ports – and I *love* it!
RAND BLEIMEISTER

We suspect you're right about sales; that's probably why the 17-inch MacBook Pro was canned, too. Still, it breaks our hearts - or rather our wallets - that we have to spend so much to get a MacBook that's comfortable for working on magazine pages on the move.

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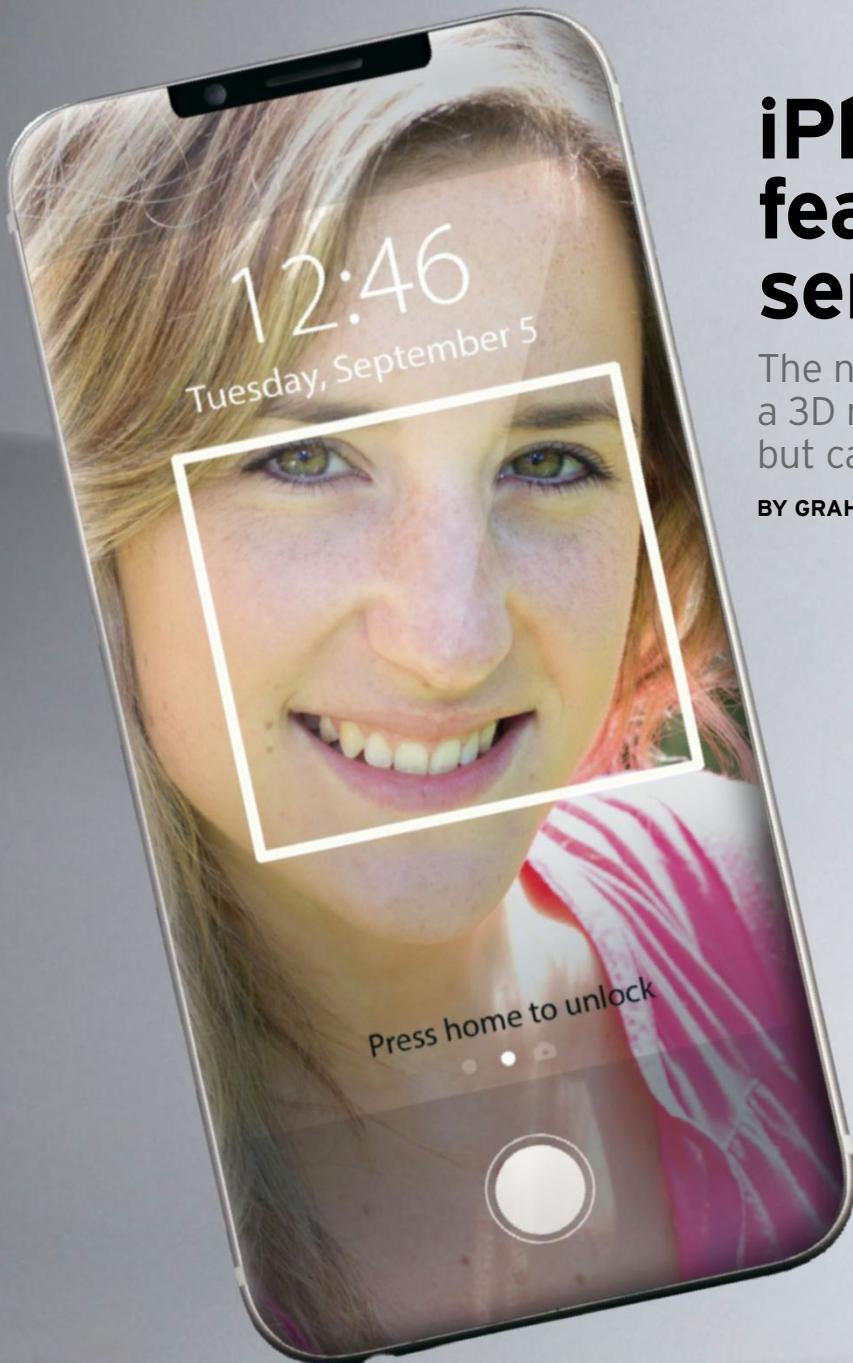
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iPhone 8 to feature depth-sensing camera

The next iPhone looks set to use a 3D model of your face to unlock - but can Apple make enough units?

BY GRAHAM BARLOW & DAVID NIELD

AHEAD OF the predicted September announcement, supply-chain reports indicate that production of the components for a 3D-sensing, front-facing camera system in the new iPhone 8 is ramping up.

3D sensors could be used in enhanced security and augmented reality apps in Apple's next iPhone. The technology, which includes an infrared transmitting and receiving module, means the iPhone 8's front-facing camera will be able to find the location and depth of objects placed in front of it.

With potential applications including face and iris recognition, the technology will open up a world of exciting new uses for the iPhone. As well as providing a new way to unlock your smartphone, the technology may benefit augmented reality - to which Apple devoted a lengthy segment of its WWDC keynote in June - by having your face appear as a 3D model in apps and

games. It's thought the 3D sensors will only be included in the iPhone's forward-facing camera system, however, probably for cost reasons.

THE KOREA HERALD, usually a fairly reliable source of insider info from Apple's supply chain, says Apple has started buying and leasing its own manufacturing equipment in a bid to make sure it has enough phone parts to keep up with expected demand for the next-gen iPhone. The Herald says the machinery is responsible for making rigid-flex printed circuit boards (bit.ly/rfpCBS).

The move to buy the equipment, costing tens of millions of dollars, is apparently part of a bid to help Apple's remaining suppliers deal with complicated production challenges and schedules.

This talk adds more fuel to the rumor that the iPhone 8 is going to be delayed, or at least available in very limited quantities when it launches this fall. Still, it sounds like a raft of bleeding-edge features will make it worth the wait; in addition to face recognition, the iPhone 8 is said to incorporate a 5.8-inch, edge-to-edge display with a fingerprint reader under it, extra augmented reality features in the camera, and wireless charging.

The last of those features sounds increasingly likely given that a new charging sound has been found in the iOS 11 beta.

iOS 11 beta hints at livestreaming

Soon you may be able to broadcast your screen **BY PARKER WILHELM & ALAN STONEBRIDGE**



You can broadcast yourself using the likes of Facebook Live, and soon iOS 11 might enable you to show off anything from your iPhone or iPad's screen.

QUIETLY MENTIONED on one of Apple's WWDC keynote slides for iOS 11 was "Screen recording." The idea of recording an iPhone or iPad's screen isn't new, of course; you've been able to do it for years by using a USB cable to connect a device to QuickTime on a Mac, for example. What the slide referred to is iOS 11's ability to record its display contents to its own storage, without the involvement of hardware other than the device you're using.

It now seems Apple's ambitions for this capability extend beyond recording the display for later editing – in an app like iMovie, say. The Next Web reports that a "Start Broadcast" button has been spotted in one of the developer betas of iOS 11.

While the button doesn't seem to actually broadcast at the time of writing – pressing it currently starts the plain screen-recording feature – it's being speculated

that it will allow for livestreaming of your phone's screen.

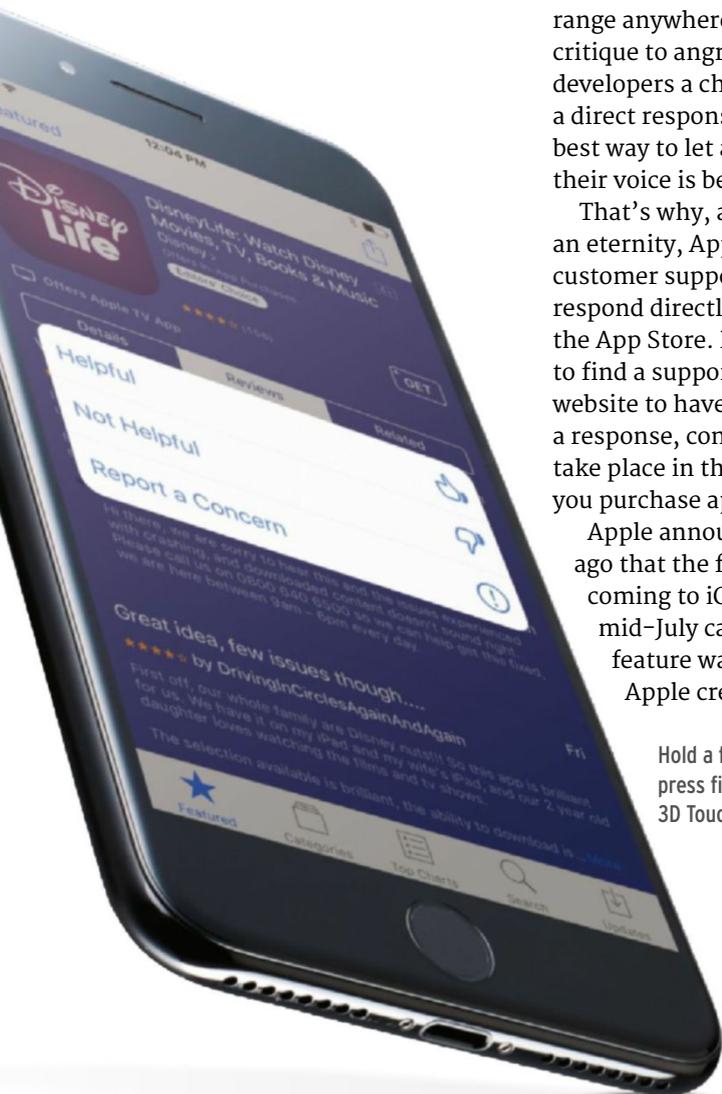
Right now there has been no confirmation from Apple about the Start Broadcast button's purpose – or whether it will definitely be available in the publicly released version of iOS 11 that's scheduled for this fall – but if this really is a new way to stream from a mobile device, we can see why Apple would jump on the opportunity.

User-broadcast video streams have become incredibly popular over the last few years, with YouTube and Facebook Live becoming major destinations for watching feeds. Meanwhile, Amazon's streaming service, Twitch, recently updated its mobile app to allow broadcasting. There's huge potential in a livestreaming feature being available system-wide in iOS, without app developers having to implement it in each app.

App developers can now reply to your App Store reviews

After nine years of one-way feedback, you'll finally know if someone's listening

BY PARKER WILHELM & ALAN STONEBRIDGE



THOUGH USER REVIEWS for apps range anywhere from helpful critique to angry ranting, giving developers a chance to step in with a direct response is sometimes the best way to let a customer feel like their voice is being heard.

That's why, after what seems like an eternity, Apple is at last allowing customer support representatives to respond directly to user reviews on the App Store. Rather than having to find a support contact on an app's website to have any hope of getting a response, conversations can now take place in the same place that you purchase apps.

Apple announced a few months ago that the feature would be coming to iOS and macOS, and in mid-July came a signal that the feature was imminent when Apple created the "Customer

Support" role for iTunes Connect – Apple's content management hub for developers.

By assigning that role to one of its staff, a company that has published on the App Store can now have that individual respond to customers' reviews of its products.

Though helpful, this role seems long overdue – by contrast, Google's Play Store for Android devices has allowed developers to respond to customer reviews since 2013.

Still, better late than never, as now you can field your praise – or, more likely, concerns or frustrations – without feeling like you're talking to a brick wall.

To make sure developers without the know-how don't wind up in a PR nightmare, Apple has published advice on how to properly engage with customers in the interests of ensuring their satisfaction.

As a buyer of apps, it's worth checking the points under the Reporting Concerns headline at apple.co/2vF8kcj, which lists some code of conduct examples for developers and customers alike. Bear in mind that if a response to a review you've posted on the App Store is disrespectful, you can report your concern to Apple.

Hold a finger on a review (or press firmly on a device with 3D Touch) to give feedback.

>THE SHIFT

There's a price to pay with iOS 11, but it's very much worth the initial pain, says **DAVID CHARTIER**



THIS FALL, millions of iOS devices will update to one of the largest changes Apple has ever made. Buttons will have moved and some muscle memory will get a new workout. Change can be hard, even frustrating at times. But I think in the case of iOS 11, it will be well worth it.

Let's consider Control Center. This useful dashboard of shortcuts and media controls changes completely in iOS 11. You will be able to change Control Center's features, and everything now fits on a single page in a grid of icons. However, unlike the Home screen, controls don't have text labels to help you discern which is which. I think they're pretty intuitive, and a long press (or a firm one if your device has 3D Touch) on many of them will reveal more options.

However, I wager this will be quite an adjustment for many people. After learning my way around the public beta, I think it's a great improvement. But be sure to give yourself some time to get used to the new layout.

The new-look Control Center does double duty on iPad, as it's combined with a vastly redesigned app switcher. Double-click the Home button or do a long swipe up from the bottom of the screen; Control Center will be on the right, with thumbnails of recent apps

scrolling off to the left, including apps combined in Split View.

I consider this to be a *huge* improvement in many ways.

Be sure to give yourself some time to get used to Control Center's new layout

Not only did Apple combine two somewhat related functions, it has made both more useful. Control Center is easier to navigate now that it isn't spread out across multiple pages, and it's easier to see multiple apps, including your Split View groups, in one place.

Still, it requires adjustment, especially since I've had to spend time learning Control Center's new icon arrangement. Overall, though, I like that I don't have to swipe between pages to control media playback. And having one place to go to switch apps and toggle settings has really grown on me.

Notification Center and the Lock screen also see big changes. In iOS 10, you can swipe left on a notification to reveal "View" and "Clear" buttons. But you can also swipe left on these screens to open the camera. It's an interaction I've always found a little janky, as it

was easy to trigger one when you wanted the other. Or it was easy to open a notification by accident.

In iOS 11, you interact with notifications in these places with a long or firm press. This will show you the full notification text, interaction options (like marking a task complete, or sending a quick reply), and a close button.

This is a big change to a little thing we tend to do often. Some think the interaction feels slightly slower than the old method, but I think it also makes it clearer how to navigate between Notification Center, the Today screen, and Camera.

At their core, design decisions like these are always about compromise – what's gained or lost. In the case of iOS 11, I think we're gaining some great new flexibility, at the cost of spending a little time to learn a new way to do a few things. I think that's a price worth paying.



All these controls are just one swipe away in iOS 11.

>>> David Chartier is a content strategist and writer with vast experience analyzing the tech world. He runs the website [Finer Things in Tech \(finerthings.in\)](http://finerthings.in) and hosts its podcast, *The Finer Things In*.

Get smart about Apple's machine learning research

The iPhone maker lifts the veil on its progress in artificial intelligence

BY MICHELLE FITZSIMMONS & ALAN STONEBRIDGE

APPLE PLACED a lot of emphasis on its machine learning developments during WWDC in June, even during the publicly broadcast keynote. Now, ahead of the launch of its next-generation operating systems, which will enable developers to more easily use machine learning in their apps, it has followed up with a website dedicated to publicizing its machine learning research.

The Apple Machine Learning Journal is a platform where Apple engineers will post about “their work using machine learning technologies to help build innovative products for millions of people around the world.” This follows last year’s announcement that Apple would begin publishing its artificial intelligence (AI) research.

At the time of writing there’s one post on the journal, “Improving the Realism of Synthetic Images”. Though published elsewhere before, this tweaked version provides an in-depth yet accessible look at techniques used to take images generated by a simulator and make them look more realistic.

The goal of this is to improve training for machine learning systems based on images that, while made by an artificial system, look more like the real thing.

Why not use real photos to begin with? Apple says it’s actually cheaper and easier to use synthetic images because there’s no data labeling cost.

Researchers stand to benefit from this sharing of knowledge and findings. Hopefully the journal will also lead to greater public awareness and understanding of machine learning and AI, as well as what Apple’s doing with them.

Apple is joining other tech giants in publicizing AI research for general readership; Google and Facebook, for example, often blog about what

they’re doing with machine learning. Artificial intelligence is in many ways the next big battle ground in tech. Nearly every major consumer tech company has its own digital assistant that gets smarter over time as it learns more about you.

There are also reports AI will be a major feature of the iPhone 8, with the 10th anniversary iPhone including a chip dedicated to it.

Meanwhile, Apple’s journal underscores the emphasis on this subject that was evident at WWDC. Not only is it providing a dedicated home for all to see this research, it’s also encouraging machine learning researchers, students, engineers, and developers to reach out with questions and comments by emailing machine-learning@apple.com.

Plus, Apple is putting its money where its mouth is: At the bottom of the page is a prominent link to Jobs at Apple, no doubt in the hope that ample AI talent will apply.



The first post on Apple's machine learning blog.

techradar.



The home of technology

techradar.com

>GAME LOOP

With new Kaby Lake Macs out now, and Metal 2 coming to macOS later this year, **BRIANNA WU** considers gaming options



THIS IS a good time to be a Mac gamer. With High Sierra around the corner, Apple is making huge bets on graphics for its flagship operating system. No matter your Mac, old or new, High Sierra will see huge graphical gains with Metal 2.

The good news doesn't stop with software – this year's entire lineup of MacBooks was upgraded with Intel's Kaby Lake processors. Faster processors are routine, but the startling numbers on Kaby Lake speak for themselves. If you're a gamer buying a portable Mac, make sure you get one of the newest models with Kaby Lake.

Some gamers play casual titles like Bejeweled 3, while others love immersive experiences like XCOM 2. Here I'll talk you through my opinions of Apple's current lineup of Macs, and the gaming pros and cons of each.

MACBOOK This spiritual successor to the MacBook Air was introduced in 2015, and the third time is the charm. This year's model boasts a better keyboard, more memory, and solid speed gains from Kaby Lake. But while it's an amazing work machine, this MacBook still struggles with anything beyond the most basic 2D games. Civilization isn't graphically intense, but it's still unplayable on the MacBook. The good news is there are plenty of amazing 2D games on macOS, one of my favorites being Peggle Nights.

IMAC The iMac is Apple's best-selling machine for creative professionals, and that power makes it a solid game machine as well. But while it's a good choice, there's a lot to give gamers pause in the current iMac.

Apple has switched from Nvidia to AMD for the graphics processor. AMD isn't a bad choice, but the processor used is not a top-of-the-line one. Still, you should expect to play almost any Mac game from Steam on an iMac.

Apple's Fusion Drive technology is fantastic for avoiding Apple's pricey SSD upgrades. These drives

mix the high capacity of conventional hard disks with a small SSD cache for system files. If you play games in macOS, a Fusion Drive will allow for a large Steam library, though you don't necessarily need one: bear in mind

A strong GPU helps with games like XCOM 2.



If you're a gamer buying a portable Mac, get one of the new Kaby Lake models



The iMac Pro is really intended for game developers.

that you can tell Steam to install games to an external drive by setting up a library folder there. Valve's official guide to this, at bit.ly/steamlab, is based on the Windows version, but the steps are essentially the same on the Mac.

Beware: if you play games in Windows using Boot Camp, avoid installing them to a Fusion Drive. The SSD part of the drive won't work in Boot Camp, slowing Windows to the speed of a conventional hard disk.

Also worth adding: though currently only possible using a kit for developers, an HTC Vive paired with Apple's External Graphics Development Kit may eventually enable you to play VR games – but note that the kit is unsupported in Boot Camp. (I find the Vive more comfortable and tracks much more precisely than the Oculus Rift.)

MACBOOK PRO For most gamers, the 15-inch MacBook Pro is your best option. Although a 13-inch model is more portable, it only has a dual-core processor. In the 15-inch versions, the quad-core Kaby Lake processors are more than able to run most popular macOS games, including demanding titles such as HITMAN.

While the iMac is a better overall gaming machine, the portability of a 15-inch MacBook Pro more than makes up for it. In my experience, I play Mac games on a couch, not at a desk. Being able to play Dota 2 while binging Netflix is worth the slight tradeoff in graphical power. Like the iMac, it works with Apple's eGPU developer kit, so there's potential for VR when the situation for consumer-focused eGPU support becomes clearer.



Many entertaining 2D games, such as Shovel Knight, run well even on low-end Macs.

No matter which MacBook Pro you get, you'll receive Apple's blisteringly fast new generation of SSD storage. This will make your MacBook Pro double well as a Windows machine, where Steam has a deeper library. Be careful: Windows games do tend to run better – but they drain the battery because the software isn't as tightly optimized for the hardware as macOS is. For intense games, only expect to get an hour or two of battery life.

iMAC PRO Apple's Space Gray beast doesn't go on sale until December, and we won't know its full capabilities until then. But, for a gamer looking for best-of-the-best performance on macOS, the iMac Pro will undoubtedly be the most powerful modern computer

Apple sells. While it will still have AMD graphics, the real story here is the minimum of eight CPU cores. Assuming your game is written to take advantage of that, the iMac Pro will devastate it.

Truth be told, the iMac Pro is made less for gamers and more for game developers – but it will undoubtedly play games well. If dropping more than \$5,000 on a gaming Mac doesn't phase you, this is the one to get.

Gamers have been neglected for a long time by Apple. But now, every Mac in the new lineup is a powerhouse for games – excluding the 12-inch MacBook. The addition of external GPUs may allow Macs to experience VR in the future. If you've been waiting for the right time to invest in a new Mac, that wait is over.

»» Brianna Wu is the head of development at Giant Spacekat, developer of Revolution 60 on iPhone and iPad, and is a regular speaker at industry events, as well as host on the podcasts Isometric and Rocket.



APPLE TRIES TO make products that live up to the “it just works” mantra. Its devices have excellent interfaces, and the online support it offers (at support.apple.com) is second to none. If you’re fortunate enough to live near an Apple Store, you can even receive a free appointment at a Genius Bar to diagnose your troubles.

In the interests of saving you both time and travel expenses, though, this issue we’re looking at 50 of the most common issues with macOS and iOS, and presenting handy quick fixes.

Wherever possible, try to make a full backup of your Mac or iOS device before implementing these. Since we can’t cover every problem in depth, we have

included links to Apple’s support site where possible, so you can discover more about your problem. Don’t forget you can also arrange a phone call or online chat with Apple Support by visiting getsupport.apple.com.

Remember that all the issues listed here are very common, so there may be more than one cause behind each problem. A slow internet connection, for instance, can be due to software issues on the Mac or wireless interference. Eliminate possibilities before assuming that there’s a hardware defect with the Mac itself.

Finally, if your Apple-related annoyance isn’t listed here, try going through the online guide to isolating issues at apple.co/2sNQvv2.

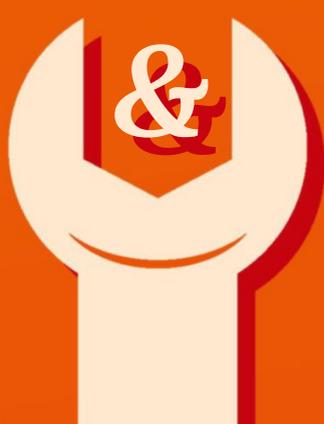


quick FIXES



for

Need to make a Genius Bar appointment? Maybe not. **Nate Drake** explains how you can fix macOS and iOS issues...



macOS & iOS

+ iOS ISSUES

Fix some of the bugbears of iOS

1 If battery life is short

Firstly, make sure that your software is fully updated by going to Settings > General > Software Update. Then go to Settings > Battery on your device to check your usage.

The easiest solution to reduce the drain on your battery is to go into Low Power Mode (in the Battery section) which toggles various features from one place – background app refresh is disabled, automatic downloads are too, visual effects are toned down, and more. Note that Low Power Mode is an iPhone-only feature. Go to apple.co/2b3WUdN for full details.



Make an iCloud backup before trying a fix: go to Settings > [Apple ID] > iCloud > iCloud Backup.

2 Your device is slow or unresponsive

If your device responds sluggishly or freezes, try to restart it by holding down both the Sleep/Wake button and the Home button until you see the Apple logo on the screen. If this fails to improve the situation and you have a recent iTunes or iCloud backup of your device, consider restoring it to factory settings (see apple.co/1EWim7U) to see if the behavior persists, and then restoring your backup to see if the problem returns.

3 You can't run a system update

Occasionally, when you go to Settings > General > Software Update on your device, the update doesn't install. You can check your current iOS version in Settings > General > About. The easiest way to fix this is to connect your device to a Mac or PC and install the latest version of iTunes (apple.co/1GE4Tpx). Open iTunes, connect your device, and click the device's icon near the top left. Click Summary in the left-hand pane, then Check For Update.

4 No sound is coming from your device

If you can't hear any sound when receiving calls, first go to Settings > Sounds and make sure the Ringer and Alerts slider is not set to mute. Next, go to Settings > Do Not Disturb to make sure your device isn't scheduled to remain silent. If these are set up correctly and you still can't hear calls, go to Settings > Bluetooth to check if sound is being channelled to another audio device, such as a Bluetooth speaker. Try restarting by holding down both the Home and Sleep/Wake buttons.

5

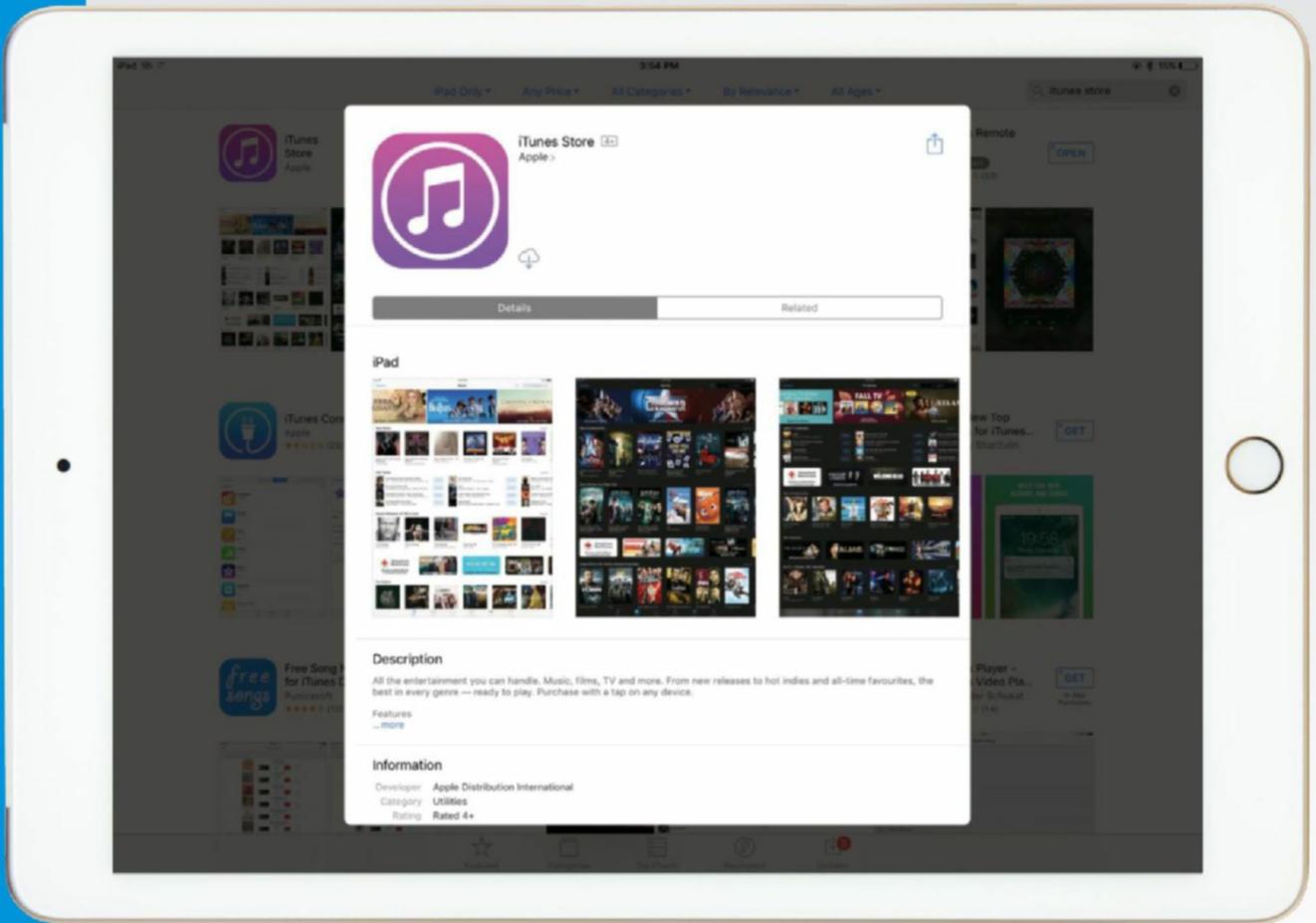
Your iOS device won't switch on

Sometimes your iOS device may appear to be dead and won't respond when you try to use it. Usually, you just need to allow it half an hour to charge. If this fails, try to reset the device by holding both the Home and Sleep/Wake buttons for several seconds. If the device still won't turn on, connect it to a machine running iTunes and attempt to restore from your last backup.



