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THE FORGOTTEN iPHONE

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STANDS IN THE
SHADOW OF
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SERIES 3:**
THE INDISPUTABLE
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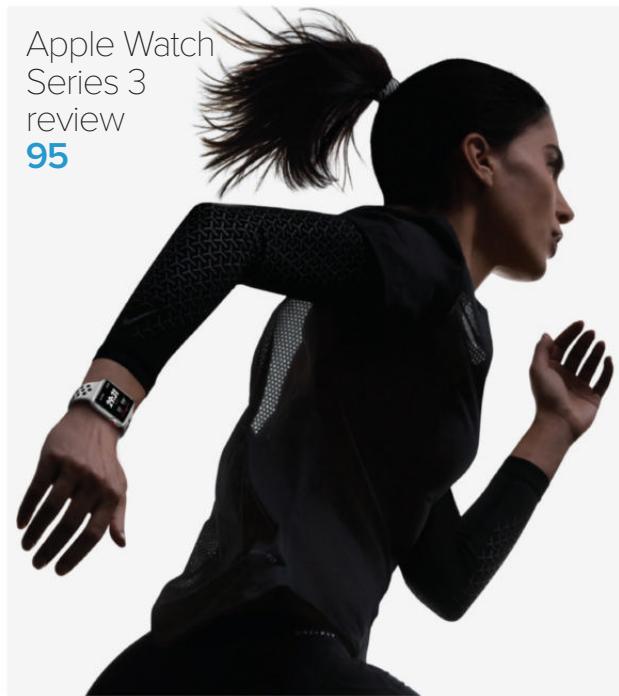


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The image displays three separate screenshots of the TechHive website's layout. The top-left screenshot shows the main navigation bar with links to NEWS, REVIEWS, VIDEO, CONNECTED HOME, ENTERTAINMENT, and RESOURCES. Below the navigation is a large image placeholder. To the left, there's a sidebar with a 'ENTERTAINMENT' section featuring a thumbnail of a computer monitor and the text 'Can computers write hit music? We'll soon find out'. Below that is a 'ALL' button and a thumbnail for 'DirecTV 2016'. The bottom-left screenshot shows a 'CONNECTED HOMES' section with a thumbnail of a power strip and a small cup, with the text 'Updated: Our essential guide to powerline Ethernet adapters'. The bottom-right screenshot shows a 'HOLIDAY GIFT GUIDE' banner with the text 'Complete coverage of the best tech gifts for everyone' and a 'Learn More' button. It also features a thumbnail of a power strip and a small cup, with the text 'The SnapPower Charger quickly adds one USB charging port to almost any outlet'.

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How Apple File System works with older Macs, encryption, external drives, and other questions

BY GLENN FLEISHMAN

With the release of macOS High Sierra and its upgrade for SSD-based startup volumes to Apple File System (APFS), *Macworld* readers had many questions about how this new

filesystem—more efficient and reliable for SSDs—will interact with older Macs, hard drives, networked filesharing, and more. Here are the answers.

Many questions revolve around a concern that files stored on an APFS-

formatted volume won't be readable or usable elsewhere. Generally, a filesystem structure only affects the way in which documents are stored on a drive. When the files are retrieved, they're independent of that format and can handle just as they would in any other case, like downloading a file from a website.

CAN I OPT TO NOT INSTALL APFS?

No. It's mandatory on SSDs when you upgrade to High Sierra. Fusion drive support (Apple's hybrid SSD and HDD combo) is coming and, we assume, mandatory with the upgrade that carries it.

IS APFS A REASON TO AVOID UPGRADING TO HIGH SIERRA FOR NOW?

Opinions vary. It's an entirely new filesystem if you have an SSD startup drive, and I generally recommend most people wait until there's a "dot" release, in this case 10.13.1 or even 10.13.2, to ensure any glitches found by early adopters are fixed without your living through the

If you clone your drive routinely, make a full clone before you upgrade, because otherwise you won't be able to revert on an APFS drive to a previous system that uses HFS+.

experience. (Since some games and software, like Adobe InDesign [[go.macworld.com/adin](#)], aren't working correctly with High Sierra at the moment, that's another reason to delay.)

ONCE HIGH SIERRA UPGRADES MY STARTUP VOLUME APFS, CAN I REVERT TO HFS+?

A reader having problems after upgrading to High Sierra wonders if APFS is the problem and, if so, can they revert? You can't: High Sierra doesn't have a back-out mechanism. You should make a clone (see next entry) if you want to have the option to revert back to Sierra. This will require wiping the drive, reformatting it, and then restoring the clone.

CAN I USE CLONING SOFTWARE TO BACK UP MY DRIVE?

Yes, but with provisos. Folks who develop cloning software for macOS are on the front lines of coping with these changes. Dave Nanian of Shirt Pocket, makers of SuperDuper, has a beta release out (free to existing owners) that supports APFS volumes, but on his blog he advises general users against



upgrading yet (go.macworld.com/shpo). Bombich's Carbon Copy Cloner (go.macworld.com/cacc), the other popular drive cloning app, has a release version that supports APFS, but notes (as Shirt Pocket does) that Apple has left some features undocumented, and has a long list of resources to read before upgrading.

If you clone your drive routinely, make a full clone before you upgrade, because otherwise you won't be able to revert on an APFS drive to a previous system that uses HFS+. It also gives you a clean revert position in case of an upgrade failure.

You should also upgrade your clone target to APFS for reasons of like-to-like compatibility, and if you want to have a bootable High Sierra volume. It's not

mandatory, but it's a good idea. (See below on converting external drives.)

I would advise people who rely on clones as one leg of their backup process—something I strongly recommend—to delay upgrading to High Sierra until both major clone-software companies express satisfaction with the state of documentation and stability on their blogs.

HOW DO I MOVE DATA FROM AN APFS VOLUME TO A NON-APFS VOLUME OR AN OLDER MAC?

You've got many, many choices:

- > Attach an HFS+ (or other supported format) external drive to your Mac, and

copy files to that drive. Eject that drive and move it to the other Mac.

- Turn filesharing on for your High Sierra Mac, and mount it as a volume on the older Mac.
- Use AirDrop. (It sometimes works!)
- Use Dropbox, SFTP, SMB, email, or any other networked file transmission technology to mount a remote volume, sync with a directory, or send a file or files. (APFS drives apparently can't be shared over the now-outdated Apple Filing Protocol.)

WILL APPLE STOP SUPPORTING HFS+?

Not for many years, because of the tens of millions of systems out there. It would be foolhardy and it's unnecessary. It will likely provide more and more reasons in future releases for external drives to move to APFS, like requiring APFS drives for Time Machine. But I can't imagine that HFS+ will be unmountable in macOS anytime in the next three years, and it will very likely remain possible for years after that—although Apple could only support read-only HFS+ mounting at that point. Effectively, Apple would want the large majority of Macs in use to be capable of being upgraded to at

least Sierra, which can read and write APFS volumes, before it stopped including read/write HFS+ support.

SHOULD I UPGRADE MY EXTERNAL VOLUMES TO APFS?

You can upgrade external drives that use either SSDs or hard drives, but not Fusion drives. However, there are no advantages for hard drives, so I would recommend against it.

If you have an external SSD that is only used for storage, the advantage is likely not high enough to give up compatibility if you ever think you would want to remove that external SSD and use it with a pre-Sierra Mac. See our instructions on using Disk Utility to upgrade an external SSD (go.macworld.com/xssd).

There's also some concern with how High Sierra's initial release handles external drives that have encryption enabled (go.macworld.com/enen), a



feature that's separate from FileVault, which only encrypts the startup volume.

SHOULD I TURN ON ENCRYPTION ON AN EXTERNAL HFS+ DRIVE IN HIGH SIERRA?

No! Apparently, an unexpected behavior in this first release is that using the Finder-based option to encrypt a mounted physical drive converts HFS+ drives to APFS without warning. (That's when you select a volume, right-click, and choose *Encrypt DriveName*.)

CAN I MOUNT AN APFS VOLUME ON A MAC RUNNING AN OLDER VERSION OF macOS THAN HIGH SIERRA?

Only Sierra, which can read and write APFS volumes. While Apple says in its APFS FAQ (go.macworld.com/sfpa), "For example, a USB storage device formatted as APFS can be read by a Mac using High Sierra, but not by a Mac using Sierra or earlier," this seems incorrect, as we'd heard from other Mac experts that Sierra could. We tested with a USB-connected SSD drive, and we can read and write to an APFS partition.

One reader asked if Apple might

Apparently, an unexpected behavior in this first release is that using the Finder-based option to encrypt a mounted physical drive converts HFS+ drives to APFS without warning.

release a compatibility upgrade for pre-Sierra OS X and macOS releases to allow them to mount APFS externally. My definitive answer is also no (though I don't know Apple's mind). APFS is a fundamental reworking of the filesystem, which requires extensive changes to the OS. I can't see a trivial way to allow this to propagate backward, even if Apple were in the habit of releasing upgrades for older macOS releases except for security reasons or Safari updates.

A third-party might be able to use the APFS spec to allow mounting such volumes, but there seems to be little market for what would be an expensive product to develop and support only for an ever-smaller number of users of older macOS flavors who also had upgraded boot or external drives in High Sierra or later releases to use APFS.

APPLE SAYS ENCRYPTION IS BUILT INTO APFS. CAN I TURN FILEVAULT OFF?

No. Apple tries to simplify security explanations, and I fear the way it has

marketed APFS may confuse people, since a few readers have already asked this. With HFS+, the long-running previous format, encryption was applied as a layer external to the format. This required more intermediation between the operating system and the underlying files when FileVault was enabled.

With APFS, encryption is an inherent property that can be turned on and negotiated at the filesystem level. That should make it less likely that things could go wrong, and should be more efficient. As a FileVault user, don't disable the feature, but you shouldn't notice any differences in everyday use.

ARE MY TIME MACHINE BACKUPS OF AN APFS VOLUME ALSO IN APFS FORMAT?

No. HFS+, APFS, FAT32, and other formats affect how data is laid out in a disk partition. It doesn't affect information read from a drive. If your Time Machine drive has HFS+ partitions, those will remain in HFS+ format.

Apple says that a feature of APFS allows creating snapshots of an entire file system at a given moment in time, which Time Machine will rely on in High Sierra for mobile backups, which are the interim Time Machine versions stored on your computer when it's not connected

to a Time Machine volume or network with a Time Machine server or Time Capsule on it.

IF I HAVE APFS ON ALL MY iOS DEVICES AND MACS, ARE iCLOUD FILES NOW ENCRYPTED AT A DEVICE LEVEL?

Readers wondered if APFS's ability to use encryption natively meant that files were stored in a different fashion when synced among devices all connected to iCloud. They are not. iCloud remains encrypted in transit and among your devices, but Apple holds all the encryption keys for contacts, events, photos, mail, and other data that you can access at iCloud.com when you log in.

iCloud Keychain remains encrypted end-to-end by devices. The new facial-identification sync system in iOS 11 and High Sierra also syncs via iCloud, but is encrypted in a fashion in which Apple doesn't have a way to decrypt the data in transit.

Device-based storage (data encrypted at rest) can't per se be end-to-end, because it has to be decrypted and read to be acted upon by the local device, like a Mac. End-to-end encryption is typically between the operating system acting upon data on your device and another operating system on the other end at a destination. ■



Apple Photos 3: The changes, new features, and improvements you should know about

BY GLENN FLEISHMAN

Photos 3, part of macOS High Sierra (go.macworld.com/osh3), doesn't bring much that's truly new. Apple acknowledges this by listing changes as a combination of

improvements and enhancements, a welcome bit of frankness. And I'd argue it's great news, because many of the rough spots in the Sierra release that we heard about repeatedly from readers who ran

afoul of them have been smoothed down.

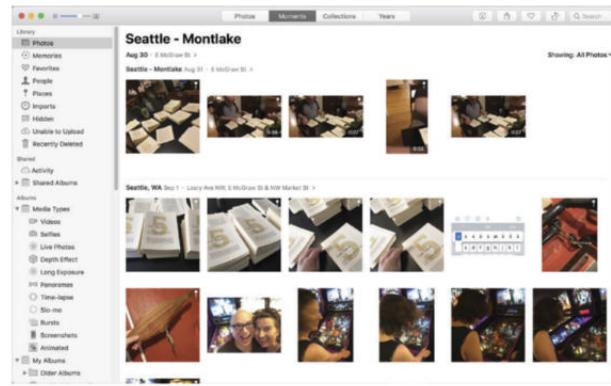
But Photos has come a long way since its first release in April 2015 (go.macworld.com/ap15). That initial foray at replacing iPhoto with something fresher, faster, and better often fell short, because it was missing many features that people relied on with iPhoto. Apple released regular updates, however, and features returned, new ones

appeared, and existing ones matured.

Some people still hate it—I get emails—but it settled down for the most part.

For example, those who have emailed me asking how to force an alphabetical listing of albums in the Photos sidebar will be absolutely delighted. The sidebar now organizes albums into Media Types (things like Slo-Mo, Selfies, and the like) and My Albums, which comprises everything you've created. You can nest folders in My Albums as before. Right-click on My Albums, and you can choose Sort By, and select among name, oldest first, or newest first. Bonus: Any of those nested folders you create to organize albums can also be sorted separately by those criteria through a similar right-click.

Let's dig deeper into how Photos has changed.



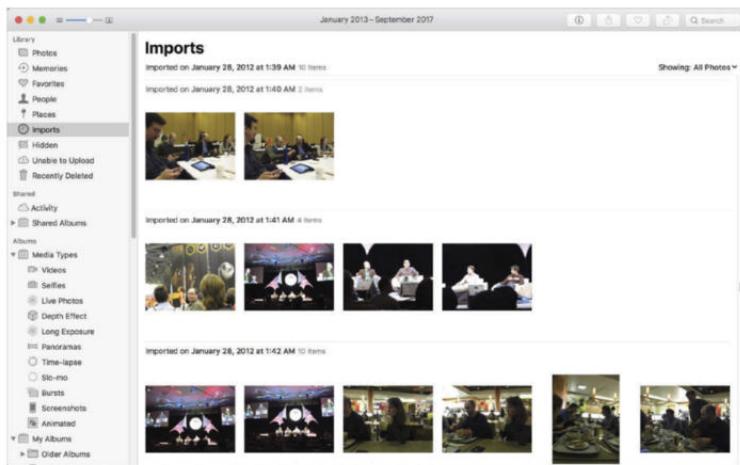
The general Photos interface is more legible, has better differentiation of features, and in its persistent sidebar organizes features and albums better, too.

PHOTOS' MEMORIES LOOK LIKE HUMAN MEMORIES

Introduced last year, Photos' Memories feature collects photos around a location, a time or holiday, or a theme determined in part by machine learning, which also then highlights the photos in that assembled set that it thinks are most representative.

Let's just say it could be fairly haphazard in the previous version, producing some howlers in terms of odd photos chosen—sometimes blurry or nearly empty—and not quite getting what might have made that period significant.

The improved Memories feature shows what seems to be a better selection of photos, probably by working harder to find common sets of faces and perform sentiment analysis to find smiles and people looking at the camera. On average,



Photos 3 shows every previous import operation, organized by date.

they seem less bizarre, and less like a rogue robot assembled them.

And Apple has clearly seeded smart ideas into the mix. Fluffy Friends over the Years shows every dog and cat I've apparently ever photographed, using the scene analysis algorithms that also let you search by keywords like dog and cat.

The slideshows that you can run from Memories, which are automatically assembled from photos and videos, remain delightfully random. One created for "Glenn's 32nd Birthday"—hey, macOS knows my birthday via Contacts, so it can figure this out—features loving paws across the back trunk and odometer of a car I once owned.

This feature remains far better in iOS, as it was in the previous versions of both

operating systems, because iOS lets you play a slideshow as if it were a movie, and adjust settings for how long you want it to be and pick among music named by mood. In macOS, you press the Play Slideshow version, which brings up a set of prefab slideshow

styles, most of which are not that great and are paired with annoying music.

LIVE PHOTOS GET A PURPOSE (AND EDITING GETS BETTER)

I confess I never much liked Live Photos, because there wasn't much you could do with them, except play them back with the random before/after videos. (iOS 11 seems to have upped the frame rate on those, making them smoother.) Live Photos seemed like a clever idea in search of a reason. While Apple improved some aspects of Live Photos in iOS 10, such as adding image stabilization, they remained a Harry Potterish gimmick. Photos 3 finally lets you create new kinds of results—not just in iOS (where the feature is somewhat hidden), but in macOS as well.



Live Photos can be transformed into loops, bounces, and long exposures.

Click Edit with a Live Photo selected, and the Adjust tab of the editing window shows Live Photos-specific tools at the bottom. You can turn the feature off, as before, and mute its audio, but you can also select a new “key photo,” or the image displayed when the photo is at rest. And you can trim out unwanted parts of the clip.

But Apple added transformative features common in Instagram and other photo apps: Loop, which turns a subset of the live portion into a continuous cycle;

and Bounce, loops in a sequence of forward to the end and then backward to the beginning. Unfortunately, you can’t select which portion gets these effects—it seems like an algorithm-driven choice. And you can’t (yet) convert your regular videos in full or as clips to apply these features to.

A final option, Long Exposure, has a lot of promise. With a still shot that has movement within the frame, you can get a lovely artistic image that captures the feel of movement. Looking through all my Live Photos, I didn’t find many that worked, but I will likely now enable Live Photos for specific shots that I want to extract as long exposures.

The whole editing interface offers significant UI improvements, too, grouping tasks into tabs at the top (Adjust, Filters, and Crop) and letting you turn on and off the depth effect in two-camera photos. A couple of more advanced features appear in the Adjust menu, too: curves, for a different and richer way to re-map the appearance of ranges of color in an image; and selective color, which you can use to swap out a specific color range in an image with an entirely different hue, saturation, and luminance.

A toolbar now appears in all Photos views, not just edited, that includes a rotation button (hold down Option to toggle it from counterclockwise to



Selective color, now built into Photos, lets you replace color families within a photo without making other changes (left, original; right, modified to accentuate changes).

clockwise) and Auto Enhance. Photos also now supports editing images in external photo-editing apps by selecting from an Edit With menu. When saved and closed from that external app, those edits become stored as a non-destructive layer in Photos, so you have the original and the revised version.

PEOPLE FINALLY SYNCs, AND IT'S BETTER, TOO

Apple promised a year ago, before the release of its revamped facial-identification feature, that “People are synced among devices where you’re signed in with the same Apple ID.” That line appeared in the iOS 10 manual, and the company had

You’ll note that Apple didn’t and still doesn’t sync this new algorithm-based People album to iCloud.com. That would put that kind of information in a place where it was at greater risk of being extracted or even subpoenaed.

This time around, Apple got whatever right they needed to. People’s overall design has a crisper, bolder look, so that names are more easily readable. The process of identifying and marking people seems better. And Apple says that it’s using technology from Memories to recognize people together, which provides more accurate ID and facial-expression selection—see my screen capture from People’s assemblage of photos of me!—

made other assurances. It never happened, and Apple never answered questions about it or explained itself.

My assumption was that before release, Apple found a flaw either in the way it merged dissimilar sets of people on different devices or in the privacy approach it took.



The improved Memories feature now works within People, too, and you can see how good it is about finding smiles and other expressions.

but also offers links to groups and pairs of people found in the same photo, a nice addition.

I found that my previous People album recognition carried through with the update, but some images were added that I'm sure I didn't select. You can just right-click on a photo and select *John Doe Is Not In This Photo*, and it's removed.

Apple says that iCloud sync will reconcile different sets of photos for the same people on different devices.

THIRD-PARTY PROJECT EXTENSIONS

Apple now lets third parties build associated extensions that work with Photos. Previously, only photo filters could be added on. This new category works for creating photo books, ordering framed prints, creating slideshows, and building websites. Apple's options for cards, calendars, books,

slideshows, and prints remain.

These extensions come in the form of apps you purchase or obtain for free through the Mac App Store. You have to launch the app before using it, and then (in my testing at least) relaunch Photos for the apps to then appear as options in the Project menu or in the contextual menu's Create submenu.

Apple sent a variety of samples of products made by these companies to *Macworld*.



Photos' Project Extensions allow you to create photo books, cards, mounted pictures, and more directly in the Photos app.

> Mpix foil-pressed cards are vivid and quite lovely, although they may be a little too busy with patterns for some people.

> An Mpix wood-print deep photo box for hanging had a good reproduction of a photo printed on wood on its front.

> Shutterfly's 10-by-10-inch hardcover book had well-reproduced color photos, although somewhat oversaturated. The pages were too stiff, however, and turning them was like flipping through lightweight cardboard.

> Mimeo's 9-by-11.5-inch hardcover photo book felt completely book-like: a good dust jacket and binding, reasonable weight interior paper for opacity and page

turning, and extremely fine photographic reproduction.

> An ifolor glass print, in which the image is printed in reverse on the back of a solid piece of glass—a technique popularized in America by Fracture—had oversaturated images, leading to areas of flat color.

> Two examples of Whitewall's glass prints were also included, which had excellent tonality without oversaturation. The photos sent were unfortunately too dark to see clearly how well lighter tones are reproduced, but the differentiation in shades for shadows and dark colors was extremely fine.

PHOTOS' MISSING PIECES

Readers ask all the time about Photos library management, and the new release offers no help there. Many readers have multiple libraries they want to merge into a single Photos library, or they have a large library they want to split, in order to archive parts of it, or store it on an external drive. These fundamentally useful features that Apple would be best placed to help with don't exist. (We recommend turning to PowerPhotos [go.macworld.com/rtp], already updated for High Sierra [go.macworld.com/fatc].)