6 The red screen of death

If your iPhone is continuously power-cycling between the Apple logo and a solid red screen, you may have encountered the dreaded "red screen of death." While this problem is found most often in the iPhone 6, it has occurred in other models too. There's no official Apple Support document for this issue. You can try to perform a factory reset if you want, but failing this go to locate.apple.com to find your nearest Apple Store or Authorized Service Provider to have your device examined and, hopefully, fixed.



If you've deleted any of the apps that came built-in to iOS 10, they can be reacquired through the App Store.

7 iOS device won't charge

If your iOS device doesn't register as charging when you plug it in, first check that you are using an official, Apple-certified Lightning cable – counterfeits are more prone to failure. If the battery is fully drained, make sure to use an Apple-certified USB plug in a wall socket rather than a computer's USB port. If you see an alert saying your accessory isn't supported, gently clean the Lightning port and connector with a dry, lint-free cloth, then restart the device and try charging again.

8 One of iOS's built-in apps is missing

Since the release of iOS 10, Apple has allowed you to remove built-in apps, such as FaceTime and Calendar, from the Home screen. (Go to bit.ly/rmvapps for help with this.) If you can't find a

particular built-in app, go to the App Store and search for it by name, then tap the cloud icon to download it again.

9 You lose your device

It's a good idea to set up Find My iPhone – if you lose your iOS device, you can place it into Lost Mode to disable it the next time it connects to the internet. Open the Find My iPhone app on your device and log in with your Apple ID. Confirm that you wish to share your location. If your device then goes missing, use another device or computer to go to icloud.com and log in with your Apple ID. Click Find My iPhone then choose your device. Click Lost Mode, enter the lost device's passcode and click Next. A message with your phone number appears on the device, you can see its location, and its ability to make Apple Pay payments is suspended.

10 Your device asks for the password for a different Apple ID

If someone else has signed into your device with their Apple ID, you may find that it asks you for their password. If this occurs when you're using the App Store, tap your Apple ID at the bottom of the Featured page for an option to sign out. To sign out of iCloud, you'll need the holder of that Apple ID to enter their password or remove the device from their account at [iCloud.com](http://icloud.com). If this isn't feasible, contact Apple with your proof of purchase for the device.

+ CONNECTIVITY PROBLEMS

Solve some typical connection conundrums

11 Mail can't send or receive emails

There are a number of reasons why Mail may not be able to send or receive messages. If this happens, try to check your email on another device. Sign in to your email provider's webmail service to verify everything is okay at that end. Next, open Mail and choose Window > Connection Doctor. This tool tells you whether Mail is able to connect to the internet, and then to your mail server(s). Check your provider's published settings match yours in Mail > Preferences > Accounts > Server Settings.

Check your firewall (below) or try different DNS servers (right).

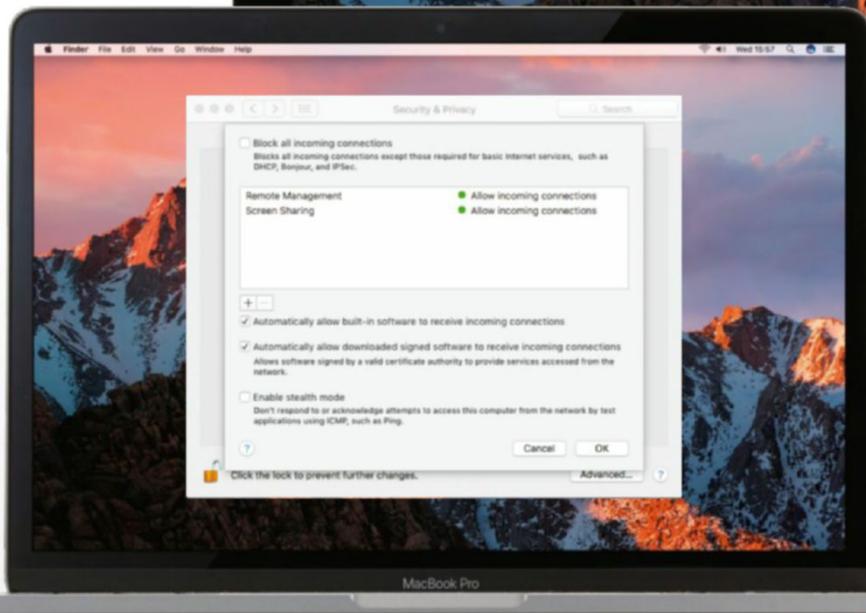
12 Your Mac uses the wrong Wi-Fi network

If your Mac is near open Wi-Fi networks, it may connect to these rather than the one in your home/office. To prevent this, go to  > System Preferences > Network. Click Wi-Fi in the left-hand pane, then Advanced. Move your preferred wireless networks to the top of the list. Highlight any unwanted network and click the - (minus) button to remove it.

13 Certain apps can't get online

If specific apps on your Mac are having trouble connecting to the internet, or others are having trouble connecting to you, you may need to modify your firewall settings. Your Mac's application firewall is switched off by default, allowing all incoming connections.

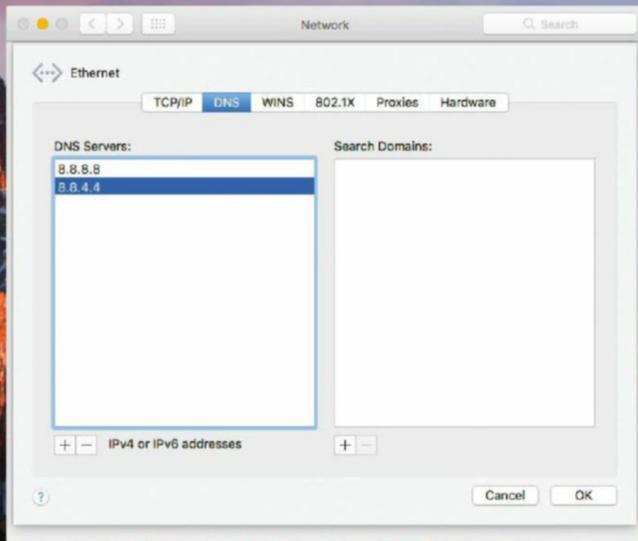
First, turn on the firewall in System Preferences > Security and Privacy > Firewall. Second, click Firewall Options in that tab, then check whether the uncommunicative app is listed and that it isn't erroneously set to be blocked.



14 Your Mac doesn't recognize its Magic Keyboard or Magic Mouse

If your Mac isn't connecting to its Magic Keyboard, Magic Mouse 2, or Magic Trackpad 2, connect the device to your Mac using a Lightning cable. Go to System Preferences > Bluetooth, where you can check the device is charged and that it's automatically paired. For an older input device, hold its power button until the LED starts to blink. It should appear in System Preferences > Bluetooth. Select it and click Pair. If the LED is steady, the device is paired.





15 Doing things online has become slow

If browsing has slowed to a crawl, make sure that your Mac isn't just generally slow (see tip 16). Try accessing the internet from another device to determine whether it's an isolated issue. If the other device is equally slow, you may be experiencing wireless interference. Look through your router's documentation to find out how to check and change the channel setting. If only the Mac is slow, start up in macOS Recovery (see bit.ly/macosrec) and choose Get Help Online to test your connection in the browser there, then contact Apple Support for help.

17 Your ISP is blocking a website

If a website is unreachable using your ISP, you may be able to bypass this by using a different DNS (Domain Name System) server to that offered by your Internet Service Provider. Go to System Preferences > Network and click your connection. Choose Advanced and go to the DNS tab. Click the + button to add new DNS servers such as Google's (8.8.8.8 and 8.8.4.4), and click on the old DNS servers then press the - button.

18 Get super-fast Wi-Fi

If you've found that changing your aging router's Wi-Fi channel doesn't improve the speed of your network, and if you've already tried Apple's recommended settings (see bit.ly/wifirecs), consider using a Time Capsule or AirPort Extreme Base Station, or a mesh networking system such as the Netgear Orbi. A Wi-Fi network in the 5GHz frequency band is much less prone to interference.

16 Troubleshoot internet connections

If you can't connect to the internet at all, first check to see if other devices on the same network are having the same issue. If you connect directly to your router using an Ethernet cable, try reseating it. For Wi-Fi, click the corresponding menu bar icon at the top right to make sure it's enabled and that there's a check mark next to your preferred Wi-Fi network. If you're connected to your own Wi-Fi network, run Wireless Diagnostics for further help (see apple.co/29KoHJV).

19 You can't connect to a hidden Wi-Fi network

If your router/base station broadcasts a hidden Wi-Fi network, you may see an error when trying to join it, even if you're using the correct password. This is usually because the other network settings have been entered incorrectly. Double-check both the SSID (network name) and the password security type – WPA/WPA2 Personal, for example. If you're unsure about these, contact your network administrator. Both capitalization and spaces matter, so make sure these are entered correctly.

20 AirPlay Mirroring to Apple TV stutters

If you find that AirPlay Mirroring to an Apple TV is slow, make sure your router matches Apple's recommended settings (bit.ly/wifirecs). Go to the Mac App Store's Updates tab to ensure macOS is up to date, then do the same on your Apple TV in Settings > System > Software Updates > Update Software. If possible, try to connect your Mac and Apple TV to your router using Ethernet cables to see if that helps.

+ APP AGGRAVATIONS

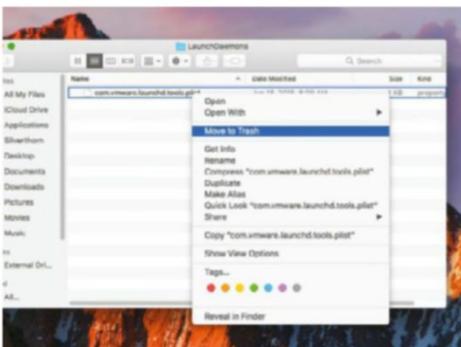
Learn the best quick fixes for your app troubles

21 Use Word docs without Microsoft Office

The iWork suite (which consists of Pages, Numbers, and Keynote) is now available for free in the Mac App Store, though you need macOS Sierra. They can open Microsoft Word, Excel, and PowerPoint documents, respectively. Each can also export your work to the corresponding Microsoft Office format. Go to File > Export To and then choose the relevant format, such as Word, from the options. Click Next in the sheet which appears, then Export.

22 Remove “Your browser has been locked” alert

If your Mac’s been infected by adware, your browser may show the message “Your Apple computer has been locked,” preventing you from visiting other websites. To fix this, start up macOS in safe mode by holding  at startup, then open Finder. Choose Go > Go to Folder, then type ~/Library/LaunchAgents. Delete any unfamiliar files from this folder. Do the same for /Library/Launch Agents and /Library/LaunchDaemons. In Safari, go to Safari > Preferences > Extensions and disable any of them you don’t recognize.



Remove adware to free up your Mac once more.



23 Change your default web browser

Safari is the default web browser for macOS. Not all websites work well with it, however, so you may prefer to install another one. Most third-party browsers will, when first opened, ask if you want to set them as your default. Otherwise click  > System Preferences > General and choose your new browser from the “Default web browser” pop-up menu. You can change back to using Safari in the same place.

24 Remove or change a payment method

If you want to remove or update the credit card you have on file with the App Store, go to  > App Store, then, in the store’s Featured tab, click Account on the right-hand side and sign in with your Apple ID. Click Edit beside Payment Information. Under Payment Type, select a new card type, or click None to remove your card. (If you’re the organizer of a Family Sharing group, you *must* have valid card details on file.)

25 Run Windows programs

If you need to use a Windows program for which there’s no macOS equivalent, you can run a virtualized version of Windows from the macOS desktop using software such as VMware Fusion or Parallels Desktop. These programs are convenient but not free, and will not give you the very best performance, as Windows is contained inside a virtual machine. Instead, you can install Windows alongside macOS using the Boot Camp Assistant tool. See apple.co/2tZowsu for a full guide.

26 Fully get rid of an app

Although you can drag any app from the Applications folder into the Trash, this doesn’t necessarily remove it from System Preferences, your user’s Library folder, or the menu bar. To remove an icon in System Preferences, -click on it, then choose “Remove [name] Preference Pane.” Next, switch to Finder and choose Go > Go to Folder. Type ~/Library/Application Support and click Go. In the window that opens, find the folder that relates to the app you’re getting rid of and move it to the Trash. Restart your Mac, then empty the Trash.





Use Finder's Get Info window to change the app that's used to open a particular file type.

27 Updates need an old Apple ID password

If you installed an app on your Mac using a different Apple ID to the one you use now, the Mac App Store will need that ID's password to update the app. If you know the password, you can keep updating and using the app as normal. If this gets too annoying and the app is free to download, simply open the Applications folder, delete your existing copy of the app, then make sure you're signed in to the store with your current Apple ID, and simply redownload the app.

28 Restore a missing Mac App Store app

If you have a new Mac or have been forced to wipe the startup disk to fix

an error, some of your apps may be missing. To restore any app you've previously downloaded from the App Store, go to the store's Purchased tab to see a list of them. Click Install next to an app to redownload it. To do this, you must be signed in with the original Apple ID you used to download the app.

29 Restore a missing third-party app

If you can't find an app you previously downloaded, this may be because it's no longer available on the App Store, or you installed it a different way, such as from a CD. If you keep Time Machine backups you can restore missing apps from them using Migration Assistant (see bit.ly/migasst). If you obtained an

app from a third-party site or online store, rather than the Mac App Store, many of those sources enable you to redownload apps, or recover the key that removes restrictions from a trial version, as long as you are able to sign in to your account.

30 Change the app used to open a file type

Many file types, such as text files, can be opened by various apps. If you want to change which app is used to open a file, **⌘**-click on the file in Finder and choose Get Info. In the window that opens, click the triangle next to "Open With" and choose your preferred app from the pop-up menu. Click the Change All button to ensure your Mac uses this app for all files of this type.

+ macOS IRRITATIONS

Grapple with some common eccentricities of macOS itself

31 Speed up your system

If your system is running slowly, save any open files, restart your Mac, and run a software update by going to **Apple > App Store > Updates**. One common reason for a slow system is having too many apps actively doing stuff at once; try quitting a few of them.

Consider how many items are set to open at login, too – go to **Apple > System Preferences > Users & Groups > [your account] > Login Items** to check and remove unnecessary ones. It's wise to remove any items you don't need. If this doesn't have an effect, try starting up in safe mode (refer to bit.ly/macossafe) to make sure third-party software isn't responsible. Safe mode automatically scans and repairs corrupted system files on your startup disk, too.

32 Find a missing file

If you're sure you saved a file but don't know where, click Spotlight's icon at the top right to search for the file's name – say, "vacation." Alternatively, press **Command+Shift+Spacebar** and use the + (top right) in the window that opens to add criteria to look for files by kind or extension, such as JPEG images or ".jpg."

If your file is still missing, it may have accidentally been deleted. If you've been keeping Time Machine backups, you can restore items by following the steps at bit.ly/usetimemac.

33 Fix failing backups

If you back up your Mac through Time Machine, you may see an alert saying a backup couldn't be completed. If you use an external drive to back up, reset

34 Correct the time

An incorrect system time can lead to all sorts of issues with web pages not loading correctly. To update this setting, go to **Apple > System Preferences > Date & Time**. Click the padlock at the bottom left, then enter an administrator account's password to make changes. Make sure "Set Date and Time Automatically" is checked, and that you're using your nearest time server – say, Apple Americas. Next, go to the Time Zone tab and select your country from the map, or use the Closest City menu.

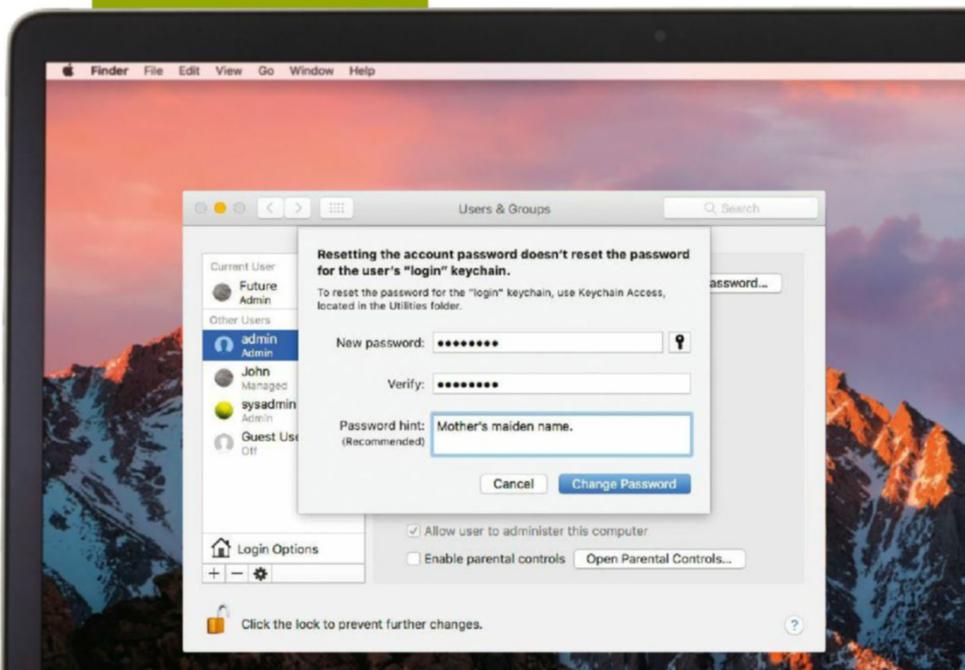
35 macOS won't start

If the operating system won't start up, check carefully for any error messages. A flashing question mark signifies that the system software wasn't detected, and may indicate a hardware issue. Contact Apple Support if this happens. If your Mac displays a blank white or gray screen with a loading bar, remove any peripherals and perform an SMC reset (see apple.co/1ENyxqS). If startup still fails, contact Apple Support for further troubleshooting.

the connection, click the Time Machine icon in the menu bar, and choose **Back Up Now** to try again. If you're using a Time Capsule, update its firmware (see bit.ly/airtupd), then restart it. Make sure your Mac is connected to the same network as your Time Capsule.

36 macOS freezes after login

Sometimes your Mac will start up but then freeze on login. Its screen may even turn blue. If other users can log in to the Mac without any trouble, the issue



is most likely to do with incompatible software or a corrupt font. You need to restart your Mac in safe mode (see bit.ly/macossafe), then go to System Preferences > Users and Groups. Click your user on the left, then the Login Items tab to check for third-party apps that may be causing this problem. Also read bit.ly/rmvfont.

37 Force your Mac to shut down

On occasion, your Mac will refuse to power off; if another user is logged in, macOS will prompt you to enter an admin password first. If that's not the case, you likely have a crashed app that's stopping macOS from restarting. Save any files that you're working on, then click **Apple > Force Quit**. Select an app and click Force Quit, then try shutting down; repeat if necessary.

38 Reinstall macOS

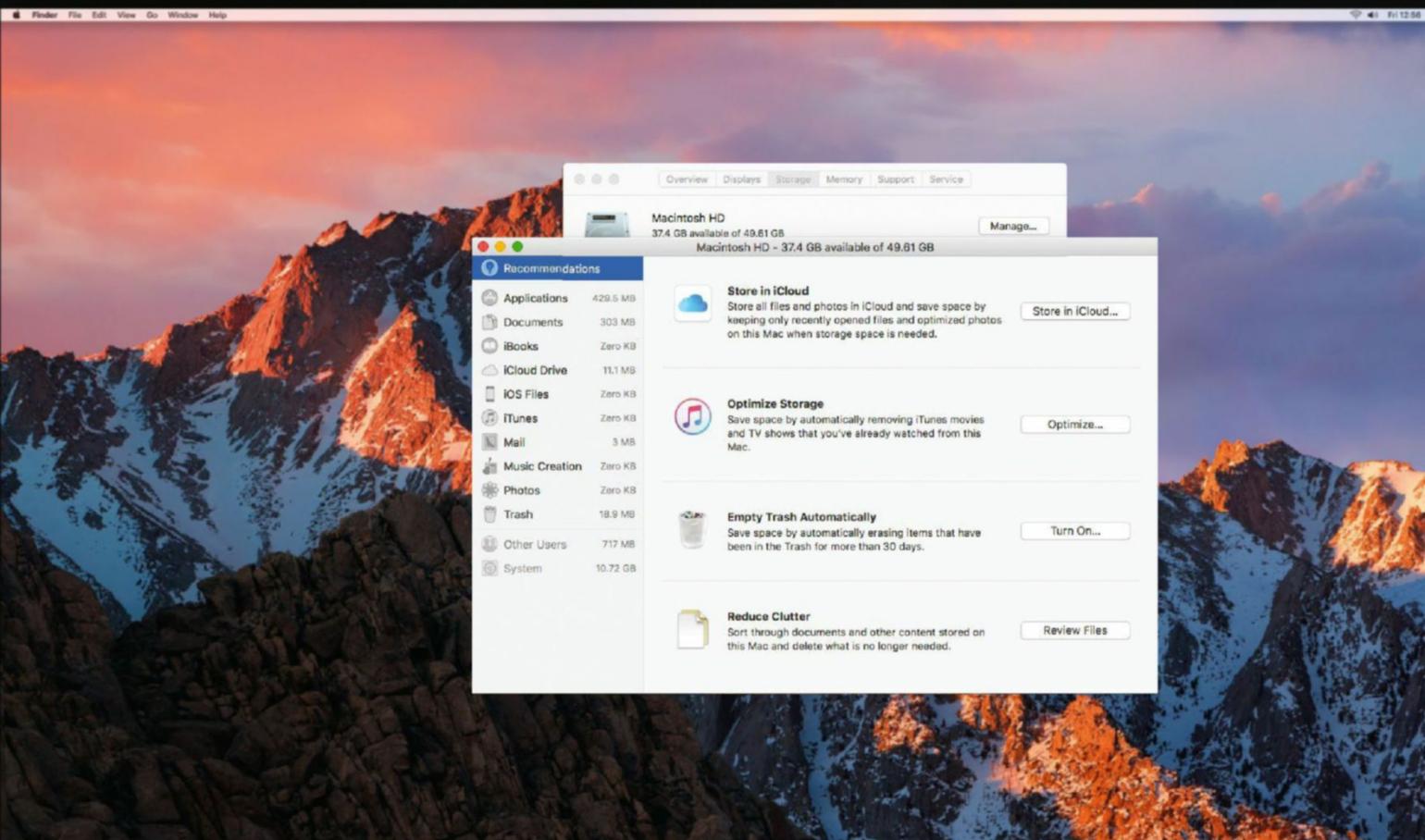
If your system is still behaving badly, you can try to erase the startup disk and reinstall macOS. To do this you'll need to know the Apple ID and password you used to install it. Make a backup if you can, then restart the Mac and hold **Command + R** at the startup sound. Follow the steps at bit.ly/reinstmac to set up as new, or bit.ly/rstrtime to restore from Time Machine backups.

39 Reset login password

If you've forgotten the password you use to log in to your Mac, the easiest way to reset it is to have an admin user do it for you. Ask them to go to System Preferences > Users and Groups, select your account, then click the Reset Password button. After resetting your password, you'll need to create a new login keychain – see bit.ly/rstkeych.

40 Fix the message "Your startup disk is almost full"

You will see this message if there's very little free space on your Mac's main storage. In **Apple > About this Mac**, click the Storage tab to see what data's taking up the most space. Click the Manage button to store some of your files in iCloud, remove watched movies and TV shows, and automatically empty the Trash each month. Additionally, items in your Downloads folder can usually be safely deleted as you can often download them again if needed.





+ HARDWARE HASSLES

Learn to detect common issues with your Mac's hardware

41 Deal with an overheating Mac

If the fans on your Mac are constantly running, or it's uncomfortably hot to the touch, there may be a hardware fault. Place the machine on a hard surface to allow better air circulation; Apple recommends a maximum operating ambient temperature of 95° F. If the fans are still running constantly, try performing an NVRAM reset (see bit.ly/resetnvrn). Noisy fans and overheating can be caused by software, such as Spotlight reindexing, so contact Apple Support before you take your Mac to a repair center.

42 What does this startup sound mean?

Macs sometimes beep on startup; the number and frequency of these beeps can help you understand an issue with your Mac. If you hear a beep every five seconds, no memory modules are detected; three beeps means the memory hasn't passed the integrity check. If you hear three long, then three short beeps, the Mac's firmware has been corrupted, and you need to take your computer to a repair center.

43 Detect a faulty charger

If your MacBook isn't charging, check that its power adapter is correctly connected and try a different wall socket. If this fails, remove the charger and inspect the charging port on your MacBook to make sure there are no foreign bodies in it. Carefully examine your charger for any frayed or exposed wires. If you find anything, take the MacBook and charger straight to an authorized repair center. If the cables and port seem in order, try performing an SMC reset - see bit.ly/restsmc for instructions.



44

Isolate hardware issues

Issues with your Mac, such as no sound, the display appearing incorrectly, or slow performance, can be caused by both hardware and software issues. If any error messages appear, make sure to copy them down exactly. Also note down the time they're happening.

Next, go to getsupport.apple.com on a working device to chat to Apple Support, which will be able to tell you if it sounds like there's a hardware problem with your Mac.

45 Check your warranty

Visit checkcoverage.apple.com and enter your serial number to check if your device is in warranty or covered by the AppleCare Protection Plan.

In addition, the Uniform Commercial Code, which all states have adopted in some form, provides an automatic "implied warranty of merchantability," which guarantees that consumer products are free of substantial defects and will function properly for a reasonable period of time.

What's "reasonable" varies from state to state and depends on the product, but generally the period is limited to four years by law.

It may “sound” obvious, but check the headphone jack...



47 Fix common sound problems

If you can't hear any sound on your Mac, make sure there are no external audio devices connected such as headphones. Next, go to System Preferences > Sound. Click the Output tab and make sure internal speakers are selected. If you can't see this option, contact Apple Support. If “Internal Speakers” is selected, turn up the volume and perform an NVRAM reset (see bit.ly/resetnvram). If you hear the normal startup sound, your Mac's issue is software related. Otherwise, it's likely a hardware problem.



50 Memory upgrades

The more memory your Mac has, the less likely it is that macOS will need to move data for an idle app to storage to free it up for something else, and back to memory when it's needed. So, you may want to upgrade your Mac's memory. Some repair centers can do this, but you can do it yourself on many older Macs. Identify your model in **Apple > About This Mac**, click the Memory tab to see how much is installed, then click Memory Upgrade Instructions. Note that some Macs can't be upgraded at all.

46 Use Apple Diagnostics

Your Mac includes one of two diagnostics suites, depending on your model's age – see bit.ly/apptests for full details. To run either, shut down your Mac, then disconnect all external devices except the keyboard, display, and mouse. Next, power on the Mac while holding **⌘**. Choose your language if prompted, then the test will start. If issues are found, take a photo of the screen or note down any reference codes before contacting Apple Support.

49 Spot display anomalies

Every now and then a transistor on your Mac's display may fail, causing a small area either to go dark or stay bright. Sometimes display issues are caused by a foreign object such as dust particles getting behind the screen. If you have display issues, clean your screen with a dry cloth and perform an NVRAM reset – see how at bit.ly/resetnvram. If this fails to fix it, visit your local Apple Store for advice.

48 Dimmed screen

Occasionally you may see a dimmed screen on your Mac, saying you have to restart your computer. This can be caused by a number of issues, from corrupted system updates to a serious hardware failure. Restart the Mac as it suggests. If you see more “kernel panics,” disconnect any peripherals and try starting up in safe mode (bit.ly/macossafe) to see if the issue persists there. If the issue does continue, contact Apple Support for further help.



Dive deep into iTunes

APPLE'S APP for storing your entertainment media doesn't always receive the recognition it deserves, as many of us tend to use a handful of its features. Even ardent fans are sometimes bewildered by navigating their media in it.