Photos ability to search by date remains extremely poor, especially compared to Google Photos and other tools. There's simply no good way to say, "Show me what happened on October 31, 2010." You can use the main Photos album and click Years in the new set of tab buttons at the top, scroll to 2010, guess about where October lies, click, and then scroll through Collections. Typing in the date as above into search offers no results. It can't even do "October 31," splitting it into "October" and "31" and only finding matches for both. The new version does seem to match address well: I typed in September 1, and saw a lot of photos taken in the month of September at street addresses that began with 1.

Likewise, searching by place is primitive. Enter "Camden, Maine" and

Photos is stumped. Enter "Camden Maine" and it parses it to show "Camden, Maine/City, State." I can't even begin to explain how Apple passed this through its testing teams. Search performance is far better than iPhoto and early Photos releases, but it remains as poor and wonky as all the Sierra versions of Photos.

MACHINE LEARNING AND iCLOUD PHOTO LIBRARY

If you're using iCloud Photo Library and storing only optimized media on your Mac, you won't be able to make full use of facial recognition, Memories, or scene-element identification for searching except for images downloaded and cached locally. You can also force downloads for processing by right-clicking a manually created album and choosing Download Originals To This Mac.

While this proviso was also true with the previous release of Photos, I think an increasing number of people relying on iCloud Photo Library might run into the problem because of increased media storage and the high expense of larger-capacity SSDs. If you chose a 512GB SSD instead of a much-more expensive 1TB SSD or a 1TB or 2TB Fusion drive, it seems possible that you also used optimization to prevent filling that drive with media.

In my initial High Sierra testing, I've only updated my laptop, which lacks the storage

to handle the full iCloud Photo Library. (My office iMac has a Fusion drive and the full files, but I'm holding back on my most critical machine as I do with all macOS system updates.) I downloaded albums to check that thumbnails weren't being analyzed. iCloud Photo Library syncs metadata—camera capture details, date, GPS coordinations, keywords, and the like—so other searches and organizational features work as expected.

BOTTOM LINE

Photos 3 for macOS is a significant improvement in interface, flow, and ease of use, but has no standout feature that will make you jump up and down in joy. Hopefully, the changes mean you won't jump up and down in anger and frustration anymore. ■





Three MacBook mistakes: Will Apple correct course?

BY JASON SNELL

Apple's not a company that backtracks easily. It's got a lot of pride and a reputation for moving forward. And yet every so often the company makes a decision

that it thinks is right and is ultimately proven to be completely wrong.

In 2008, Apple removed FireWire from the MacBook (go.macworld.com/jrto), only to put it back in 2009 (go.macworld.com/jrtb).

[com/pibi](#)). In 2009 the iPod Shuffle went buttonless ([go.](#) [macworld.com/ipsh](#)), only to revert to its previous buttony design in 2010 ([go.macworld.com/ipbd](#)). The third-generation iPod, with its row of touch-sensitive controls, was a similar design cul-de-sac. And the most recent example is the Mac Pro, which Apple introduced to fanfare ([go.macworld.com/fanf](#)), but ultimately admitted was a mistake ([go.](#) [macworld.com/awam](#)).

I've been thinking about all of these visible failures because I'm starting to imagine what Apple might do if it decides that some of the decisions it's made the past few years regarding Mac laptops might have been...misguided.

ONE USB-C PORT ON THE MACBOOK

It's been nearly three years since the new MacBook ([go.macworld.com/3yrs](#)) arrived bearing a single USB-C port for both charging and peripherals. Through two revision cycles, it has remained largely unchanged. USB-C hubs do exist, but the fact is that out of the box, you can't power



The MacBook has one USB-C port. Invest in a USB-C hub if you want to connect multiple devices.

the MacBook and attach any USB devices. That's less than ideal. So is a redesign in the works, and might Apple take that opportunity to add a second USB-C port?

It's certainly possible. The original MacBook Air had a single USB port, but when the first major hardware revision of the Air arrived, it added a second port. A second port on the MacBook would allow just enough flexibility to eliminate the complication caused by the charging port also being the only peripheral port.

The MacBook only supports USB-C, while the USB-C ports on every other Mac also support Thunderbolt 3. Despite the confusing mess that is the USB-C standard ([go.macworld.com/usbs](#)), I don't believe Apple is going to abandon it. A little consistency wouldn't hurt, though, which is

why I'm hoping that the next MacBook supports Thunderbolt 3, thereby extending that standard across the entire Mac line.

THE LOW-TRAVEL BUTTERFLY KEYBOARD

Introduced with that same MacBook, Apple's shallow laptop keyboard has now spread to the MacBook Pro line. A lot of people, myself included, consider it a regression—the reduced key travel makes typing less pleasant and tactile. It's also a little baffling that Apple chose to bring a keyboard designed to fit in the ultra-thin MacBook to MacBook Pro models that have much more room for key movement.

But the big issue with these keyboards is that they are apparently quite unreliable (go.macworld.com/quun) for many users, so much so that Apple posted a tech note

(go.macworld.com/note) recommending that people use compressed air to blow out dust (go.macworld.com/dust) that might cause the keys to stick. Right now, most of the computers dealing with these problems are under warranty (go.macworld.com/warr), but what happens when your four-year-old laptop's key breaks and you have to have the entire top of your laptop replaced? An entire generation of Apple laptops may be saddled with fragile, unpleasant keyboards. And a laptop without a functional keyboard is basically useless.

The good news here is that Apple has other keyboard technology it's built, most notably the Magic Keyboard (go.macworld.com/magi), which was introduced the same year as the new MacBook keyboard and is much more pleasant to use. Apple could also just keep iterating on the MacBook keyboard, though I have a hard time seeing how small design changes will be able to address all the stuck keys and broken housings. It might be time for a strategic retreat back to keyboards that are easier to clean and service. A little extra key travel—especially on the thicker MacBook Pro models—would be nice, too.



The 2017 MacBook still uses the butterfly-switch keyboard introduced two years ago.

THE TOUCH BAR AND TOUCH ID

This is the big one. With the new MacBook Pro models of 2016, Apple introduced the Touch Bar and an accompanying Touch ID sensor. This year's release of macOS High Sierra offered very little in the way of Touch Bar improvements, and I've yet to hear very many users rave about the Touch Bar. My early hopes that app developers would innovate with the Touch Bar to improve productivity have also been dashed, more or less. A year later, the Touch Bar seems to have no momentum and fails to provide a compelling reason for users to embrace it.

How long will Apple ride the Touch Bar? Shipping a new generation of MacBook Pros with physical keyboards would be a remarkable reversal of course for Apple, and an admission that this particular innovation was rejected by the market. It would also re-open the question about whether MacBooks should have touchscreens, as is common on Windows laptops and ChromeBooks.

And let's not forget Touch ID. That feature is also only available on the MacBook Pro models, and with the arrival of the iPhone X with Face ID, it's about to become

previous-generation technology on iOS. Will Apple even attempt to bring Touch ID to more of the Mac, or will next-generation iMacs and MacBooks feature Face ID sensors instead? The iMac in particular is thick enough to easily incorporate Face ID sensors like those on the iPhone X, and its reliance on external keyboards would seem to preclude an easy addition of Touch ID.

As always, there's no way to tell today which current features are here for the long haul. We'll only know for sure that they're alive or dead based on if they appear in the next generation of Apple products. But it might be better for Apple and users alike if the next generation of Mac laptops discards the failed strategies of the recent past. If at first you don't succeed, try, try, again. ■



We haven't seen many innovative uses of the Touch Bar since its release.



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



IWantToBeRecycled.org



KEEP AMERICA
BEAUTIFUL



SOFTWARE

ADOBE PHOTOSHOP ELEMENTS 2018: PHOTO EDITOR FOCUSSES ON AUTOMATION AND ARTIFICIAL INTELLIGENCE

BY JACKIE DOVE

Photoshop Elements 2018 (go.macworld.com/phot; \$100 on Amazon at go.macworld.com/elem), Adobe's consumer photo editor, concentrates on giving its targeted family-oriented users new ways to jazz up mundane snaps for sharing with friends, family, and social media pals. It features a flurry of new guided edits, a super-easy selection tool, and improved integration of its Adobe Sensei AI and machine learning framework.

Photoshop Elements 2018 also introduces a convenient new naming convention for its annual updates, substituting old-fashioned sequential version numbers with the upcoming year.

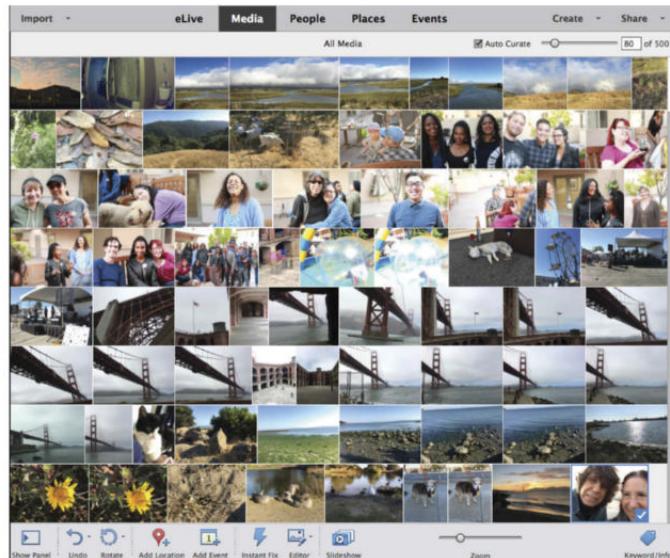
ORGANIZER APP

Like Photoshop's Bridge, the Elements Organizer helper app that ships with both Photoshop Elements and the Premiere Elements video editor, provides the bedrock for locating, selecting, and searching your photo collection for the best shots to edit or share, or to use in creating an artwork or building a slideshow. The Organizer gets a significant refresh in the 2018 version.

This year's Organizer debuts Auto Curate, an AI-derived feature that analyzes photos for quality parameters like composition, exposure, and faces, choosing just a small fraction among thousands of images. A slider lets you dictate how many photos you want to include in the results. The app's Smart Tag feature, introduced last year, helps Auto Curate identify image content. I found the results hit or miss, as some overexposed and underexposed photos were included among the best results.

SLIDESHOW TOOL

Ease of use is the hallmark of the revamped Slideshow tool, which works in

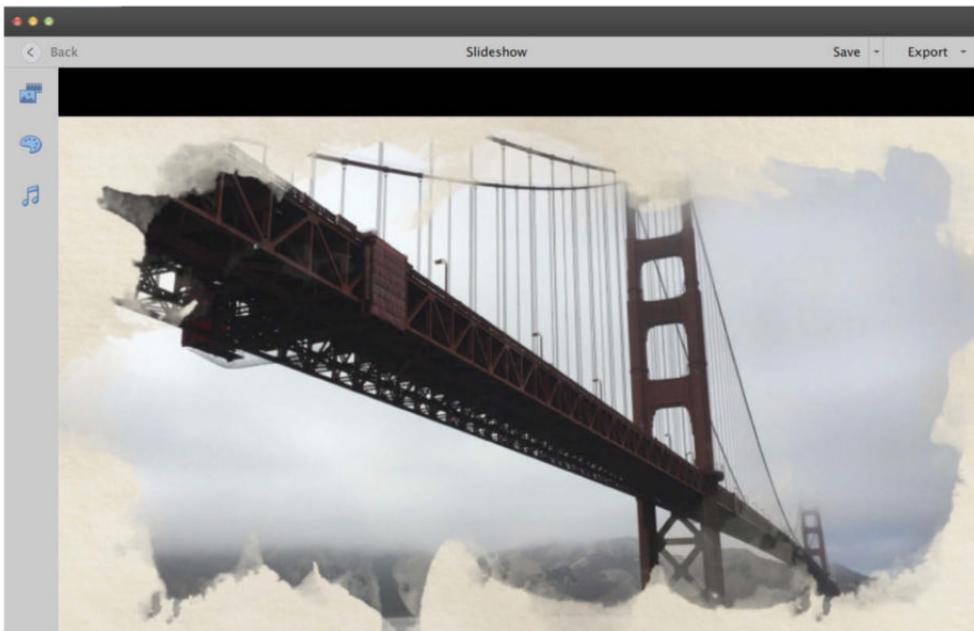


Auto Curate lets you use a slider to choose how many of your best shots you want to see.

concert with Auto Curate to automatically select the best shots, letting you choose from among several built-in animated themes and soundtracks. You can customize slideshows with your own soundtracks from iTunes, add captions to the images, rearrange slide order, or import additional images and videos. It takes just a few clicks and a few minutes to pump out a sharable slideshow.

AUTO SELECT

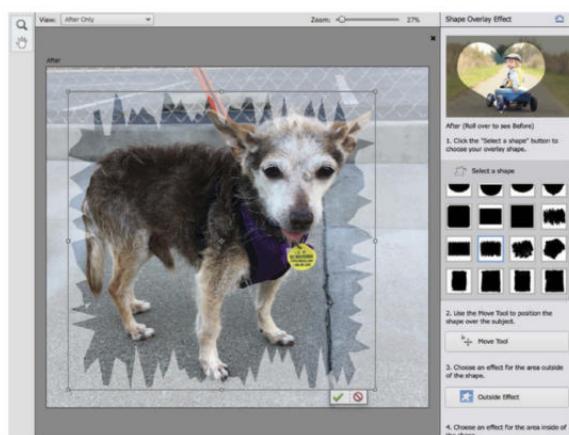
For amateurs and pros alike, selecting objects or people and separating out foregrounds from backgrounds, evokes major time-sucking anxiety. With the new



Watercolor slideshow tool animates effects as it moves through your images.

Auto Select feature, all you have to do is draw a box or Ellipse around a subject, and the tool immediately recognizes the foreground and the background for a surprisingly accurate selection.

Of course, Auto Select may not get every last bit correct the first time, but you can add or subtract from the selection until you are satisfied with the result. From there, you can switch out the background for the object, person, or animal you have



Auto Select makes quick work of complex selections, though many will still need some tweaking.

selected or use it for a different composition or slideshow.

OPEN CLOSED EYES

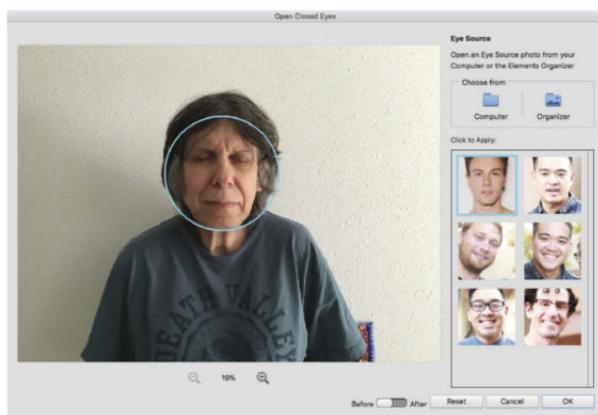
This AI-inspired fix can substitute open eyes for closed ones in a given portrait, letting you use eyes from a different shot of the same person. Subbing eyes can be tricky because lighting and skin color

should be roughly similar for results to look really natural. Oddly, this tool also lets you substitute eyes from different people—but that is really creepy.

NEW GUIDED EDITS

Photoshop Elements 2018 features several new guided edits—Watercolor, Swap Backgrounds, Shape Overlay, and Double

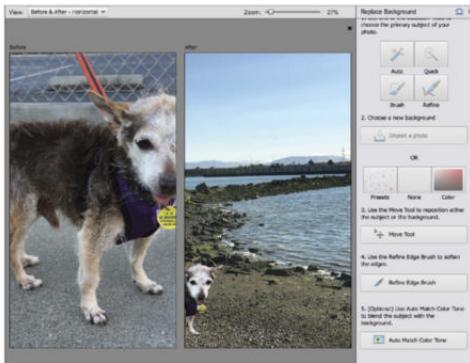
Exposure—which, aided by the new Auto Selection tool, add useful effects to the Elements arsenal of cool photo moves. On the whole, though, this new crop is less inspired and original than some in the past. That's partly because any number of consumer programs, mobile apps, and online resources feature tools that let you do most of these things.



Elements can substitute open eyes for closed eyes, naturally integrating open eyes from a second photo.

NO SUPPORT FOR HEIF

With iOS 11, owners of an iPhone 7 and later now save photos in HEIF (go.macworld.com/heif), High Efficiency Image File) format, rather than the traditional JPEG. This new image container offers higher quality and better compression for high resolution images or image sequences so you can



Swap background takes this little doggie off the street and to the beach.

shoot without maxing out your device storage. The new macOS High Sierra works with this format in Apple Photos and other native apps.

Photoshop Elements 2018 does not support HEIF as yet, and the company advises iPhone shooters to continue shooting traditional JPEGs by setting Camera app preferences to Most Compatible rather than High Efficiency.

BOTTOM LINE

Photoshop Elements 2018 builds on a solid foundation of consumer photo editing that lets anyone achieve advanced photographic special effects without being a photo jockey, and its increasingly integrated

use of AI and machine learning are time-savers for busy households that want to quickly share images and slideshows.

The 2018 version also augments Elements' established and growing complement of guided edits to help families create a memorable catalog of their lives. I have no specific complaints about how these new guided edits worked, but I found this year's admittedly useful entries more utilitarian and somewhat less imaginative and inspiring than in the past. Some minor stability problems arose while testing the Organizer with the new Mac OS High Sierra, but the intermittent freezing and crashing seemed to dissipate after repeated use.

If you were satisfied with last year's version of Photoshop Elements, and have not been driven half-mad by family

members who can't keep their eyes open long enough to beat the shutter, you might be tempted to skip this version. However, despite some initial flaws in the Auto Curate feature, this is a potentially vast time-saver for those with thousands of images, and its assistance in creating quick, sharable slideshows is definitely worth a second look, while Auto Select is worth the price of admission. ■



Adobe Photoshop Elements 2018

PROS

- Open Closed Eyes will salvage many shots.
- Auto Curate is a promising timesaver.

CONS

- Guided edits lack originality.
- Occasional Organizer instability with High Sierra.

PRICE

\$99

COMPANY

Adobe



SOFTWARE

ADOBE PREMIERE ELEMENTS 2018: ARTIFICIAL INTELLIGENCE GOES TO THE MOVIES

BY JACKIE DOVE

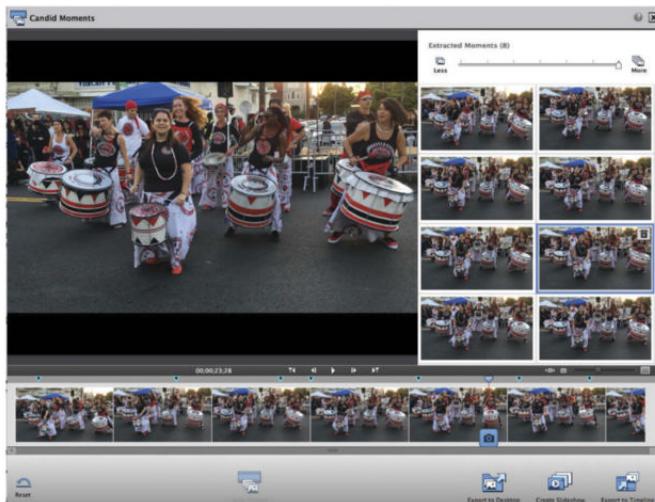
As Adobe boosts the presence of its AI (artificial intelligence) and machine learning framework within its consumer imaging apps, Premiere Elements 2018 ([go](http://go.macworld.com/prel). macworld.com/prel; \$100 on Amazon) benefits with new features like Candid Moments and Smart Trim, as well as some intelligent updates to the companion Organizer app that ships with both Photoshop Elements and Premiere Elements. Going forward, Elements adopts an updated naming convention that uses the upcoming year as part of the software name, as opposed to old-fashioned version numbers. The previous version number was 15.

Adobe's Organizer helper app, which ships alongside both Photoshop Elements and Premiere Elements, offers an updated, wall-to-wall view of your photographic assets in much the same style as photo apps from Apple, Google, and Flickr. (For a detailed discussion of specific Organizer updates, see our review of Photoshop Elements 2018 on page 27.)

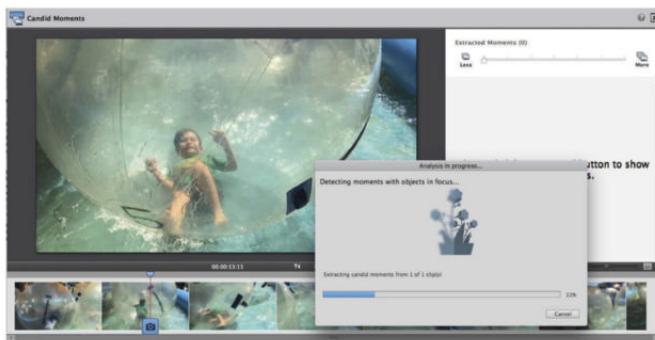
Premiere Elements puts the Organizer's Auto Curate—a headlining feature for the new Elements package—to good use with its new features, Candid Moments and Smart Trim. The feature also supports an overhaul of the Slideshow tool, which turns out a template-driven animated visual within minutes for sharing on social media.

CANDID MOMENTS

Sometimes you just want to showcase a single frame from a video, but to do that you must painstakingly scrub through a



Premiere Elements marks the spot where it derives the stills from your video.



Candid Moments: In almost every video, I found stills that I liked better than the ones the program automatically chose.

movie to locate and select those frames. Or you can let Premiere Elements' new Candid Moments tool do it for you. This AI-infused feature is designed to do automatically what you would otherwise

do visually: scrub through your footage for the best single shots. After you review and approve the app's still choices—you can add to or subtract from the auto selections—Premiere Elements places the images into a separate folder.

In analyzing why the AI engine chose the frames it did (interesting lights, objects in focus, and of course faces and groups of people), its selections made sense. Nevertheless, I found the initial results hit or miss, especially with only six frames chosen by default; you can use the slider to generate additional frames. While auto choices were sometimes less than satisfying, the app did much better with people than with animals. Bottom line: I look forward to continuing improvements in this useful feature.

SMART TRIM

Almost all videos have boring footage that adds nothing to the production or message except excessive length, but it's a tough manual process to expurgate all dull instances throughout a clip. That's where Premiere Elements' new Smart Trim feature comes in, using intelligent analysis

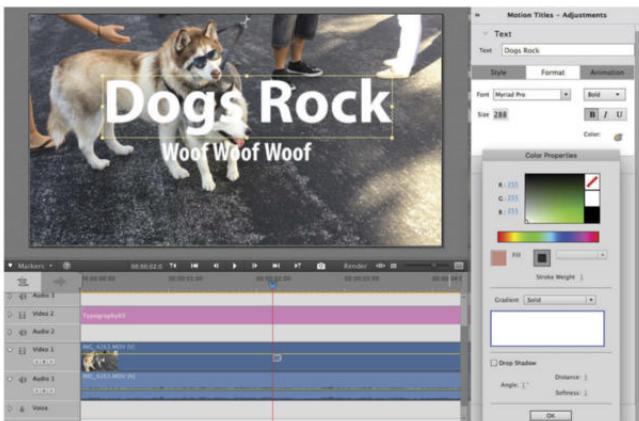


Smart Trim worked well, especially on footage that doesn't feature narrative or music.

to scan content and determine what can be removed without compromising the overall contextual message.

You can assist by customizing the algorithm to look for people, action, or both, and extract the minimum or maximum amount from the final version. The feature maintains flexibility by letting you easily add footage back into the movie right on the timeline without a lot of tedious snipping and trimming. The program automatically assembles all the clips with transitions into a final product, for quick, no-fuss posting on social media.

The tool worked well with casual videos, especially those without a defined soundtrack, as opposed to voice narratives, demos, or musical performances where, despite the transitions, cuts sounded a lot less subtle.



Making memes.

GUIDED EDITS

A mainstay of Elements' core functionality, Guided Edits are the app's popular step-by-step recipes for how to create specific special effects and actions with both photos and videos. Every upgrade hosts several, and I tried them on for size.

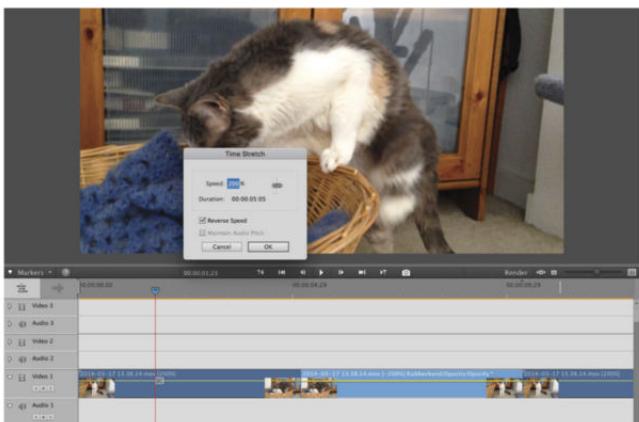
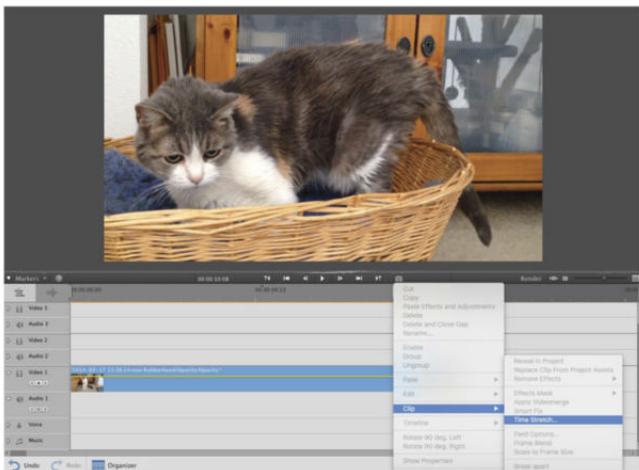
Animated Social Posts:

This neat storytelling tool lets you apply customizable static or animated text effects to a short video to quickly create social media memes and messages. Quite a variety of templates are available in categories like Decorative, Geometric, Formal, and Fun. You just need to choose one, set the start and end points for the animation, and type in a stylized message. There's no complexity to the process and the results can be stunning.

Freeze frames with motion titles:

This guided edit lets you emphasize parts of your video by freezing a frame and then adding a motion title. You just have to specify which frame you want to use while the guide takes you through some easy steps.

Bounce-back effect: Many of us are familiar with animated effects that make the subjects loop their actions forward and backward—like with Instagram's Boomerang and Apple's Live Photos. Now,



Bounce-Back: Time stretch, reverse, rinse, repeat. Watch Lila climbing in and out of her basket.

Adobe has come up with a technique that does something similar with a few customizable steps to create a sharable short video.

Fix Action Cam Footage: This guide is

designed to fix fisheye lens distortions from GoPro and similar cameras as well as trim and correct color. The edit sequence first trims the fat off your video to distill it down to the best footage. From there, you apply the Lens Distortion effect, adjusting the Curvature slider until the video looks in perspective. The last step is color correcting the entire clip, and you're in business. Or you can just trim and color correct the video yourself and use the Lens Distortion effect on its own, as you could in the previous version.

While the edit worked to improve GoPro footage, it was a slow, processor-intensive experience, often accompanied by fan action from my late 2013 MacBook Air. Performance was inconsistent: The slider

acted intermittently cranky, balking with a beachball at being moved, though at other times it moved without incident, while the preview moved haltingly, playing catch-up with both slider adjustments and the timeline marker.



The Fix Action Cam footage guided edit can nix lens distortion, but it is a painstaking process.

While it's not in the guided edit, Adobe recommends rendering the timeline just after Importing a video clip and also after completing the Action Cam Guided Edit for smoother previews. The Lens Distortion controls respect your last setting, and do not revert to zero with new clips.

WHAT'S MISSING

HEVC (High Efficiency Video Coding, also known as H.265)—a relatively new, highly compressed video format—has arrived with iOS 11 and macOS High Sierra, and is already supported by Apple's iMovie. Adobe has yet to adopt

it for Premiere Elements. Thus owners of an iPhone 7 and later will have to use the Camera app's Most Compatible setting so that their files can be viewed and edited on the desktop in Premiere Elements.

Despite the popularity of Virtual Reality and headset viewing, and broad social media adoption of this kind of output over the last couple of years, Adobe does not consider the VR crowd as part of its target market. That means if you bought one of these newly affordable 360-degree cameras, you will not be able to edit that footage with this app. Premiere Elements customers may not be the edgiest hipsters on the block, but enthusiasts are showing intense interest in



Adobe Premiere Elements 2018

PROS

- Useful set of creative new guided edits.
- Smart Trim feature takes the work out of cutting.
- Candid Moments is helpful in choosing where the good still shots are located.

CONS

- Candid Moments did not always pick the best shots.
- Action Cam guided edit had performance issues.
- No support for new HEVC video format.

PRICE

\$99

COMPANY

Adobe

360-degree cameras, as they are dead simple to use, and prices are dropping. Hopefully, we'll see some features catering to that audience in future versions.

BOTTOM LINE

I've always admired Premiere Elements for its consumerist ease of use and dedication to making extremely complex operations accessible with its guided edits. This version still does that, with a boost of intelligent automation from the updated organizer and social networking oriented guided

edits. Various performance issues marred the Action Cam Guided Edit, which could have been more streamlined and fluid. It would be nice to see Elements

recognize new and increasingly popular technologies like 360-degree video, which is being targeted to consumers and hobbyists who align with Elements' own memory maker crowd. ■





INPUT DEVICES

KEYMAND: TURN YOUR iPAD INTO A KEYBOARD SHORTCUT POWERHOUSE FOR YOUR MAC

BY J.R. BOOKWALTER

Keymand (go.macworld.com/keym; \$20 on the iTunes store [go.macworld.com/itun]) is an iPad app that turns the iPad into an application-specific keyboard for Mac applications like Final Cut Pro. Hardware application-specific keyboards exist, but they aren't particularly well-suited to tasks beyond the ones for the apps they are designed for. Keymand can work with a wide array of apps, not just production apps that most application-specific keyboards focus on.

Keymand syncs with a free Mac companion app (go.macworld.com/mpap) through a required Lightning-to-USB connection, which also keeps your tablet charged while working. Sadly, the app



Keymand comes with panels for 13 built-in macOS apps including Finder, but you'll have to create others all on your own.

syncing via the iPad Pro Smart Connector isn't supported.

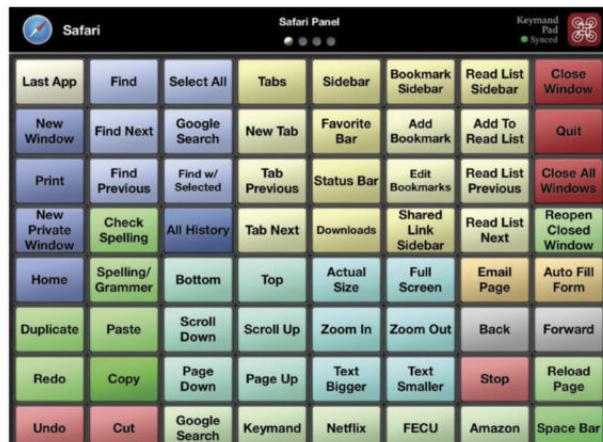
SHORTCUT COMMANDER

After launching both apps, click Connect on the Mac side, then tap Accept at the iPad prompt. When the sync indicator changes from red to green, Keymand is ready to use, automatically reconnecting whenever the iPad app is relaunched or after waking from Mac sleep.

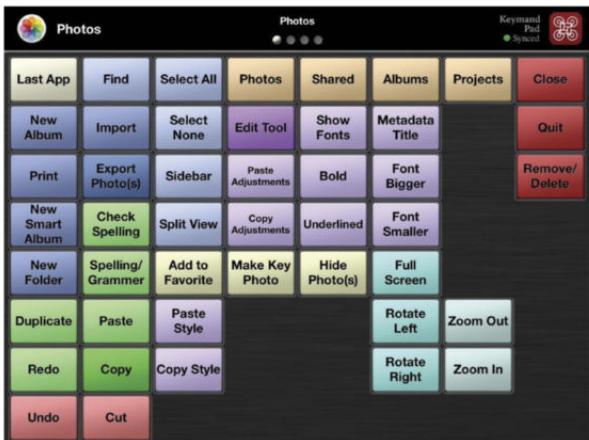
Keymand displays the current application name and icon in the upper left corner, as well as a grid of 64 one-tap buttons at a time, which

update as you switch between applications. Buttons respond instantly when tapped, and the Mac app uses a negligible amount of CPU; you'll wind up with another icon in the menu bar, however. Buttons can be left blank for a more eye-pleasing layout, and each desktop app can use up to 256 possible shortcuts spread across four panels.

As you start using Keymand with favorite Mac apps, expect to see a lot of blank panels. That's because the app only includes panels for 13 macOS apps: Finder, App Store, Calculator, Calendar, Contacts, Dictionary, Font Book, iTunes, Mail, Notes, Photos, Preview, and Safari.



Have trouble remembering Safari shortcuts? Keymand can turn them all into one-tap buttons instead.



If you don't need all 64 buttons on a panel, you can leave blank spaces for a more eye-pleasing custom layout.

DESIGNING BUTTONS

For other applications, users must create their own custom buttons on the iPad. Switch to Settings view by tapping an icon in the upper right corner, where you can assign keyboard shortcut buttons on a per-app basis, each with custom names and colors. The process is straightforward enough: Tap and hold the current color to save as a swatch, which can then quickly be applied to any other button.

While convenient for mobile workflows, Keymand would benefit from the ability to assign buttons on the Mac side as well. Settings are only saved on the iPad, convenient for

those who move between multiple systems, but not very conducive to sharing shortcuts with co-workers or colleagues.

The inability to export shortcuts is a glaring limitation for an otherwise useful app. I'd love to see the developer provide an online community where users can share individual app settings with others, which would make it easier for novices to get started. (An SQLite database is accessible from the Keymand app in iTunes File Sharing, but there's no way to

save data for specific applications.)

For the time being, Keymand appeals mostly to power users willing to dedicate time to assigning shortcut buttons one at a time, or casual users content with the

built-in Mac software commands and occasionally supplementing favorite apps.



Keymand

PROS

- Fast access to Mac keyboard shortcuts from connected iPad.
- Up to 256 custom shortcut buttons for each Mac app.

CONS

- Time-consuming process to add new shortcut buttons.
- Can't export shortcuts to share with others.

PRICE

\$20

COMPANY

Keymand Technologies

BOTTOM LINE

As someone who spends weekdays parked at a desk, Keymand puts my iPad Pro to work as a Mac keyboard accessory. But the cumbersome and time-intensive assigning of shortcuts would be better performed on the computer instead of the tablet. ■



Anki Overdrive's app-steered robot race cars get a Fast & Furious boost

The new Fast & Furious Edition adds some extra personality to the fun connected toy set.

BY ANDREW HAYWARD

The coolest connected toys of 2015 are back for round two this fall. Sphero has just rolled out (go.macworld.com/roll)—sorry—the similar BB-9E and the even grander R2-D2 (follow-ups to its delightful app-controlled BB-8 [go.macworld.com/bb-8]). And now Anki is back with a new

edition of Anki Overdrive—this time with the blockbuster Fast & Furious film license attached.

It's such an obvious fit, pairing the explosive action of the smash movie series with Anki's speedy connected cars, and the familiar rides from this year's The Fate

of the Furious fit in perfectly with Overdrive's existing supercars. By and large, the addition of movie branding doesn't result in massive changes to the two-year-old experience, but it brings a little more personality and pop to the still-fun experience.

OVERDRIVE, ALL OVER AGAIN

At its core, the Fast & Furious Edition (go.macworld.com/fafu; \$169.99 MSRP; same price on Amazon, go.macworld.com/over) is very similar to the original Anki Overdrive, and the starter kit provides much the same kind of core experience as before. It's an all-in-one bundle that lets you build a number of different race tracks, race and battle with friends or against computer-controlled opponents, and use your iPhone, iPad, Android device, or Amazon tablet to control the action. And all of this stuff is compatible with all of the old track and cars, too.

Inside the bundle, you'll find 10 pieces of track (four straight pieces and six curves) and two cars, as well as a charging station and a sticky-surface tire cleaner

to help the little vehicles maintain traction and stay on track. And there's something else to help with that: snap-on guardrails for the outside edge of the curved pieces. That was one of my biggest gripes from the previous version, as Anki previously only sold them separately.

Getting set up is a breeze: the ultra-thin plastic track pieces snap together effortlessly with a magnetic click, and you can build eight different designs from the segments found within. It even has a couple of risers so you can have a chunk of the course loop over another part. Once your course is constructed and the cars are charged up—that takes less than 10 minutes, giving the cars about 20 minutes of drive time—you'll turn to the



It takes mere moments to set up a quick track like this.

app for the rest.

From the app, you'll choose what kind of event to play, whether you're completing missions in the Campaign or just facing off against local friends and family members with their own devices. And then you'll use your iPhone or iPad to drive your car: the Anki vehicles are semi-automated, so they'll lightly accelerate and take turns on their own, but you can tilt your phone or tablet to shift lanes, speed up and brake as desired, and even fire off virtual weapons to slow down or spin out foes.

It's very much like Super Mario Kart, albeit with real toys firing off and reacting to unseen digital attacks (the visual explosion seen in the opening image isn't real). Some events make racing the top priority, while others are focused on who can land a certain number of attacks first—there's some variety in the mix.

SOME FAST PERKS

What does the Fast & Furious franchise bring to the table? Well, the cars are the most obvious addition: Dominic Toretto's Ice Charger and Luke Hobbs' International MXT are pretty similar to the rides seen in



The Fast & Furious cars (middle) fit in well enough with Anki's own creations.

The Fate of the Furious, albeit with a more of a cartoonish touch to match Anki's otherwise bespoke toy vehicles. It would've been great to see some of the other flashy rides from earlier films, especially from back when the series still focused on brightly colored tuner cars, but these will do the trick for now.

All of the track pieces have a Fast & Furious logo along the edge, but one straight piece has something more: a special "Power Zone" area. If you drive over that first while other cars are nearby, you'll "hack" them—which means they'll slow down significantly, giving you a chance to speed ahead. Likewise, the other cars can do the same to you, even if they're computer-controlled, so it adds a



You might recognize these people.

new strategic element to the experience. You might have a reason to hit the brakes and stay back for a second, lest a rival driver force you into it instead.

Furthermore, the new Anki Overdrive: Fast & Furious Edition app (go.macworld.com/ffea) is fully movie-themed, with hand-drawn renditions of familiar characters like Dom, Letty, and Tej, all with voice clips that either come from the real actors or very convincing sound-alikes. You'll face them alongside other generic opponents in the Campaign mode, which finds you racing or battling it out with weapons as you progressively unlock new missions and in-app car upgrades alike.

And if you have one of Anki's larger

Supertruck vehicles (go.macworld.com/vehi; \$59.99 a piece; same price on Amazon, go.macworld.com/anki), the Takeover play mode is a pretty perfect fit for the movie franchise: it finds you battling other cars to try and take control of the semi truck and win the match. I didn't have a Supertruck to try it out, unfortunately, but it might be worth the extra cash to add one if you and your family become deeply invested in Anki Overdrive—and/or want to reenact some movie scenes in your living room.

FURIOUS OR FUN?

Deeply invested is a key phrase here, because like the main set, Anki Overdrive:

Fast & Furious Edition can be extensively expanded with additional track pieces, extra cars and trucks, and even special stunt pieces. But it's all pretty pricey: two extra straight or curved pieces will cost you \$20 per pack, while the plus-sign-shaped Collision Kit piece is \$30 on its own. Anki also has enormous (go.macworld.com/enor) add-on bundles

ranging up to \$380, and that doesn't include a starter kit.

Adding more track opens up a lot more possibilities for course designs, and lets you create sprawling, inventive playgrounds for your cars to zip around—but as I discovered the last time around, the cars seem less able to stay on the track as it encompasses more and more pieces. The

Overall, luckily, the concept of Anki Overdrive is just far too cool to be ruined by those little, albeit recurring hitches.



Two starter kits plus a few extra pieces, and the track's so large it won't fit in the photo.

Launch Kit (go.macworld.com/laki; \$30) in particular, in which the cars attempt to vault over a fairly small gap, is the worst addition of all. I couldn't get the Fast & Furious cars to do anything but fall over the edge and try to drive under the other piece of track. More isn't necessarily better with Anki Overdrive, as appealing as that might sound.

Even if you stick with the starter kit, there are still recurring annoyances. Cars that find their way off-track—even with the new guardrails—rarely find their way back, and they can't do anything if they're stuck up against a rail, spinning their wheels endlessly while on an orange magnetic

connector, or manage to flip upside down. You'll still spend a little too much time babysitting the cars, which can be squirrely at times and often get spun around and start driving the wrong way. They'll eventually auto-correct and turn around, but you'll lose some progress in the race. All told, these annoyances pile up as I'm frequently forced to get up and reposition cars to keep the race going. On the other hand, my four-year-old son—who first loved Anki Overdrive when he was two, and still calls them only by the name “car mats”—thinks it's hilarious. So your mileage may vary.

IS IT WORTH IT?

Overall, luckily, the concept of Anki Overdrive is just far too cool to be ruined by those little, albeit recurring hitches. It's slot cars for a new generation, with little battery-powered sports cars that zip and zoom at your command, using your smartphone and an extendable track that you can customize to your heart's delight. Sure, the add-on elements are costly and inconsistent, but you don't need them. Even at \$20 more than last time, the \$170 starter kit still feels well-priced for how much you get, and for how extensive the app experience is.

The Fast & Furious contributions aren't dramatic; super-fans who have all eight films in their home collection don't

necessarily need to rush out and buy this solely for the license, but it's really only a positive component. It adds a little more character and excitement to the fun, while the familiar cars and the new Power Zone are nice additions. I'd recommend this version over the vanilla Anki set, unless you specifically dislike the films.

And if you already have Anki Overdrive and you're still actively enjoying it, or eager to give the experience a shot in the arm, then it might be worth adding the Fast & Furious Edition. It'll be a pricey upgrade, essentially, but the extra track and cars offer a lot more options, the guardrails are a welcome bonus, and the new app experience serves up enough new challenges to potentially justify the investment.

The Fast & Furious Edition may not be a brand-new Anki Overdrive, but with the right license and a couple of tweaks, it feels fresh enough to warrant another look this holiday season. ■



The box has everything you need except for an iPhone or iPad.