The situation isn't helped by the fact that iTunes has undergone many changes over the years, from removing DRM (Digital Rights Management) from purchased music to scrapping iTunes Radio in favor of a paid service for Apple Music subscribers, along with an interface revamp and subsequent refinements.

In this guide, we're focusing on some of the handiest yet less well known features of the app. Firstly, we'll take a more literal approach

to "hidden" features by helping you to locate lost purchases from the iTunes Store, as well as how to move your iTunes library to an external drive to save space on your Mac.

You'll also learn how to import and manage content that you rip from CDs or download from stores other than Apple's own. This includes editing descriptions and adding album artwork. And if you love radio, you'll discover how to access online stations, including adding your favorites.

Finally, you'll discover how to get great value from iTunes' MiniPlayer, which enables you to queue music, browse your library, and control playback in a smaller window while you carry on working, browsing, or playing in other apps.

Uncover the powerful hidden features of your media library

BY NATE DRAKE

Find iTunes content

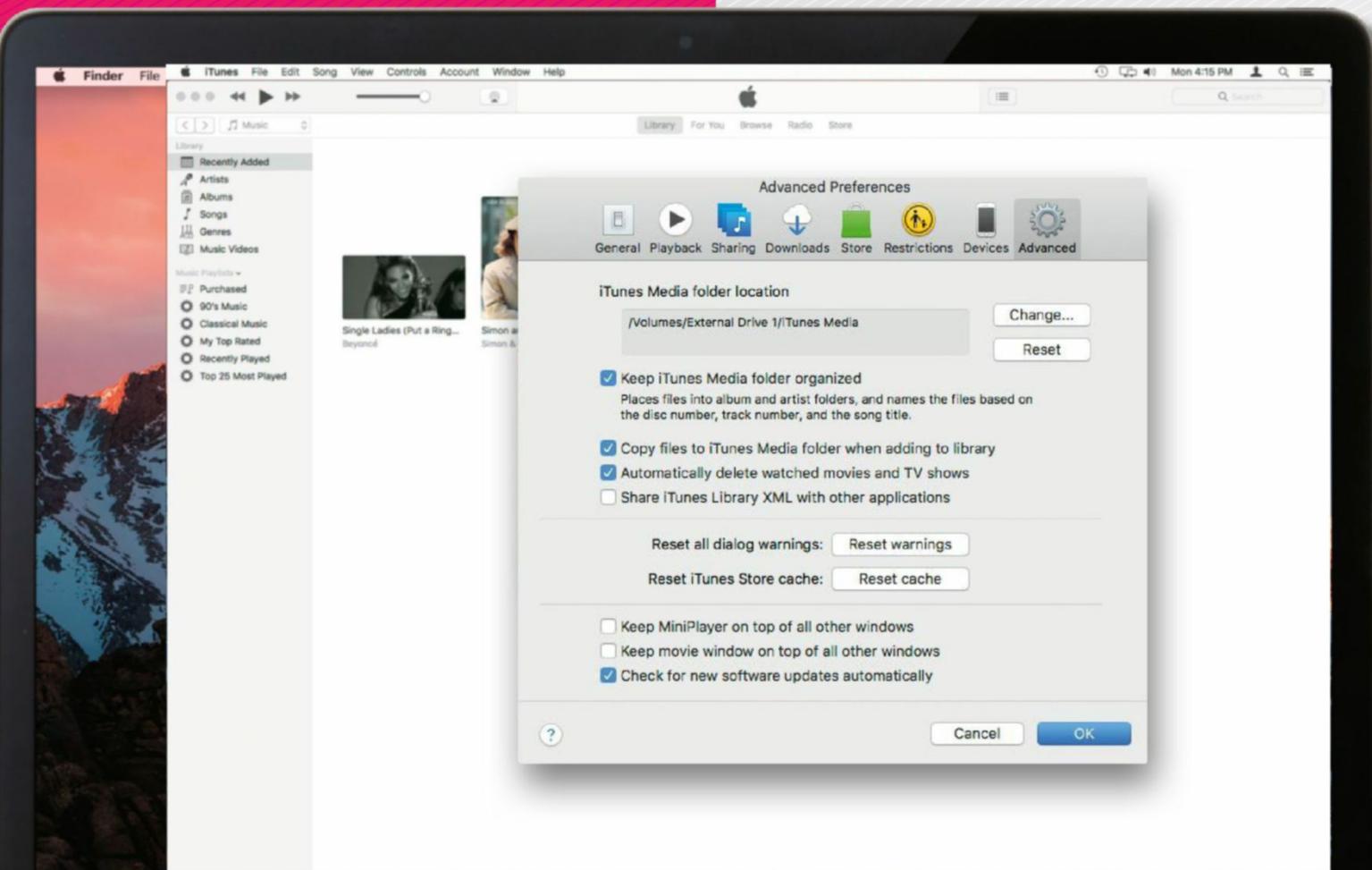
Music at your fingertips, if you can find it... Here's how to locate your missing iTunes purchases



WITH ITUNES, all your music is at your fingertips – but sometimes it's not always there! If for some reason newly purchased content from the iTunes Store doesn't appear in your library, it's likely that the download has failed. The simplest remedy is to go to iTunes > Account > Check for Available Downloads. Enter your Apple ID's password and press . If there's any purchased content available to download, iTunes will retrieve it for you – note that downloads will start automatically when you choose this option.

If you'd prefer to view what content is available before clogging up your Mac's storage with music, apps, and videos, follow the steps in "How to redownload past iTunes purchases" later in this feature to view media you've previously purchased, so you can pick and choose what to download.

If you're using Apple's Family Sharing feature (see bit.ly/famsharing), not only can you download content you've purchased using your own Apple ID,



but also most media other family members have bought using their personal IDs. At the view of your past purchases, click your name at the top left of the window and choose a family member, then download their content just as you would your own.

HIDDEN PURCHASES

While sharing purchases with your family saves each of you from having to buy your own copies of music and movies, you may prefer that your loved ones didn't know you're secretly a fan of trashy '80s pop music. In light of this, Apple allows you to hide previous purchases, so that they don't appear in the Purchased section of iTunes, for you or other family members. Follow steps 1 and 2 of "How to redownload past iTunes purchases", but instead of downloading an item, click the "X" next to a purchase to hide it from view.

To make a hidden purchase visible again, go to Account > View My Account, then enter your Apple ID's password and press . Under the "iTunes in the Cloud" heading, click Manage to the right of Hidden Purchases, choose the type of media you're looking for at the top right, then click Unhide next to an item to restore it to your list of purchases. Remember that if you're using Family Sharing, all family members will then be able to see and download the unhidden content.

MEDIA MANAGEMENT

You may want to automatically download iTunes Store purchases in future, so that your Mac contains a copy of all media that you purchase on any devices

YOU MAY PREFER THAT YOUR LOVED ONES DIDN'T KNOW YOU'RE SECRETLY A FAN OF TRASHY '80S POP MUSIC, SO YOU CAN HIDE IT

signed in to your Apple ID. In iTunes > Preferences, click the Downloads tab to view your Automatic Downloads settings. Make sure "Always Check for Available Downloads" is enabled. You have the option to treat kinds of media differently – on a portable Mac with limited storage, say, you might want music you purchase on your iPhone or iPad to download automatically, but not movies. If space isn't an issue, consider leaving "Download full-size HD videos" checked to ensure videos are received at the best available quality.

If you enable automatic downloading of videos, though, there's an easy remedy for ensuring things you've watched don't clog up your Mac's storage. Go to iTunes > Preferences, click the Advanced tab, and enable "Automatically delete watched movies and TV shows" to have iTunes free up space for you.

If you're a music lover, consider following the steps at bit.ly/getapplemusic on how to sign up for the Apple Music subscription service. Apple Music includes a feature called iCloud Music Library – also part of the older iTunes Match service – which ensures a copy of the music on your Mac is stored online. Rather than manually syncing, tracks are streamed over the internet to your other devices, so they don't have to take up huge amounts of space.

> Associated devices



FOR ITUNES

to play content from the iTunes Store, your Mac must be associated with your Apple ID. You can have up to 10 devices associated with your Apple ID and iTunes Store account at any time, though no more than five Macs or PCs.

This can be problematic, as over time you might associate different devices with your Apple ID. To check how many you have, make sure you're connected to the internet, then open iTunes and choose Account > View My Account.

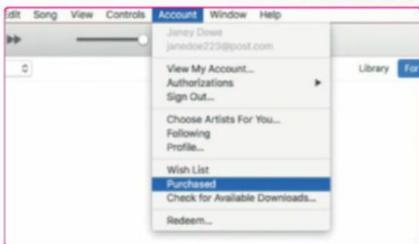
When your account info appears, find the "iTunes in

the Cloud" heading and click Manage Devices there. This will reveal a list of any iOS devices, Macs, and PCs that are linked to your Apple ID, which grants those devices the ability to automatically download iTunes and App Store purchases, or to redownload past purchases. Click Remove next to any

device you no longer use. You should also do this if you're selling or giving away your Mac.

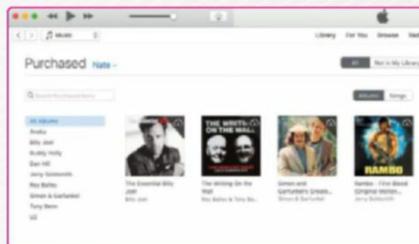
To add a new Mac or PC, in iTunes choose Account > Authorizations > Authorize This Computer. Enter your Apple ID's password; after a few moments you'll see a confirmation.

HOW TO Redownload past iTunes purchases



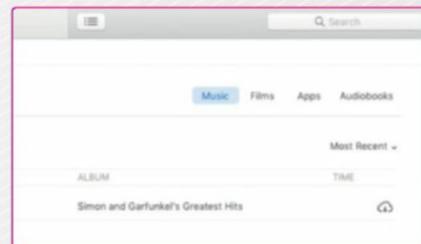
1 View past purchases

In iTunes' Account menu, look for a Sign In option; if it's there, choose it, then enter your Apple ID and its password to continue. Otherwise, choose Purchased, or Family Purchases if you've set up iCloud's Family Sharing feature.



2 View purchases

Click on a media type, such as Music, near the top right to view past purchases of that kind. If you're part of a Family Sharing group, you can click your name (top left) then a family member's name to view their purchases.



3 Download items

Click the cloud icon next to the item you want to download. Once that's done, double-click the item to play it right away, provided your Apple ID is authorized for playback on this Mac; if it isn't, look in Account > Authorizations.



If you have a large amount of music imported from CDs, or lots of home videos, you may want to store your entire library on an external drive. Before and after you migrate your library to an external drive, run List MIAs (donationware, bit.ly/listmias) to verify that files for all items are where iTunes expects them to be. Once that's done, create an empty folder on the external drive: in Finder, go to File > New Folder, and name it "iTunes Media."

Next, go to iTunes > Preferences > Advanced and ensure "Keep iTunes media folder organized" and "Copy files to iTunes Media folder when adding to library" are enabled. The former causes files to be renamed and reorganized; it's not strictly necessary, but without it some people report finding broken links in their library, notably where media was originally stored outside of the iTunes Media folder.

Click the Change button next to "iTunes Media Folder location," navigate to the folder you just created, click Open, then click OK. You'll be asked to confirm that iTunes should move and rename files in your new iTunes Media folder. Click Yes.

Choose File > Library > Consolidate Files to begin copying from your Mac to the external drive. Make sure the drive is connected to your Mac when you want to play content in iTunes. After migrating, use List MIAs, mentioned earlier, to check for broken links, and follow bit.ly/itunesloc to fix them.

>>> **THE LIST MIAS** tool is an AppleScript that helps you out with situations like this. It runs through all the items in your music library and checks the files they link to actually exist.

However, you don't fix broken links from its window; you still do so in iTunes, which cleverly scans for any other missing files relative to the one you point it at.

Make iTunes your own

Add music from CDs and other download stores, plus album artwork and other media - including internet radio streams



ONCE YOU'VE REDISCOVERED old iTunes Store purchases, you may want to start adding more content to your library. Although you can sign up for Apple Music to access millions of tracks, you might add music from CDs, or tracks you've purchased elsewhere online.

While ripping music from CDs is less common these days, you may well have other media you've purchased online from Amazon or maybe even artists' own websites, or downloaded for free from sites like Soundcloud (soundcloud.com). One little known feature of iTunes is that adding this content to your library is as simple as using the copy and



> Radio Gaga



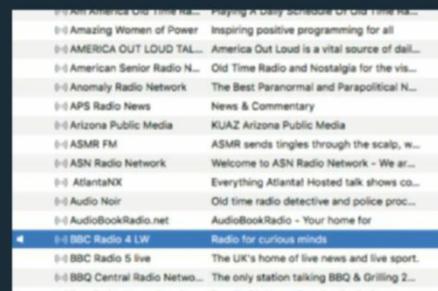
THERE ARE thousands of stations available as streaming internet services, and you can listen to many of them in iTunes.

To get started, select Internet Radio from the pop-up menu near the top left of the app. If you don't see this option in the list, choose Edit Menu instead and follow the steps we've listed in the main article to add it.

As there are so many stations, iTunes lists them by category, such as

Classic Rock. Click the small gray arrow next to a category to see the available stations of that kind, then double-click one to start streaming it.

If a radio station isn't listed, go to File > Open Stream. Type the stream's address and click OK. Any stations you stream this way are automatically added to a playlist named "Internet Songs." You can edit the name and other metadata for stations in this playlist the same way as other library items: select one and press **C+I**.



Double-click on an internet radio station to begin streaming it. Choose File > Open Stream to add a new station by entering its address.

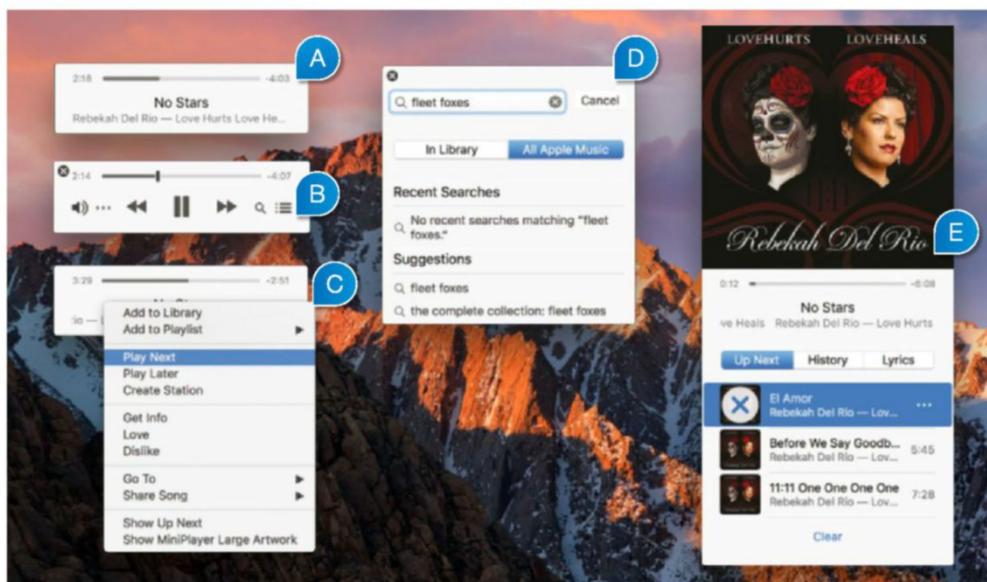
HOW TO Use the MiniPlayer

A The MiniPlayer can vary in size, showing as little as the current track's name, artist, and elapsed time.

B Put the pointer over the MiniPlayer (in any of its configurations) to reveal additional controls.

C With those controls visible, click the ellipsis to reveal commands related to the current track, and to show or hide artwork and the Up Next playback queue.

D Click the magnifying glass (or press **⌘+F**) to search for tracks - either in your library or Apple Music's catalog - to play immediately or queue up for later.



E Click the bulleted list to show or hide the queue, or drag the window's bottom edge down to reveal album

art and then the queue. Drag up to hide them again in the reverse order. Put the pointer over a result from your library

and click the ellipsis for queuing options. (Clicking an Apple Music item reveals it in iTunes' main window.)

> Check iCloud Music Library upload status



WHEN YOU connect iTunes to iCloud Music Library, tracks that aren't available

in Apple's huge catalog are uploaded to your online library. Fortunately this doesn't use up any of the storage quota for your iCloud account.

iTunes downsamples files that are above a certain quality into 256Kbps AAC files, yet the high-quality original on your Mac is

left untouched. Tracks are ineligible for upload if they're too long, their file size is too large, or they're encoded at too low quality. Apple describes the conditions at apple.co/2tqmbHk.

To find out if any of your tracks have failed to upload, choose File > New > Smart Playlist. Set the playlist's rules to match the iCloud Status of tracks to any of "Ineligible," "Error," or "Not Uploaded."

paste commands in Finder. Say you have a folder of MP3 files provided as a bonus for buying a vinyl album from an artist's online store, which is a fairly common thing these days; simply copy or move that folder to the one named "Automatically Add to iTunes." You'll find the latter folder located in /Users/<your username>/Music/iTunes/iTunes Media by default. If you followed the steps to transfer your iTunes Media folder to an external drive, as detailed in the previous section, navigate to the folder there instead.

In this location, place your music and/or video files in the "Automatically Add to iTunes" folder and they'll be added to your library when iTunes is open. Note that this only works for files that are in a format iTunes can understand, such as MP4 video files and MP3 and AAC audio files.

MANAGE YOUR METADATA

When you import an audio CD to iTunes, the app connects to the online Gracenote database to look up info about the disc's artist, tracks, and artwork.

If the album isn't in the database, you'll see a list of numbered track titles and no album cover, and the title may also be incorrect. Follow the steps in "Customize your albums" to fix this.

After you update a disc's details and import its contents, you may find no image of its artist is shown in iTunes' Artists view of your music. If you have an Apple Music (or iTunes Match) sub, you can fix this in iTunes > Preferences > General by turning on iCloud Music Library. If the artist has material in Apple Music's catalog, their picture will be shown in the Artists view after the app next auto-updates your online library, or after forcing a manual update using File > Library > Update iCloud Music Library.

Enabling iCloud Music Library makes music in iTunes on your Mac available online. It can take a while to upload the tracks, depending on the size of your library, how many tracks can be matched against Apple Music's catalog, and the speed of your internet connection. If content from your library isn't in Apple Music's catalog, iTunes automatically uploads it (with some exceptions – see "Check iCloud Music Library uploads").

Using iCloud Music Library on your Mac enables music you add to iTunes to be played on other devices you also connect to it – on other Macs and PCs, iPhone, iPad, and Apple TV.

MINI TREATS

While our guide mainly focuses on music and video, iTunes can play many kinds of content that aren't listed by default. To discover them, click the pop-up menu near the top left of iTunes and choose Edit Menu. Put a check mark next to media types you want to organize and play in iTunes. Click Done, and you'll be able to choose those kinds of media from the pop-up from now on.

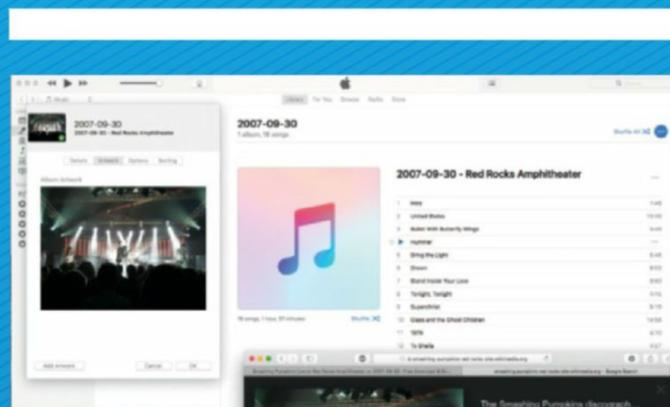
The additional media you can play in iTunes includes internet radio stations. See "Radio Gaga" on the previous page to learn how to set this up. You can listen to Beats 1 without an Apple Music sub, though other features under Radio require one.

If you want to keep an eye on what's playing, consider using iTunes' MiniPlayer instead of switching between iTunes and other apps. This is a smaller window that shows the currently playing track. You can extend its height to reveal the Up Next queue, and search your library or Apple Music's to line up things to play. To switch to it, choose iTunes > Window > MiniPlayer.

While the MiniPlayer is convenient, it's also easy to lose track of it among other windows. In iTunes >

Preferences > Advanced, put a check mark next to "Keep MiniPlayer on top of all other windows" to avoid this. You can drag the MiniPlayer to a new position on the desktop. However, note that it won't be shown when you're using an app in full-screen mode.

Hopefully our guide will have convinced you that iTunes is a powerful media manager with hidden depths that make it worth engaging with. If there are features you'd like to see added or improved, you can share your thoughts with Apple at apple.com/feedback/itunesapp.html.



> Customize your albums



IF AN audio CD isn't recognized by the Gracenote database, the album will lack proper artwork. In this instance, if you've already imported the album into iTunes, go to your music library and look under Recently Added, **⌘**-click the album's placeholder artwork and choose Get Info. iTunes will ask to confirm that you want to edit multiple items. Click Edit Items to open a new window.

Select the Artwork tab. This will simply show a blank space. To add artwork, either drag an image from Safari or Finder and drop it onto the space, or

click the Add Artwork button to find an image on your Mac.

At this stage, you may also want to click on the Details tab to update the album's title, artist, year, and so on. Use the Options tab to set the media kind, or to ask iTunes to remember the playback position for this track between sessions, which is switched off by default. You may want to amend the last two attributes for an audiobook, for example.

Under Sorting you can set the order things are listed in your library. Artists are sorted by first name by default, but you can assign separate names for display and ordering.

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APP LIFE

THIS MONTH'S MOST INTERESTING IPHONE & IPAD APPS

Affinity Photo

Professional image editing on the iPad

\$29.99 From Serif Labs, affinity.serif.com

Made for iPad **Needs** iOS 10.3 or later, iPad Pro, iPad Air 2, iPad (2017)



Here, for the first time, is a complete professional photo editor on the iPad.

Compared to its acclaimed macOS version, the neat dark interface has been adapted to save space, with palettes docked into a single column at the right and tools down the left that change according to the mode – or “persona” – selected at the top. Photos can be imported from the

Photos app or iCloud Drive, but not directly from other apps or Dropbox.

When you open brushes or filters, their controls appear at the bottom and stay in place while you open other palettes, until something overrides them. That can get confusing, but it’s vital when, say, you want to watch the histogram to check the effect of an adjustment. Alternatively you can display a vectorscope or



The Refine Selection tool can help to clean up and smooth complex outlines.

RGB parade – tools more familiar to video colorists – or a power spectral density plot, used in scientific analysis. You don’t even get all these options in Adobe Photoshop CC, which would cost you the same for two months’ subscription as it does buying Affinity Photo outright. The Frequency Separation filter

APP TIPS

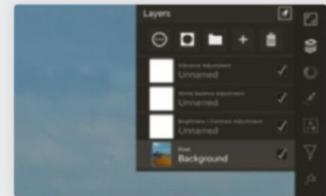
Get the most from editing features



The movable Before/After preview lets you judge changes as you make them, halving the view or showing the whole image twice.



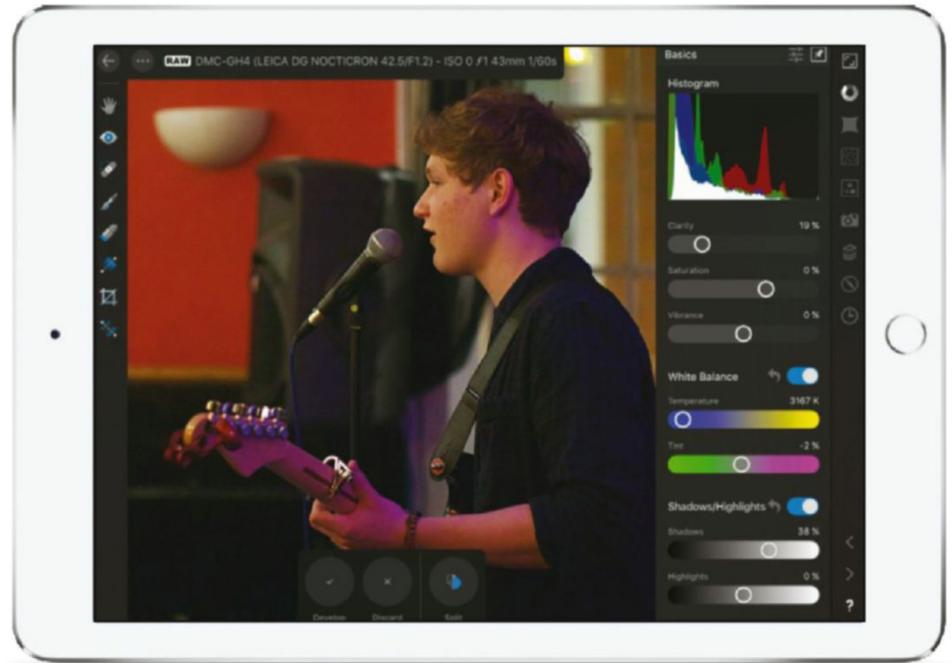
The Frequency Separation filter quickly splits an image’s detail and color into separate layers, which you can edit to remove blemishes seamlessly.



Adjustments and filters are applied in separate layers by default, so you can reverse the changes you make at any subsequent point.

splits out the detail in an image from the shading so you can edit them as separate layers, an essential pro portrait-retouch technique. Unlike other iOS graphics apps, Affinity Photo lets you edit images in CMYK or LAB color as well as 8- and 16-bit RGB, and handles raw files too, in its Develop persona. Images can be stacked for HDR processing, focus merging, and more.

If that all sounds a bit technical, a batch of video tutorials can get you started, and a text-based help guide is available from the main screen. But if you just have simple tasks in mind, all the filters and adjustments you would expect are reasonably accessible. Layers, masks, and channels work in familiar ways, and the Selection persona offers tools like the Smart Selection Brush and Refine Selection to tackle complex edges. Layers can take effects such as soft shadows, useful when you add vector shapes and text. Affinity Photo imports and exports layered



PSD files, among other formats, although it can't save clipping paths.

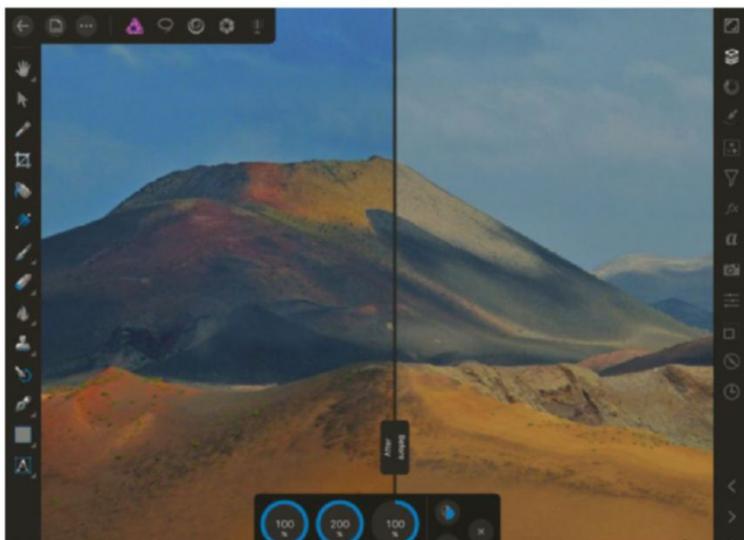
A few key tools, such as Levels and Highlights/Shadows, didn't work the way we expected them to, and we missed the ability to instantly check the RGB or CMYK value of a pixel. Only one palette can be open at a time, and to close it you have to find and tap its

icon again; a "Close the open palette" button would be simpler. We'd like more keyboard shortcuts and less glitching: A few operations slowed the app to a crawl, and it crashed occasionally, although automatic saving meant we lost hardly any work.

Unlike a mouse or graphics tablet, using the touchscreen does risk your finger getting in the way, and for that reason we found the iPad Pro's Apple Pencil easier to use – but you can manage without it.

THE BOTTOM LINE. Affinity Photo is a triumph: an iPad app made for serious creative users, with room to get even better. **ADAM BANKS**

Raw photos can be imported from most DSLRs, so you can edit with no loss of quality.