Hot Stuff

What We're
Raving About
This Month



D-LINK OMNA 180 CAM HD

us.dlink.com

Wi-Fi security cameras are becoming more of a fixture in smart homes thanks to integrations with Amazon Alexa, SmartThings, and even IFTTT. But D-Link's \$150 Omna 180 Cam HD is the first camera certified to work with Apple's HomeKit platform, which makes this purchase a slam-dunk for Apple fans who are tapped into HomeKit. It's a solid security camera—the image quality is great, motion detection is reliable with plenty of customization for adapting it to different situations, and the Omna companion app is elegant and easy to use. Plus, its sleek, cylindrical form evokes Apple's attention to design. —MICHAEL ANSALDO

RYLO 360-DEGREE VR CAM

rylo.com

360-degree cameras are nothing new, but with a handful of crafty software tricks, the \$499 Rylo cam rises well above the fray. Rylo is small enough to sit in the palm of your hand, and comes with dual 4K video cameras. Each lens captures a 208-degree field of view, and has an f/2.8 fixed aperture. It's all pretty standard stuff until you fire up the Rylo app and begin viewing—and manipulating—what's you've recorded. When Rylo shoots video, it captures everything that's happening around you. The software uses all this content to impressive effect, letting you edit standard-frame videos directly in the mobile app as if you were a director working with shots from multiple camera angles. —**JON PHILLIPS**



Hot Stuff

BOSE SOUNDLINK MICRO

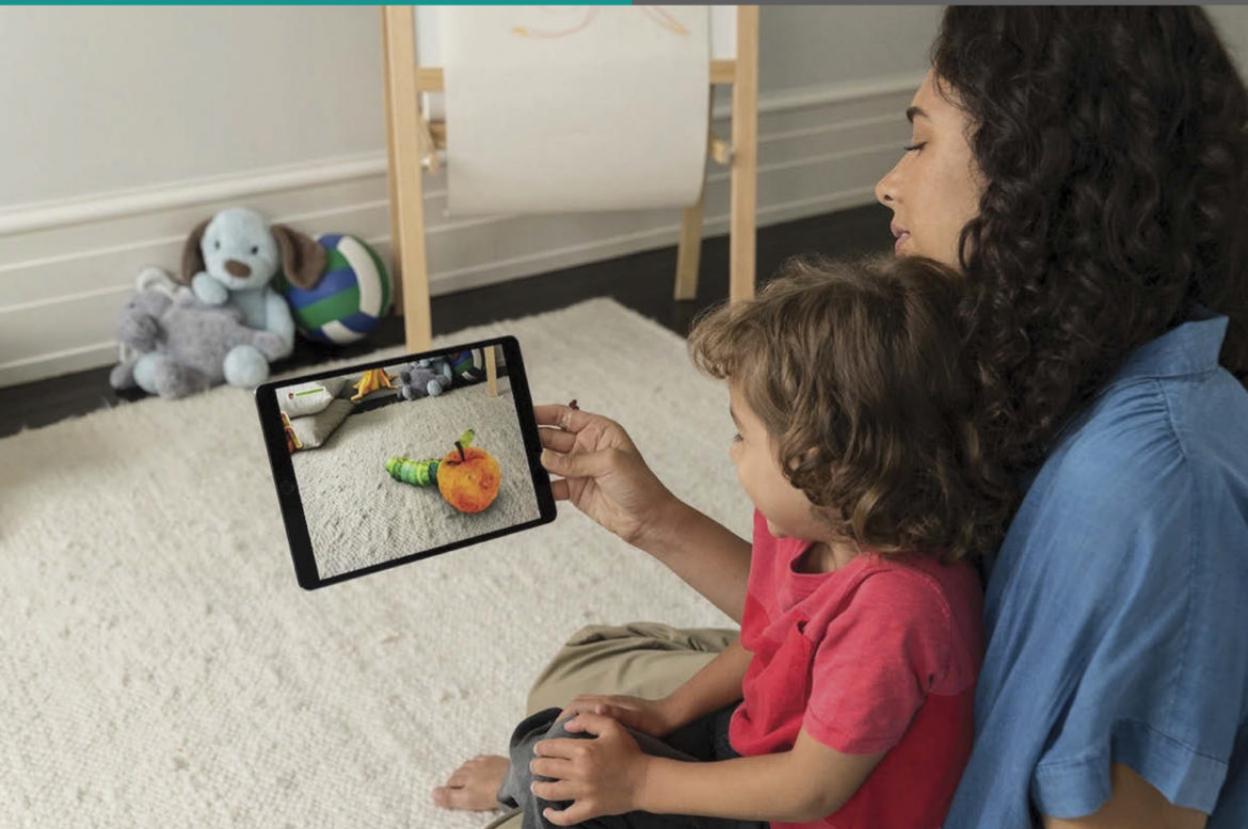
bose.com



Unlike the other speakers in Bose's portable lineup, the Soundlink Micro is designed to be carried and routinely abused. With an IPX7 rating, it'll survive a trip into the shower

or a dunk into the pool to a depth of one meter for up to an hour. Part of this resilience in the face of the elements is due to the speaker's silicon rubber exterior, which not only reduces the number of seams and other access points for water to seep into, but also protects its internal components from being banged around, dented, or cracked.

The only port you'll find on the speaker is a micro-USB port for charging its battery. A single charge will yield approximately six hours of audio. —SEAMUS BELLAMY



10 of the best ARKit apps and games to try for iOS 11

Apple's augmented reality tech powers a new wave of impressive experiences.

BY ANDREW HAYWARD

Augmented reality apps have been around for some time now, but they've often been clunky or rudimentary. But Apple is pushing hard on an AR future with

iOS 11, thanks to ARKit. The tech allows developers to create smarter, more responsive apps that tweak and enhance your real world via the lens of your iPhone or iPad screen.

And creators were ready and waiting. When iOS 11 dropped in September, there were dozens of ARKit-ready apps available, some of which built upon past AR ideas and others that debuted new concepts. If you're eager to see what's possible, whether it's with apps or games, we've picked out 10 of the most impressive ARKit experiences so far.

1. SKY GUIDE AR (\$3)

Star-finding apps have been iOS highlights for years now, letting you use GPS to get the approximate location of stars and constellations in the night sky—but with augmented reality, now they can go a step further. We see that impressively with Sky Guide AR (go.macworld.com/skyg). You'll still point your device toward the heavens,

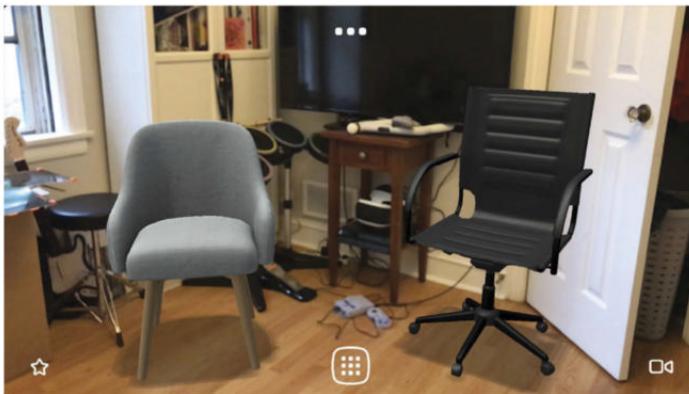
but now the info is overlaid atop your real world sights.

When aiming toward the unobstructed sky, you'll see the overlay of stars and constellations right atop the sky, completing the illusion that you're looking at the real thing...even if it's daytime. Of course, it's more handy at night, as it'll let you pinpoint stars and sights with ease. Be sure to pack this tool for your next stargazing trip.

2. HOUSECRAFT (FREE)

Augmented reality can be extremely useful for envisioning how something would look in the real world, albeit without the hassle, expense, and commitment of the physical object. That's definitely true with furniture, and Housecraft ([go](http://go.macworld.com/housecraft)).





macworld.com/hous) is a surprisingly fun—yes, fun!—early ARKit app that lets you position and experiment with different pieces within your living space.

Unlike the IKEA Place app ([go](#), macworld.com/ikea), the furniture here is generic: this isn't a shopping app, and it's just meant to get your mind moving about what could work in your space. But it's incredibly intuitive, the faux furniture looks pretty sharp (but also fairly natural against your own backdrop), and just for kicks, you can even toss in a tornado to

kick things around when you're done. Sure, why not?

3. DOMINO WORLD AR (\$2)

Knocking down an elaborate trail of intricately-placed dominos is one of life's great pleasures, but taking the time to

set them all up—while carefully avoiding an early downfall—can be a stressful, tiring excursion. Luckily, this is one of those scenarios that augmented reality can solve, and Domino World lets ([go](#), macworld.com/domi) you build with ease before toppling your creation.

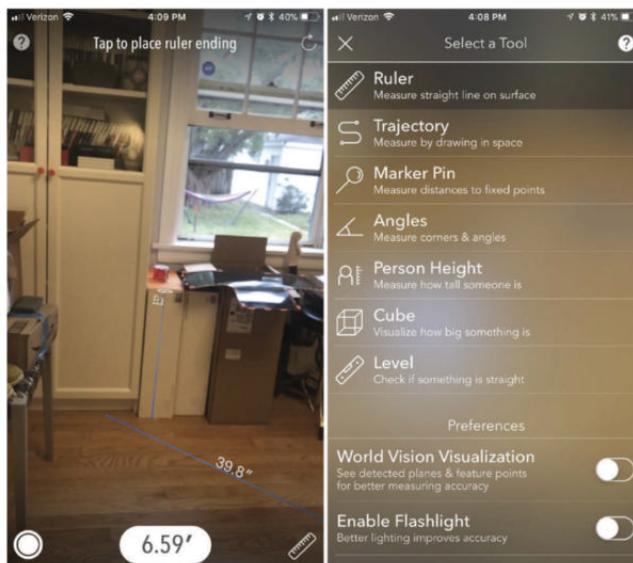
It's as simple as finding a flat surface, holding down a button, and then "drawing"



trails of dominos by moving your device. You can even add in little stairs and toys for amusing twists. True, without the risk and effort of building the real thing, the reward isn't quite as sweet...but it's still pretty entertaining, all the same.

4. AR MEASUREKIT (FREE)

It's time to throw out your tape measures, rulers, yard sticks, and levels. Why? Because now there's an app for all of that. AR MeasureKit (go.macworld.com/arme) uses the power of ARKit to measure distance, letting you figure out the length or height of something via the camera. You'll tap to set a starting point and then point where you'd like to stop, and just like that, you've got a measurement.



OK, so you might want to keep some of those traditional tools to confirm any ultra-precise distances (and make sure the app is working as it should), but for a ballpark measurement, AR MeasureKit seems to do the trick. The ruler tool is free, while tools to measure trajectory, height, and angles require a single \$3 in-app purchase for the whole bundle of additions.

5. MONSTER PARK—DINO WORLD (\$3)

Have you seen the Apple demo that shows an enormous, realistic-looking Tyrannosaurus Rex dropped into the real world? Yeah, that's Monster Park—Dino World (go.macworld.com/dino) in action,

and indeed, it's one of the more compelling visual experiences available using ARKit tech right now.

There's not a lot to it, admittedly: you'll start the scene, which puts the big T-Rex in front of a portal to a prehistoric world, plus there's a Pteranodon flying about. You can prod the dinosaurs a bit and step through the portal into the other environment, all while freely looking at the beasts from all angles, but that's



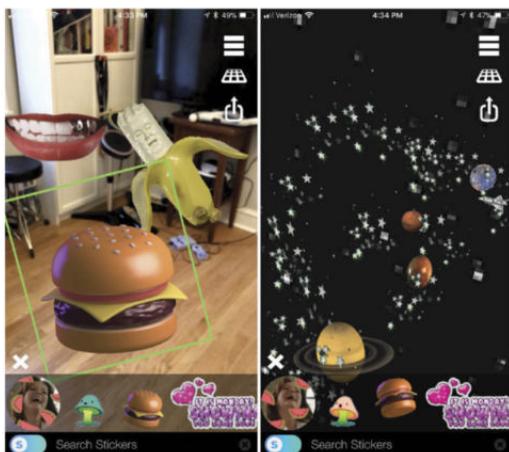
about the extent of it. Luckily, it looks so good that Monster Park is perfect for taking fun gag photos and videos, or for letting kids explore a bit.

6. GIPHY WORLD (FREE)

Animated GIFs are all over the place, whether it's on social media or in our messages—and now they can physically be all around you in Giphy World (go.macworld.com/giph). Well, digitally physically, at least. Giphy World taps into the GIF repository's vast libraries of moving images and lets you drop GIFs and themed GIF-scapes into the world around you using your device camera.

And they'll stay in place as you move your iPhone or iPad around, letting you

concoct elaborate and quite likely obnoxious GIF collages in the augmented version of your space. Look, there's nothing critically important about Giphy World, and it's clearly just meant for a

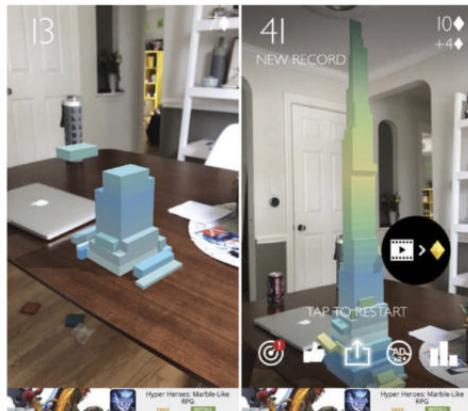


laugh. But that's fine: that's what GIFs do best anyway.

7. STACK AR (FREE)

The standard version of Stack ([go](#). [macworld.com/stak](#)) is a one-tap game that you'll be tempted to play over and over again, and the new Stack AR ([go](#). [macworld.com/stvr](#)) simply shifts the action to your coffee table, desk, or wherever else you have a flat surface. As before, the goal is to tap to place a moving block atop your ever-growing tower—and if you don't time it perfectly, the overlapping edge gets cut off.

Over time, that gives you less and less space to place the new block, and eventually it'll be game over. It's a simple, yet perfectly-executed concept. AR doesn't do anything tremendously special for the experience, but it's cool to have the game in your living space,



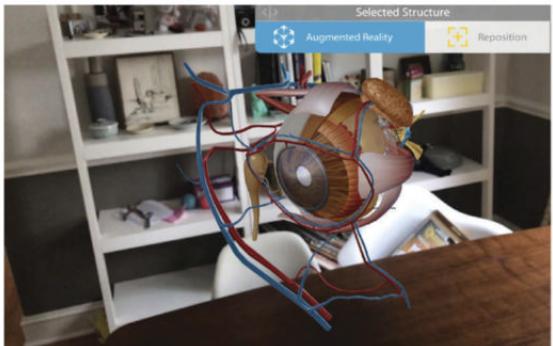
almost like it's a super-sized Jenga tower. The pop-up ads are aggressive, but \$2 within kills them forever.

8. AR RUNNER (FREE)

Using AR apps might be mostly centered on staring at your phone or tablet screen, but AR Runner ([go.macworld.com/arru](#)) is the rare exception—well, sort of. You'll still keep your eyes on your screen, since that's where the reality gets augmented, but this fitness experience is all about getting up and moving in a hurry.

AR Runner creates a little race path to run in your space, setting up virtual gates in the world for you to pass through, and then it challenges you to run the best time you can. Races comes in different sizes and shapes, plus you can compare times on the online leaderboards and even run local races with pals. It's short, fast, active fun, and an inventive use of ARKit.





9. HUMAN ANATOMY ATLAS 2018 (\$1)

You might not want to see a real dead body up close, or handle real, excavated body parts—but with augmented reality, you can get all the knowledge without any of the mess or icky feelings. Human Anatomy Atlas 2018 (go.macworld.com/huaa) lets you pull up an impressively realistic 3D model of a cadaver, eyeball, or other body part, drop it on a surface, and then examine it from all angles.

That's perfect for getting an inside look at a part of the human body and understanding its components and dimensions. The app itself is a bit confusing to navigate, however, and only some of the elements have AR experiences. That might throw you off at first, but once you're staring into the abdomen of a fake-real corpse, surely all frustrations will be forgiven.

10. MY VERY HUNGRY CATERPILLAR AR (\$3)

Eric Carle's iconic storybook *The Very Hungry Caterpillar* has transcended generations, so both you and your young ones might get a real kick out of My Very Hungry Caterpillar AR (go.macworld.com/mvhc).

It turns the classic storybook

into a compact augmented reality playground, letting you feed the bug and have it play around with toys until it ultimately grows and transforms into a butterfly.

It's not another telling of the classic story, unfortunately, and there isn't a lot of depth to the experience. However, it looks really slick, especially if you play outside in the grass or another natural backdrop, and it's extremely easy to understand and interact with. This one's perfect for the little ones to play around with. ■





Hey Siri, Google Assistant is winning the AI game and it's not even close

Google's new toys make the gap even wider.

BY MICHAEL SIMON

You might have missed the Apple references during the recent Google Pixel 2 event, but they were there. There was VP of Product Management Mario Queiroz telling the crowd, "We don't set aside better features for the larger devices." Or pointing out that "even iMessages" would be transferred over

when you decide to switch. And let's not forget the woman taking a big bite out of an apple during the Pixel 2's intro video.

In fact, it seemed like every new Google product released last week had a singular message seemingly aimed squarely at Apple. Google might have a long way to go before it starts selling iPhone-like numbers of Pixel phones, but

there is one important area where it's firmly in the lead, and it has nothing to do with bezels or beats. It's about intelligence.

At Apple's recent iPhone X ([go.macworld.com/iphx](#)) event, Tim Cook pulled out Steve Jobs's old Wayne Gretzky quote about skating to where the puck is going, but there's only one company that's thinking forward right now and it's not Apple—it's Google. New hardware might have been the reason for the event, but machine learning was the strongest undercurrent, and the message Google sent was clear: Our AI is better than your AI.

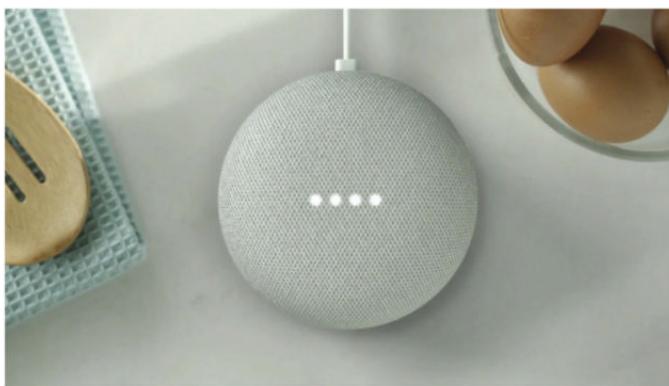
BRAINS BEFORE BEAUTY

Google CEO Sundar Pichai kicked off the Made by Google event by talking about his favorite topic: machine learning. It's not enough that Google makes uncannily accurate search algorithms anymore. Google is using its AI smarts to make its products more responsive and adaptable to each user's lifestyle.

It's not about specs (although the Pixel phones [[go.macworld.](#)

[com/pixe](#)] have really good ones) or design (although the Google Home Max [[go.macworld.com/goho](#)] would look good in any room). In fact, none of Google's new products are all that interesting on the surface, but what's inside is leaps and bounds ahead of what Apple is doing with Siri and iPhone X. It's about smarts, and Google has integrated Google Assistant and machine learning into every one of its devices in a, dare I say it, Apple-like way.

There's the impulse-buy Google Home Mini ([go.macworld.com/gomi](#)) and the high-fidelity Max to put Assistant in every room of your house. Active Edge on the Pixel lets you squeeze the sides of your phone to launch Assistant. And the Assistant-powered Pixel Buds ([go.macworld.com/pibu](#)) feature a remarkable live translation feature.



Google Home Mini will put Google Assistant in every room of your house.

Google's latest products are designed from the inside out to be smarter than they are pretty, a big bet that consumers are tired of good-looking gadgets that put form before function. And if it's right, Apple could be playing catch-up for years to come.

CONVERSATIONS, NOT COMMANDS

Apple's first home AI speaker won't hit shelves until December, but Google already has three of them. When it was announced in June, HomePod (go.macworld.com/hpod) appeared to have an advantage over Google Home and Amazon Echo with its high-fidelity, room-sensing smarts, but now Google Home Max has landed, and it might be even better.

Like HomePod, Google Home Max uses machine learning to analyze your

space to deliver optimal sound, but Google's method gets more granular and fine-tunes the sound based on the song you're listening to as well as adjusting based on Max's surroundings. But if they're even when it comes to sound, the real difference is Google Assistant.

Apple has improved Siri's speech patterns in iOS 11 (go.macworld.com/io11), but for the most part, its AI ambitions have been relatively conservative. Google Assistant isn't just better at recognizing what you're saying, it's more contextual and conversational, which leads to an all-around better experience. And with the new Routines feature, you'll be able to combine several tasks (like shutting the lights off, setting an alarm, and activating your security system) with a single phrase. It even recognizes your voice over the other people in your home. With Siri, commands are islands

unto themselves, while Google Assistant is practically like talking to an actual person.



HomePod intelligently scans your room to deliver the perfect sound.

A SMARTER CAMERA LENS

It was just a year ago when Assistant was limited to Pixel

phones and Google Home, and now it's everywhere: watches headphones, speakers, not to mention hundreds of millions of Android phones.

And now Google is branching out beyond simple voice commands. Exclusive to the Pixel phones (at least for now) is a new app called Google Lens (go.macworld.com/lens), and it has the potential to be just as instrumental to Google's AI push, if not more so. A combination of augmented reality and artificial intelligence, Google Lens uses your phone's camera to identify buildings or flowers, scan and store phone numbers, even input Wi-Fi passwords, all without needing to jump around to various apps.

This isn't a fancy box for Google Assistant, it's a whole new set of skills. Apple doesn't have anything close to this type of functionality, and Google is set to begin shipping it in a few weeks. If it's as fast and accurate as it is in Google's demos, it will be nothing less than a game-changer for search (go.macworld.com/gcha).