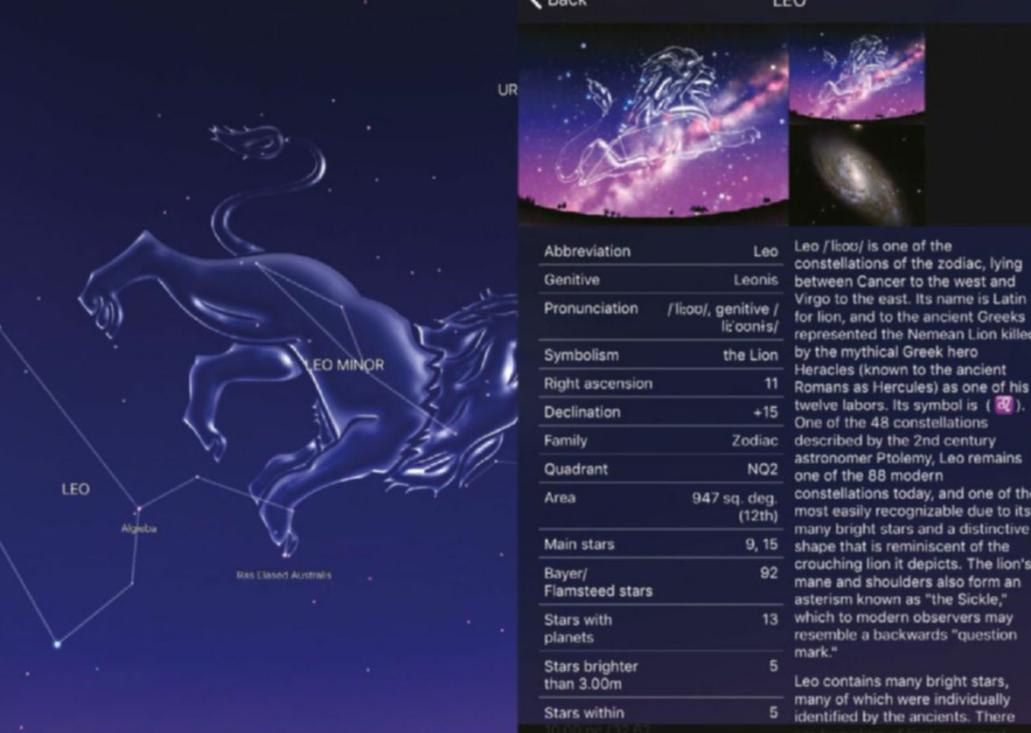


Modern features like Haze Reduction make it easy to get the best from your photos.

AFFINITY PHOTO

- Comprehensive tools reflect pro methods
- Generally responsive and highly usable
- A few niggling omissions
- Interface can get mildly confusing

EXCELLENT ■■■■■



The detail available on every constellation, like this entry for Leo, is incredible.

settings designed to get the best possible shot of whatever you're trying to photograph in the sky, from a bright constellation to a single planet. Bear in mind, though, it's not going to work miracles.

A couple of features are only accessible with a monthly subscription. The first of them enables you to tour the moon-landing sites recreated from the Apollo 11 and Apollo 15 missions. The other premium feature is Night Sky Tonight, an animated view of the sky above you from sunset to sunrise the following morning. We wish it were possible to view this full-screen, though.

The wealth of data and information that's available in Night Sky is incredible – everything you could want to know about every satellite, constellation, and planet is here. Apple TV and Watch apps are included, the latter using Series 2's GPS and gyroscope to enable identification of things in the sky by raising your wrist.

THE BOTTOM LINE. Whether you're an astronomy geek or have just a passing interest, Night Sky is a fascinating joy.

KENNY HEMPHILL

NIGHT SKY 4.4

- Masses of detailed information
- Explore sky from around the world
- New data on light pollution and stargazing conditions
- There's no one-off premium price

EXCELLENT ■■■■■

Night Sky

Twinkle, twinkle, little star...

Free (Premium subs: \$1.99/mo, \$9.99/yr) From iCandi, icandiapps.com

Made for iPad, iPhone, watchOS, Apple TV **Needs** iOS 9.3 or later



Night Sky enables you to view constellations of stars and planets – not to mention satellites – on your iPhone or iPad, in real time. Hold your device up to the sky and the app tells you exactly what you're looking at. An augmented reality view overlays the constellations, planets, and names on the

view from your iPhone's camera. You can, of course, pan and zoom to see more or less detail as you gaze.

There's a great deal more to Night Sky than that, however. Version 4.4 brings several new features including a World Traveler mode. This allows you to choose any location on the planet and explore the sky from that area. There's information on light pollution and stargazing conditions, as well as rise and set times for the sun and moon.

Also new in 4.4 is VoiceOver support, and a section that provides detailed information on the 2017 US solar eclipse, showing the event from different locations complete with timings.

Night Sky also has an astro-photography tool that provides you with camera

World Traveler mode lets you see the sky from anywhere on the planet.



Adobe Scan

Makes great PDFs with character recognition

Free From Adobe, adobe.com

Made for iPhone, iPad **Needs** iOS 10.0 or later



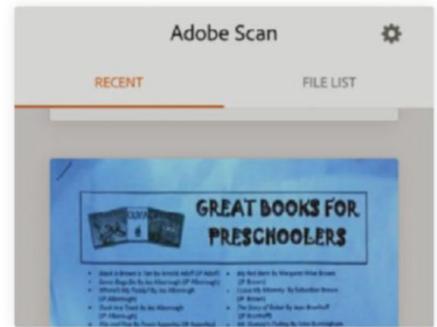
Adobe Scan is yet another app that uses your device's camera to capture images of documents and turn them into PDFs. But it justifies its existence by making great PDFs fast, with free and automatic optical character recognition – so you can search for text in them and copy and paste that content elsewhere.

Auto-Capture does a wonderful job even in low light, highlighting your document in blue so you can confirm it's looking at the right thing. Or you can turn off Auto-Capture to scan manually, and even create PDFs from images already in your photo library.

By default, Scan saves your data to the Adobe Document Cloud, which includes 2GB of storage for free accounts. But you can also use the Share option to send the scanned PDFs to other apps, including Mail, Messages, Dropbox, and Documents.

You can't do any PDF editing or markup inside Scan, however. You need Adobe's free Acrobat Reader app for iOS (or another PDF app) to annotate and sign your PDFs, but they show up there seamlessly via Document Cloud, and ready to be searched, marked up, commented on, and highlighted.

Both Scan and Acrobat Reader include an optional in-app purchase called PDF



Adobe Scan's minimal interface shows your PDF files and lets you scan new ones.

Pack, which, for \$9.99 a month, lets you combine PDFs and convert them to editable Microsoft Office documents or images. But otherwise Adobe Scan delivers without costing a penny.

THE BOTTOM LINE. Adobe Scan works fast and produces solid results for free. **SUSIE OCHS**

GREAT ■■■■■

Documents 6

One app for any file and any cloud

Free From Readdle, readdle.com

Made for iPhone, iPad **Needs** iOS 9.0 or later



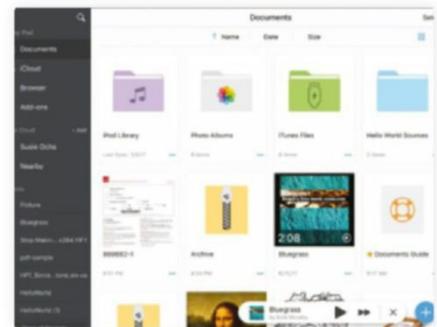
Documents 6 is a great app with terrible timing. In iOS 11, Apple will roll out Files, a reimagining of the iCloud Drive app that also supports other cloud services. That's the same as Documents, but Readdle's app goes even further.

You can download files from the web via a speedy built-in browser, add them directly to Documents from iTunes, or choose "Copy to Documents" from the share sheet throughout iOS. Then it's easy to view files, move them, or even zip a folder into an archive to send. Readdle even nailed drag-and-drop on the iPad before it's added to iOS 11. You can drag a

file between Documents on one half of an iPad screen and another Readdle app (Spark, Scanner Pro, or PDF Expert) on the other half. It works seamlessly.

Even with iOS 11 around the corner, Documents is worth having for its flexibility. You can listen to music stored in your iTunes library or streamed from the cloud, plus watch video files that Apple's player doesn't support. You can connect to a WebDAV, SFTP, or FTP server, not to mention Dropbox, Box, SharePoint, OneDrive, Google Drive, Windows SMB, and Yandex.Disk.

The app's main drawback is that some of its abilities depend on other Readdle



Documents 6 has a clean, intuitive design and provides you with plenty of help.

apps – if you try to mark up or sign a PDF, you're prompted to install the \$10 PDF Expert first. But you can always send files to other apps (such as Notes, in the case of that PDF) to finish a task.

THE BOTTOM LINE. Documents 6 is key if you've got files in multiple clouds. **SUSIE OCHS**

EXCELLENT ■■■■■



Old Man's Journey

May the road rise to meet you - literally

\$4.99 From Broken Rules, oldmansjourney.com

Made for iPhone, iPad **Needs** iOS 10.0 or later



Old men. Heartbreak. Redemption... And lots and lots of walking. These are the main ingredients of Old Man's Journey, a story told through wordless vignettes of one man's life as he walks across hills, mountains and seas to find... something. You are his guide, of sorts, dragging the

scenery around him to clear the path and help him continue. You can pull up hills to meet his feet, creating zig-zags of landscape, or leave him to pause on an immovable part such as a house, bench, or lighthouse, as you rejig the curves of the land to create a way forward - since you can't move anything he's on.

There's a lot of fun to be had manipulating the undulating countryside and pulling boats across water with your finger. It feels responsive, and gentle, as the curves of the hills slide up and down to where you want them. There's also the calming pleasure of interacting with small objects in the background, such as window shutters, trees, and waterfalls, which react to your touch in various ways. It's a well-thought out piece of design



The use of color in this game is simply beautiful, going from sunsets to candy-colored hills.

that doesn't affect the plot in any way, but gives you a little spark of happiness for making a mark on the game.

The world feels vibrant and alive, done in a memorable, gorgeous pastel crayon style. It's cleverly reminiscent of something Mediterranean, all soft terracotta and azure colors, flowers climbing up the plaster of a hotel wall, soft clouds scudding across a blue, blue sky. The game never explicitly reveals where it's set, but you can imagine a Greek coast, a small Italian island, or the south of France, sun-faded and lilac-scented.

The small vignettes - the old man's memories - are so perfectly painted and composed that you'll want to linger on them for as long as possible.

Old Man's Journey can be slow and even a bit frustrating at times - one section set on a train particularly so - but it just doesn't really matter when the story and the view are both heartwarming, purely good.

THE BOTTOM LINE. One of the most beautiful games we've seen in a while, with a story that'll make you weep. **KATE GRAY**

OLD MAN'S JOURNEY

- 📱 Seriously beautiful art
- 📱 Simple, and easy to figure out
- 🎧 The music is worth putting on headphones
- 🔴 Can be frustrating sometimes

AWESOME ■■■■■

ArtPassport

Visit 360-degree art exhibits

Free From GalleriesNow, galleriesnow.net

Made for iPhone **Needs** iOS 9.0 or later

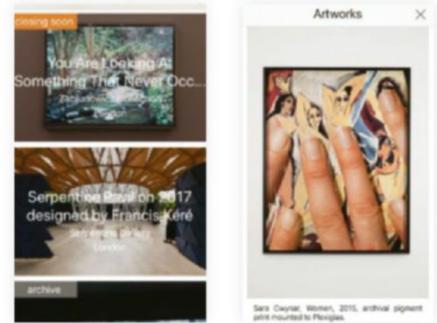


ArtPassport does one thing, but it does it well, showing 360-degree views of art galleries from around the world. You can immerse yourself in current and archived art installations, and not just one or two – the scrollable, searchable list has nearly 100 choices and counting, from 35 cities in 23 countries around the world.

Tap one to learn more about the artist and exhibition, and then tap Artworks to swipe between close-up views of each piece to get their names and details, or tap Visit to find out how to see the art in person. The real attraction is tapping the

big “360” button to be dropped into a 360-degree view of the gallery. From there, just rotate your device to see all around you; the artworks can be so much more stimulating in context than just viewed on their own. You can even zoom in and out.

You don't get to “walk” through the gallery, but most of them have multiple 360-degree views so you get a good look at everything in the room. If you have a Google Cardboard viewer or mobile VR headset, you can tap the VR button for a stereoscopic view, which is more immersive since you just move your head to look around, but also means you lose



New exhibitions and artists from around the world are added constantly.

the zoom feature. ArtPassport doesn't have an iPad version – probably because there's no Google Cardboard for iPad! – and that's too bad because the 360-degree gallery views would look great on a bigger screen.

THE BOTTOM LINE. A worthwhile download for any art lover. **SUSIE OCHS**

GREAT ■■■■■

Sway

Meditation in motion

\$2.99 From PauseAble, pauseable.com

Made for iPhone **Needs** iOS 8.0 or later



A lot of meditation apps want you to sit perfectly still, close your eyes, and listen to some blissed-out voice reminding you to keep breathing. If that's not your idea of relaxing, Sway is worth a look. It doesn't mind if you keep your eyes open. It doesn't have any talking at all, just peaceful, calming tones and sound effects that put you in almost a trance-like state. And you don't have to stay still. In fact, you have to keep moving to keep meditating.

Sway is an interactive meditation app, focusing your attention on slow, repetitive movement, kind of like tai chi,

one of its inspirations. This makes it a more natural fit for noisy environments than guided meditation, which works best in a quiet space. To keep a Sway session going, you have to keep your phone in constant motion – not too fast and not too slow, or a tone and message on the screen prompt you to adjust.

You start with a three-minute goal, which increases by one minute each day, with an ultimate goal of 20 minutes. Best of all, there's no subscription fee, just a one-time purchase that gets you six levels that unlock one by one – but if you don't stay at it, you drop a level, in order to encourage good habits.



Once you hit the day's goal, the session doesn't end – and you won't want it to.

Movement is the focus, but we wish the app had a “work mode” where we could put the phone down but keep Sway's sounds playing, because we think we could listen to them for hours.

THE BOTTOM LINE. Even in noisy surroundings, Sway brings us inner peace. **SUSIE OCHS**

AWESOME ■■■■■

Arkanoid vs Space Invaders

Make space for this one to invade your iPhone

\$3.99 Developer Square Enix, square-enix.com

Made for iPhone, iPad **Needs** iOS 8.0 or later



Seemingly designed to tweak nostalgia glands, Arkanoid vs Space Invaders combines two of gaming's oldest designs in a fusion of frantic one-thumb gameplay, thumping techno music, and eye-searing neon.

Half the game is borrowed from Breakout, where you smashed balls at walls of bricks. The rest is ancient blaster Space Invaders, in which hordes of blocky foes once slowly descended, aiming to take over the world.

The mash-up bit is where Breakout revamp Arkanoid comes in. In that title, the bat was a spaceship, smacking

ordinance at evil space bricks. Here, you get the bricks, but no ball – your bat is used to send the aliens' projectiles back at them.

It's a bit weird at first – and slow, too. You wonder why the heroes aren't equipped with actual weapons, and why early levels are surprisingly boring as you send the odd bullet back towards lazily whirling invaders. But about 20 levels in, Arkanoid vs Space Invaders actually starts to click.

First, you realize your enemy is time, not the invaders – you must smash enough craft or bricks before the clock runs down. This becomes increasingly



Smash the invaders' bullets back at them, as bricks and enemies whirl menacingly.

tough, adding a layer of strategy to the mix. Secondly, everything speeds up, not least when you venture into the deranged hard mode, which wipes seconds from the clock for every missed projectile.

The result is a great blast, and there are even some cameos, with famous Taito faces from the likes of Bubble Bobble enlisted to power-up your bat.

THE BOTTOM LINE. A slow starter, but this arcade blaster is bright, noisy, one-finger fun. **CRAIG GRANNELL**

GREAT ■■■■■

Monument Valley 2

It's all a matter of perspective

\$4.99 Developer Ustwo Games, monumentvalleygame.com

Made for iPhone, iPad **Needs** iOS 9.0 or later



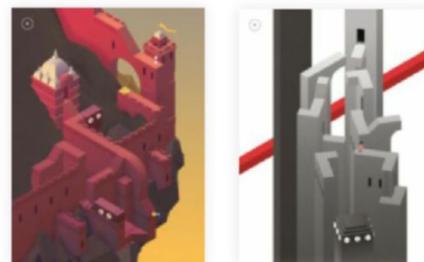
Let's cut straight to the point, for those of you who never played the 2014 original: you know the sort of brain-melting Escher prints of impossible pathways you'd see hanging on a math teacher's classroom wall?

Monument Valley is a succession of them, turned into an indie puzzle game. You control Ro and her pint-sized daughter, nudging them gently along pathways, over bridges and through doorways. The catch? You've got to build them yourself.

At first, this is simple stuff – twirling basic segments around so that they connect up from a different angle (just

don't ask us how that geometry works). Later, you'll have to hone your spatial awareness, as you pull out segments of floor and manipulate them in isolation before returning them to the layout – keeping your fingers crossed that you've got it right all the while.

If we're entirely honest, we didn't come up against any puzzles that couldn't eventually be solved by trial and error – but mindlessly shifting shapes until they click into place is far less rewarding than actually putting in the brainwork. It's all bundled up with the occasional vaguely philosophical quote, but if you're not the studious type you



When you rotate part of the level on the right, the whole darn thing shifts about at once.

can always sit back and let it wash over you. And my, what a beautiful wash it is.

The closest equivalent, aesthetically, is PlayStation 3's equally mystifying Journey, but (original aside) there's little that compares in gameplay. Looks like you've found a video game your math teacher would approve of, after all.

THE BOTTOM LINE. This stunning sequel to the much-acclaimed puzzler is absolutely muddly lovely. **EMMA DAVIES**

EXCELLENT ■■■■■

ROUNDUP

Six apps to grow your garden

Tap your way to green fingers with these six downloads

BY EMMA DAVIES

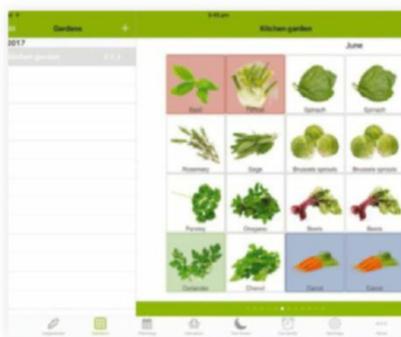
There's no denying that gardening is a rewarding hobby, but it can also be demanding, frustrating, and often downright confusing, especially if you're new to it. So if summer's got you itching to get outside with a trowel, this handful of apps will get you growing like a pro in no time.

For many people, there's a lot of appeal in producing their own veggies. **MY POTAGER** (\$0.99, iPad and iPhone) is the ideal companion for your kitchen garden, enabling you to lay out your plot, keep track of how your harvests are going, and look up information on your various herbaceous delights. There's even info on the phases of the moon, if you think that sort of thing makes a difference.

If stats are your thing, try **ePLANT** (Free with in-app purchases, iPad and iPhone) to keep track of how your garden grows. You can log what you've done to every plant – whether



Never considered kale a decorative crop? Think again, says My Garden Containers.



Tagging something "Planted" in My Potager turns it blue; harvested tiles are red.

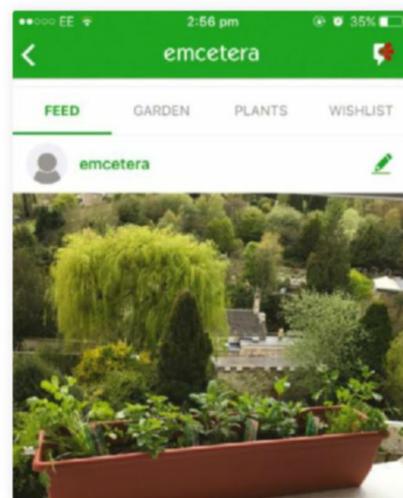
that's the usual watering and fertilizing, or something more exotic such as repotting, pruning, or even a friendly chat – you know what they say! Watching seedlings' measurements means you can easily see what's had an effect, too.

Sadly, not everyone has room for a full set of flowerbeds, so if you're short on space, **MY GARDEN CONTAINERS** (Free, iPad and iPhone) will help you make the most of what's available. An encyclopedia of pot-friendly plants and how to help them thrive, it lets you filter by a range of criteria. So if you want a purple bloom that lives in the sun and can handle your neglectful watering habits, looks like it's celosia for you.

If the environment is important to you, you're likely keen to keep the bees coming to your yard. **BEE SMART POLLINATOR GARDENER** (Free, iPhone) lets you search by ZIP code to see what kind of ecological area you live in, and then recommends the requisite greenery to attract your industrious insect friends.

It's good to have goals, which is where **PERMACULTURE** (Free, iPad and iPhone) comes in. The brainchild of an Australian couple pursuing a sustainable lifestyle, it's full of articles and videos detailing eco-friendly projects. It might not all be achievable for a layman, but you'll certainly absorb some fascinating knowledge.

Finally, when your family and friends tire of hearing about your fondness for foliage, get yourself on **GARDEN TAGS** (Free, iPad and iPhone). Essentially Instagram for horticulture, it enables you to follow other gardeners, publish pictures of your own plot, and even set upcoming task reminders for the plants in shot. As a bonus, being able to tag your photos by the season in which they were taken means it's also a great way of keeping a visual record of the year's progress.



Here's our herb garden – we're just waiting for the Garden Tags likes to start pouring in.

Apple WATCH

APPS AND GUIDES TO GET MORE FROM YOUR WATCH

Elk

A travel currency converter on your wrist

Free From Clean Shaven Apps, cleanshavenapps.com

Made for iPhone, Apple Watch **Needs** iOS 9.3 or later

Despite the recent high-profile departure of apps like eBay, Google Maps, and Amazon from watchOS, there are still plenty of independent developers willing to support the smartwatch platform. Among the latest is Clean Shaven Apps, whose latest effort is a travel currency converter – and no, that’s not a typo.

While it may seem like a curious decision nine years after the App Store gold rush,

Elk takes a unique approach that requires no keypad number entry. That’s not actually as limiting as it sounds, since you can swipe left to increase the values or right to decrease. Should you require greater accuracy, tapping a value allows for more granular control by turning the Digital Crown.

Although Elk is technically free, that only gets you support for your local currency, plus a curated selection of five popular rates – which kind of defeats the purpose. To unlock the full currency lineup, there’s a one-time \$3.99 in-app purchase available through your iPhone, or you can opt for a free 14-day trial to take the full version of Elk for a spin before buying.

Despite it being optimized for watchOS 3, we did have issues launching Elk for the first time on our first-gen Watch – but uninstalling, rebooting the smartwatch, and reinstalling got things working. To be fair, this happens a lot on our device, but Elk seemed to be more



stubborn than normal; the Watch app also failed to properly recognize the free trial had been activated.

THE BOTTOM LINE. Spend some time with the free trial before committing to buy, then wait for more bug fixes.

J.R. BOOKWALTER

ELK - TRAVEL CURRENCY CALCULATOR

- 📍 Location-based currency calculator
- 📱 Works better on Apple Watch than on iPhone
- 🔴 Installation, in-app purchase bugs
- 🔴 Free version limited to six currencies

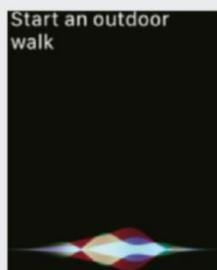
SOLID ■■■■

WATCH TIP

Quickly start a workout

Here’s an oldie but goodie worth repeating: Rather than open Workout with finger taps, raise your wrist and say “Hey Siri” followed by the type of activity you want to engage in. For example, before heading outside for a walk, initiate a

workout by saying “Hey Siri, start an outdoor walk.”

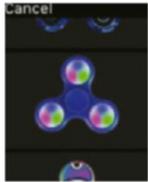


Fidget Spinner Plus

Is this *still* a thing? Apparently so...

Free From Paul Dumais

Made for iPhone, iPad, Apple Watch **Needs** iOS 9.0 or later



Readers with kids will instantly recognize the subject of our next app. Fidget Spinner Plus is yet another simulated version of those

annoying real-world plastic widgets found in retail stores everywhere.

Unlike the real thing, this won't cost you a dime, and there are 14 different spinners to choose from – or you can create your own using one or more custom colors on the iPhone app.

On Apple Watch, turning the spinner is done by rotating the Digital Crown or multiple taps or swipes on the display,

while Force Touch changes to a different type of spinner. There's even a Complication that can be used to launch your favorite spinner right from any supported Watch face.

There are no sound effects on Apple Watch, but the ad-supported iPhone app offers audio plus a game play field where you can bounce the spinner around the screen, plus Battle Mode for playing with two spinners at once.

THE BOTTOM LINE. Mildly entertaining, but it works better on iPhone. **J.R. BOOKWALTER**

SOLID ■■■■

Color Pong

The future of Pong is finally here!

Free From Pallavi Kalyanam, pallavi.vijayanathan.com

Made for iPhone, iPad, Apple Watch, Apple TV **Needs** iOS 10.1 or later



As the name implies, Color Pong is a clone of sorts of the Atari arcade classic that you can purchase once and play on all of your non-Mac

Apple devices – including Apple TV and Apple Watch. That sounds like a pretty great deal considering the app is free, but the experience isn't quite ideal when playing from your wrist.

Although Watch owners play against the app – there's no two-player mode – turning the Digital Crown moves both paddles at the same time. This isn't a problem in and of itself, but sometimes

the ball accidentally bounces off the net instead, not to mention it moves a tad too slow.

Sadly, the gameplay is also hindered by choppy frame rates, but at least there are some basic sound effects to spice things up a bit. There's nothing new here, and we've certainly seen better Pong imitators for Apple Watch, but it's hard to argue with free.

THE BOTTOM LINE. Choppy, buggy gameplay mars an otherwise decent take on an arcade classic, now in color. **J.R. BOOKWALTER**

OKAY ■■■■

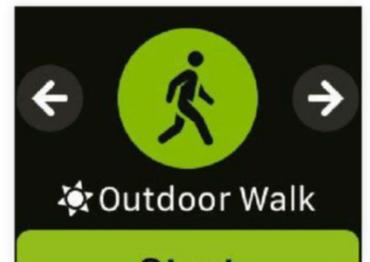
HOW TO

Use StepsApp as an activity tracker



1 STEP COUNTING

Open the free StepsApp on your Apple Watch to view an up-to-the-minute graph of your step counts and calories burned, plus miles and minutes walked.



2 ACTIVITY TRACKER

Instead of using watchOS's built-in Workout app, swipe left in StepsApp, find the desired activity from the list by tapping on either arrow, then tap Start to begin.



3 NOW RECORDING

After a short animation, StepsApp begins recording your workout, merging new app data with the Health account already synced on your device.



REVIEWS

TOUGH TESTING, TRUSTED RATINGS

21.5-inch iMac with Retina 4K display (Mid 2017)

The 4K iMac gets the extra power and speed it deserves

\$1,499 From [Apple, apple.com](http://Apple.com)

Features 3.4GHz quad-core Intel Core i5 processor, AMD Radeon Pro 560 with 4GB video memory, 8GB memory, 1TB Fusion Drive, 2x Thunderbolt 3 ports, 4x USB 3.0 (Type-A) ports, SDXC card slot, Gigabit Ethernet, 802.11ac Wi-Fi, Bluetooth 4.2

Believe it or not, the 2017 models of the 4K iMac are the first updates since the original debuted in October 2015; Apple's desktop Macs have had it very quiet of late. When it came out, this was a bit of an oddball machine. For a lot of people, it ought to be a nearly ideal desktop computer - with a fantastic, highly detailed display for viewing photos or working, the power of a quad-core processor, and the inherent advantages of a desktop, such as lots of ports and a large amount of storage fitted as standard.

But while it was good, the first version had its disappointments: It came with a slow 1TB, 2.5-inch hard drive, instead of the Fusion Drive that always should have been the minimum; and its visuals felt a bit underpowered, as they were delivered by Intel's integrated graphics chips, rather than a dedicated GPU. That was okay for basic use, but didn't give much room for intensive tasks that benefit a lot from a powerful graphics processor. It was, in short, half-baked.

However, with another 20 months in the oven, the 2017 models have risen to a much

more impressive finish. For a start, you can now get a 4K model for less money than before.

When the 4K iMac launched in 2015, it cost \$1,499, and it was the top-of-the-range 21.5-inch model, with two non-4K models below it. In the 2017 range, there's the equivalent top-of-the-line \$1,499 model that's reviewed here, but also a new \$1,299 Retina 4K model.

There's also an even cheaper \$1,099 entry-level iMac, which is equipped with just a dual-core processor and an integrated Intel Iris Plus Graphics 640 processor. Given all this, and that model's 1920x1080 display, which lacks the wider color gamut of the Retina 4K display, we strongly recommend spending at least the extra \$200 to get much better bang for your buck.

So what do you get for more money? **Front and center is still the gorgeous Retina 4K display; at 4096x2304 pixels, it's actually slightly higher resolution than the Ultra HD 4K broadcasting standard (3840x2160) used by regular TVs.** This doesn't mean much in

21.5-INCH IMAC WITH RETINA 4K DISPLAY (MID 2017)

- ▶ Excellent 4K display
- ▶ Big graphics boost...
- ▶ ...though still not that strong for the money
- ▶ Divisive keyboard

GREAT ■■■■

practice, yet it's nice for videographers working in the Cinema 4K standard, which is 4096 pixels wide. Some DSLRs record at this res, so it's not *that* obscure a thing to want... just pretty obscure.

LOOKING SHARP

The important thing is that the display is super-crisp for viewing photos, can provide a huge amount of working space for documents and windows if you tweak the settings, supports the P3 wide-color gamut to make compatible images (including those taken on an iPhone 7) look more realistic than on other screens, and is now brighter than before. That last attribute helps reduce the reflectivity of the screen - this year's models are among the best iMacs Apple has made for cutting down on reflections - and is generally impressive at making everything look super-vibrant. Colors really pop on this iMac's display, and the sheer number of pixels is brilliant for viewing your photos, without the slightly monstrous screen size of the even-more-detailed 27-inch 5K iMacs.

Next up, the processor: it's a quad-core 3.4GHz Intel Core i5, compared to a 3.1GHz quad-core unit in the previous



Apple's aluminum craftsmanship is beautiful, but the iMac's design feels ready for an update.



The display is more impressive than ever, and less reflective, thanks to improved brightness.

SPEAKING OF LOW-HANGING FRUIT THAT APPLE HAS FIXED, YOU NOW GET A FUSION DRIVE AS STANDARD

version. (The \$1,299 model in this year's range now has a 3.0GHz quad-core i5). As is often the case with these generational updates, the difference between their speeds seems pretty small, and practical results bear this out.

In our tests using Geekbench, the improvement was a little under 10 percent for both single-core and multi-core operations. When we ran our real-world test of a difficult video encode, we saw around the same gain. So, nothing groundbreaking, but then processor power was never a slouch in the 4K iMac anyway - those are good results that match the more expensive Retina 5K iMac. Even if you're planning to do programming or video work, this is still a strong performer.

The area in which we were really looking for improvement is graphics. Apple has gone from using a thoroughly middling integrated Intel graphics processor in the 2015 model to a much more capable discrete chip from AMD this time around. This is obviously

good for gamers, but it's great elsewhere, too - apps from consumer-level stuff like Photos to professional software such as Final Cut Pro use it to speed up many tasks. Skimping on its performance meant limiting the capability of these apps, but that's all changed.

PUSHING PIXELS

Gaming is one of the toughest tests, and the difference is huge in our Tomb Raider benchmarks. With the game set to render at 1920x1080 pixels, we saw a 66 percent improvement in frames per second (fps). When we set the game to render to the display's native 4096x2304 resolution, the difference was a colossal 92 percent - though we still only saw 12.3fps on this latter test, so don't expect playable 4K games unless they're a lot less complex than Tomb Raider.

Those results show exactly why we were so disappointed with the graphics last time, and it's great to see them fixed. This iMac still isn't blockbuster power for a \$1,499 machine - it's not capable of powering a virtual reality system, for example, which is a shame since Apple focused heavily on VR at WWDC - but with performance improvements coming in High Sierra plus the new breed of apps that make better use of graphics power, this is a pleasingly capable desktop.



The 4K iMac remains clean and simple at the back, with a central bulge tapering to the super-thin edges.

> What about the iMac Pro?

>>> YOU MIGHT BE

wondering whether the iMac Pro, due out this December, should affect your Mac buying decision now. It's a 27-inch 5K iMac, but it's quite a different beast to the regular 5K iMac (which we'll have a full review of next issue).

It has the same bright, wide-color display as the 4K and 5K iMacs in the

same chassis (except it comes in Space Gray), but with Mac Pro-level innards, hence the name... and the price: it starts at \$4,999, rather than the \$1,299 of the 4K iMac. Its processor is eight-core at minimum, rather than quad-core, and can be configured 10 or 18. It can take up to 128GB of memory, and its graphics card is made for

high-end 3D rendering, not a quick bit of Civilization VI.

In short, the iMac Pro is a beast, and put simply, if you have to ask whether it's for you, it's almost certainly not. It's for people who know they need all that power. Don't let the fact that it's coming later this year put you off buying a suitable iMac now.



The ports are generally identical to before, but with Thunderbolt 3's ludicrous speed and 5K display output.



The 4K iMac gives you a big, crisp display, without dominating your desk the way the 27-inch model (with Retina 5K display) does.

Speaking of low-hanging fruit that Apple has fixed, you now get a Fusion Drive as standard at this price. It's a 1TB model, and the use of flash storage alongside a big hard disk makes a massive difference to the experience. The fastest data read speed we saw on the 2015 model was 104MB/sec; on this one it's 487MB/sec.

A Fusion Drive isn't as good as purely flash-based storage (things you haven't used in a while are slower to find and open, since they're stored on the hard disk rather than the relatively small flash portion of the Fusion Drive), but it is a much, much cheaper way to combine the speedy performance of flash with the large capacity of a hard disk in a single volume - and in a desktop, what a lot of people want is plenty of room to store photos, videos, and other files going back years. That's what you get here, but with a big speed boost for apps and files you access often.

FUSION REACTION

We're disappointed to see that the \$1,299 model still only comes with a plain 1TB hard drive, though. Apple, this is a premium machine, and a little 32GB stick of flash storage is not breaking your bank - just throw it in! You can configure

the \$1,299 model to have a 1TB Fusion Drive for an extra \$100, but that's too steep - we would suggest paying an extra \$100 on top of that to get the best model.

You still get 8GB of memory here, which is fine for most people; although if you're delving into editing photos from a DSLR, or like to edit video, springing for the 16GB or even 32GB upgrade is wise even though they're expensive - you're not able to add more memory yourself later, only by going to a service center.

The new iMac models come with Apple's Magic Keyboard, which has a fairly crisp response to its keys. It won't win over mechanical keyboard lovers, but we like it. That said, we can't believe it doesn't come with Touch ID in this day and age - if you've used a new MacBook Pro, this will feel like a big backwards step. And in the era of thin bezels, we think the iMac's design is due a refresh - including a Space Gray option across the line, not just on the upcoming iMac Pro, Apple! The important thing is that the 4K iMac gets the internal performance to match its fantastic Retina display - making this a great desktop pick.

THE BOTTOM LINE. Whether you work with photos or videos, or just do office work, this is a strong Mac with a lovely display. **MATT BOLTON**



MacBook (Mid 2017)

Looking for a refresh? Look this way...

\$1,299 From Apple, apple.com

Features 1.2GHz dual-core Intel Core m3 processor, 8GB 1866MHz LPDDR3 memory, 256GB SSD storage, Intel HD Graphics 615 processor

Apple hasn't changed the ultra-slim MacBook much in the little over two years since the computer's 2015 debut. A glance down the tech specs for the 2017 version reveals a lot of things are unchanged, for better or worse: the FaceTime camera still captures a 480p picture; there's still a 3.5 mm headphone jack on the right side; and – as you probably expected – Apple hasn't shifted on its single-port design.

Storage capacities are also unchanged from 2015 and 2016 models, but when you compare the amount that's provided in \$1,299 models of MacBook and MacBook Pro, that isn't cause for concern. With the MacBook, Apple is generous – not merely because you get twice as much storage as in the Pro, but also because it has boosted the speed by up to 50 percent for the 2017 refresh, which was borne out in our tests.

Where the MacBook's processing capability is concerned, though, we weren't expecting much given that its fanless design imposes constraints on what components can be used in the ultra-thin body without overheating.

But Intel's processor optimizations in the two years since 2015's MacBook show headway is being made – even if the low-end Core m3 naturally can't hold a candle to its Core i5 brethren, at faster clock speeds, used in the 13-inch MacBook Pro. So, our

CPU-intensive HandBrake test completed 17 minutes more quickly on the entry-level MacBook as compared to 2015, thanks to two generations of architectural tweaks and a slight boost in clock speed.

The MacBook is improving more slowly where graphical capabilities are concerned, as shown by our *Batman: Arkham City* tests, which is now a fairly old game. Another big sticking point with the MacBook for many people has been its keyboard, so as part of this year's refresh, Apple has improved the overall feel when typing by adding its second-generation butterfly key mechanism.

One thing makes this generation more appealing than anything else we've talked about: being able to get 16GB of memory as a \$200 build-to-order option. If you happen to push the MacBook hard now and then with large photos, or just by leaving lots of apps open, this is a very welcome change.

We still can't ignore the awkwardness of having to unplug power to connect storage or some other accessory. For many people that won't matter at all, but if you have to plug in a hard drive to back up with Time Machine, it forces you to spend on adapters.

THE BOTTOM LINE. If power is what you mostly (or only ever) connect, and you like the new keys, this is a great portable Mac.

ALAN STONEBRIDGE

MACBOOK (MID 2017)

- ▶ Highly portable
- ▶ Improved keyboard
- ▶ Very fast storage
- ▶ One power/data port

GREAT ■■■■■



MacBook Pro 13-inch (Mid 2017)

A good alternative to a 13-inch MacBook Air

\$1,499 From Apple, apple.com

Features 2.3GHz dual-core Intel Core i5 processor, 8GB memory (2133MHz LPDDR3), 256GB SSD storage, Intel Iris Plus Graphics 640, two Thunderbolt 3 ports

Since the end of last year, there have been two major attributes that define the high and low end of the MacBook Pro line-up. Aside from screen size (and thus weight), you must choose between high-end models with a Touch Bar and low-end ones with traditional function keys. With the latest refresh coming just seven months later, that distinction persists.

The model reviewed here is of the latter type, and though it offers a slower Intel Core i5 clock speed than its more costly siblings, its memory spec is now in line with them, risen from last year's 1866MHz to 2133MHz. 16GB remains the maximum memory capacity you can get, as a \$200 build-to-order option.

Additionally, all MacBook Pros have been refreshed with seventh-gen (Kaby Lake) Intel Core i5 processors, and newer Intel Iris Plus Graphics processors - a 640 in function key models, and a 650 in those with a Touch Bar. **CPU clock speeds have been upped across the line-up too, with our review unit boosted from its predecessor's 2.0GHz to 2.3GHz.**

Stepping up a generation to Intel's Kaby Lake processor architecture delivers bigger

gains from the CPU than the integrated GPU. Our HandBrake test finished seven minutes sooner than the outgoing model, even beating last year's 13-inch, 2.9GHz MacBook Pro with Touch Bar by a slim margin. However, the GPU performed barely any differently in our Tomb Raider benchmark than last year's Iris Graphics 540.

On both function key models, benefits from the 2016 line-up still apply. Perhaps the most appealing is the Retina display's 500-nits brightness and wide color (P3) gamut, which are delightful if you snap wide-color photos with an iPhone 7, because you can see more colors and edit them accurately on this Mac.

In all, you'd have to be very keen on the Touch Bar, two extra Thunderbolt ports, and perhaps the better GPU to easily justify dropping \$1,799 on the next model up. Having two ports is fine for lighter demands such as a printer, a USB flash drive, or your iPhone, not necessarily all connected at once.

THE BOTTOM LINE. A good Mac, but the expected gains of Kaby Lake can't overcome our concerns about cost.

ALAN STONEBRIDGE

MACBOOK PRO 13-INCH (MID 2017)

Compact and light

Good battery life

Kaby Lake benefits intensive tasks

It costs a lot

SOLID ■■■■

Tough testing, trusted ratings






 MacLife
EDITORS'
CHOICE

10.5-inch iPad Pro

Apple's tablet gets a second wind

From \$649 From Apple, apple.com

Features 2224x1668-pixel display, A10X processor, Lightning port, Smart Connector, Apple Pencil support, up to 512GB of storage

There's an adage for most new tech: don't buy the first version. No matter how groundbreaking and good it is, the second will be even better. And so it has come to pass that the smaller iPad Pro's second version leaves its predecessor looking like an unfinished thought.

With its eye firmly on the "Pro" side, Apple has improved things in three key areas from the 9.7-inch iPad Pro: the amount of working space, the quality of the display, and the performance. The move to a 10.5-inch screen with a higher resolution of 2224x1668 pixels adds about 20 percent display area, while keeping the same sharp pixel density – and barely any extra size to the chassis, due to the new design.

Items on the screen generally look the same size as on the 9.7-inch model, but you have more space to play with, and it allows for extras – such as the on-screen keyboard (and separately purchased Smart Keyboard) being just about full-size, which helps with typing speed. It's subtle overall, but instantly obvious if you work in Split View a lot. It was usable but a little cramped before; now we find we can happily do all kinds of work with our email app locked to a quarter of the screen.

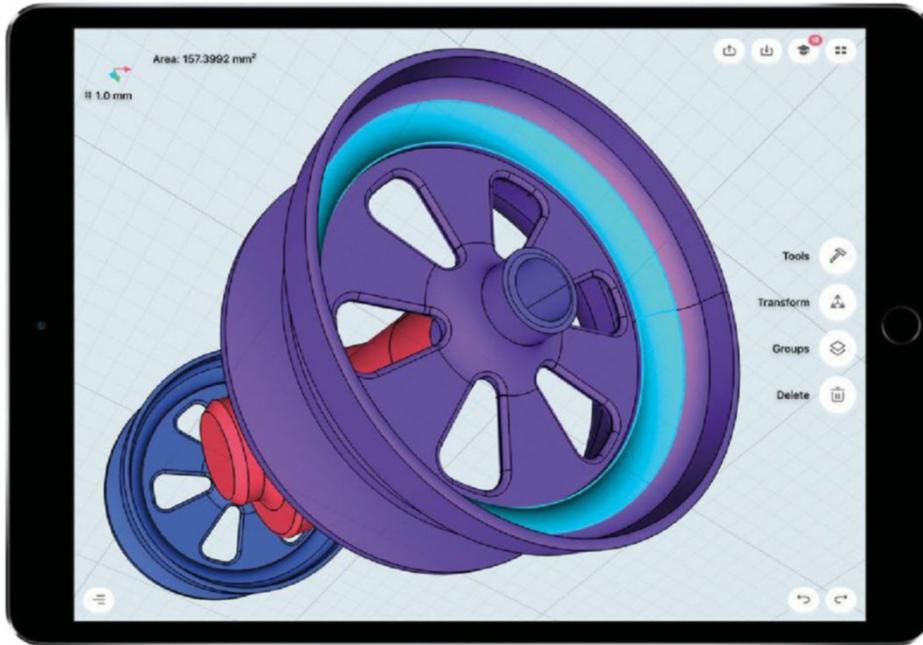
Of course, the 12.9-inch iPad Pro is even more comfortable for working in Split View, and will be the best platform if you want to use four apps simultaneously (coming in iOS 11), but the 10.5-inch display here is now a wonderful balance between space and portability.

But size isn't the only interesting change to the display. One big feature is support for a 120Hz refresh rate, which doubles the number of frames per second the screen shows compared to Apple's previous displays. It makes animations look extremely smooth, and scrolling text more readable. This is lovely but, more importantly, it also makes the screen twice as responsive, because it shows the result of any interactions twice as fast. That's huge in the case of the Apple Pencil.

10.5-INCH IPAD PRO

- Amazing display
- Hugely powerful
- Great battery life
- Still super-portable

AWESOME ■■■■■



The new A10X processor and graphics performance improvements provide real pro power.

The display is powered by ProMotion tech, which varies the refresh rate; if you're watching a TV show or reading a book, the screen runs at a lower rate to save power. This is all essentially unnoticeable, but results in excellent battery life: We typed this review for a couple of hours, spent another hour browsing the web and viewing photos, then left it on standby overnight - and the battery was still at 80 percent the next morning, so ProMotion seems to do its job.

The screen's brightness has been amped up, too. Combined with the wide color gamut, it makes photos look astoundingly vibrant, and helps with viewing in bright light, in conjunction with an improved anti-reflective coating. It's even good enough to display high dynamic range (HDR) video, though support for this won't arrive

The 120Hz ProMotion display makes the Apple Pencil feel more fluid and realistic than ever.



until iOS 11. The 2017 iPad Pros have Apple's best screens to date.

There's another huge boost when it comes to the iPad Pro's sheer, raw computing power. The new A10X processor is a triple-core chip (up from the dual-core A9X), with 4GB of memory and a new, more powerful graphics unit. Opening and switching between apps is very fast, but other iPads don't feel slow in comparison. It's in intense tests that you see its power: in Geekbench 4, the A10X scores 81 percent higher than its predecessor, and 42 percent higher than the latest generation of 12-inch MacBook. In fact, its score even beats most 13-inch MacBook Pro models.

In real-world tests against its predecessors, you'll see less dramatic results, but still considerable gains.

To test the processor, we used WinZip to compress a 1.2GB folder of files, and the new Pro finished the task in 25.16 seconds - 37 percent faster than the 39.93 seconds of the 9.7-inch Pro.

Not many apps use this much power now, but it helps futureproof this machine as more and more powerful apps appear. Take Affinity Photo, which is basically the equivalent of Photoshop on the iPad. On the old Pro, it works great, but with some pausing after you apply certain brushes. There's no such waiting on the new iPad Pro.

There are improvements for pros in other areas too, such as up to 512GB of storage, and USB 3 support over the Lightning port. The Pro's speakers are still great, and the Smart Connector, though unchanged, is handy for things like the Smart Keyboard (which still costs an eye-watering \$159 - wait for a cheaper option if you can).

So, should you get this iPad? Absolutely - if you're looking for a portable work machine. If you just want an entertainment tablet, its HDR support is great, but it's very much overkill - the fifth-generation 9.7-inch iPad is almost half the price, and fantastic for non-pro stuff. But with its gorgeous display, oodles of power, and amazing drawing prowess, this really can be a laptop replacement for some. In fact, it might just be our favorite computer in years.

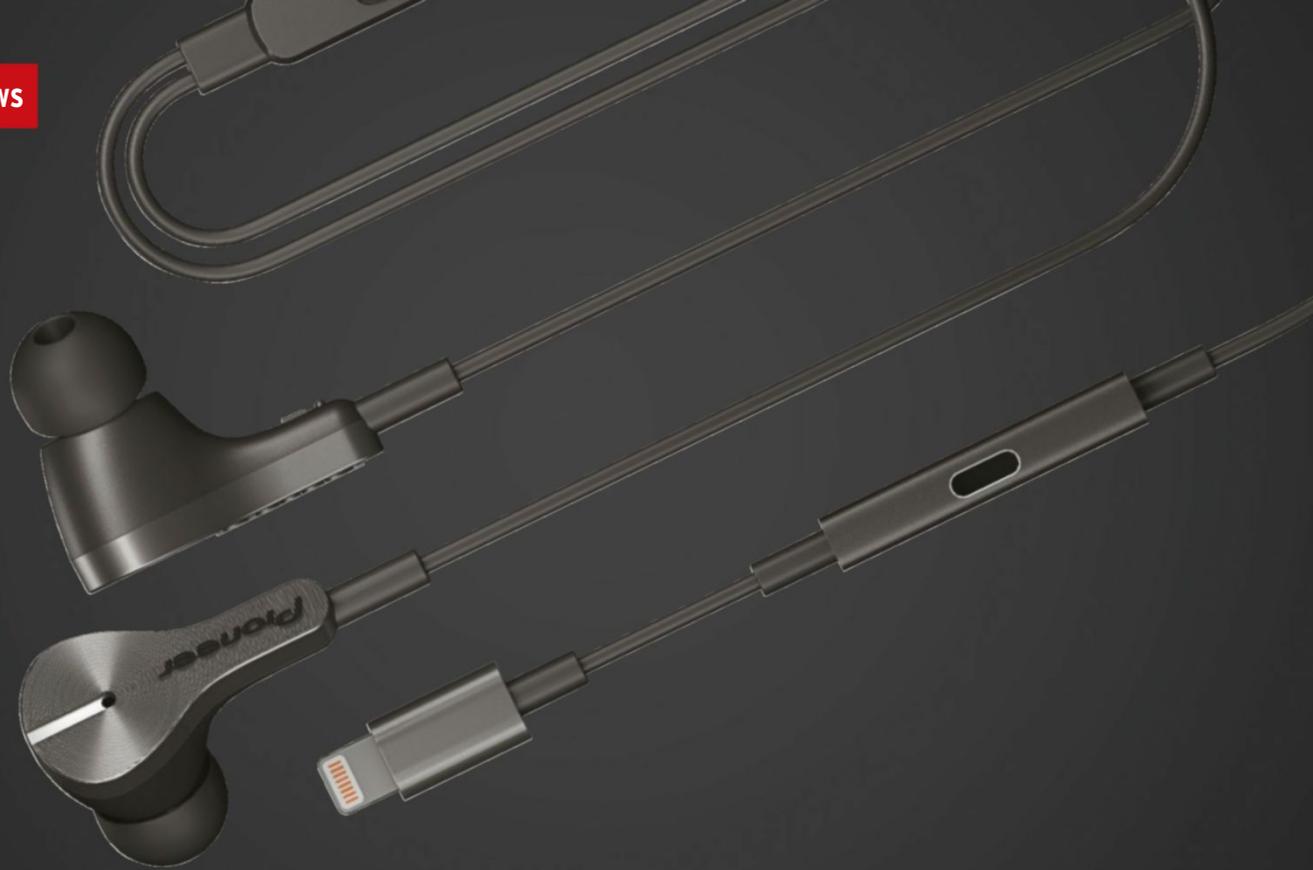
THE BOTTOM LINE. A stunning display and powerful futureproofing make this a top mobile working machine - and it'll only get better when iOS 11 is released. **MATT BOLTON**

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Pioneer Rayz Plus

Clever and capable cabled headphones



\$150 From Pioneer, pioneerrayz.com

Features Lightning connector, passthrough Lightning port, HearThru ambient sound mode

These Lightning headphones solve a problem that iPhone 7 users have been dealing with for a year now - how to listen to wired headphones and charge your phone at the same time. Here, it's easy. You plug their Lightning connector into your device, then plug power into them, and you're all set. Of course, Lightning means they only work with suitably equipped iOS devices.

But that's not all these headphones do. They're packed with extra smarts that make them great headphones even beyond that feature. There's active noise cancellation that rivals the Bose QuietComfort range - our gold standard - for cutting out sound, plus a very smart auto-muting mic feature that cuts out all sound from your end of a call when you're not talking, so the other person doesn't have to talk over background noise. They also auto-pause your music when you take them out of your ears,

just like Apple's AirPods. The Rayz app includes the ability to set the action of the inline remote's Smart Button to toggle noise cancellation, mute/unmute calls, or open an app of your choice.

The headphones come with a wide range of in-ear tips to make sure you get the best sound out of them too, which is great, since they don't skimp on audio quality either.

The sound is pretty punchy, filling the mid and bass with richness, without forgetting to pack the high end with detail and precision.

Those who are particular about a very open and natural sound won't find them totally to their taste, but we think just about everyone else will love them, especially for the price.

THE BOTTOM LINE. Charge and listen at the same time, enjoy great sound, and count on top-notch noise cancellation. A top buy for your iPhone if you don't mind wired headphones.

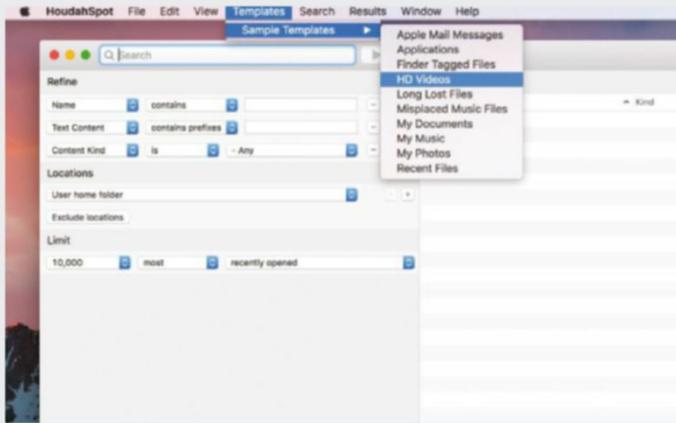
MATT BOLTON



PIONEER RAYZ PLUS

- ▶ Great sound quality
- ▶ Intelligent behaviors
- ▶ Charge while listening
- ▬ Not the most natural sound

AWESOME ■■■■■



HoudahSpot 4

Turning up the Spotlight power

\$29 From Houdah Software, houdah.com

Needs OS X 10.10 or later

The Mac's Spotlight search engine has added lots of new features in recent years, but as a tool for searching your computer, it remains basic.

That's where HoudahSpot comes in. It uses the Spotlight index but allows you to build searches using a variety of criteria and save them as templates, somewhat like Smart Folders. And it's mighty fast. It comes with lots of prebuilt templates; new in version 4.2 is one that enables you to search for all video files of HD resolution on your Mac.

While HoudahSpot presents an interface that may seem daunting, selecting a template from the Templates menu quickly reveals the app's power and ease of use. So, for example, choose Mail and you'll see a list of search criteria in the left-hand sidebar. You simply fill in the ones you want to inspect and press "play" – it's that easy.

Once you've pinpointed what you want, you can double-click to open it in the specified app; open it in another app; or tag, rename, copy, or move it. It's powerful stuff.

THE BOTTOM LINE. HoudahSpot is ideal for anyone who craves more powerful searching than Spotlight in macOS.
KENNY HEMPHILL

HOUDAHSPOT 4.3

- Powerful search tools
- Can build custom search templates
- Very granular control
- May seem daunting at first

EXCELLENT ■■■■■

WinZip 6 for Mac

Surely that's "MacZip" then?

\$29.95 From Corel, corel.com

Needs OS X 10.8 or later

Mac compression utilities aren't sexy – if they reduce file sizes and use less bandwidth, it's a job well done. Corel brings some of the sizzle back in WinZip 6 for Mac, which now manages files as well as compacting them.

This is done from a new Files pane on the app's left-hand side, where you browse mounted volumes, cloud storage accounts, and the last five archives accessed. Rather than dragging and dropping from Finder or using the Action menu, everything happens inside WinZip's window, with the pane expanding into split-screen view alongside the current archive while browsing.

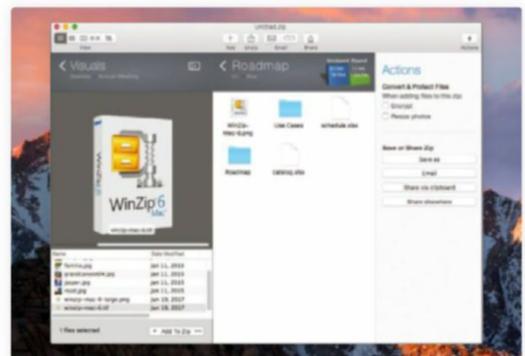
WinZip isn't quite a full-fledged file manager – you can't view two volumes side-by-side, for example – but the improvement will be welcome if you work with Zip, GZip, LZMA2, BZip, and other archive formats. Contextual menus provide a convenient peek without opening files, and you can delete and rename files from within the app. There's also enhanced support for Zipx.