BIG BEAUTIFUL BRAIN

Google is in a unique position to excel in the AI space. Where Apple needs to keep wowing us with drool-worthy hardware to get noticed, Google has taken a utilitarian approach to its design,

banking on AI to drive the experience. The Pixel 2 isn't as pretty as the iPhone X or even the iPhone 8 (go.macworld.com/iph8) for that matter, but Google is selling brains before beauty.

In its first year, Google Assistant has advanced further than Siri has in the past seven. And it's getting smarter every day. Not only is it basically on every phone that ships (including iPhones), but it's in our homes, our cars, on our wrists, gathering information and learning how to better respond to our needs. And with Google Lens, there's no telling how intelligent it will be this time next year.

Google might never design a smartphone that's as beautiful as the iPhone X. But one thing is for sure: It's closer than Apple is to making one that's smarter than a Pixel. ■



The Pixel 2 isn't as pretty as iPhone X, but it's way smarter.



Hate iTunes 12.7 and want to be able to install and manage iOS apps in iTunes? Install iTunes 12.6.3

BY ROMAN LOYOLA

Tune's 12.7 removed the iOS app store (go.macworld.com/remov), which means you can't buy or manage your iPhone and iPad apps when your devices are connected to your Mac. Some people don't like it, and if you really don't

want to change your ways, there's a workaround: You can install iTunes 12.6.3 and get back access to the iOS app store.

There is a catch, though. Apple provides support only for the latest version of iTunes, which means that iTunes 12.6.3

is not supported by the company and you can't get technical support if you need it.

iTunes 12.6.3 was originally released to address the needs of businesses and enterprise customers that prefer the app management method built into iTunes prior to version 12.7.

You can learn more about iTunes 12.6.3 by reading Apple's knowledgebase article (go.macworld.com/base).

HOW TO INSTALL iTUNES 12.6.3

If you've already installed iTunes 12.7, you can run the installer for version 12.6.3 and it will replace version 12.7. But there are a few additional steps you need to perform to get 12.6.3 to work.

If you are using iTunes 12.6.2, you don't have to upgrade to 12.6.3. Click the following link to download iTunes 12.6.3 for Mac: (go.macworld.com/12.6).

Here are the instructions to installing iTunes 12.6.3 over iTunes 12.7:

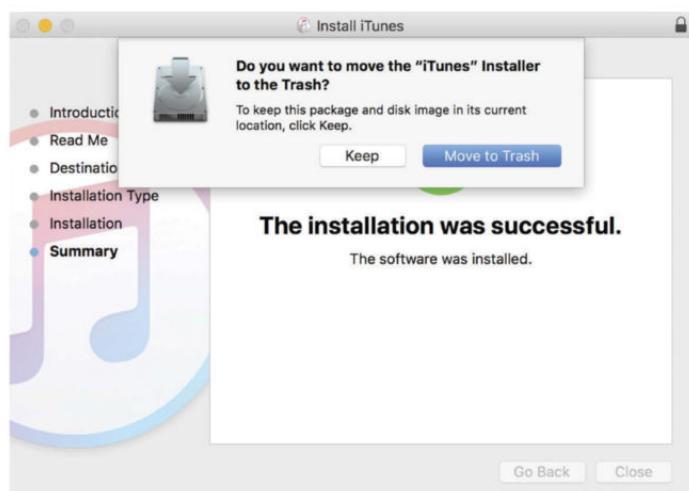
> After downloading the installer, double-click the disk image file called iTunes12.6.3.dmg. (It should be in your Downloads folder, or

whatever folder you've designated as the download location.)

> In the window that opens, you can read the Read Before You Install iTunes document. Double-click on Install iTunes to run the installer.



> As you navigate through the installer, you'll need to enter your user password to proceed. The installation takes a few minutes.

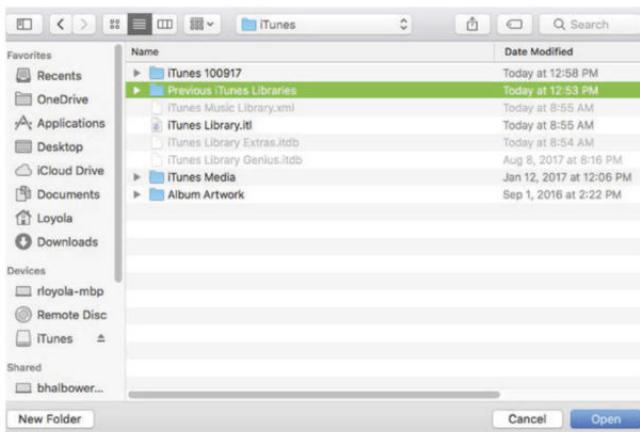


> When the installer finishes, it will ask if you want to move it to the Trash. Click Move To Trash. After that, you'll find iTunes 12.6.3 in your Applications folder.

HOW TO FIX THE 'iTUNES LIBRARY. ITL' PROBLEM WITH iTUNES 12.6.3

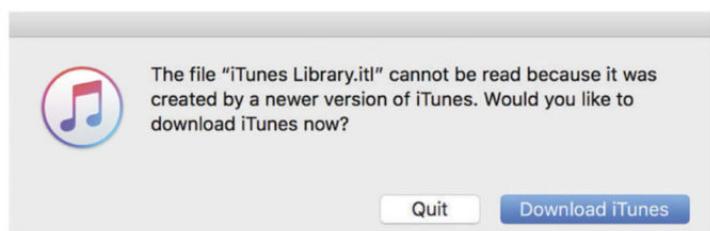
If you had iTunes 12.7 and want to replace it with iTunes 12.6.3, there are a few more steps you need to do. You have to reassign the library that iTunes uses, because iTunes doesn't like it when you are using a previous version to access a library created by the current version. You'll see the message below. Click Quit. Do not click Download iTunes, because this will download iTunes 12.7. Here's how to fix it:

> Go to your Applications folder and look for the iTunes icon. Hold down on the Option key while you double-click iTunes.
 > You should see the message below. You can click Create Library, and this will



make a brand-new library. If you click Choose Library, you might be able to access an older library, like the one you had before installing iTunes 12.7. You can click on Choose Library, and it should automatically take you to your iTunes folder; if not, you'll find it in your Music folder. You may have a folder called Previous iTunes Libraries (see above). Open that folder, and then look for a recent .itl file. Select it and click Open. If it's not the library you want, you can redo these steps and select a different .itl file.

> After you select your library file (or create a new one), iTunes will launch and you'll find the iOS app store, as well as the sections to organize your iOS apps. ■



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HAMILTON 75K+ Instagram Followers



Start A Story. Adopt
theshelterpetproject.org





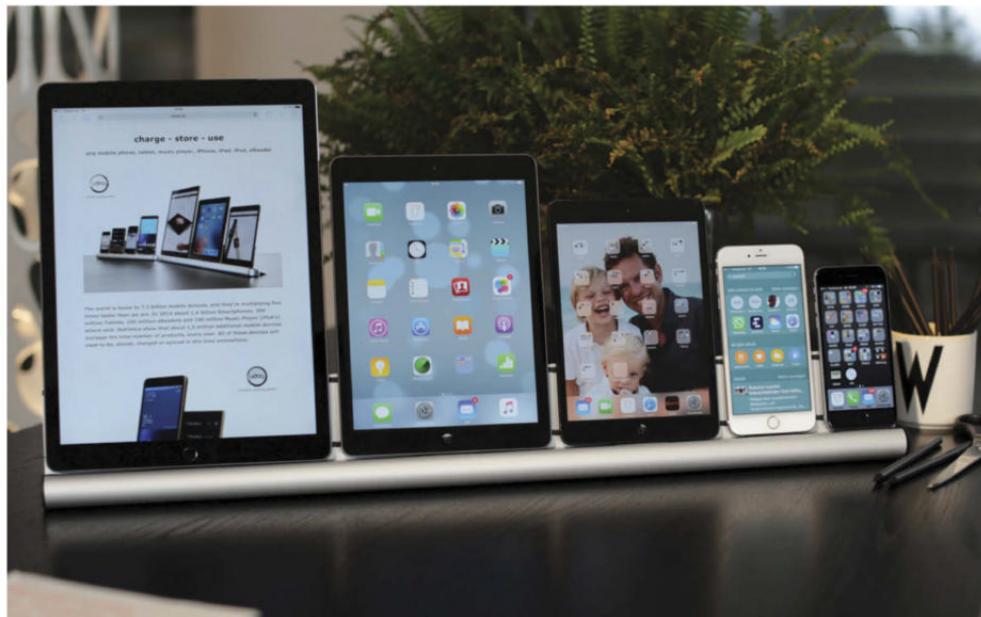
THE CLOSER WE GET, THE MORE WE SEE



Experience the world's most amazing animals in one app. **WWF TOGETHER**—the new free app from World Wildlife Fund. Download it today.

worldwildlife.org/together





MOBILE ACCESSORY

UDOQ: DOCKING STATION BIG ENOUGH TO CHARGE EVERY iOS DEVICE IN THE HOUSE

BY J.R. BOOKWALTER

Constructed from sturdy aluminum, the Udoq (go.macworld.com/udoq; \$111 to \$219) is a docking station for charging multiple smartphones and tablets. The Apple-specific version includes MFi-certified Lightning cables that snake through the back, snapping into patented connectors which slide along a track on the bottom and can be moved to any position.

Height is also adjustable, allowing the dock to be used without removing most protective cases. There are four models available; I reviewed the Udoq400 (\$147), which at 15.75 inches wide was a tad long for my desk, but perfect for the kitchen counter. (By comparison, the largest



Udoq700 (\$219) tops out at 27.56 inches, enough for all three iPad sizes with room to spare for two iPhones.)

The Udoq's unique design allows owners to mix and match with Android devices with a quick cable swap. A small tool is included to facilitate this, or you can custom configure each dock when ordering. One thing not included is any kind of power adapter; the company sells a \$35 six-port charger to address this limitation, as well as a Qi adapter (\$26) so iPhone 8 and iPhone X owners can join in the fun.

I understand the rationale—most of us have plenty of spare

chargers lying around, and this allows an individual cable to be plugged into a computer at the same time. But all these cables create a tangled mess behind the

dock, especially when trying to determine which one goes where, since neither end is labeled. The Udoq also neglects iPads in landscape mode, since the angled back is too short to support tablets.

Udoq

PROS

- Charge iOS, Android devices from single docking station.
- Quality aluminum construction.

CONS

- Connector cables aren't labeled at either end.
- Not a cure for tangled charging cables.

PRICE

\$146

COMPANY

Udoq

BOTTOM LINE

It's one of the more versatile docking stations I've used, but the Udoq doesn't go far enough at eliminating the problem of having too many cables. ■



MOBILE ACCESSORY

MEEM: BACK UP iOS DEVICES WHILE THEY CHARGE WITH THIS UNIQUE CABLE

BY J.R. BOOKWALTER

The Meem (go.macworld.com/meem); available on Amazon for \$47 [32GB from go.macworld.com/32gb], \$61 [64GB from go.macworld.com/6gb4], or \$60 [128GB from go.macworld.com/128g]), is a USB 2.0 charging cable that includes cloud-free backup storage. Available for iOS devices with a Lightning port or micro-USB for Android, the Meem offers 32GB, 64GB, or 128GB of flash memory built into one end of a stylish green cable.

A small processor is also embedded into the 120.6mm x 21.1mm x 8.3mm black barrel at the Lightning end. The larger section of the cable is a little flexible, but be careful when setting it on a table or kitchen counter, because the Meem protrudes about four inches from the device.

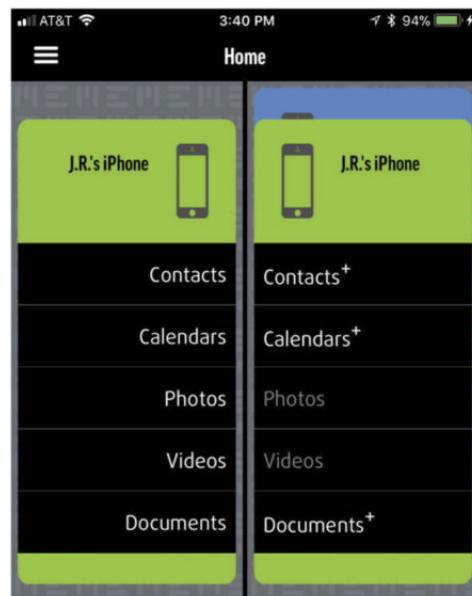
You'll have to provide an AC power supply like the one shipped with your iOS device, but the Meem is otherwise ready to go. Plug it in and your device begins charging at 5V, then launches the free iOS app a few seconds later.

AUTOMATIC BACKUP

The Meem app backs up contacts, calendars, photos, videos, and documents stored on up to three different iOS devices. It can't back up everything—messages, ringtones, and other file types are off limits. The first time a device is connected you'll create a four-digit PIN code used to access or restore data.

The app is laid out in two columns, with the attached device on the left and backups on the right. Meem delays automatic backups 20 seconds, giving users time to adjust settings by tapping a device icon to select which content types are backed up. Manual backup or restore can be done any time via drag and drop between columns, while archive mode is used to retain items from previous backups since deleted.

Meem is less ideal for iCloud Photo Library users with multiple devices, since photos and videos must be downloaded before they can be backed up. Even the 128GB model isn't spacious



iCloud Photo Library users can disable photos and videos, which require downloading full-resolution content prior to backup.



Udoq

PROS

- Charge and back up with a single cable.
- Configurable automatic backups.
- Intuitive, easy to use.

CONS

- Not a good solution for iCloud Photo Library backup.
- Cable extends too much from device.

PRICE

From \$47

COMPANY

Meem Memory

enough for this purpose, a problem that could be alleviated by using removable storage in future models. There's also a desktop app offloading data to a Mac, Windows, or Linux computer.

BOTTOM LINE

The Meem is a clever combination of device backup and charging in a single product, but the lack of upgradeable storage is a limitation for iCloud Photo Library users with a lot of photos and videos. ■



MOBILE ACCESSORY

WATERFIELD DESIGNS iPHONE CAMERA BAG: TOUGH, PRICEY PROTECTION FOR iPHONE PHOTOGRAPHY GEAR

BY SÉAMUS BELLAMY

As smartphone cameras have become more powerful, it's gotten a whole lot easier for a serious iPhone photographer to justify spending hundreds of dollars on accessory lenses, tripods, and gimbals designed to drag the best images and video possible out of their handsets. These extras don't come cheap and their diminutive size makes them easy to lose. Stashing them in your backpack or camera bag makes them difficult to find or organize and eliminates the size savings that rolling through a photo shoot with nothing but a smartphone imparts. What's

needed is a bag designed specifically for smartphone photography. With its iPhone Camera Bag (go.macworld.com/cbag; \$99 to \$129 MSRP), Waterfield Designs has attempted to give us exactly that.

DESIGN

Waterfield Designs called it an iPhone Camera Bag but, provided your handset's no larger than an iPhone 8 Plus, you'll be able to jam most any smartphone or action cam into it.

The bag comes in two different finishes: ballistic nylon and a high quality grizzled leather. Available for \$99 and \$129, respectively, neither iteration of the bag comes cheap. But given how much replacing a single lost or damaged lens from a company like Olloclip (go.macworld.com/ollo) or Moment (go.macworld.com/mome) can set you back, it's possible to look at the purchase price as more of an investment than a burden. Both versions of the bag are sized at 8 x 3 x 4 inches, and weigh less than 10 ounces.

The leather and ballistic face fabrics of the bag are both weather-resistant and the main compartment's waterproof zipper helps to keep dust and liquids at bay.

The whole bag is swathed in a layer of dense foam, which is more than adequate



The iPhone Camera Bag is just the right size for carrying a smartphone and a few photographic essentials.

for protecting any delicate hardware being carried inside of it from bangs, bumps, and other casual abuse. Further protection is found in the bag's adjustable hook and loop dividers, which can divide and protect up to four lenses from banging up against each other while you're on the go. The bag also has an internal zippered mesh pocket, perfect for stowing a few cables, lens filters, or a LensPen (go.macworld.com/lensp).

When it's time to whip out a lens or other accessory, the bag opens up wide, making it easy to access everything inside. Unfortunately, the interior of the iPhone Camera Bag is black—I found that this made it difficult to quickly find what I was looking for, despite using its interior dividers to organize my gear.



We'd be happier with the iPhone Camera Bag if these fabric loops were as tough as the hooks that attach to it.

ahead of time. Given that so much of good photography depends upon being able to quickly capture a moment using the right hardware, it's a disappointing oversight.

CARRIAGE

The iPhone Camera Bag comes with a thin, adjustable nylon strap. Were this any other bag, I might take issue with this: Thin straps tend to make for an uncomfortable carry. But this isn't a pack designed to carry your lunch, laptop, and jacket. The size and weight of the gear you'll want to carry in the bag will be minimal, so the strap's width can be, too.

Waterfield Designs equipped the strap with a pair of sturdy, spring loaded metal hooks that will ensure long service. Unfortunately, the clips attach to a pair of flimsy nylon loops on the side of the bag. I feel that these loops could easily succumb to wear over time. Replacing or repairing one could prove a major pain.

If you're not into rocking it on a shoulder strap, it's also possible to wear the bag on your belt, thanks to a pair of belt loops built into its backside. The loops could also be used to attach the camera bag to a backpack strap—a nice touch. I was also pleased by the fact that the bottom of the bag comes equipped with a number of elastic straps that can be used to securely lash a portable tripod or smartphone gimbal to.



Waterfield Designs iPhone camera bag

PROS

- Well-sized for carrying iPhone photographic accessories.
- Bag provides ample protection against weather and impact.

CONS

- Dark interior makes it difficult to find what you're looking for.
- Expensive.

PRICE

From \$99

COMPANY

Waterfield Designs

BOTTOM LINE

Waterfield Designs' iPhone Camera Case provides some much-needed protection to expensive smartphone photography accessories. But its steep price and a number of design flaws make it difficult to recommend it without reservations. ■



A father and daughter are captured mid-air as they jump from a concrete dock into a body of water. The father, shirtless and wearing patterned swim trunks, is on the right. The daughter, wearing a blue long-sleeved swimsuit, is on the left. They are both reaching forward with their arms. In the background, there's a stone wall and some greenery.

It only takes a moment
to make a moment.

Take time to
be a dad today.

fatherhood.gov
#makeamoment



WHAT'S NEW AT THE APP STORE



HQ

Fancy yourself a master of unimportant details? Are you a pub trivia connoisseur? And do the words “cash prizes” send your pulse racing? If any of those things are true, then you might be thrilled to hear about HQ ([go. macworld.com/hq](http://go.macworld.com/hq)). Hailing from a couple of the makers of shuttered social video service Vine, HQ is a live trivia app that offers up a daily competition you’ll play on your phone.

Into the Dead



Quick! Need a free, fun, seasonally-appropriate game to play before the Halloween season ends and we’re all thinking about Thanksgiving instead? You’re in luck: PikPok just released Into the Dead 2 ([go. macworld.com/itd](http://go.macworld.com/itd)), the sequel to one of the best endless runners ever seen on the App Store.

The Talos Principle



The Witness hit the App Store in September, and now The Talos Principle ([go. macworld.com/ttp](http://go.macworld.com/ttp)) brings another one of the most beloved puzzle games from the past couple years to your iPhone and iPad. The most obvious comparison is probably Valve’s quintessential Portal.

Stranger Things

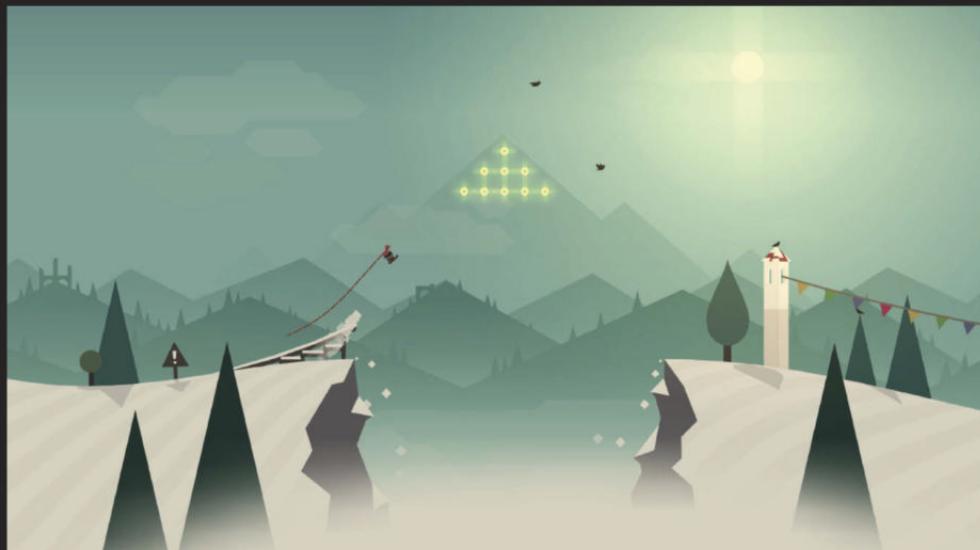


Stranger Things ([go. macworld.com/stt](http://go.macworld.com/stt)) is back on Netflix with a second season, but that’s not the only thing that viewers should be excited about this month: there’s also a mobile game, and unlike the vast majority of licensed games, it’s actually good. Even better yet, it’s completely free, lacking any kind of obnoxious ads or in-app purchases. Why? We don’t know. Don’t question it. —**ANDREW HEYWARD**

APPLE TV GAMES

6 GAMES THAT YOU SHOULD ABSOLUTELY PLAY

You may not have a PlayStation 4, Xbox One, or Nintendo Switch in your house, but if you have the current-gen Apple TV hooked up to your screen, then you really do have a game console ready and waiting to entertain. **By Andrew Heyward**

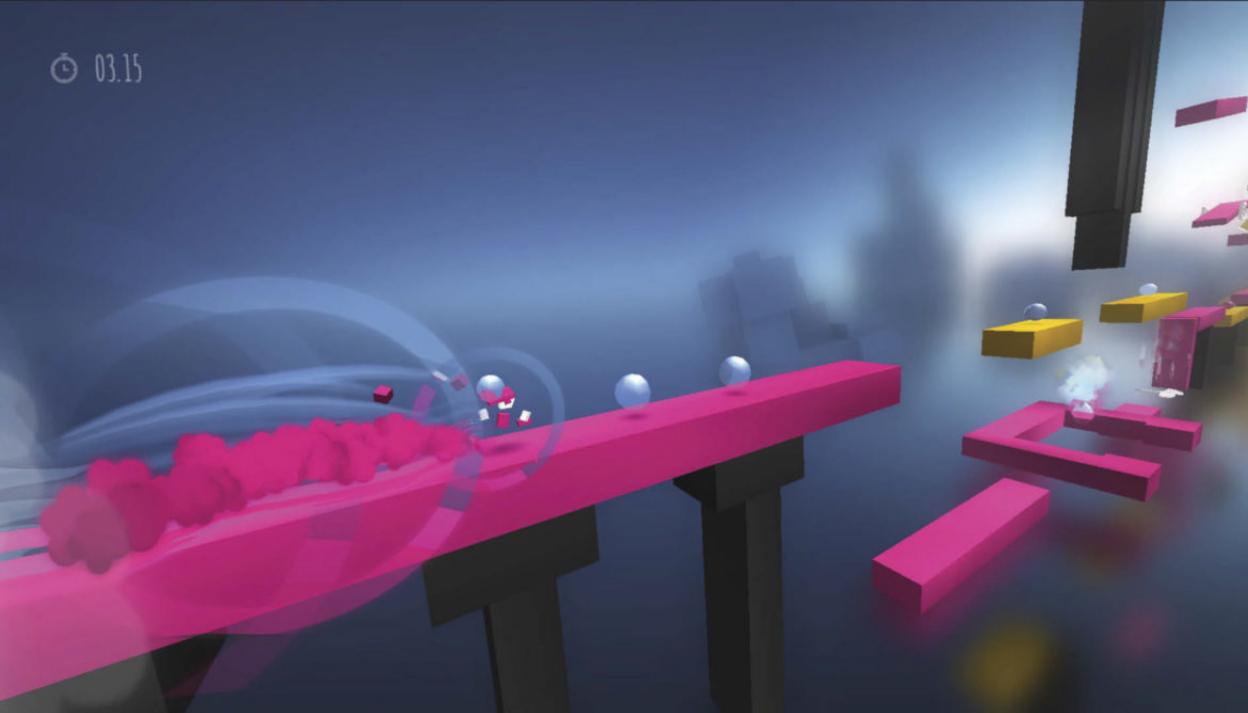


ALTO'S ADVENTURE

go.macworld.com/alad

Alto's Adventure (\$3) is one of the most beautiful iPhone games we've played on our iPhones and iPads, and—no surprise here—it's also one of the most beautiful games you can play on your Apple TV. Its gorgeous, minimal artwork, which features flat environments, stark colors, and smooth animations, all holds up rather well on a living room flat screen.

⌚ 03.15



CHAMELEON RUN

go.macworld.com/chr

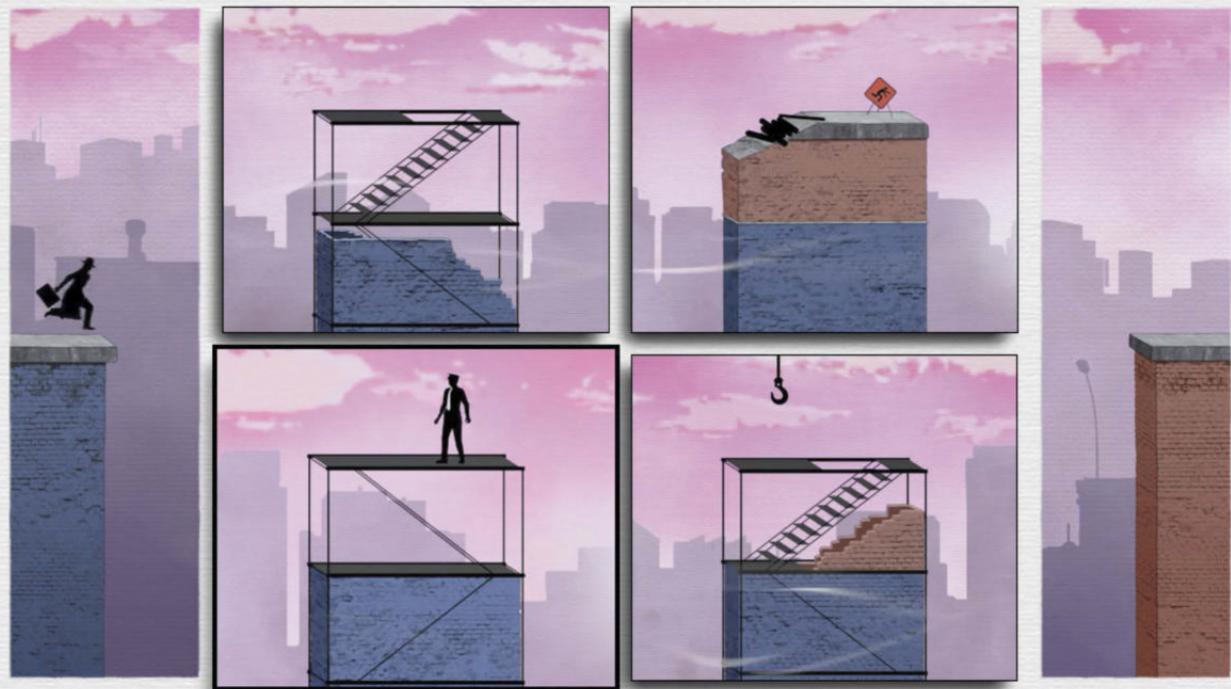
Chameleon Run (\$2) is one awesome—but also very difficult—2D platform game. It's like a hyper-speed version of Mario, albeit with a twist: to make it to the end of the level, you can only step on platforms that are the same color as your hero (pink or yellow). Land on anything else and your character detonates on the spot.

CROSSY ROAD

go.macworld.com/crro

After all the hours we've poured into Crossy Road (free) on iPhone—all the hard-fought leaderboard battles and close calls with speeding cars—switching platforms is tricky. It's such an intimate experience on a touchscreen: You tap and it happens right there. Here, you're clicking the Apple TV remote and the television is a few feet away. It's strange. It's different.





FRAMED

go.macworld.com/fra

Framed (\$5) is one of the cleverest original games on the App Store, as it builds a puzzle-solving experience around comic book panels that correspond with each other. You must help a shadowy man (and later a woman, too) evade capture by getting to an exit on each screen, and you'll do so by rearranging the panels to create the correct series of events.



GALAXY ON FIRE: MANTICORE RISING

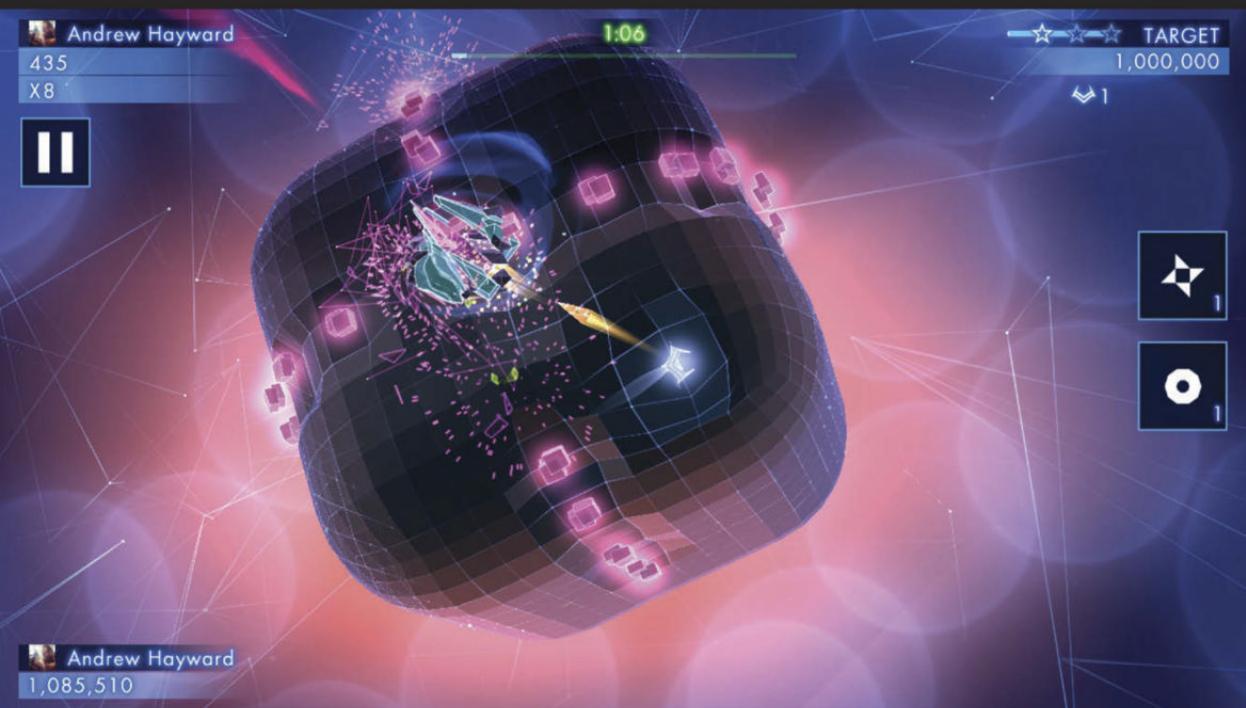
go.macworld.com/im

The Galaxy on Fire series has kept iOS space shooter fans entertained over the years, but for the Apple TV release, Fishlabs decided to do something different. Well, not that different: It's still a slick, 3D space shooter in which you'll zip around and blast enemy ships to bits. But rather than port an existing game, Galaxy on Fire: Manticore Rising (\$6) is an Apple TV exclusive.

GEOMETRY WARS 3: DIMENSIONS EVOLVED

go.macworld.com/gw3

Geometry Wars 3: Dimensions Evolved (\$10) is a delightful return for the arcade-style blaster, and while the focus remains on surviving in a confined space while shooting geometric foes in all directions, this entry adds a whole lot more. It has 100-plus individual levels to play, with new 3D stages and boss characters to defeat, plus time-evaporating arcade modes like the clever, weaponless Pacifism.





Tonya Peat
Cancer Survivor

Morgan Freeman
SU2C Ambassador
Executive Producer
of the documentary,
The C Word

Be the breakthrough.

Breakthroughs are the patients participating in clinical trials, the scientists and doctors working together to advance the fight against cancer, and the brave survivors like Tonya who never give up. Let's be the breakthrough. To learn about appropriate screenings and clinical trials or to help someone with cancer, go to su2c.org/breakthrough. #cancerbreakthrough

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TheCWordMovie.com

 **STAND UP TO CANCER®**
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Stand Up To Cancer is a program of the Entertainment Industry Foundation, a 501(c)(3) charitable organization. Please talk to your healthcare provider about appropriate screenings for your age, sex, family history and risk factors; and about clinical trials that may be right for you. Photo by Nigel Perry

iPhone 8 AND 8 Plus Review:

DON'T
OVERLOOK
THIS
SPEEDY
UPGRADE.

The iPhone 8 and 8 Plus may be Apple's 'safe bets' in their 2017 iPhone lineup, but it makes improvements on the iPhone 7 in almost every category.

By Leah Yamshon



Apple releases a new iPhone every September, and it's a given that it will be the best iPhone ever. But what do you do when the company announces not one, not two, but THREE new iPhones? How do you rank them and decide which one is the actual best iPhone ever, especially when they don't all go on sale at the same time?

Because of this, the iPhone 8 and 8 Plus are at an unfair disadvantage right out of the gate. The iPhone X (go.macworld.com/iphx) was announced at the same time and is the clear frontrunner when it comes to innovation—it has an all-new design with an edge-to-edge, bezel-less OLED display and a new Face ID technology that lets you unlock your iPhone just by looking at it (literally). The iPhone 8 maintains the same look and feel of the iPhone 6, 6s, and 7, with some changes and enhancements.

However, pushing the iPhone X aside, the iPhone 8 and 8 Plus make substantial improvements on last year's iPhone 7 (go.macworld.com/iph7), which *Macworld*'s Susie Ochs said felt "like a beta version of what's to come." Well, the

iPhone 7 is officially out of beta, and it's called the iPhone 8.

FAMILIAR DESIGN WITH A GLASSY ADDITION

It's true: At a glance, the iPhone 8 and 8 Plus look almost identical to the iPhone 7 and 7 Plus. They have practically the same dimensions (5.45 inches long by 2.65 inches wide at 0.29 inch thick for the iPhone 8; 6.24 inches long by 3.07 inches wide at 0.30 inch thick for the iPhone 8 Plus), same display size (4.7 inches diagonally for the iPhone 8; 5.5 inches for the iPhone 8 Plus), same button and port locations, and they both lack a headphone jack (very sorry to say). If you have a case for your iPhone 7, it will fit the iPhone 8 like a glove.



The iPhone 8 (top) and the iPhone 8 Plus (bottom) look very similar to the iPhone 7, but with one key aesthetic difference.



One downside to glass? Smudges.

Color wise, you have three options: space grey with a black bezel, silver with a white bezel, or gold with a white bezel. Gone is the jet black matte finish, and gone is the lovely rose gold option, but Apple switched up its standard gold option to meet us somewhere in the middle. If you compare a gold iPhone 6/6s or 7 to a gold iPhone 8, you'll notice that the iPhone 8 has a copper-bronze tint to it, where the older models are closer to a champagne gold. I'm low-key obsessed with the new gold option—I think it's the iPhone's best color yet.

But if you look closer, you'll notice one key design difference: It has a glass back, featuring a new glass formula that Corning made especially for Apple. Apple claims that it has a 50-percent deeper

strengthening layer over Gorilla Glass. Because of the glass, the 8 models are slightly heavier than the 7 models—the iPhone 8 is 5.22 ounces, 0.35 ounces heavier than the iPhone 7; the iPhone 8 Plus is 7.13 ounces, 0.5 ounce heavier than the iPhone 7 Plus. I didn't notice the extra heft at all when comparing the iPhone 8 to the iPhone 7, but it is definitely

noticeable in the Plus version. However, the iPhone 8 Plus doesn't feel like a heavy phone whatsoever.

This isn't the first iPhone to feature a glass back: The iPhone 4 and 4s also had glass, but Apple ditched it with the iPhone 5. I like the look of the glass a lot—it gives the iPhone a nice shine, and also gives it a bit of contrast from the main color. Take the new gold, for example. The glass back gives it a kind of cream-colored finish, and the gold really pops along the edges.

Yes, the glass does make the phone a bit more slippery compared to the aluminum finish of the iPhone 7. I haven't had a problem with it slipping out of my hands or sliding off a table or anything unexpected, but it just feels more slippery, generally speaking. And it absolutely will

show fingerprints and smudges, even after a few minutes of casual use. If you're worried about any of the above, then a case is the way to go.

WIRELESS CHARGING

There's a reason why Apple revived the glass back. The material is more conducive to wireless charging—which can't travel through metals—and the iPhone 8 and 8 Plus are Apple's first phones that support the technology. You can top up your iPhone 8's battery with any wireless charging pad that uses the Qi standard—just place your iPhone on the pad, and it will begin to charge. It will make the same charging chime and flash the lightning bolt indicator, just as it does with a Lightning connector.

Have a case on your phone? No problem: if it's not metal, it should charge just fine through the case. I've tested out the iPhone 8's charging capabilities with several different cases and haven't had any problems.

I didn't think this would be a feature that I cared much about, but it turns out, I do. I love that I can just set my iPhone down on

the charging pad by my desk or on my nightstand without having to fiddle with a Lightning cable. It will be a zillion times better when Apple releases its AirPower charging pad (go.macworld.com/airp) in 2018, where I should be able to charge my new Apple Watch Series 3, my iPhone 8 Plus, and my AirPods all on the same pad. (Currently, the existing Qi pads can only charge one device at a time.)

There are some downsides to wireless charging, however. To start, you can't ignore the cost. Apple still provides a Lightning cable in the box when you buy your new iPhone 8 or 8 Plus, but if you picked up one of the charging pads that Apple sells in stores (either from Belkin [go.macworld.com/belk] or Mophie [go.macworld.com/mophie]),



Left: This iPhone 8 has been placed properly on the charging pad, and is charging away. **Right:** But a slightly askew iPhone 8 cannot connect to the wireless charger.

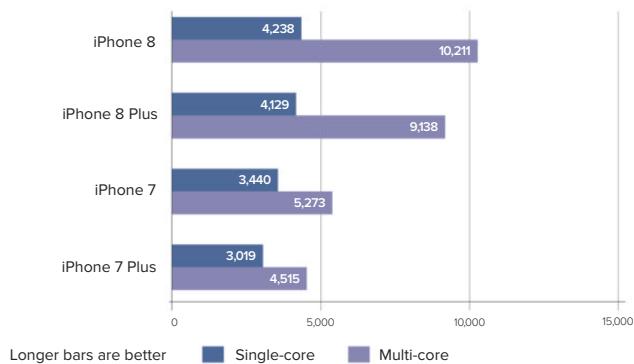
macworld.com/moph]),

that will set you back an additional \$59.95. It's common to have Lightning cables in every room in the house, but to do the same with charging pads could be a major investment.

Wireless charging doesn't boast of any speed improvements, either. Apple states that wireless charging is about as fast as the included Lightning cable and 5W wall plug, and our testing lines up with that claim. There aren't any wireless charging pads that support fast charging on the market yet, so if you need to reload your battery quickly, you're better off using a USB-C-to-Lightning cable with a compatible power adapter.

Also, you can't really use your iPhone while it's charging, which is kind of annoying. And make sure you pay attention to how you place your iPhone down on the charging pad—if it doesn't line up with the sensors properly, it won't charge. During my first overnight charge, I had slightly missed the target (d'oh!) and the phone was dead before morning. Because of these reasons, I suggest starting with one pad and keeping it on your nightstand for overnight charging.

GEEKBENCH 64-BIT SINGLE- & MULTI-CORE CPU TEST



PERFORMANCE, SPEED, AND SPECIAL FEATURES

The iPhone 8 and 8 Plus have a brand-new chip: Apple's A11 Bionic, which boasts a six-core CPU and 64-bit architecture. Apple claims that its two performance cores are 25 percent faster than the iPhone 7's A10 Fusion chip, while its four efficiency cores are 70 percent faster. Our Geekbench speed tests support that claim.

Honestly, all I noticed was speed on both devices, especially when compared to my year-old iPhone 7 Plus, which has been sluggish for the last month or so. Apps launched right away, unlocking the phones with Touch ID was quicker than ever, Apple Pay was seamless, and video streaming via Apple Music, Netflix, and YouTube had little to no delay. Running powerful image editing apps like Adobe Lightroom? Not a problem on either



More AR dinosaurs, please.

phone. Graphics-heavy games like Super Mario Run (go.macworld.com/sumr) with large files? Also fast. Even installing new apps and running updates felt fast.

The speed is super noticeable when playing around with augmented reality apps. There are a small handful of AR offerings in the App Store—home decorating apps from Ikea (go.macworld.com/ikea) and Housecraft (go.macworld.com/hocr), Sky Guide AR (go.macworld.com/skar) for star gazing, and a dinosaur app called Monster Park – Dino World (go.macworld.com/dinw) to name a few—and the iPhone 8 handles all of these better than the iPhone 7. They are ridiculously fun

to play around with, too: the apps prompt you to scan the floor around you, which takes just a few seconds, and then you'll have dinosaurs stomping around your living room in no time.

I also noticed slightly better battery performance, too. Both the iPhone 8 and 8 Plus survived a heavy day of use while I was at Disneyland without needing a charge, where I was constantly snapping photos and videos for my Instagram story, texting, playing games while waiting in line (Heads Up! [go.macworld.com/head] for when I'm feeling social, TwoDots [go.macworld.com/2dot] when I'm not), using the park's official app to monitor wait times

and pull Fast Passes (which uses location data), streaming music, and more. A normal day of use still fares better than my iPhone 7 Plus, every single day that I've been testing these phones.

Officially, Apple says that battery life is about the same between the iPhone 7 and iPhone 8 (12 hours of Internet use on the iPhone 8, 13 hours on the iPhone 8 Plus), so your mileage will vary. On a normal use day, I typically have around 25 percent left on the iPhone 8 and 30 percent on the iPhone 8 Plus; my iPhone 7 Plus usually hovers somewhere around 15 percent.

On a normal use day, I typically have around 25 percent left on the iPhone 8 and 30 percent on the iPhone 8 Plus; my iPhone 7 Plus usually hovers somewhere around 15 percent.

Chances are, you won't notice much of a difference unless your older phone has experienced some performance issues (as mine has).