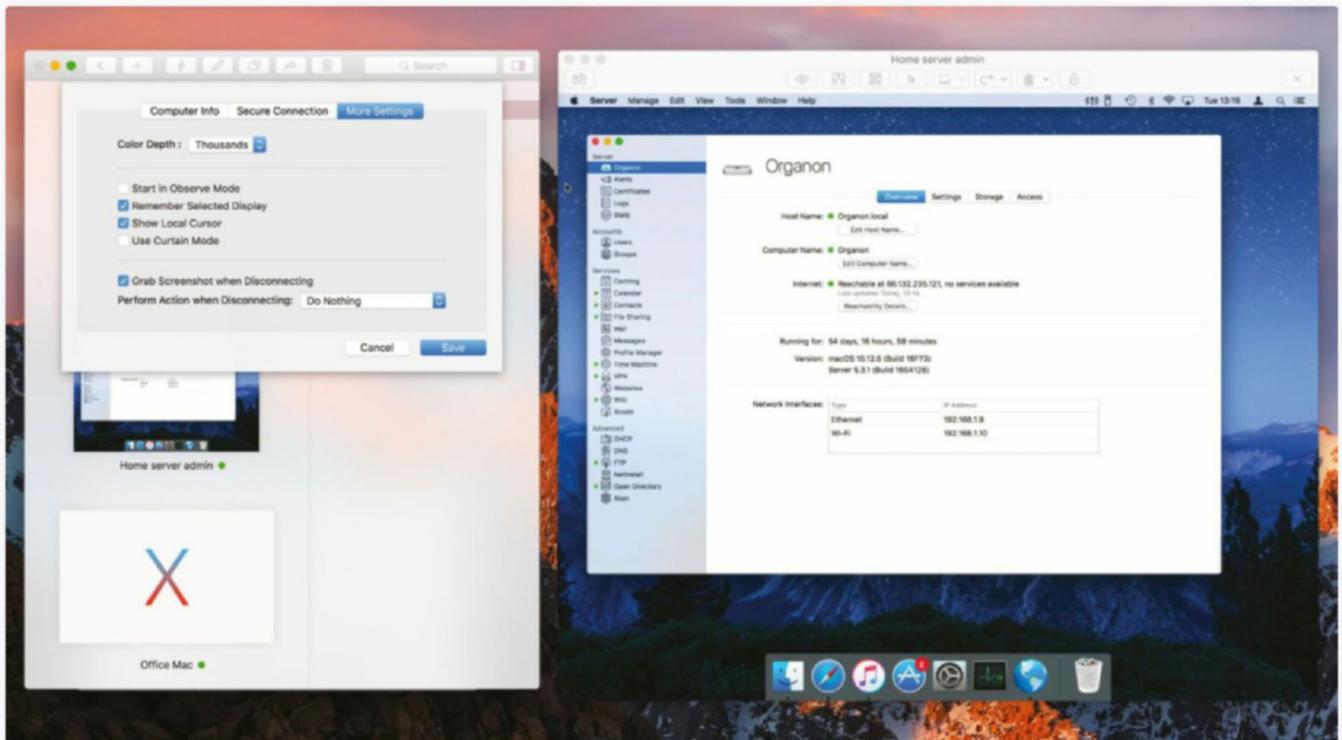
THE BOTTOM LINE. More convenient than ever, but no upgrade pricing. **J.R. BOOKWALTER**

WINZIP MAC 6

- Convenient new Files pane
- One-click access to local and cloud volumes
- Zipx support
- No upgrade pricing

GOOD ■■■■





You can group multiple Macs and view them as thumbnail images to make locating the one you want easier.

Screens 4

Get at your Mac on the move

\$29.99 From Edovia, edovia.com

Needs OS X 10.11 or later

Screens 4 enables you to connect to your Mac from anywhere there's an internet connection. Once connected you can control the Mac remotely as if you were sitting in right front of it.

Version 4 adds the ability to transfer files by dragging and dropping between your local Mac and the remote one, as well as a feature that obscures the display of the remote Mac while you work.

If you connect to a Mac with multiple displays attached, you can choose which of them you want to view, or see all of them at once. And if you connect to multiple Macs, you can save them and arrange them in groups to help you find them easily later.

Setting up Screens is straightforward. On a local network Macs are automatically detected, though you'll need to switch on Screen Sharing in a remote Mac's System

Preferences to control it. To connect over the internet, you need to set up a Screens account and run the Screens Connect utility on the Mac you want to connect to.

We found Screens worked well, and connected quickly over our local network. For the most part it worked exactly as it should. **However, we did run into occasional problems when trying to drag and drop files between our local Mac and the one we were connected to.** Likewise, we sometimes ran into problems copying and pasting between remote and local Mac. Those problems could have been down to our network, however. Other than that, we found Screens to be a snap to set up and a pleasure to use.

THE BOTTOM LINE. If you need to connect to a remote Mac, for whatever reason, Screens 4 is a great way to do it.

KENNY HEMPHILL

SCREENS 4

- Easy to set up
- Drag and drop files
- Can obscure screen of remote Mac
- Occasional glitches with file transfers/Clipboard

GREAT ■■■■■



MyDVD Pro

A somewhat specious title

\$19.99 From Corel, corel.com

Needs OS X 10.11 or later

Currently you have few good options on a Mac for creating pro-level video discs on a budget. Final Cut Pro X and Compressor can create basic discs, but offer prosumers who want to sell content on physical media little in the way of real authoring capabilities.

Despite its name, neither does Corel's new MyDVD Pro, but this is otherwise a perfectly affordable solution for everyone else. Essentially a stripped-down version of Roxio Toast, MyDVD Pro makes it easy to create DVD or AVCHD discs in a few clicks, with a Blu-ray option also available for a one-time in-app purchase of \$9.99.

MyDVD Pro includes 13 consumer-themed menu templates, but you can customize text, colors, backgrounds, and music. The dark interface offers intuitive navigation for choosing themes, importing media, or creating manual or automatic chapter stops. Encoding quality is good, but you have zero control over the results.

Two features appeal to pros: You can share from Final Cut Pro X with imported chapters, and save disc images in the popular ISO format, rather than Apple's own IMG type.

THE BOTTOM LINE. Hardly pro, but perfectly acceptable for burning consumer discs. **J.R. BOOKWALTER**

MYDVD PRO

📺 Customize text and backgrounds

🚫 Too basic for prosumers

🚫 No encoding controls

🚫 Limited authoring functionality

OKAY ■■■■

Softorino YouTube Converter 2

From YouTube to your device

\$19.95 From Softorino, softorino.com

Needs OS X 10.10 or later, iOS 5 or later

When it comes to saving YouTube content to iOS devices, few apps do it as eloquently as this one. Copy a web address and this one-click Mac app downloads, converts, and imports videos to your iPhone or iPad. And that's merely the opening act.

With YouTube Converter 2, iOS devices no longer need to be tethered by a cable – the whole process can now happen over Wi-Fi, with no impact on transfer speed. The software is four times faster than before, with support for 4K, high frame rate, and even VR, 360-degree videos.

Although the first version could download from a few other sites like Vimeo, SYC 2 handles over 30, including Vevo, Bandcamp, and Discovery Channel. By enabling a preference, downloads also include subtitles when available.

Creating ringtones with one click is another killer feature, with a few caveats. You can choose an entire song or only the first 30 seconds, but there's no way to trim to your favorite section.

THE BOTTOM LINE. Bugs aside, a must-have utility for all iOS users. **J.R. BOOKWALTER**

SOFTORINO YOUTUBE CONVERTER 2

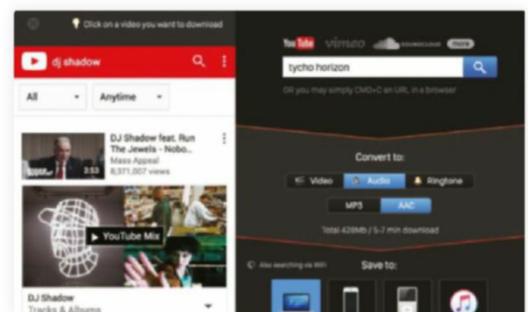
📺 Download web videos

📺 Transfer via Wi-Fi

🚫 Device transfer bugs

🚫 Falls into legal gray area

GREAT ■■■■





Everything

Turns out you *can* have it all

\$14.99 From David O'Reilly, everything-game.com

Needs OS X 10.8 or later

Everything is a simulation of sorts. You play as a wayward consciousness, hopping from one host to the next. The point of the "game", if there must be one, is simply to explore. Perhaps you start off as a muskox - braying, leading your herd, and reproducing. Eventually, a buzzing housefly, a creaking oil rig, or even a wandering asteroid will lay out Everything's guiding principle: "This isn't about giving you something to see, but giving you a different way of seeing."

Initially, you can only hop into other vessels of similar size, but Everything treats ecosystems like a collection of infinitely nested Russian dolls: there's always a smaller or larger level to explore, from ox to flea to paramecium.

Squeeze into a grain of sand and the camera pulls in tight, until wood splinters and grass stalks scrape the sky; spend a few seconds as a lenticular galaxy and realize there is something even bigger to investigate. Eventually, you'll be able to simply will things into existence, no matter where.

All the while, the world around you teems with other creatures' inner thoughts: jokes, reflections, and laments. [You may meet a giraffe who falls in love too quickly, or an underwater strand of kelp unsure if it will survive the day.](#) Sometimes, you'll hear snippets of mid-century lecturer Alan Watts explaining his notion of cosmic interconnectedness. Leave the keyboard alone for more than a minute and Everything plays itself, zipping up and down the great chain of being with ease, a guided tour of all creation.

Infused with a sense of wonder and awe, Everything's charm is in the sheer volume required to live up to its name, in the way it crams life into each nook and cranny: there is always something new to discover, some joyful juxtaposition to stumble across. To meet such technical demands, Everything adopts a lo-fi aesthetic that only amplifies its potential for serene beauty and absurd comedy.

Despite Everything's philosophical underpinnings and O'Reilly's roots as an experimental artist and filmmaker, Everything isn't precious or opaque. Its novelty and boldness drive the game's first several hours until a series of puzzles take shape.

THE BOTTOM LINE. As Everything's mechanics reveal themselves and boundaries disappear, a more recognizably game-like objective emerges: to fill in the game's overflowing encyclopedia, from Arctic fox to zebra, amoeba to quasar. Interesting, if too unguided for some tastes. **JOSEPH LERAY**

EVERYTHING

- ▶ Refreshingly novel
- ▶ Exploration is consistently surprising
- ▶ Thought-provoking but not preachy or dense
- ▶ Lack of clear-cut goals might be turn you off

GREAT ■■■■





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AIR QUALITY MONITORS

Indoor air quality can affect your health, decision-making, and learning – so take control with these new air monitors

BY CLIFF JOSEPH

There have been plenty of headlines about air pollution in recent months – including the news that the Environmental Protection Agency has proposed delaying a federal air pollution rule for two years. Air quality isn't just the responsibility of governments, though, especially when it comes to indoor air quality, which now has its own acronym: IAQ. After all, most of us spend most of the day – and night – indoors, so indoor air quality can obviously have a major effect on our health.

That's why a number of companies have developed air quality monitors that can detect and measure a number of different pollutants and other factors and, in effect, tell us when to open a window and get some fresh air. That might seem like simple common sense, but not all pollution is easy to detect. Some factors – such as humidity – can be quite harmless for many people, but



WE'RE STARTING TO SEE FANS, AIR CONDITIONERS, AND MORE THAT WORK WITH HOMEKIT

have a real impact on others who suffer from allergies or medical conditions such as asthma.

The simpler air quality monitors tend to concentrate on the level of carbon dioxide (CO₂), which is often used as a ballpark indication of indoor air quality. Netatmo's Healthy Home Coach is a good example, and has actually been available for a few years. Priced at \$100, the Home Coach focuses on CO₂ levels, as well as monitoring temperature and humidity. It can check sound levels too, although that doesn't exactly seem essential to us.

SOMETHING IN THE AIR

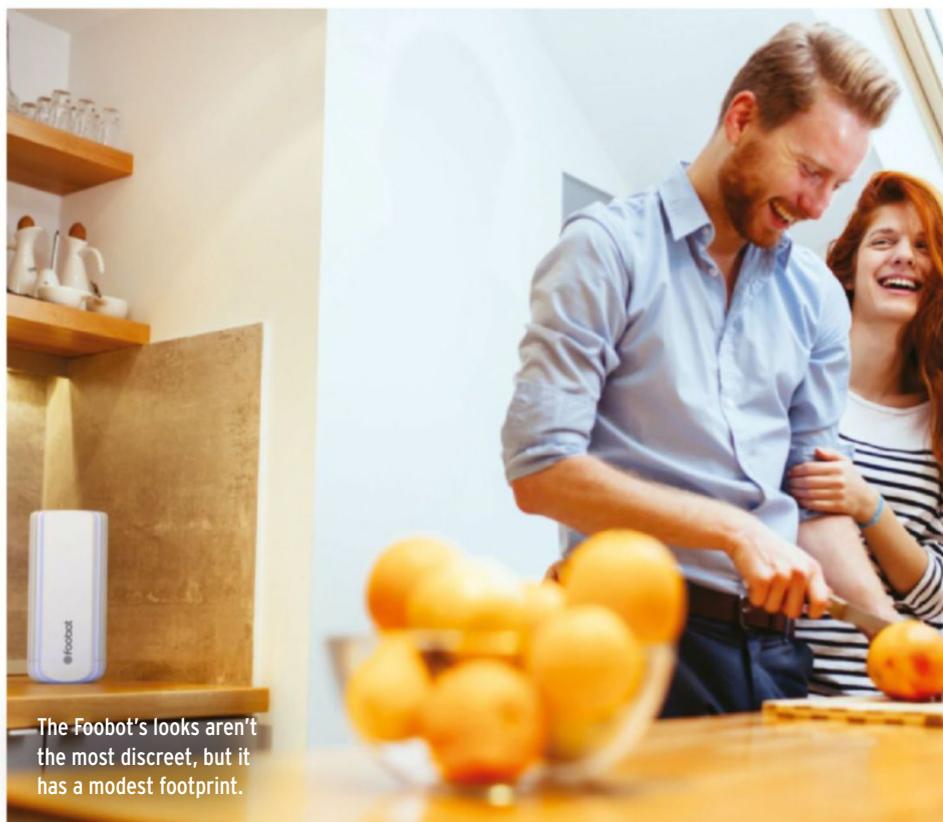
Like most air quality monitors designed for home use, the Home Coach can simply flash a few warning lights to get your attention when it thinks there's a problem, but it can also connect to your home Wi-Fi network to send you notifications and detailed info via its companion app on your iPhone.

The next step up is a device such as Elgato's Eve Room, which is actually cheaper at \$80, but also has the ability to monitor VOC – volatile organic compounds. That term covers a wide variety of airborne chemicals and pollutants, from – ironically enough – air fresheners, to burnt food, cleaning materials, or the emissions from an office printer (a contributing factor to “sick building syndrome” in many large office blocks).

However, the Eve Room relies on Bluetooth, rather than Wi-Fi, to connect to the Eve app, which helps to keep the price down but also means that you'll probably have to be in the same room in order for the two to connect. Despite their relatively low prices, the



Awair is designed to blend in with your home.



The Foobot's looks aren't the most discreet, but it has a modest footprint.



Elgato's Eve Room can monitor volatile organic compounds.

Eve Room and Netatmo Healthy Home Coach both support Apple's HomeKit software. This means that you can use Siri voice commands to get a quick air-quality report, or even use them to control other HomeKit devices, such as Netatmo's Starck-designed smart thermostat. If the monitor thinks it's too warm then HomeKit – along with the Home app in iOS 10 – would allow it to turn the heating on or off. We're also starting to see humidifiers, air conditioners, and fans that work with HomeKit, making it easy to control those, too.

DUST TO DUST

Going one step further, the best all-round indoor air quality monitor that we've seen so far is the new Foobot (Model 21) from AirBox Labs. It's a little pricey at \$199, but the Foobot really goes to town with sensors that allow it to monitor both carbon dioxide and carbon monoxide, VOCs, temperature, and humidity. Its outstanding feature, however, is its ability to detect "particulate matter" – fine particles that can

include dust, aerosol sprays, smoke, and other pollutants. These particles are small enough to penetrate your lungs and cause a variety of health problems, or exacerbate existing allergies and other conditions.

The sheer amount of data recorded by the Foobot means that its iPhone app can sometimes blitz you with statistics but, like most of its rivals, it has a simple system of color-coded warning lights that can flash to get your attention.

Another new option that is very similar to the Foobot is Awair, which also costs \$199. We haven't had a chance to take a close look at this yet, but it claims to monitor CO₂, VOCs, temperature and humidity, dust, and particulate matter. It has a neat retro design too, like an old wireless radio.

Finally, there's one clever jack-of-all-trades that is also worth mentioning.

The Withings Home camera is a popular baby monitor, but also has the ability to monitor VOC levels in a child's bedroom. It costs \$290, but the combination of a baby-cam and air quality monitor in one device will appeal to many parents who want to keep a close eye on their child's health.



Foobot is one of the few monitors to detect particulate matter, such as smoke.

FIVE OF THE BEST

We recommend the best air quality monitors for use at home



1

AWAIR
\$199
getawair.com

> The Awair monitor has a smart retro design that should blend in with most home decor, and its front panel acts as a simple display so that you can quickly check air quality without having to use its iPhone app. Awair is able to check for CO₂, VOCs, temperature, humidity, and dust particles.



2

ELGATO EVE ROOM
\$80
elgato.com

> The most affordable air monitor around at the moment. Its Bluetooth connectivity is a tad limiting, but it gives a good indication of general air quality by measuring CO₂, VOCs, temperature, and humidity. It also supports Apple's HomeKit tech, so you can control it using Siri voice commands.



3

FOOBOT (MODEL 21)
\$199
foobot.io

> Though more expensive than some of its rivals, the Foobot is one of the most sophisticated indoor air-quality monitors you can get right now. It can measure CO₂, VOCs, temperature, and humidity, as well as detecting fine particles that can get into your lungs and cause serious health problems.



4

NETATMO HEALTHY HOME COACH
\$100
netatmo.com

> Its features might seem somewhat basic, concentrating mostly on CO₂, temperature, and humidity, but the Healthy Home Coach is easy to use, and its HomeKit support means you can link it with other HomeKit devices, such as to a thermostat to control your heating.

> SMART HOME LIVING

To her chagrin, **JENNIFER PHIN** is newly excited about geofencing



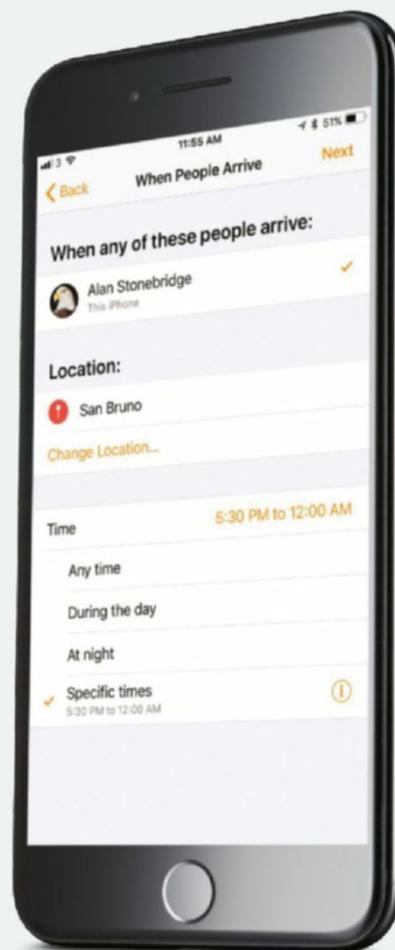
APPLÉ'S WWDC EVENT may have saved my marriage, with the announcement of new developments in geofencing. There's a sentence I never thought I'd type into a Google Doc, but hey, it's 2017, politics has gone nuts, and apparently you can eat Pop Tarts without toasting them first – so let's just accept the new reality and move on.

My husband loves geofencing. Loves it. When he leaves the house, all the lights go off. As his car pulls back into the drive at night, a tree of twinkling fairy lights blossoms and welcomes him home. When he climbs into bed and says "Goodnight" to Siri, the house falls into darkness save for a small nightlight in our daughter's room. Sometimes he talks wistfully of the day that our Eve Motion sensor will inform us of movement in our attic when we're both out, rather than when I charge up there to chase an overconfident bat. Although why that's a dream scenario I really have no idea.

This is all fine and dandy, except that our geofencing is tied to his devices. So for the first week after setting it up, and intermittently since, the child and I find ourselves alternately plunged into darkness, confused by a nightlight, or startled by a tree. My nerves are now completely shot.

But hope, like a toddler caught in the dark on a potty, springs.

Apple's WWDC keynote this year announced an update to HomeKit to allow multiuser geofencing. So soon the house will only go dark if both my husband and I are out, and will be lit again when the first of us returns. Hooray! Great news for everyone, except the kid, but hopefully she won't be leaving the house alone any time soon. Hey, Apple, geofencing for kids, WWDC 2018? See you there!



5

NOKIA HOME

\$290

health.nokia.com

> Nokia's Home security camera is a good option for parents. It's best known as a baby-monitor camera for parents who want to keep an eye on their sleeping toddlers, but Home also includes a sensor that can monitor VOCs in order to check on air quality in potentially stuffy bedrooms.

APPLE TV

THE LATEST tvOS APPS AND THE HOTTEST HARDWARE



If only real fishing was this lucrative. Still, at least your child will be learning to spell while you count the coins.

Fish and Spell

Gone fishin'

Free



This colorful educational fishing adventure takes place in the fictional Mingoville Lake District, where Fisherman Fred is your guide through a variety of “lakes,” each in a different category, such as animals, family, clothes, or food.

Only the first category is unlocked in the free version – you’ll have to pony up \$0.99 for a “fishing license” to each additional lake, or pay \$2.99 to get them all. The objective is to sit in a boat and fish for the letters required to spell each word as they swim by. There are more than 500 words in total, and everything has been designed for a child’s short attention span.

The graphics are fun and quite good, with plenty of eye-catching color, animation, music, and voice actors along the way. Fish and Spell’s gameplay also helps improve hand-eye coordination and reflexes. Each level offers easy, medium, and hard options, so kids aged 5+ will have plenty of challenges. **J.R. BOOKWALTER**

TV Deluxe

Live TV – if you’re lucky

\$4.99



If the lure of 500 premium channels for a one-time purchase of five bucks sounds too good to be true, well... it is. TV Deluxe makes bold claims about bringing live TV channels to your Apple TV – even touting “the highest number of TV channels in all the App Store” – but you get what you pay for.

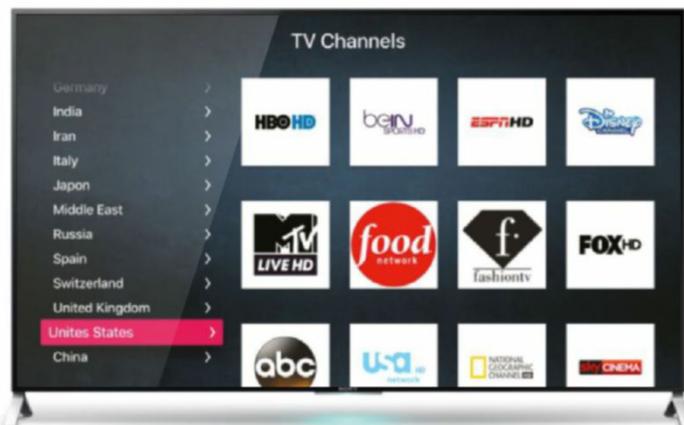
First of all, don’t expect to fire this app up and start watching feeds from the four major networks. The majority of TV Deluxe’s content comes from

publicly available web streams or questionable online sources like FilmOn, but it ultimately depends on what you’re looking for.

We found foreign channels to be more reliable – many American sources failed with a prompt that “an error occurred loading this content.”

You can also add your own channels in .m3u8 format, but it’s a bit of a chore from the TV, and the developer’s universal iPhone/iPad app requires a separate purchase.

J.R. BOOKWALTER



Can you really get the likes of the Disney Channel and Fox HD for free using this app? If you’re raising an eyebrow right now, you know the answer...

Outside TV Features

The great outdoors, indoors

Free (subscription required)

 No matter how much one loves the great outdoors, at some point you need to enjoy the spoils of home life. But that doesn't mean you can't get a quick fix of the outside, courtesy of Apple TV and the Outside TV Features app.

This app offers more than 4,000 curated short-form videos showcasing action and adventure sports content from Outside TV Network, and the app has also recently expanded into full-length feature films and original series, courtesy of a \$4.99 per month premium subscription.



Check out the best of wild country life with the air con on full blast, and an iced tea.

Content is high-quality and easy to find, complete with access to a live feed from the network and the ability to queue favorite videos to enjoy later. There's a seven-day free trial too. **J.R. BOOKWALTER**

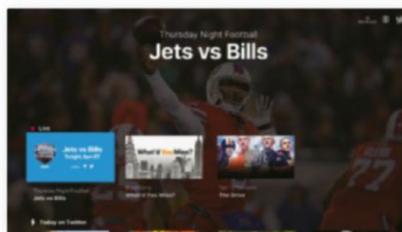
Twitter

Live 360-degree views from your social feed

Free

 Twitter might not seem like the most obvious app for Apple TV, but the new 7.0 update has done more than just put a fresh coat of paint on the smartphone and tablet version. That's because the big-screen edition now enables you to view live 360-degree videos on your television screen.

Twitter for Apple TV also now taps into the Periscope Global Map, so you can easily find user-created, livestreaming content from all over the world. Although video quality is fairly low-resolution in live 360 mode, controlling the view with the



There are a lot of sports-related vistas on offer, though that's to be expected.

Siri Remote's touch pad is pretty neat. However, it's just a little too easy to accidentally tap and call up Report Broadcast while viewing, which could hide the content being viewed. **J.R. BOOKWALTER**



Make the most of home entertainment



VIZIO SMARTCAST M-SERIES M65-DO

\$1500 • VIZIO.COM

For the Android-curious, this 65-inch Ultra HD, HDR-capable display includes a six-inch tablet remote powered by Google's mobile OS, offering both HDR10 and Dolby Vision for good measure. It's also quite affordable, with ample ports and decent image quality – but where's the Amazon Video app?



NYTSTND TRAY 5

\$89 • NYTSTND.COM

Why buy multiple chargers when one can handle everything you own, including Apple TV's Siri Remote? This all-in-one dock is equipped for iPhone 5 or later, any iPad with a Lightning port, Apple Watch, and AirPods, and has a holder for your Apple Pencil too. It comes in white or black with a choice of three base colors.



ASK

TECH SUPPORT & TECHSPLANATIONS



To play a DVD from non-optical storage, such as a memory stick, in DVD Player choose File > Open DVD Media and point at its VIDEO_TS folder.

ACCESSING PC SLIDESHOWS

I used to create slideshows on Windows PCs using Photodex ProShow software, then burn them to DVDs. Now I've switched to a Mac, how can I best transfer those?

There are at least two good ways to do this. DVDs are really just a bunch of data files, and you can move those to your Mac either via DVD - if it has an optical drive - or by copying them from your PC to a memory stick or other storage. Once on your Mac, you can view them using DVD Player.

In that app, choose File > Open DVD Media. Select the VIDEO_TS folder on the DVD, or in the folder to which you copied the disc's contents on your memory stick, and the app should load and play the video as normal.

You can also "rip" homemade DVDs to a more convenient format using one of the many ripping apps on the Mac - HandBrake (handbrake.fr) is free and a popular choice. As your personal DVDs won't be encrypted, you won't need to use another tool to bypass protections.

If you want full access to your old content, you could install ProShow in Windows in a virtualization app such as Parallels Desktop; it can exchange files with macOS, so you'd be able to export the original slides as well as completed shows in DVD format.

FireWire still burning?

Can I connect a FireWire camera to a MacBook from 2016? Yep, it's a pretty old model of camera...

Yes, but it takes two adapters whichever way you do it. One route is from USB-C to USB 3, then connect a USB 2-to-FireWire adapter. Your other option starts with a Thunderbolt 3 (USB-C) to Thunderbolt 2 adapter, then Thunderbolt 2 to FireWire 800.

The App Store is stuck

Why can't the App Store seem to load any data for updates?

Move its settings at ~/Library/Preferences/com.apple.commerce.plist, /Library/Preferences/com.apple.commerce.plist, and ~/Library/Preferences/com.apple.appstore.plist to your Documents folder. Then sign in to the App Store from scratch. If you still can't get it to check properly for updates, contact Apple Support so it can check your account if necessary.



Put it right there

Can I force an iOS app to store its data locally?

It varies, but in many cases you can. The exception is if the app needs iCloud to function, which a lot of the time is offered just as a way to access files from all your devices. In Settings > [Apple ID] > iCloud, turn off an app's switch under "Apps using iCloud" to block it from using that service.

Aware of ransomware

Given the recent spate of ransomware attacks around the world, I'm wondering if macOS protects against ransomware?

System Integrity Protection (SIP) in El Capitan and Sierra should stop

malware tampering with system files, provided your Mac is kept updated. However, malware can still remove or encrypt other files, including apps and your documents. Try RansomWhere?, which is free from objective-see.com/products/ransomwhere.html.



Numbers on your Touch Bar
I use an AZERTY layout keyboard on my 2016 MacBook Pro, which requires the  key to be used for numbers. Could I put those numbers in my Touch Bar instead?

You can't yet customize the Touch Bar globally: settings are intended to be app-specific. Two pop-ups in the Keyboard tab of the Keyboard pane control its general behavior. The upper of those can be set to Expanded Control Strip, but can't include numeric keys in the way that you want. The lower pop-up doesn't provide helpful options for this scenario either.

In apps that support customization, you could use the Customize Touch Bar command in the View menu to make your own custom layout, but that doesn't offer numeric keys. Some third-party apps now support

> Forgetful Time Capsule

My MacBook Pro (Mid 2015) backs up to a Time Capsule. Recently, it started warning me about once a week that backups have verification problems, and informs me that it must create a new backup. It then wipes all my old backups and starts again. How can I stop this?

Your Time Capsule is detecting that its

previous backups are corrupted beyond repair, so it must trash them and start afresh.

If this occurs once, it's worrying, and when it happens repeatedly there must be something seriously wrong with your Time Capsule.

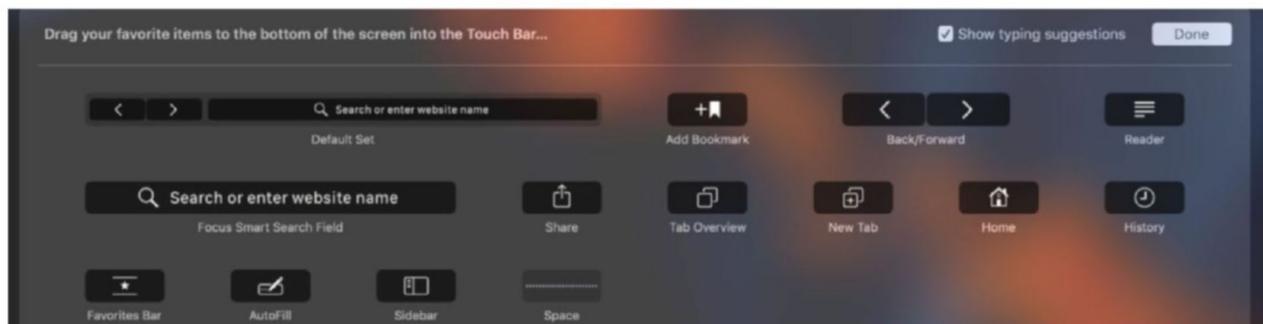
Ensure its firmware is fully up to date by opening AirPort Utility and inspecting the Time Capsule there. Click any

red badge next to it there for details, update as needed, then initialize it from scratch.

If, after that, your Time Capsule repeats this behavior, it shows that something is corrupting the hard disk in it, or that the drive is sick and failing - which is a matter for Apple Support, or a Genius Bar. If it's older than three years, you may need to replace it.



If your Time Capsule is over three years old and keeps having to create a new backup, it may need to be replaced.



The Customize Touch Bar command affects only the app you're currently using, and doesn't allow you to add regular number keys.



You can delete backed-up items in Time Machine: select a file and click the cog for options.



>>> the Touch Bar: BetterTouchTool from boastr.net might eventually enable what you want, but doesn't at present.

Burning appendable CDs
I use an external Apple SuperDrive with my 21.5-inch iMac (Late 2012) to make CDs and DVDs. Upgrading to El Capitan removed the feature to make them in Disk Utility, and now I cannot make a disk appendable: Finder's Burn command closes the disc so that no more can be written to it. Is it still possible to make a CD which is appendable?

This facility still exists in both Sierra and El Capitan. However, it's now only accessible using commands in Terminal, or with third-party software. If you don't feel like messing around at the command line, one of the most capable suites for working with optical discs is Toast Titanium (roxio.com), which can make audio CDs, DVDs, and more. There's a range of cheaper or free tools in the App Store, too.

To do it yourself in Terminal, first use Disk Utility to create an image of the optical disc: assemble its contents in a folder, create a new image from

that, and set its Image Format to "DVD/CD master," without encryption. Place that master, for example named MACDOCUMENTS.cdr, on your desktop, insert your blank CD, then in Terminal type the following command:
`hdiutil burn ~/Desktop/MACDOCUMENTS.cdr -noforceclose`

Trashing old backups
I've installed a new, larger external hard disk and have started using it as a new Time Machine backup. On a separate volume on that disk, I have an old "Backups.backupdb" folder containing some old backups, which I want to delete. When I drag it to the Trash, I cannot empty it because of error -8072. How can I get rid of those backups?

Old backups like these present a problem when you want to get rid of them because of their permissions, and the fact that they contain tens or hundreds of thousands of hard links, which Time Machine uses to make each backup look like a complete image of your disk.

If you've nothing else on that partition (volume), then the simplest

way to get rid of them is to open Disk Utility, select only that volume, and erase it. If you have other files there and can't do that, you'll need to resort to the command line in Terminal.

First, check that Time Machine isn't backing up to that location. Type `tmutil listbackups` in Terminal - it should list the location of all the backups on Time Machine's drive, but not those which you want to remove.

Next, work out the path to that old Backups.backupdb folder; for example, if it's on a volume named Old Backups, the full path will be `/Volumes/Old Backups/Backups.backupdb/`.

The command which you'll then need in order to remove all those old backups will be something like `sudo tmutil delete "/Volumes/Old Backups/Backups.backupdb/"`

Finally, you'll need to authenticate with an admin user's password.

Fastest startup for a mini
My Mac mini (Late 2014) starts up from an external 256GB SSD, and I manually transfer documents to its 1TB hard disk when I need to. Would my mini start up more quickly from

a Fusion Drive, and would that be better connected via Thunderbolt, rather than USB 3?

Your fastest option should be to boot from an internal SSD. The performance of external drives is largely dependent on the chipset in the enclosure, and less on the theoretical maximum performance of the bus used to connect the drive. This is particularly true for Thunderbolt and USB 3. External Thunderbolt enclosures are expensive and few, if any, significantly out-perform much cheaper USB 3 enclosures.

Fusion Drives are a great way of getting a large combined capacity at a reasonable cost, delivering SSD-class performance for the most-used files, which usually includes macOS and your favorite apps. However they do impose some overhead above that of just using an SSD. Much of the time, a Fusion Drive should deliver near-SSD performance for only slightly greater cost than a hard disk.

If you can lead a disciplined life using separate SSD and hard drives, as you have been doing, and have laid out the contents of the SSD and hard disk optimally, that's still likely to give you a slight edge in performance and the time taken to start up. A Fusion Drive should make fuller use of the SSD, though.

There's the added complication that building your own Fusion Drive is currently not officially supported by Apple. Some people who've done this experienced problems when upgrading to Sierra. Sticking to a straight SSD should be most compatible with anything that macOS 10.13 changes later in the year - at least until it's had time to settle in and those intrepid pioneers have figured out whether home-brewed Fusion Drives are a practical possibility with it.

> Card reader folded

I normally take the SDXC card out of my camera, put it into an Integral card reader, and plug that into a USB port. This no longer works, and I can't read the card on my iMac or MacBook. What's up?

Try a different card, in case that one has become corrupted. If that doesn't work either, your reader may have bitten the dust.

Many Macs have integral card slots which save you the trouble of using another peripheral. Older iMacs with optical drives have their slot close to that drive. Newer models without optical drives position the slot on the back, by the USB ports.

Insert the card the right way round, with the connectors going in first.

Once you've downloaded all the images from the card, reformat it. Insert the card into the camera, and use the camera's menu system to format it. Formatting cards in your Mac isn't a good idea, as it doesn't understand the specific folders and other requirements expected by your camera.

Finally, always remember to eject the card properly before removing it from your



Many modern Macs have a built-in SDXC card reader, although the slot's purpose isn't always obvious.

Mac, either from an integral slot or an external reader. Not only will macOS complain if you don't, but it can result in damage to the data on the card - even if it doesn't look like data is currently being written.

You should get the very fastest startup times and best performance from an SSD by fitting it inside your Mac mini.



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Mac|Life

CREATE

HOW TO DO ANYTHING ON YOUR MAC, IPHONE & IPAD

Record with GarageBand

Get into the groove and record a song with Apple's free music-making app

REQUIRES

GarageBand,
OS X 10.11 or later

YOU WILL LEARN

How to use loops,
play virtual instruments,
and record your voice
or a guitar

IT WILL TAKE

30 minutes



AS PART OF the iLife family, GarageBand used to be paid-for, and given away with all new Macs. Recently, Apple made it, along with iWork and iMovie, free for all Mac users running recent operating system versions, regardless of whether you've just bought new hardware.

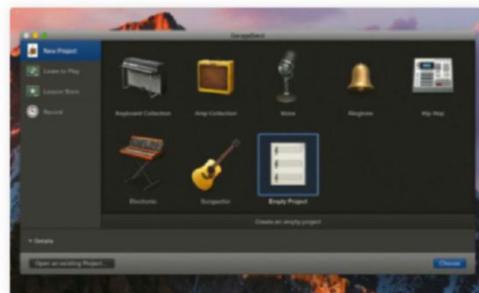
In GarageBand's case you only need a Mac running OS X El Capitan or later.

That's great news as the app is more powerful than you might expect a free one to be. Sharing much of its underlying technology with Apple's more advanced Logic Pro X, it puts a friendly face on music-making tools, and shouldn't be daunting even if you're a beginner.

It comes with a lot of premade loops, instruments, and effects, and building up your first track is surprisingly simple. Best of all, you don't necessarily need any extra equipment to start making music – with just your Mac and this app, you can write tunes right now! **HOLLIN JONES**



HOW TO Build your first track



1 Start a project

Download GarageBand for free from the Mac App Store, or open it from your Mac's Applications folder if it came preinstalled. In the app's opening window you'll see a number of project templates to choose from.



2 Add a track

Double-click on the Empty Project option to start a brand new project. Next, you are prompted to set the type of your first track. For this example, choose Software Instrument by selecting that option, then click Create.

QUICK LOOK GarageBand's interface



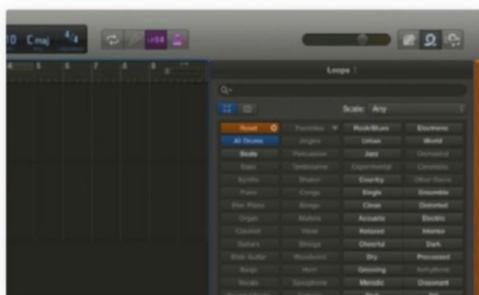
A
INSTRUMENT PRESETS
All your instruments can be loaded from here by choosing a category, then an instrument preset.

B
TRACK LIST
Build up layers of loops, instruments, and audio recordings, then use the sliders here to adjust the level of each one.

C
ARRANGEMENT
Copy, paste, and arrange clips on the timeline. Drag the ends of loops to make them longer. Snap clips to ensure correct timing.

D
LOOP LIBRARY
You can sort loops using tags and names, download just those you want, and drag them into a project to create backing tracks.

E
EDITORS
MIDI and audio can be edited. This means sounds you've recorded as well as content from GarageBand's library.



3 **Find a loop**
You'll probably want to start with some kind of a beat, so open the loops library by clicking the Apple Loops button at the top right of the window. To filter the list of loops, click the Loop Pack pop-up and pick a category.



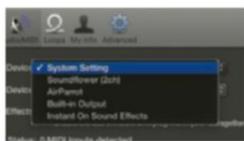
4 **Add to project**
Click a loop to hear it. To place a loop into a project, drag it from the library and drop it on a track in the centre. Its tempo will adjust to match the project. To change the project's tempo, double-click the tempo box at the top.

? GENIUS TIP

GarageBand's content library is over 20GB in size. To save disk space, just download the sounds or instruments you want, using the small arrows next to their names.



GENIUS TIP



In the app's preferences, you can change the device your Mac uses to send and receive sound. Use this option with a dedicated audio interface to make higher quality recordings.



5 Make the loop longer
 Drag the right-hand edge of the loop to the right to add more copies of the loop. Then find another loop, say a bass or guitar, and drag that to a new track, extending it to cover as many bars as you like, too.



7 Add a real recording
 To add a real recording, choose Track > New Track, select the option to record using a microphone, and click Create. Connect some headphones and a good USB mic. With this track selected, press Record in the toolbar.



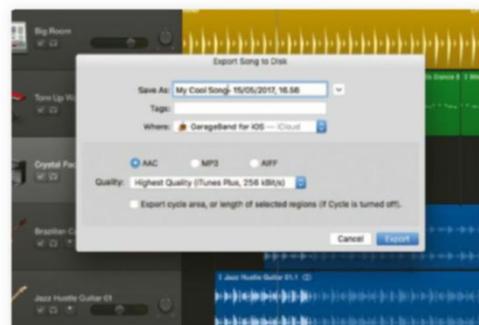
9 Mix the song
 Press the Smart Controls button near the top left of the window to see controls for the effects and instruments in the selected track. Use the level faders on a track to change its volume and refine the mix of your tracks.



6 Add an instrument
 Now choose the instrument track - we've picked an electric piano, but you can use any you like from the library on the left. Pick Window > Show Musical Typing to see how to play the instrument using your Mac's keyboard.



8 Build more parts
 Keep adding loops, recordings, and instrument parts until you are happy. The clips on the timeline can be cut, moved, or deleted to help build your arrangement. Select a track then a new instrument to try different sounds.



10 Share or export
 When you're finished, choose an item from the Share menu. You can send your music to iTunes, SoundCloud, email or AirDrop it, or export a file. Export as high quality AAC for a smaller file, or AIFF for an uncompressed file.

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or find it at your nearest store

Publish like a pro with Pages

Apple's publishing app is free, fun, and surprisingly powerful

REQUIRES

Pages, and some photos to use in your document

YOU WILL LEARN

How to create stunning brochures in Pages

IT WILL TAKE

25 minutes



PAGES IS CAPABLE of much more than bashing out the odd letter. You can use it to create eye-popping ads, fab flyers, nifty newsletters, mouthwatering menus, and pretty much any other kind of document you can imagine. You can even use it to create ebooks, and to collaborate on documents via iCloud. We've used it to write books, create album covers, and design brochures, and we're constantly amazed by how easy it is to use and how great the results are.

You can collaborate with others in real time with Pages on Mac, iPad, iPhone, and iCloud.com, easily replace fonts through an entire document, import and export Rich Text Format (RTF) files, and make use of tabbed windows to work across multiple documents without cluttering your desktop with extra windows.

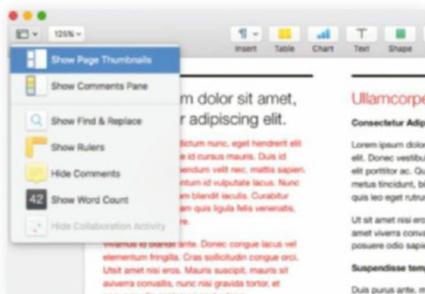
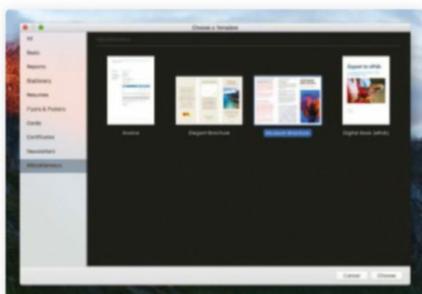
This kind of stuff wouldn't be helpful if Pages didn't talk to other apps, but it does. You can export your masterpiece as a PDF, Word, or an ePub document, as

well as RTF and plain text files, and you can send documents by email, Messages, or AirDrop, or add them to Notes. And images and movies you embed can be optimized for playback on iOS devices.

In this tutorial, we'll use a simple brochure to explore some of Pages' design tools. We'll use Instant Alpha to remove the background colors of images, and explore the use of masks to control how images display in your document and how text flows around them. We'll also look at the various formatting options for images and text, and how you can stack different elements on the page.

One thing we won't be doing is using Pages' media browser to organize and add images, as it can be a very slow process. It's a minor flaw in an otherwise excellent app, and easily worked around. We've found that organizing our images as albums in Photos, and dragging from there into Pages, is much faster. If you'd rather not use Photos you can drag from a Finder window instead. **GARY MARSHALL**

HOW TO Design a brochure in Pages



1 Pick a design

Pages' templates include the usual kinds of letters and flyers found in a word processor, but you can also create impressive brochures and other things you'd expect from a desktop publishing app. We'll use the Museum Brochure.

2 Thumbs up

This template isn't a one-pager: it's designed to print on both sides. If you click the View button at the top left of the window and choose Show Page Thumbnails, you can move between the two sides with a click.

3 Drag images

Pages' built-in media browser can be painfully slow. To add images without having to wait around, drag them from Photos (or Finder) onto the relevant spot on your document. Here we're replacing the center image.



4 Resize or move
As you might expect, you can adjust the space allocated to an image by dragging the handles on its edges and corners. If you move an image, temporary guides appear to help you align it with other objects on the page.



5 Edit the mask
If you find that the picture is too big for the space allowed, choose Format > Image > Edit Mask. You can now drag the image around within its frame, or resize it so that it looks just right on your page, without being cut off or too big.



6 Kill the background
If your image has a background color, you can remove it: open the Format inspector (top right), then click the Image tab followed by Instant Alpha. If you now click the background of your image, it appears in cyan to indicate transparency.



7 Kill more colors
By default, Instant Alpha only removes one color, but if you drag across a range of colors you'll make all those the pointer passes over transparent, too. Take care: if you overdo it you'll find that your images start to look really weird.



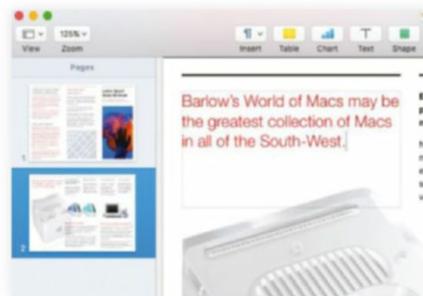
8 Put it back
If you want an image to appear behind everything else, click the Format inspector's Arrange tab. Sometimes, though, you'll see something like the above: our image is behind another image that has a solid background.



9 Instant Alpha again
We need to use Instant Alpha to remove the background color from the foreground image. You may find this causes text to appear around it. To stop that, select the image, then experiment with the Arrange tab's Text Wrap options.



10 Line it up
Choose View > Zoom > Fit Page to see how your page looks in full and check that the design works. That large picture on our page doesn't look good: it should really fit into the first column, or sit behind the entire page.



11 Add your own text
Replacing text in a Pages template couldn't be simpler: just select the text you want to replace, then type or paste the new text. Use the Format inspector's Text tab to adjust fonts, sizes, colors and spacing to make things just so.



12 Have some fun
Pages really rewards exploration: the good old "What does this button do?" approach often uncovers great features. Here we've experimented with transparency and masks to run a big image of a Mac across multiple columns.

Power up your app switcher

Replace macOS's app switcher with the superb Witch

REQUIRES

OS X 10.10 or later,
Witch 4 or later

YOU WILL LEARN

How to replace and go beyond macOS's app switcher with Witch

IT WILL TAKE

10 minutes



WITCH'S SLOGAN IS “ ⌘ -Tab Everything”. Initially, the app resembles the standard macOS app switcher, but dig deeper and you rapidly realise Witch is akin to a “pro” take on Apple’s implementation.

With Witch’s switcher active, you can drill down into apps to access their windows by name – more efficient than Exposé – or even by tab. Not sure what you’ve got open, but recall a window’s title? Just use Witch’s search function in real time, much like triggering a Spotlight search.

There’s a ton more more to discover: visual customization, menu bar access, multiple switchers, and more. The bulk of it is covered in some form in our walkthrough. Before the first

step, we assume you’ve installed Witch, opened it in System Preferences, and clicked Enable Witch.

You can download a free trial of Witch from manytricks.com/witch. After 50 uses, Witch will occasionally suggest you buy it, which will cost you \$14.

CRAIG GRANNELL



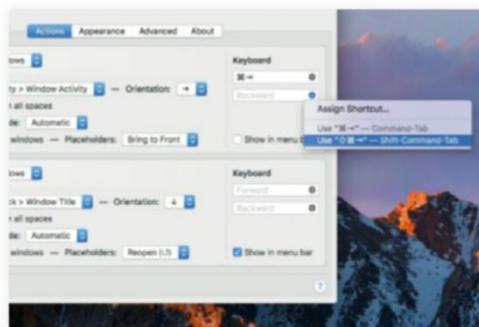
USE WITCH'S SEARCH FUNCTION TO TYPE AND RAPIDLY FILTER OPEN WINDOWS

HOW TO Make the most of Witch



GENIUS TIP

In the Appearance tab, you can adjust the look of Witch. Themes can be saved in the Presets menu, which comes with several predefined alternatives.



1 Edit shortcuts

In the Actions tab, click the cog in the control under Keyboard, and set the shortcut to $\text{⌘} + \text{⇧} + \text{→}$. Set the Backward option below to $\text{⌘} + \text{⌘} + \text{⇧} + \text{→}$. When it's active, Witch will replace macOS's built-in app switcher.

2 Use the switcher

Open some Safari windows and then hide the app ($\text{⌘} + \text{H}$). Bring up Witch ($\text{⌘} + \text{⇧} + \text{→}$), navigate to Safari and, with your thumb still holding ⌘ , press the ⏏ key. Your open Safari windows will be displayed in a list.



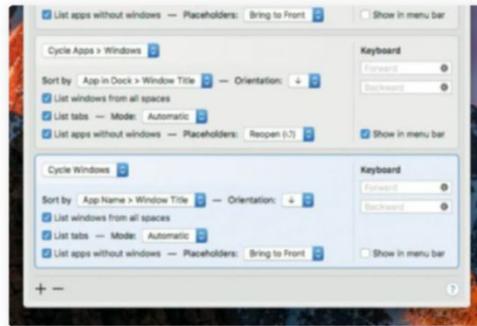
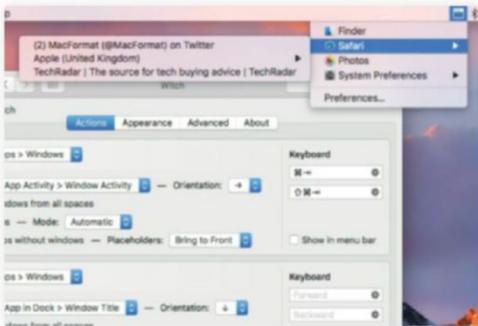
JARGON BUSTER

The **app switcher** has long been a core Mac component. Triggered using **⌘+⇧** it enables you to see which apps are open and switch to them. But Witch does more.



3 Preview and select
To bring a window to the front, select it and release **⌘** or press **⇧**. For non-hidden windows, selected items can be previewed by pressing the space bar. Alternatively, return to the app switcher by pressing **⌘**.

4 Filter your windows
If you've scads of windows open and don't feel like going through them all, open Witch and with **⌘** held, press **S** to search. Start typing to see only item names containing your search terms. Again, **⇧** selects one.



5 Use the menu bar
Back in System Preferences, you'll see a second switcher is set to show in the menu bar. Change its sort order to App Name > Window Title. Now click the menu bar icon to see an alphabetized list of apps and windows.

6 Create a new switcher
Click + to create a new switcher. This one will be specifically for listing open windows. Set the top-left menu to Cycle Windows, "Sort by" to App Name > Window Title, and the orientation direction to down.

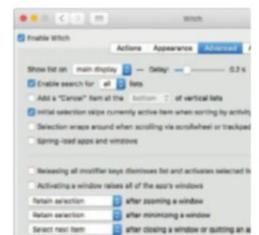


GENIUS TIP

In Witch's Advanced tab, uncheck "Releasing all modifier keys" and Witch will remain active without you having to hold **⌘**. (**esc** closes it.)

7 Define some shortcuts
We already use **⌘**-tabbing for Witch's main switcher, so set the new switcher's two shortcuts to **⌘+⇧** and **⌘+⇧** for, respectively, forward and backward. Use the shortcut to bring up your new switcher.

8 Adjust how tabs display
In Safari, add tabs to a window. In Witch, a window with tabs has > next to its title. Use the **▶** key to drill down. Or adjust the Mode menu's setting to treat tabs as windows, and they'll then be listed together.



Cheat sheet: Safari

Discover features that give you a smoother experience on the web



ON THE SURFACE, your Mac's built-in web browser looks much like any other. It has a dual-purpose bar for entering the address of a website or page, or terms you want to search for, and a tab bar for all the pages you have open. Yet it packs in many useful tricks for easier browsing.

Before we move on to those, let's talk about a couple of shortcuts that are really helpful. First, rather than reaching for your mouse or trackpad to click in the search bar, press **⌘+L** instead. This moves the input focus to the bar.

Second, as you'll see on the opposite page, typing in the search field displays various kinds of suggestions. Quickly move down them a category at a time by using **⌘+↓**. In fact, this also works in the results presented by macOS's Spotlight feature. **ALAN STONEBRIDGE**

> ADD CURRENT PAGE TO...

Save the current page or send it elsewhere

1 Reading List
Pages you add to this are saved on your Mac, so you can read them without being online. To add one, put the pointer over the search bar and click the +, or use **⌘+⌘+D**. To see the list, pick **View > Show Reading List Sidebar**.

2 Bookmarks
To add a bookmark for a page to any folder, put the pointer over the search field and **⌘**-click on the + on the left (or click it with two fingers on a trackpad), move the pointer down the folder list, then let go over the desired folder.

3 Favorites
The best way to add the current page to the favorites that appear when you place the focus in the search bar is to drag and drop the icon from there to the grid position where you want it.

4 Other apps
With a page open, click in the search bar and then drag the icon that appears to Finder to save a hyperlink as a file, or into a doc in apps such as TextEdit and Notes - handy for consolidating research.

QUICK LOOK The toolbar and the tab bar



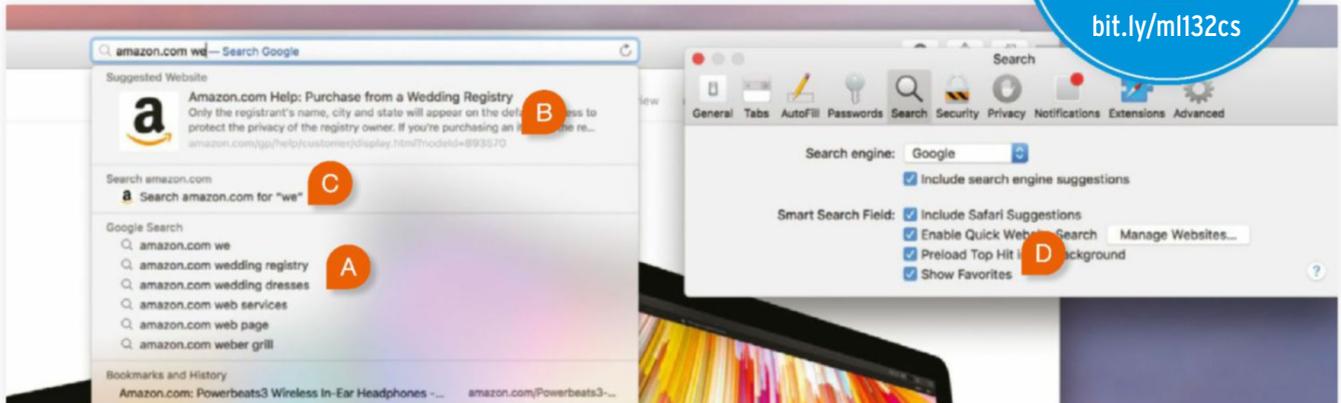
A QUICK HISTORY
With the pointer over the Back or Forward button, hold down your mouse or trackpad's button for a history of pages visited in the current tab, before or after the page you're currently looking at.