As for call quality, every call I made on both the iPhone 8 and 8 Plus sounded crystal clear, both when using Wi-Fi-based calling or FaceTime calls and while making calls over my cellular network (AT&T). I haven't experienced any of the crackling issues that have plagued other iPhone 8 owners. Luckily, Apple pushed out an iOS

11 update (iOS 11.0.2 [go.macworld.com/lost1]) that should fix the crackle problem, if you have it.

The iPhone 8 and 8 Plus maintain the same level of water resistance as the iPhone 7, with an IP67 rating (you can submerge your iPhone for up to 30 minutes in a depth of 1.5 meters). I took them for a quick dunk in a swimming pool (they were fine!) and took them for a front-row ride on Splash Mountain (they were...shocked, but fine!). One caveat: You'll have to dry off your Home button to use Touch ID, and you should make sure your camera lenses are

dry, too. (Some of the iPhone 8 Plus's post-Splash Mountain photos were slightly blurry, until I realized that the back-facing camera lens was still wet.)

Another welcome feature is the iPhone 8's TrueTone Retina HD display, which automatically adjusts the white balance on the display to better match the ambient light around you. It's really noticeable when you compare the iPhone 7 to the iPhone 8—the iPhone 8 (and 8 Plus) look crisper and warmer. If you don't have an older iPhone handy, you can toggle this setting off or on while setting up your new iPhone 8 or 8 Plus to see the difference.

THE CAMERA

Looking at specs alone, it doesn't look like the iPhone 8 or 8 Plus has improved their cameras much over the iPhone 7 or 7 Plus. But when using the cameras in the field, there are noticeable improvements.

The iPhone 8 has a 12 megapixel back-facing camera, with f/1.8 aperture and digital zoom capabilities up to 5x—just like the iPhone 7. It still has optical image stabilization, a quad-LED True Tone flash, noise reduction, auto HDR, and all of the other marquee iPhone 7 camera features.

I've been using the Plus version of Apple's phones since the launch of the iPhone 6, and the Plus has always had a better camera over its baby brother. I was really impressed with what the iPhone 8 can do with its camera—all of the photos I took look great, with vibrant colors and sharp details that I wasn't expecting to see.

The camera app hasn't changed at all in iOS 11, so you can launch it and start taking great photos right away. Because of the speedy A11 Bionic chip, the camera



The iPhone 8 (top) versus the iPhone 8 Plus (bottom). While the 8 Plus has better sharpness, vibrancy, and balance, both cameras capture beautiful landscape shots.

was quick to focus and snap pics, even if I was in motion.

The iPhone 8 Plus has more to offer. Both the iPhone 7 Plus and iPhone 8 Plus cameras still rock dual 12-megapixel



iPhone 8 (left) vs. iPhone 8 Plus (right): Here, the iPhone 8 Plus has slightly better color balance, but the iPhone 8 comes pretty dang close.



iPhone 7 Plus (left) vs. iPhone 8 Plus (right): The iPhone 8 plus reveals richer color and warmer details over the iPhone 7 Plus.

setups, with a wide-angle lens at an aperture of f/1.8 with OIS, and telephoto lens at f/2.8. The 8 Plus has upgraded its

my photos look for Instagram-related purposes—but even I can clearly see the differences between my amateur shots with

Sony sensor to be more power efficient and to allow “deeper” pixels over the iPhone 7 Plus.

Immediately, I noticed a better color balance on the iPhone 8 Plus over the iPhone 7 Plus. Colors were just a bit more vibrant, but in a natural way—nothing seemed heavily filtered or oversaturated.

My nighttime and dusk shots had also greatly improved, as the iPhone 8 Plus is better equipped to handle low-light photos.

You still can see some levels of graininess in low-light environments, especially if you’re using the zoom, but it offers better results than the iPhone 7 Plus.

Mind you, I am not a professional photographer by any means. I don’t own a DSLR, and I’m mostly concerned with how good



Top left: iPhone 8. Top right: iPhone 7 Plus. Bottom: iPhone 8 Plus. There's a noticeable difference between the iPhone 8 and the others—the 8 had trouble focusing with the neon signs. There's a slight difference between the iPhone 7 Plus and 8 Plus, with the neon shining a little brighter on the 8 Plus.

my naked eye. Because I'm no expert, we handed the heavy camera testing off to someone who is: Adam Patrick Murray, *Macworld's* in-house photographer and video producer.

One feature that left us both disappointed is the iPhone 8 Plus's Portrait Lighting mode, which uses depth and facial recognition to selectively alter the image to recreate

professional-grade studio lighting effects. This feature is still in beta, so we can't judge it too harshly yet, but some of our results so far leave much to be desired. Two modes—Studio Light and Contour

One feature that left us both disappointed is the iPhone 8 Plus's Portrait Lighting mode, which uses depth and facial recognition to selectively alter the image to recreate professional-grade studio lighting effects.



...yeah, Portrait Lighting is still in beta.

Light—performed ok, adding a nice level of backlighting and facial details that could be useful in certain settings. However, Stage Light and Stage Light Mono look flat-out silly most of the time. Use these sparingly.

Luckily, the default Portrait Mode setting—Natural Light—is a joy to work with. The bokeh effect is soft and subtle, and the clarity of most photo subjects is excellent.

We published a separate article that focuses solely on the iPhone 8 Plus's

camera, so be sure to check that out for our full thoughts (go.macworld.com/thgt).

BOTTOM LINE

It's difficult to put a label on the iPhone 8 and 8 Plus. It's a definite update from 2016's iPhone 7—even though it looks almost exactly the same—but it's different enough that it doesn't deserve to be given an "S" naming scheme. To me, it feels more like an "iPhone 7 and three-quarters": Too different to be a 7, not quite different enough to be bumped into a new



category. And that's why, understandably, some iPhone die-hards may be bored with the iPhone 8. It's a big improvement, but not quite innovative enough to be exciting. All of the innovation hype lies with November's release of the iPhone X.

However, the iPhone X might be too radical for many users. Remember when we all flipped out over the loss of the headphone jack on the iPhone 7? For some, losing Touch ID and relying on gestures for navigation instead of a Home button will be just as hard of an adjustment. The iPhone 8 might

be playing it safe, but I don't think that's a bad thing.

So, who is the 8 and 8 Plus for? If you're on the iPhone Upgrade Plan (or other similar plan with your carrier), you have no interest in the iPhone X, and the cost



iPhone 8 (256GB)

PRICE

\$849



iPhone 8 Plus (256GB)

PRICE

\$949

difference between your current phone and an 8 isn't that much, this is a worthwhile upgrade. If you're rocking an iPhone 6s or older, the improvements here will be noticeable, too. But if you're on an iPhone 7 and still love it, you can probably stick with your current phone for one more year and be just fine. ■



APPLE WATCH SERIES 3 REVIEW: THE WEARABLE LEADER RUNS OUT TO AN INSURMOUNTABLE LEAD

THERE'S NONE BETTER, WITH OR WITHOUT LTE. **BY MICHAEL SIMON**



Apple Watch Series 3 is the gold standard of smartwatches, even in silver aluminum.

The Apple Watch Series 3 (go.macworld.com/aws3) has relieved my Forgotten Phone Anxiety. You know the feeling: You reach your destination and paw at the outside of your pocket to feel the phone-sized lump and it isn't there. And you panic.

Mind you, my stomach still drops when I realize my phone isn't with me (even times when I had purposefully left it at home), but now my fears quickly subside. With an LTE-equipped Apple Watch Series 3 on my wrist, I don't need to turn around and head back to my house. I know that if someone is trying to get in touch with me, they can, and if an urgent email comes in, I can answer it.

That being said, I didn't need more than a couple days with my LTE-equipped Apple Watch Series 3 to see that it's not meant to be away from an iPhone for very long. Its main selling point might be independence, but it's still a generation or two away from being a full replacement for your iPhone.

But man is it close.

TIMELESS APPLE WATCH DESIGN

Reviews of Apple products generally devote many words to design, but there's not a whole lot to say about the Apple Watch Series 3. It's the same dimensions

as the Series 2 (38.6 x 33.3 x 11.4 or 42.5 x 36.4 x 11.4 millimeters, depending on which size you choose), and there's just one new color, gray, in the \$1,299 ceramic Edition model, as well as a tweaked gold aluminum to match the iPhone 8. That means all old bands, stands, and chargers will work fine.

If you want to pick nits, it's about a millimeter thicker than the Series 1 model Apple is still selling. But that's with more storage (16GB versus 8GB), a bigger battery, GPS, 50-meter water resistance, a

barometric altimeter, and, of course, cellular. I've tested several LTE-enabled Android Wear watches that make the 42mm Apple Watch look small, so putting such capabilities in the 38mm model is nothing less than a remarkable feat of engineering.

Some people are likely to fixate on is the red dot on the Digital Crown. There doesn't appear to be any technical reason for it, so it's safe to assume it's strictly there to distinguish itself from the non-cellular models. And that it does. I never really



Good news
band collec-
tors: You can
still mix and
match old
bands with
Apple Watch
Series 3.



Yep, that's a red dot all right.

noticed the color of the Digital Crown before, but the red circle was hard to miss against my test model's silver aluminum body and seashell sport loop band.

I kind of like it, but I could see why people despise it so much, especially if you're the kind of person who constantly changes bands. It's a curious design choice, but I wouldn't be surprised to see similar flourishes on future models. The Apple Watch's design is already iconic, and I don't see a massive redesign in the cards for Series 4 or 5. Apple positions its watch as jewelry like a Rolex or

Omega, so the familiarity of the design is important. The red dot is a perfect way to showcase newness, even status, without changing what makes the Apple Watch so recognizable.

SPEED AND OTHER INTERNAL IMPROVEMENTS

While it might look the same as models that came before, the Apple Watch Series 3 couldn't be more different on the inside. Along with LTE, there's also a new S3 processor and W2 wireless chips, which give the Series 3 Apple Watch a tremen-

Where I mostly relied on my old Apple Watch for quick notifications, by the end of my testing I was instinctively using my Series 3 to respond to messages, check sports scores, even read headlines.





Apple Watch Series 3 (center) is the same size as the original Apple Watch (right) and noticeably smaller than the LG Watch Sport (left), but it still gets better battery life than both of them.

dous speed boost.

Navigation and animations are much smoother now, but most importantly, apps open much quicker. The speed of third-party apps was a pretty major pain point with previous generations of the Apple Watch (particularly the original model, which most people will be upgrading from), and the new internals make a huge difference. I didn't experience any lag when launching stock apps, and third-party ones rarely showed the spinning loading ring while updating. Even raise-to-wake

seems quicker (though the lack of an always-on display is still a bummer).

That makes the Apple Watch Series 3 much more of a stand-alone device, even without LTE. Where I mostly relied on my old Apple Watch for quick notifications, by the end of my testing I was instinctively using my Series 3 to respond to messages, check sports scores, even read headlines. Siri's responsiveness is particularly impressive, but everything from stocks to sports to weather now load within a second or two. By the time the S4

chip comes around, watch apps will be just as fast as the ones on our iPhones, if not faster.

ALL DAY AND THEN SOME

Apple claims the same 18-hour battery life with either the LTE or non-LTE Series 3 Apple Watches, but as with all battery claims, that doesn't tell the whole story. Apple doesn't like to give technical specs for its batteries, but iFixit's teardown found a 279 mAh cell inside the 38mm LTE model, a minuscule upgrade over the Series 2's 273mAh battery. iFixit didn't open a 42mm model, but presumably its battery is also a little larger than the Series 2 model's 334mAh one.

But while the Apple Watch's battery is a good deal smaller than most of its competitors', it pretty much blows them all away. With a phone nearby most of the time, I breezed through a full day and most of a second. That includes wearing it while I slept, making calls, checking scores, responding to messages, getting directions—all of the usual things you'd do while wearing it. While the Series 3 might pale in comparison to Fitbit Ionic's four to five day battery life, OG Apple Watch upgraders will surely see a nice boost in battery life.

Granted, those numbers

deteriorate pretty quickly when relying exclusively on LTE. When I left my phone at home and used my watch for everything—including a lengthy stretch of listening to music, a couple Apple Pay purchases, driving directions, and liberal use of the Siri face—I barely got through 8 hours. When I made a straight hour of phone calls, my battery dropped to 68 percent. An hour of music mixed with messages and emails cost a little more than 10 percent.

But that's not a typical use case. When jumping between phone and LTE connection as most people will do, I was easily able to make it through a full day. With the exception of making calls and listening to music, I measure my Apple Watch interactions in seconds, not minutes, but even when using it far more than I normally would (both tethered and independently), I never needed to resort to Power Reserve mode.



Even when playing music for long stretches, you'll still get great battery life with Apple Watch Series 3.



The new Heart Rate app
isn't just for athletes.

A HEALTHY BOOST FOR ATHLETES

Apple has packed its Series 3 watch with some new fitness features as well, and it stacks up well to Fitbit's New Ionic watch (go.macworld.com/iwa), with an expanded and enhanced Workout app, and a barometric altimeter designed to measure elevation. Older watches still measure flights climbed, but it's that much more accurate on the Apple Watch Series 3.

Apple hasn't actually updated the heart-rate sensor for its Series 3 watch, but it's extracting a whole lot more out of it. Launch the Heart Rate app, and you'll get a bunch of new data, including your current beats-per-minute reading as well

as your resting rate and walking average. Even as a non-athlete, I found it useful, especially the feature that alerts you to any abnormalities (thankfully I didn't get to test it, however).

But music is the Apple Watch Series 3's killer new fitness feature. All throughout watchOS 4 there are little touches that make it easier to listen and control your music: You can swipe left in the Workout app to bring up music controls, a Now Playing box appears on the Siri watch face, and the music app will automatically sync playlists while charging. However, you still can't play music through the Apple Watch's speaker, and proper LTE streaming won't arrive until the upcoming 4.1 update.

LTE BRINGS IT ALL TOGETHER

All of these upgrades are nice, but the Apple Watch Series 3 is all about one thing: its cellular connection. For the first time, an Apple Watch can operate independently of your phone, and it's a liberating, transcendent experience...most of the time.

I've used a variety of LTE watches from Samsung (go.macworld.com/sams), LG (go.macworld.com/lg), and ZTE (go.macworld.com/zte), and the Apple Watch Series 3 is the first that delivers on its promise. Setup with the eSim and my Verizon account was remarkably simple, taking less than a minute, and the only setting to speak of is an on/off toggle. LTE simply takes over when your watch is out of range of your phone. I was very aware of when it was

running at first, but after a couple days I stopped obsessively checking to see if my watch was connected.

It's not perfect, however. I didn't have anywhere near the constant problems with unauthenticated networks (go.macworld.com/unt) that some early reviewers experienced, but there were still instances where my watch showed a red "x" while roaming to indicate that it was disconnected from the cellular network. Resetting my phone's network settings and deleting some old saved networks on my Mac helped immensely, but that's not something you should have to do to ensure a stable connection. Apple issued the 4.0.1 update (go.macworld.com/tktk) while I was writing this review to correct it, but it didn't fix

The complication on Explorer would be great as an option on other watch faces.





When you walk away from your phone with an LTE Apple Watch, you don't need to freak out anymore.

some of my other occasional problems.

In poor coverage areas, I found that the watch routinely dropped its connection where my phone was able to hang on with a bar or two. If I was on a call when I left my house, it consistently dropped when switching from Wi-Fi to cellular. And once it required a hard reset to get LTE going on my watch again.

In strong coverage areas, however, my watch worked great. Overall my issues were infrequent and as expected for a first-gen product. I did want the ability to add a cellular complication to any watch face. The antenna isn't nearly as strong as it is on the iPhone, and unless you're using the Explorer face, you can't quickly tell how

strong your connection is without heading into the mini Control Center first. I'm hoping this is a new feature in watchOS 4.1, along with a fix for my Wi-Fi handoff issues.

But even with the above hiccups, LTE on Apple Watch Series 3 is game-changing. I routinely left my phone on the charger while leaving the house for quick errands or to pick up my son from school, and my watch dutifully kept me up-to-date with notifications. I never missed a message, call, score, or breaking news brief, and Siri's improved responsiveness let me quickly send messages over LTE without needing to scribble letters on the screen. And at times, my watch actually refreshed faster than when it was tethered to my phone.

watchOS STILL A WORK IN PROGRESS

Just because you can use the Apple Watch without your phone doesn't make it an iPhone replacement. Even with watchOS 4, many third-party apps still depend on the phone for data retrieval, and things like checking my Twitter timeline, controlling my Hue lights, or peeking at my Ring video doorbell feed just weren't possible. Developers have slowly been moving away from building Apple Watch apps—just last week Twitter disappeared from the store, and I had major issues with it even before that happened—but I'm hopeful LTE compels them to get back on board.

And here's something that would help

spur interest: an on-watch App Store. It's one of the best features of Android Wear 2.0, and it would be awesome to quickly find and install a watch app while away from our phones. Also missing is a stock Notes app. While there are a few third-party options, I wanted a way to quickly ask Siri to take a note and have it sync back to my iPhone. As it stands, that can't happen.

I love having a list view for apps—seriously, I'm never using the honeycomb screen ever again—but the new Dock isn't as great. It's basically a task manager/app switcher, and I much preferred the original Glances or watchOS 3's snapshots, which would let you get little bits of info without actually opening the app. With the new

method, apps need to be launched before they're updated, like the iPhone's app switcher.

Fast app switching isn't nearly as useful on the watch as it is on the phone, and I'd like to see Apple revert to the old version in watch OS 5. Glanceability is important, and



Even when playing music for long stretches, you'll still get great battery life with the Apple Watch Series 3.



Say goodbye to the honeycomb screen forever with watchOS 4's list option.

it's not really there in watchOS 4.

My favorite new watch face on watchOS 4 was already the Siri one (sorry Buzz and Woody), but Apple Watch Series 3 takes it to a new level. With LTE connectivity, the Siri face is even more useful when my phone's not around, as it continuously shows a stream of news, weather, stocks, and photos. LTE and the Siri face didn't seem to have a noticeable impact on battery life. Third-party app support would make the Siri face that much better, but something tells me we'll have to wait a while before that arrives.

But mostly watchOS is merely a step, not a leap, forward. There are still occasional bugs. For example, I couldn't take a

screenshot despite toggling, restarting, and re-pairing, and the side button is less useful than ever. But you're still not going to find a better wearable platform.

SHOULD YOU BUY AN APPLE WATCH SERIES 3?

For my purposes, the Apple Watch Series 3 is a software update and a couple apps away from being my dream device. But even in its current form, it's miles ahead of its closest competitor when it comes to functionality and parsecs ahead with design. There's a reason Apple hasn't visually changed its watch in three generations: It's nearly perfect.

You can quibble over price, but it's a bit

Even from far away,
the Digital Crown's
red dot will tell every-
one you're special.



like comparing a Casio watch to a Tag Heuer or a Rolex. You can save a few bucks by getting a cheaper Android Wear or Fitbit watch, but you'll definitely get your money's worth by choosing an Apple Watch Series 3. At \$329/\$359 for the GPS model or \$399/\$429 for LTE, it's hardly a luxury item anymore. Granted, you can spend \$1,200 on a ceramic Edition or Hermès double tour, but the affordable entry-level sport models look and act just as good.

Apple is the only company committed to developing a solid wearable platform. Fitbit's Ionic

is initially underwhelming as a smartwatch, Samsung's Tizen OS is still struggling with security and adoption, and we've yet to see

a meaningful Android Wear 2.0 watch after six months of public availability. LTE has its issues—most of which will be snuffed out in the first software update—but Apple Watch Series 3 with LTE is the first cellular smartwatch to get it right. Apple Watch Series 3 might not be an iPhone replacement, but it's the closest thing to an all-day, independent wearable you're likely to find.

And it's the best remedy for Forgotten Phone Anxiety. ■



Apple Watch Series 3 with GPS + Cellular

PROS

- LTE gives Apple Watch the freedom it's always deserved.
- Incredibly fast chip and excellent battery life.
- Great health and fitness features.