B THE TAB BAR
Unlike some browsers, Safari's tabs show page titles but not site icons. For a graphical overview of all open pages, though, press this or **⌘+⌘+⌘**; see opposite page for a fast trackpad alternative.

C PIN TABS OPEN
Drag a tab to the left end of the bar to pin it there; it'll show the site's icon. Pinned tabs appear in all Safari windows bar private ones, and work great with key combos for switching tabs (see opposite).

D RELOAD PAGE
Click this to reload a page, or hold down on it for options to reload without content blockers (some sites block you if one's detected), or with plugins active that are ordinarily disabled.

E SHARE OPTIONS
The options behind this button are replicated in **File > Share**, enabling you to set key combos to quickly post to Facebook, say. Do that in **Apple > System Prefs > Keyboard > Shortcuts > App Shortcuts**.

QUICK LOOK Understand the search field's suggestions

- A** **SEARCH ENGINE**
As you type in the search bar, Safari shows a mix of suggestions, including those from whatever search engine you've chosen in Safari > Preferences > Search.
- B** **SAFARI SUGGESTIONS**
Safari makes suggestions it thinks are relevant, such as stock prices, iTunes music, and Wikipedia articles. Also, try "Weather" or "Map" followed by a place name.
- C** **QUICK SITE SEARCH**
Safari remembers sites' search engines that you use. Later, type a site's name and some words; you'll see a suggestion to submit those terms directly to the site.
- D** **SHOW FAVORITES**
If new windows or tabs are set to show your favorite sites (in Safari > Preferences > General), you can opt to not have them appear in the search bar's suggestions.

> NAVIGATION SHORTCUTS

Discover quick ways to get around using popular input devices



- 1 Keyboard**
To go back or forward in a tab's history, hold **⌘** and press a square bracket key. To move along the tab bar, add **⇧**. Use **⌘** and a digit (1 to 9) to jump to a tab. Set up combos for menu items in **Ⓜ** > System Prefs > Keyboard > Shortcuts > App Shortcuts.



- 2 Trackpad**
Swipe two fingers left or right to go back or forward. With the pointer over a page element, double-tap two fingers to zoom in on it, or spread apart/pinch together to zoom arbitrarily. When fully zoomed out, pinch again for an overview of all open tabs.



- 3 Magic Mouse**
Horizontal swipes of two fingers jump back and forward through a tab's history. Magic Mouse doesn't offer arbitrary zooming, but a two-finger double-tap on it zooms in or out to whatever's under the pointer, just as it does on a trackpad.



- 4 Third-party mice**
Check whether your mouse's maker provides software for tailoring what the various buttons do. In some cases you can even tailor actions to do different things according to what app you're using at a given moment.

Get iOS 11, High Sierra, and tvOS

Try out the public beta versions of Apple's latest operating systems today

REQUIRES

A Mac that meets macOS Sierra's requirements (see bit.ly/sierrareqs). See following pages for iOS 11 and tvOS system requirements.

YOU WILL LEARN

How to sign up for and install Apple's public betas of macOS, iOS and tvOS.

IT WILL TAKE

At least an hour



APPLE HAS MADE public beta versions of this year's system upgrades available for you to try. Why would you want to run a version that's likely to contain a few bugs? Aside from being helpful to Apple, you might want to check whether any of the apps or accessories you depend upon have any showstopping incompatibilities. It's wise to do that as early as possible if you plan to buy a new device that'll come with one of these systems preinstalled.

The method of trying out High Sierra we present on these two pages makes it easy to switch back and forth between it and your working system.

Things are more involved on iOS in particular, mostly due to the time it takes to download the latest non-beta version, erase your device to install it, and restore a backup.

The key thing to remember to do on macOS and iOS is to make a full backup of your device immediately before installing. Backups made on iOS 11 will be worthless to you if you later roll back to iOS 10.

And on macOS, Apple's advised method is to back up using Time Machine. However, restoring your entire Mac from Time Machine's backups is a disruptive and slow process, so we recommend another route that requires a second drive; it takes longer upfront, but it saves you stress if you run into a big problem.

In order to try any (or all) of the public betas, start by following the three steps below to sign up for Apple's public beta program. Should you want to roll back to your non-beta system, see Apple's guides at bit.ly/betarstr. **ALAN STONEBRIDGE**



HOW TO Sign up for the public beta program



1 Sign up
To try the public beta versions of any Apple operating system, first go to beta.apple.com and click the button labelled "Sign Up" - scroll down if you can't see it. Enter your Apple ID's details and click the "Sign In" button.

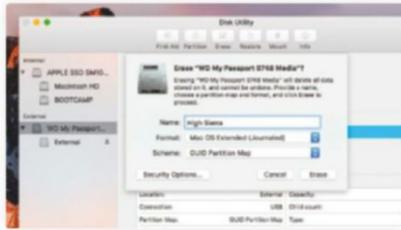


2 Read the terms
Read the beta program's terms and conditions. The fifth item is very important, as it forbids sharing of info and screens with non-participants, at least of things Apple itself hasn't disclosed to the general public.

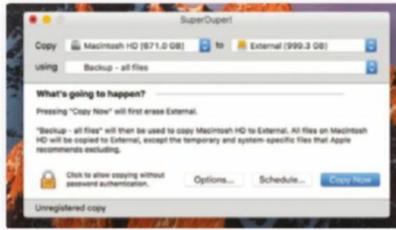


3 Accept agreement
Click Accept at the bottom right of the page. Next, you'll see a page containing guides for installing the various beta OSes; before you install High Sierra, read the walkthroughs opposite for our recommendations.

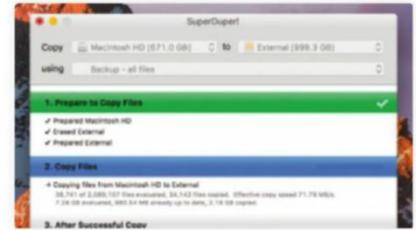
HOW TO Prepare your Mac



1 Make a backup
 Instead of Time Machine, we'll use a different tool to save time if you want to roll back, yet still test your full setup with High Sierra. Connect a spare drive and erase it (not just its partition) with a GUID scheme in Disk Utility.



2 Prepare for cloning
 Download SuperDuper (shirt-pocket.com) to clone your startup disk to the second drive. Set the app's Copy pop-up menu to your startup disk, its "to" pop-up to your external drive, and "using" to "Backup - all files."



3 Start cloning
 Click Options. Set "During copy" to "Erase <volume>, then copy files..." and then Click OK > Copy Now > Copy. Once cloning's done, rename the copy "High Sierra," make it your startup disk in System Prefs, and restart your Mac.

HOW TO Install the macOS High Sierra beta



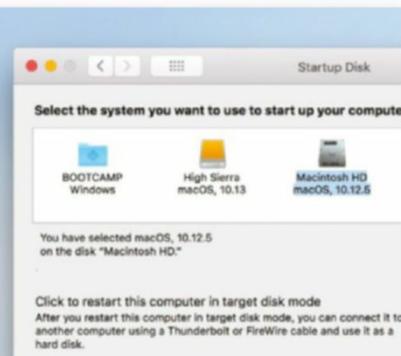
1 Enroll your Mac
 With your Mac started up from the clone, sign in at beta.apple.com, click "macOS", and click "enroll your Mac" under Get Started. On the next page, download and install the public beta access utility.



2 Download installer
 Close the beta access utility installer and the App Store will open to a High Sierra beta page. Click the button on its left side to download the actual installer for the beta; it's more than 5GB large, so it may take a while.



3 Install the beta
 When the installer opens, run through its steps, then wait. Just make sure the "High Sierra" volume is set as the destination. You can opt out of the new Apple File System, but doing so defeats a reason to try the beta.



> SWITCH BACK

Return to your previous system in seconds

Once the beta is installed, you'll continue to receive updates to it right through to the general public release. If you've followed our method of trying out the beta on a second drive, either as a clean installation or over the top of a clone of your working system, you can switch back to your previous version of macOS or OS X by choosing it in System Preferences' Startup Disk pane. But if you used Apple's method of making a Time Machine backup, you'll need to follow Apple's guide for Sierra at bit.ly/rstrtimemac or the one for your system at bit.ly/rstroldersys.

Try out the iOS 11 public beta

Take the new Control Center, better iPad multitasking, and more for a spin

REQUIRES

iPhone 5s, SE, 6, 6s, or 7,
iPad mini 2 or later,
iPad Air or later,
iPad Pro (any model),
or an iPod touch
(6th generation)

YOU WILL LEARN

How to prepare your device and data, and then install the iOS 11 beta.

IT WILL TAKE

At least an hour



INSTALLING THE public beta

of iOS 11 is straightforward, though it's best if you use a device you don't depend on from day to day – say, to check your bank account and pay your bills.

You can restore your device to iOS 10 if you want – or at least you can for a short time after the final public release of iOS 11 drops, though Apple doesn't say exactly when that will be.

If you decide iOS 11 isn't for you, make sure you roll back as soon as you can spare the time to do so. Note that the process takes longer to complete than simply telling your Mac to switch from starting up High Sierra from one partition to using your previous system on another.

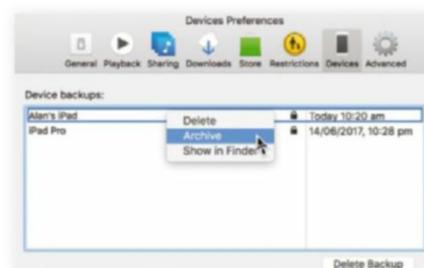
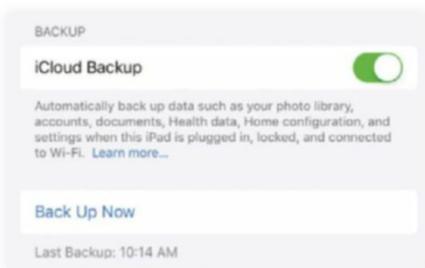
As always with a big software update, the first thing you should do is make a backup of your device. On iOS, you might already be doing this using one of two methods: using iOS's iCloud Backup feature, which backs up automatically when your device is locked, on Wi-Fi, and connected to a power source; or using the

device backup capability of iTunes on your Mac, located on a device's summary page.

ALAN STONEBRIDGE



HOW TO Install the iOS 11 public beta



1 Enroll your device
Go to beta.apple.com on the device on which you want to install the iOS 11 public beta, click iOS near the top of the page. Scroll down to the Get Started heading and then click "enroll your iOS device" in the text below it.

2 Back up to iCloud...
You'll be reminded to back up. If you use iCloud Backup, open Settings and tap the row for your Apple ID at the top, then iCloud > iCloud Backup. Tap Back Up Now so iCloud records your device's latest state, and let it complete.

3 ...or iTunes on a Mac
To back up using iTunes on your Mac, follow the steps for preparing a device for a beta software update at bit.ly/prepriosbeta – do not skip step 5, as you'll need an archived backup if you want the option to roll back to iOS 10.

Put the tvOS beta on your Apple TV

Try out interface tweaks and other improvements to the little black box

REQUIRES

Apple TV (4th generation)

YOU WILL LEARN

How to receive public beta versions of tvOS.

IT WILL TAKE

15 minutes, depending on your internet connection



THE LATEST tvOS is the easiest to install of all Apple's public betas. There are no backups to make and no profiles to install; you only need the Apple ID you registered with the Apple Beta Software Program. See the steps to the right.

Rather than supplying feedback from your Apple TV, which would be tedious to enter using its Siri Remote, Apple expects you'll also be running the iOS 11 public beta. Consequently, if you have bugs to report or suggestions to make about the tvOS beta, open Feedback Assistant on iOS 11 – you'll find it on the Home screen, by entering at least some of its name in Spotlight, or by saying "Open Feedback Assistant" to Siri. Tap the new message icon, then choose your Apple TV under "Feedback for," or tap Other Devices if you don't see it listed there.

To restore your Apple TV to a non-beta version of tvOS, you'll need a USB-C cable with the corresponding connector for your Mac at the other end. You'll find steps to roll back at bit.ly/rollbackbeta.



- 1 Prepare Apple TV**
In Settings > Accounts, sign in to iCloud, iTunes and App Store, or Game Center using your beta program Apple ID.
- 2 Opt in to betas**
Go back to the top of Settings, then to System > Software Update and switch on Get Public Beta Updates.
- 3 Receive and install**
In the same place, if Automatically Update is switched on, your Apple TV will receive public betas as part of that. Or, go to Settings > System > Software Updates > Update Software to check for and install the latest version right away.

2 Download Profile.

From your iOS device, go to beta.apple.com/p. iOS device will prompt you to install it. Follow

Download profile



- 4 Download profile**
Under the text of the second step on the web page, click the "Download profile" button. You'll be taken to the Settings app and be shown a summary of the profile; basically, it tells your device to check for and receive beta updates.

- 5 Install and restart**
Tap Install on the summary and read the reminder that what your device will receive is pre-release software. Tap Install again, then a third time on the confirmation dialog. When prompted to restart your iPad, tap Restart.

- 6 Get the beta itself**
When your device restarts, go to Settings > General > Software Update and momentarily you'll be told that your device is eligible to receive the iOS 11 public beta. Tap Download and Install, then follow the usual on-screen steps.

Start keeping a diary

With Moleskine Journal, it's simple to start recording your life

REQUIRES

Moleskine Journal,
iOS 8.1 or later

YOU WILL LEARN

How to use Moleskine Journal's different modes to add content and sync with Evernote

IT WILL TAKE

30 minutes



CREATED TO BE a digital version of the real-world notebooks, sketchbooks, and planners, Moleskine Journal allows you to write and draw on your iOS device in a virtual Moleskine. You can also import photos and sync notes with Evernote, or back them up to Dropbox.

If you choose to type rather than write by hand, Moleskine Journal supports the full range of iOS fonts, with the ability to resize them on the page. If you would rather work by hand, you can use either your finger or a stylus, including the Apple Pencil. You can choose from a paintbrush, pencil, pen, or highlighter, and the color picker gives you full control over the hue of what you write or draw.

There are two modes for writing. Productivity mode allows you to type with the on-screen keyboard, which includes controls for choosing a font, setting the size of the text, and styling it as bold, italics, underline, strikethrough, or highlighted. You can also set the color of the text here, as well as indent it or choose a bulleted or numbered list.

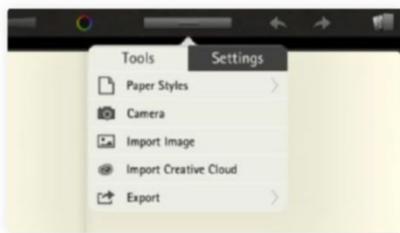
Creativity mode is designed for creating shorter, prettier text and allows for larger, fancier typefaces.

Alternatively, you can draw or write on the screen using your finger or a stylus. Just choose your instrument (pencil, pen, highlighter, or brush) and start drawing. There's also a scissors tool that acts like the lasso selection tool in Photoshop, enabling you to draw around something and cut or copy it to paste elsewhere.

You can swap between Productivity and Creativity modes whenever you like, and can set the paper style (plain, lined, squared, weekly planner, or storyboard) from the Tools palette. One of the real-world Moleskine notebook's best-loved features is the pocket tucked inside the back cover, and that's also here in the digital version, enabling you to store snippets of text and images.

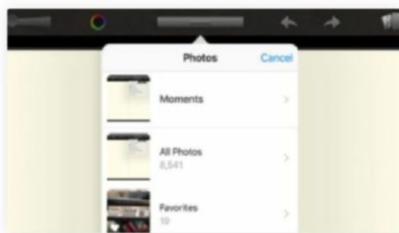
Fortunately, unlike the real thing the digital journal has multiple levels of undo. So if you write or draw something you don't like, just tap the back arrow in the toolbar to get rid of it – without ruining your Moleskine. **KENNY HEMPHILL**

HOW TO Import photos



1 A clean page

Open the journal in which you want to import a photo and tap the arrow at the right of the screen to move to a new page. Tap the Tools palette at the top of the screen, next to the color picker, to see its menu.



2 Take or choose

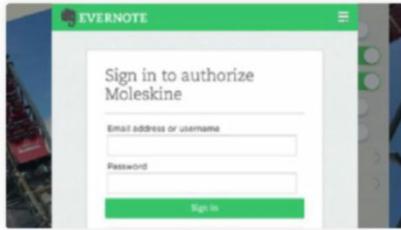
In the Tools palette, tap Camera if you want to take a new picture right now, or tap Import Image to add an existing one. Once you've authorized access to your photo library, you'll see a list of albums appear in the menu.



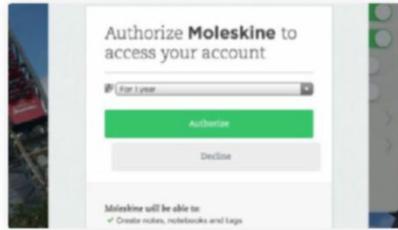
3 Select your pic

Navigate to the photo you want to import and then tap it. It will appear on the page. You can now use two fingers to resize it by pinching in or out, or twist to rotate it. Use one finger to drag it into position on the page.

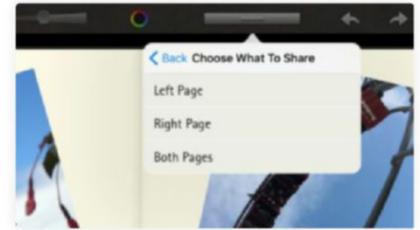
HOW TO Sync with Evernote



- 1 Sign into Evernote**
Open the Tools palette and tap Settings. Turn on Evernote Login and, when the dialog pops up, type your Evernote account's details into the username and password boxes. Tap Sign In to continue.

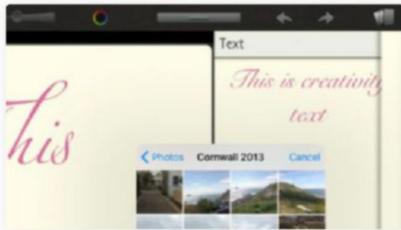


- 2 Authorize Evernote**
On the next window, choose how long you want to allow Moleskine to access your Evernote account and tap Authorize. Now go back to the Tools tab and tap Export. Tap Evernote to send your notebook to that service.



- 3 Export to Evernote**
You'll see a list of your Evernote notebooks in the Tools window. Find the notebook you want to export to and tap it. Tap "Left page," "Right page," or "Both pages" to tell Moleskine Journal what to export.

HOW TO Use the inner pocket



- 1 Add an image**
Tap the top right of the screen to open your journal's pocket. To add an image from your photo library to the pocket, tap the picture icon at the bottom of the screen. To take a new one, tap the camera icon.



- 2 Add text**
To add "creativity text" or an image from the main notebook to the pocket, tap the text or image in your journal and choose Pocket. To delete an item from the pocket, tap the pencil icon, the item, and then the trashcan.



- 3 Empty the pocket**
To place an item from the pocket onto a notebook page, hold a finger on it, then drag it onto the page. Resize it and drag it into position, and double-tap it to set it in place. To move it again, tap it, then Lift, and drag it.



> EXPANDING YOUR OPTIONS

Add more notebook types with in-app purchases >

Moleskine Journal has three options for in-app purchases. They cost \$2.99 each and are designed to replicate the Passion Journals the company produces for its real-life notebooks. The three digital versions currently available are a wine journal, a recipe journal, and an interactive traveler's journal. Each has specially designed pages for its subject; for example, the wine journal has sections for different types of wine plus space for you to record the names of wines and your notes. When you buy one, it's added to the notebooks view in Moleskine Journal.

Get more from your albums

Organize your shots more effectively with albums in Photos

REQUIRES

Photos

YOU WILL LEARN

How to create and add pictures to an album, manage albums, and share their contents.

IT WILL TAKE

15 minutes



IN THE DAYS of analog film cameras we were limited to shooting on rolls of film that produced a maximum of 36 photos at a time. Most people would only use a handful of rolls of film each year to record special events such as holidays, weddings, and birthdays.

In these digital days, you're never without a camera thanks to the app provided with every iPhone and iPad. As well as shooting birthdays, holidays, and weddings, you're likely to document ordinary daily activities as a series of clips and stills. Unlike our analog ancestors, we have thousands of digital photographs and video clips to manage and share. Fortunately, iOS's Photos app has all the tools you need to take control of your ever-growing collection of digital assets.

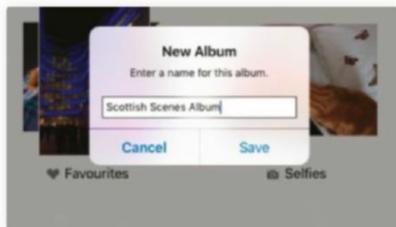
Photos uses the analog album model to organize digitally sourced shots and clips. Analog albums had to be filled manually, but Photos uses the metadata stored in digital images and video clips to help gather related files together automatically, in various ways.

An image's metadata can tell Photos where and when a shot was taken, and what type of shooting mode was used (such as time-lapse). If you use your iPad's front-facing camera to snap a shot, then Photos presumes you're taking a self-portrait. These will automatically be stored in the Selfies album in Photos, so you can find all your best poses in an instant. If you have set your iPad and iPhone to upload to the iCloud Photo Library (in Settings > iCloud) then you'll also find Photos has created albums that store images taken in Panorama, Time-lapse, and Burst mode automatically.

Automatic albums are a springboard to finding specific types of files fast, though you'll find it more useful to create themed albums from scratch. We'll show you how to create albums, add photos to them, and even merge multiple albums to simplify your collection, if you find yourself with too many on the go.

You'll also learn how to share album-based content with friends and family so that your precious pictures will find their audience. **GEORGE CAIRNS**

HOW TO Create a custom album



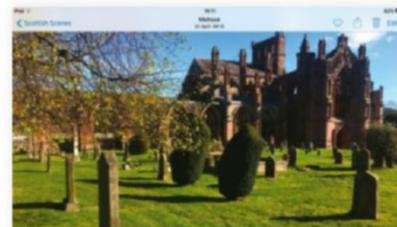
1 Label it

In Photos, tap the Albums icon to view albums that gather photos automatically using metadata. To create a custom album manually, tap the + icon. Enter a name for the album and then tap Save.



2 Add photos

You'll be taken to Moments, where you can browse your pictures by date. Scroll to a particular Moment and tap the photos you want to add to your album. Drag with a finger to add multiple shots quickly. Tap Done.



3 View custom album

You'll now have a custom album full of hand-picked photos in the Albums section. Tap its icon to view its contents. Tap a thumbnail to view its full-size and swipe through the contents of the album to enjoy them.

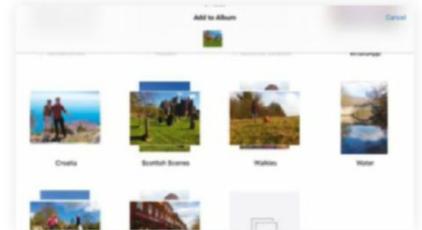
HOW TO Organize albums



1 Delete an album
You can rearrange your digital albums, which is helpful if the Albums view gets cluttered. Tap the Edit button, then tap the X by an album to delete it. The contents of that album remain accessible in the Moments view.



2 Rearrange albums
While the X is still present, tap and drag an album to reorder the list. Press Done when you're happy with the arrangement and the X will disappear. The rearranged albums are now locked into their new positions.



3 Merge Albums
Open an album, tap Select, then tap the photos you want to merge (or Select All), then tap Add To. Next, tap the album to merge the selected photos with. (If you've emptied the first album, you may want to delete it.)

HOW TO Share album content



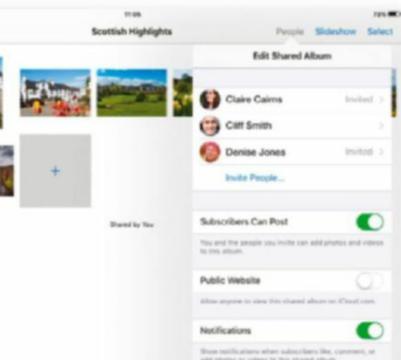
1 Create a slideshow
You can view an album's contents as thumbnails to create a slideshow. Tap Slideshow, then Options. Choose a theme, such as Origami (which adds picture-in-picture and motion effects). Tap Play to view it.



2 Share online
In an album, select the shots that you want to share online. Tap the Share icon. Select more of the album's content now if you want, then tap the icon of where you want to share those photos, such as Facebook. Tap Post.



3 Extra share options
As well as sharing photos using iOS's built-in apps, such as Messages and Mail, you can tap the More button to add third-party apps such as Skype as destinations. Turn on the switches next to services you want to publish to.



> SHARE VIA iCloud

Export an album to select family and friends

Go to Settings > iCloud > Photos. Scroll down to iCloud Photo Sharing and turn it on, then open Photos and select the pictures that you want to share. Tap the Share icon and choose iCloud Photo Sharing. The app will prepare the images. In the dialog that appears, type in a comment, then tap Shared Album followed by New Shared Album and give it a name. Tap Next. Enter the email addresses of the people you want to view your photos. Tap Next, then Post. The album appears in Photos' Shared view on your and your friends' devices.

RANDOM APPLE MEMORY

The Company Store

It's the only part of Apple's headquarters that isn't a secret, and **Adam Banks** remembers it fondly



The late, lamented Company Store's enviable merch.

APPLE'S INFINITE LOOP campus isn't open to the public, and even authorized visitors are ushered firmly to and from the department they've been invited to. There's just one area where everyone's always welcome: the Company Store.

Established in 1993, it predated the Apple Store chain and remained for years the world's only official Apple store. It was the highlight of my own first trip to Cupertino, in the late 1990s: Phil Schiller's press event, which I'd flown 5,000 miles to attend, was (unusually) rather dull, but wandering around Infinite Loop with a colleague was exciting - even if we were warned off attempting entry by the not-so-discreet gaze of

security guards. At the Company Store, entry seemed almost compulsory, though. Modestly sized and blandly styled, it felt like a museum gift shop, but what mattered was its exclusive range of branded merchandise - bags, mugs, T-shirts, hats - bearing the coveted rainbow-striped logo.

In 2015, unexpectedly, the Company Store closed for the summer and reopened as a full-blown Apple Store. One British visitor on TripAdvisor sniffed that the expanded outlet's "red T-shirt-wearing drones" could no longer sell him "any of that cool Apple swag." You can, in fact, still buy a \$35 Apple pen, a small selection of minimalist apparel, or even

an Apple cocktail shaker. But the logos are uncompromisingly monochrome.

As Infinite Loop's workforce decamps to Apple Park, the Company Store will be reborn once more in the site's visitor center - separate, again, from the "mothership" where the real work will happen. Spread over more than 10,000 square feet, according to the plans, it's surely going to be worth a visit: if you never make it any closer to the inside of Apple's empire, at least you can say you got the T-shirt.

**NEXT
MONTH**

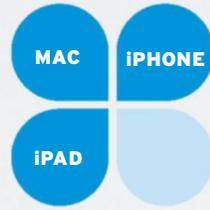
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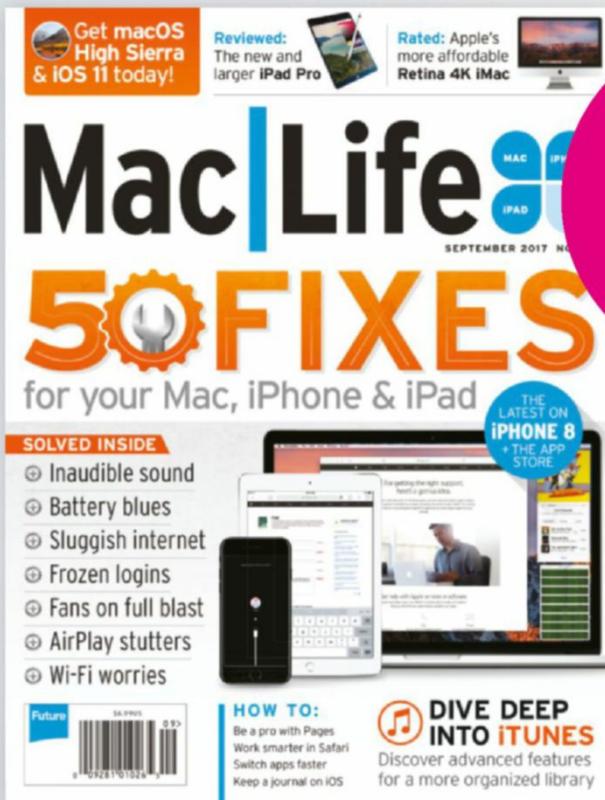


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