CONS

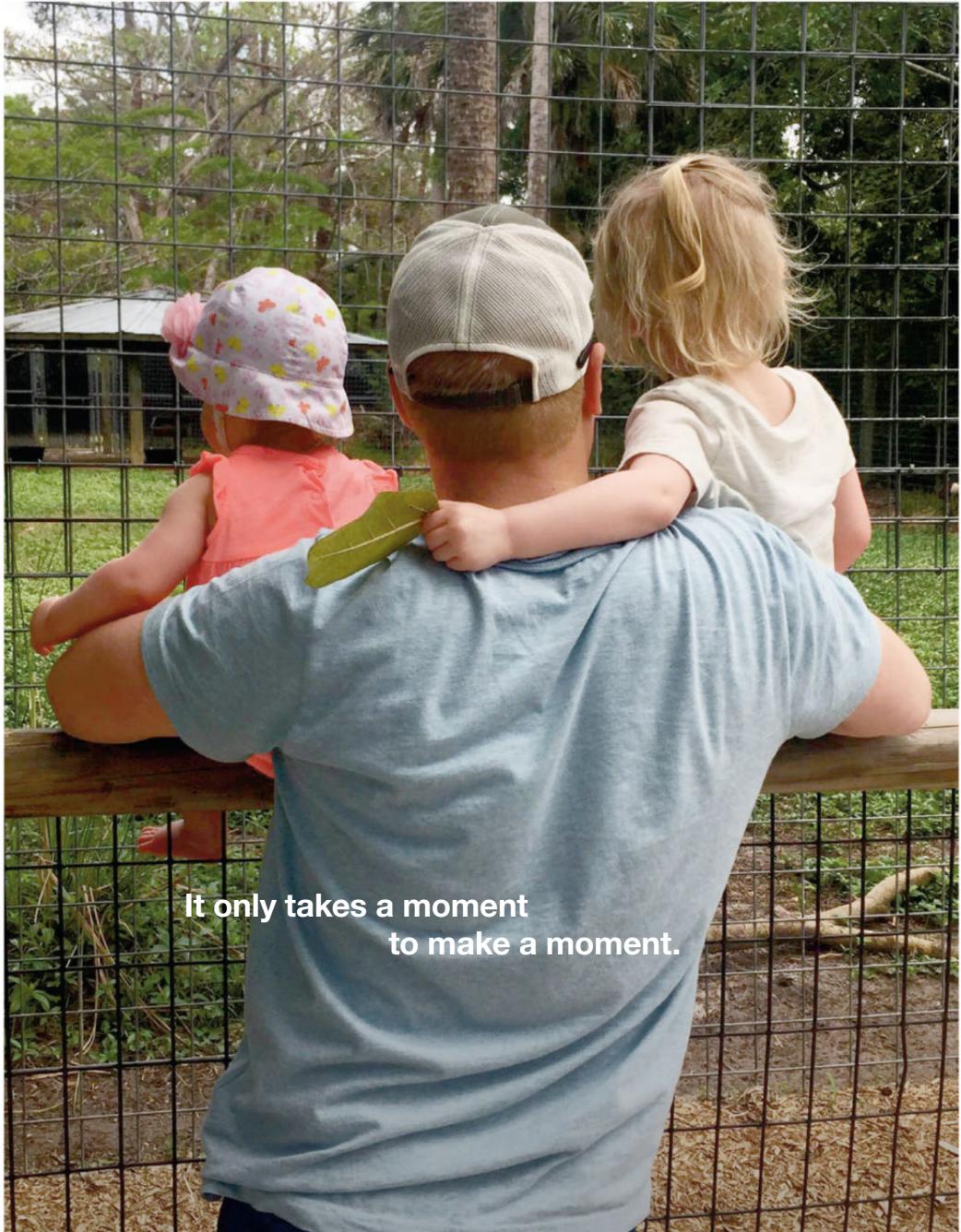
- Some connectivity issues.
- No onboard App Store.

PRICE

\$429

COMPANY

Apple



**It only takes a moment
to make a moment.**

**Take time to
be a dad today.**

fatherhood.gov
#makeamoment





**YOUR CLOTHES
THAT ARE TOO
SMALL CAN DO
BIG THINGS FOR OTHERS.**

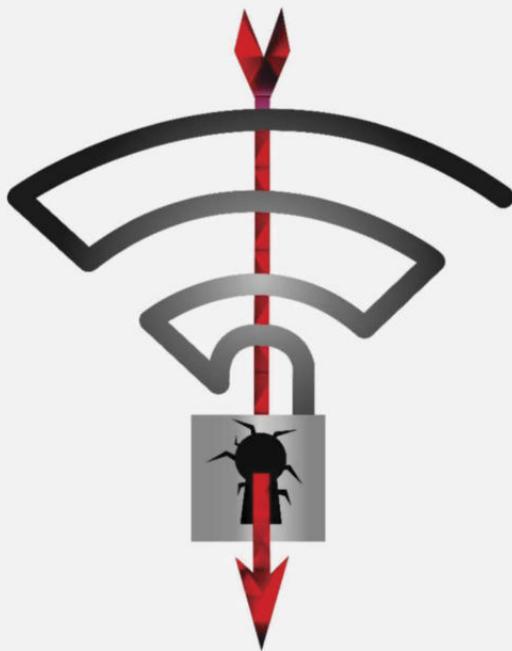
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KRACK Wi-Fi attack threatens all networks: How to stay safe and what you need to know

BY BRAD CHACOS AND MICHAEL SIMON

A devastating flaw in Wi-Fi's WPA (go.macworld.com/wfpa) security protocol makes it possible for attackers to eavesdrop on your data when you connect to Wi-Fi. Dubbed KRACK, the issue affects the Wi-Fi protocol itself—not

specific products or implementations—and “works against all modern protected Wi-Fi networks,” according to Mathy Vanhoef (go.macworld.com/math), the researcher that discovered it. That means that if your device uses Wi-Fi, KRACK likely impacts it. Fortunately, major tech companies are

moving quickly to patch the issue.

Read on for what you need to know about the KRACK Wi-Fi vulnerability, from how it works to how to best protect yourself against it. We'll repeatedly update this article as more information becomes available.

HOW DOES KRACK BREAK WI-FI SECURITY?

KRACK (short for, uh, **K**ey **R**einstallation **A**ttack) targets the third step in a four-way authentication “handshake” performed when your Wi-Fi client device attempts to connect to a protected Wi-Fi network. The encryption key can be resent multiple times during step three, and if attackers

collect and replay those retransmissions in particular ways, Wi-Fi security encryption can be broken.

That's the CliffsNotes version. For a more technically detailed explanation, check out Mathy Vanhoef's KRACK attacks website (go.macworld.com/kraw).

WHAT DEVICES ARE AFFECTED BY KRACK?

If your device uses Wi-Fi, it's likely vulnerable to the KRACK Wi-Fi security flaw to some degree, though some get it worse than others. We go into greater detail about how particular devices are affected by KRACK in a dedicated section further below.



WHAT HAPPENS WHEN WI-FI SECURITY IS BROKEN?

For starters, the attacker can eavesdrop on all traffic you send over the network. “This can be abused to steal sensitive information such as credit card numbers, passwords, chat messages, emails, photos, and so on,” Vanhoef explains. For a deeper look at the potential impact, check out *PCWorld*’s article on what an eavesdropper sees when you use an unsecured Wi-Fi hotspot (go.macworld.com/eave). It’s a few years old, but still illuminating.

“The impact of exploiting these vulnerabilities includes decryption, packet replay, TCP connection hijacking, HTTP content injection, and others.”

The United States Computer Emergency Readiness Team also issued this warning as part of its KRACK security advisory, per Ars Technica (go.macworld.com/arte): “The impact of exploiting these vulnerabilities includes decryption, packet replay, TCP connection hijacking, HTTP content injection, and others.” HTTP content injection means the attacker could sneak code into the websites you’re looking at to infect your PC with ransomware or malware.

So yeah, it’s bad. Keep your security shields active, just in case. *PCWorld*’s guide to the best antivirus software (go.macworld.com/beso) can help you select a reliable solution if needed.

IS WI-FI SECURITY BEING BROKEN IN THE WILD?

“We are not in a position to determine if this vulnerability has been (or is being) actively exploited in the wild,” Vanhoef says. US-CERT’s advisory didn’t include any information about whether KRACK is being exploited in the wild, either.

Now for some somewhat settling news: Iron Group CTO Alex Hudson says (go.macworld.com/alex) an attacker needs to be in range of your Wi-Fi network to carry out any nefarious plans with KRACK.

“You’re not suddenly vulnerable to everyone on the internet,” he says.

HOW TO PROTECT YOURSELF FROM KRACK’S WI-FI FLAW

Keep your devices up to date! Vanhoef says “implementations can be patched in a backwards-compatible manner.” That means that your device can download an update that protects against KRACK and still communicate with unpatched hardware while being protected from the security flaw. Given the potential reach of

KRACK, patches are coming quickly from many major hardware and operating system vendors. Up-to-date Windows PCs, for example, are already protected.

Until those updates appear for other devices, consumers can still take steps to safeguard against KRACK. The easiest thing would be to simply use a wired ethernet connection, or stick to your cellular connection on a phone. That's not always possible though.

If you need to use a public Wi-Fi hotspot—even one that's password protected—stick to websites that use HTTPS encryption. Secure websites are still secure even with Wi-Fi security broken. The URLs of encrypted websites will start with "HTTPS," while unsecured websites are prefaced by "HTTP." The Electronic Frontier Foundation's superb HTTPS Everywhere browser plug-in (go.macworld.com/htev) can force all sites that offer HTTPS encryption to use that protection. Alternatively, you can hop on a virtual private network (VPN) to hide all of your network traffic. Don't trust random free VPNs, though—they could be after



your data as well. PCWorld's guide to the best VPN services (go.macworld.com/bvpn) can help you pick out a trustworthy provider. And again, keep your antivirus software (go.macworld.com/beso) up to date to protect against potential code injected malware.

Going forward, the Wi-Fi Alliance (go.macworld.com/alli) will require testing for the KRACK WPA2 vulnerability in its global certification lab network, so new devices will be protected out of the box.

DEVICE AND ROUTER WI-FI SECURITY FAQ

Is my phone at risk?

KRACK is a different sort of attack than previous exploits, in that it doesn't go after devices, it goes after the information you use them to send. So while the data stored

on your phone is safe from hacking, whenever you use it to send a credit card number, password, email, or message over Wi-Fi, that data could be stolen.

So my router is vulnerable?

That's closer, but still not totally accurate. It's not the device that's at risk, it's the information, so the sites you visit that aren't HTTPS are most vulnerable.

Oh, so I should change my Wi-Fi password then?

Well, you can, but it's not going to stop the likelihood of attack. The exploit targets information that should have been encrypted by your router, so the attacker doesn't need to crack your password to implement it. In fact, it has no bearing on the attack whatsoever.

So all devices are at risk?

Now you're getting it. However, while any device that sends and receives data over Wi-Fi is at risk, the researchers who uncovered the attack said Android devices were more at risk than other mobile phones.

Great, I have an Android phone. But I'm running Nougat so I'm safe, right?

Unfortunately, no. Newer phones running Android 6.0 or later are actually more at risk since there is an existing vulnerability in the code that compounds the issue

and makes it easier to "intercept and manipulate traffic."

Google expects to have a security patch ready for November 6, which should promptly roll out to Pixel and Nexus devices. But it could take weeks or even months for Android hardware makers and cellular providers to validate and deploy the patch to other phones and tablets. Many devices, especially older ones, may never receive the update.

So are my iPhone and Mac safe?

Safer than Android, but still not entirely safe. Apple said in a statement that all current iOS, macOS, watchOS, and tvOS betas include a fix for KRACK. It will be rolling out to all devices within a few weeks.

What about Windows PCs?

They're safe if you stayed updated. Microsoft released a Windows patch (go.macworld.com/wpat) to protect against KRACK on October 10, before the vulnerability was made public.

I run Linux. I'm impenetrable to attack, right?

Not quite. Researchers actually found that Linux machines were the most vulnerable desktop devices, with a similar bug to the one found in the Android code. Now for the good news: An upstream Linux patch (go.macworld.com/upst) is already

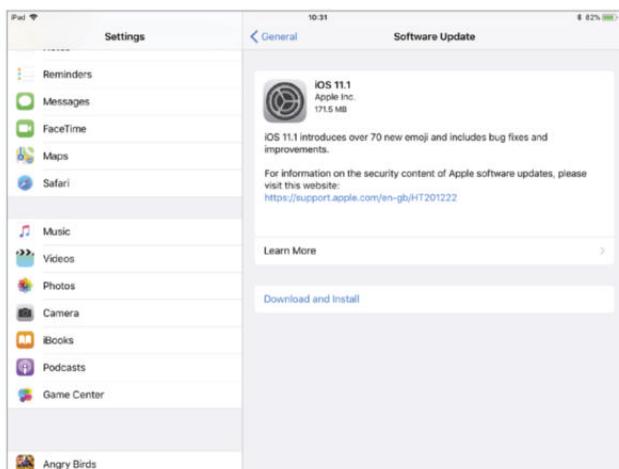
available, as are KRACK-blocking updates for Ubuntu (go.macworld.com/ubun), Gentoo (go.macworld.com/gent), Arch (go.macworld.com/arch), and Debian (go.macworld.com/debi) distributions. A patch is also available for OpenBSD (go.macworld.com/obsd).

I have automatic updates turned on. How do I know if my mobile device has been updated?

The quickest way is to check the system's software updates tab in your Settings app to see when the most recent version has been updated. More helpfully, Owen Williams is keeping a running list of companies that have distributed patches on his Recharged blog (go.macworld.com/rech). It's a stellar resource.

What about my router?

First, you should check to see if your router has any pending firmware updates. Most people aren't as vigilant in updating their routers as they are with their phones or PCs, so log into your admin page and install any waiting updates. If there aren't any, it's a good habit to check back every day, since companies will be rolling out patches



over the coming weeks, with some already being implemented.

Netgear (go.macworld.com/gear), Intel (go.macworld.com/intl), Eero (go.macworld.com/ero1), and business-focused networking providers already have KRACK router patches available. Eero's is rolling out automatically as an over-the-air update. The popular DD-WRT open router firmware has designed a patch (go.macworld.com/trac), but it isn't available to download yet. Expect it soon.

So should I turn off Wi-Fi?

That's probably not a viable option for most people, but if you're completely panic-stricken, then the only way to be completely safe is to avoid using Wi-Fi until you know your router has been patched. ■



Parallels Desktop 13: Now your MacBook Pro Touch Bar works with Windows, too

BY J.R. BOOKWALTER

The latest edition of Parallels Desktop is not only ready for macOS High Sierra, but already supports the Windows 10 Fall Creators Update as well. Apple and

Microsoft have settled into annual update schedules for macOS and Windows, which means you can expect virtualization software dependent upon both platforms to arrive around the same time.

TOUCH BAR WIZARD

If you own a MacBook Pro with Touch Bar, Parallels Desktop 13 for Mac (go.macworld.com/pade) is a must-have upgrade. That's because key features of Windows 10 will now appear on the Touch Bar while a VM is running, a feature that works straight away for the Start Menu, Cortana, Desktop, File Explorer, and popular web browsers like Edge, Chrome, and Firefox.

Microsoft Office 2016 applications are also imbued with Touch Bar capabilities, offering multiple command sets depending upon what you're doing in the app. But what about the thousands of other available Windows 10 apps? Most of them are supported too, but some assembly is required.

Located under the View menu, Touch



Parallels Desktop 13 brings Touch Bar to Windows 10, and delivers the upcoming People Bar to your macOS Dock as well.

Bar Wizard allows Parallels users to customize which Windows commands are displayed for the current application, just like they already do on macOS—in fact, Parallels uses the exact same pop-up configuration panel. It does take a little time to set up and some buttons won't work in certain Windows apps, but this is otherwise a slick addition for MacBook Pro owners.

PIP YOUR VMS

Parallels Desktop 13 does an admirable job of adopting PC-only features on the Mac. This time around it's People Bar, a new feature in the Windows 10 Fall Creators Update which consolidates favorite contact information into the Taskbar. PD13 cleverly delivers these favorites to the

macOS Dock instead, but is currently limited to the stock Windows Mail app. (The latest Windows Insider build is also required for now.)

PD13 also taps into the picture-in-picture support introduced in macOS Sierra, allowing one or more VM windows to collapse into a small floating view. This allows users to monitor activity and works even when a



One or more VMs can now run in picture-in-picture mode, complete with live updates and opacity control.

video is playing; PiP windows are semi-translucent by default, but you can adjust to fully opaque using a slider in settings.

It wouldn't be a new version without a few enhancements to existing features. Retina Display owners—nearly half of all Parallels Desktop users—will see improvements in scaled resolutions, while resizing VM windows is now much smoother. The update also delivers up to 47 percent faster performance when running Windows on the Mac, up to 50 percent faster Snapshot creation, and near-native read/write speeds from external Thunderbolt SSDs. Last but not

least, PD13 has a refreshed icon and look—I was mildly disappointed to see the company abandon the dark Control Center theme, however.

The timing is good for those lamenting Apple's decision to retire creaky old pro video apps like Final Cut Pro 7. Since these 32-bit apps no longer

run in High Sierra, I was able to create a new macOS 10.12.6 Sierra VM from my Recovery Partition in just a few clicks using

PD13's Installation Assistant so I can quickly access older projects should the need arise.



Parallels Desktop 13

PROS

- macOS High Sierra and Windows 10 Fall Creators Update preview support.
- Touch Bar support for Windows 10 apps.
- Picture-in-picture, improved performance.

CONS

- Some Touch Bar buttons don't work in Windows 10.
- No dark theme in Control Center.

PRICE

\$69

COMPANY

Parallels Inc

BOTTOM LINE

Full support for macOS High Sierra and the upcoming Windows 10 Fall Creators Update would be good enough reasons to upgrade, but conveniences like Touch Bar for Windows apps and picture-in-picture support keep Parallels Desktop 13 atop the Mac virtualization throne for another year. ■



Netgear ReadyNAS 422: This box is fast and built to last

BY JON L. JACOBI

Netgear makes well-built, super-fast NAS boxes that we truly enjoy testing. The ReadyNAS RN422 might seem expensive—you can buy one at Amazon,

without drives, for \$360 (go.macworld.com/rn42)—but they're actually quite affordable compared to similar business-grade products from QNAP and Synology. While aimed at the enterprise, this class of

hardware is outstanding for media streaming and backup on a home network.

The only downside is the occasional need for above-average tech chops for things like setting up a website server or FTP backup. If that doesn't faze you, then the RN422 (or any of its siblings: the RN424, RN426, or RN428, offering four, six, and eight drive bays respectively) will serve you well. Pun intended.

DESIGN AND FEATURES

The RN422 is a two-bay box with a front-panel LCD and five modern-looking, blue-backlit buttons that you can use to view the box's status and perform simple functions. Flip that part of the box to the side and you have access to the easy-change drive bays. Below the swing panel and drive bays is a single USB 3.0 port.

The back of the RN422 is home to a pair of gigabit ethernet ports, a second USB 3.0 port, an eSATA port, the power jack, and a Kensington lock port. The chassis and shell are largely black and of mostly metal construction. The RN422 is hefty enough to stay where it's put, even if you install lightweight SSDs. The same can't be said for NAS boxes largely made of plastic.

The two bays feature trays with plastic screw-replacing inserts for hard drive installation. It's easy, at least once you spot the diagram on the tray that shows you how to work them: Slide up the same tab



With dual gigabit ethernet ports—whether used for doubling throughput or failover protection—the RN422 is as fast and as reliable as they come.

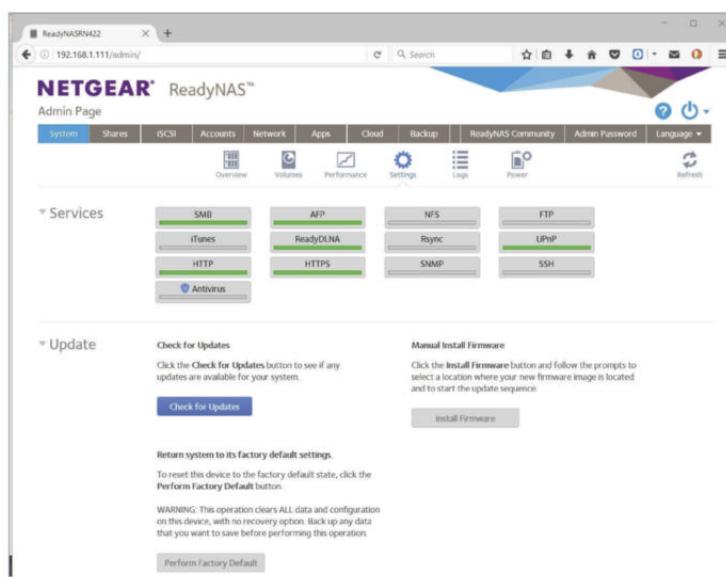
that releases the tray from the bay and the insert will slide out about 4 inches, so you can bend out the sides and slide in the hard drive. Press in the second slide-stop where it catches on a hole to completely remove the insert for SSD installation, which does require screws.

SETUP AND APPS

Netgear recommends setting up the RN422 via the ReadyCloud.Netgear.com (go.macworld.com/rcng) web portal;

however, we wanted to take the front panel for a spin. Installing an SSD that was already formatted, stopped the box with the error: "Used disks, check RAIDar." That's fine, as it could save you from accidentally overwriting important data, but the front panel doesn't take you any further. That's a bit of a tease for IT types who might like to administer the box from the front panel.

The web portal didn't work for us either for some reason, so we downloaded Netgear's RAIDar utility, which found the box and allowed us to reformat the drive. Alternatives are a good thing. And if the web portal works for you—even better.



Though you may need to spend some time with the user's guide, you'll be glad you did. There's not much that the RN422 isn't capable of.

Once up and running, we were impressed with ReadyNAS OS 6.8. It's improved since our look at version 6.6 on the RN212, and there are quite a few apps available, including BitTorrent, Drupal, and an iDrive client. Our only major wish is for an email server, but that's a small-business thing that will affect few users. Speaking of business, it would be nice if setting up a website server was little less convoluted.

For multimedia purposes, there are both iTunes and DLNA media servers, as well as Nero MediaHome, the ReadyNAS Photo server, and the DVBLINK TV server for attached USB TV tuners. There's no version of the increasingly popular Plex

Media Server available, though we're fans of the more transparent, non-proprietary DLNA (go.macworld.com/mtnp).

Also on hand is Milestone Arcus Surveillance with two camera licenses, so you can cover the front yard as well as the back. Additional licenses are available at \$60 each, 4 for \$200, or 8 for \$360. That's not cheap, but

it's pretty much par for the course (for business-class NVR—network video recording—that is). Most users should be able to cope with only the two free licenses.

BACKUP FOR DAYS

The ReadyNAS OS has great integrated backup capabilities, including remote replication (mirroring to another box or location, including cloud-storage services such as Amazon Cloud Drive, Dropbox, and Google Drive) and the ability to back up to and from remote locations using FTP and Rsync. Read our treatise on backing up your network PCs (go.macworld.com/tobu) without the use of client software here.

We still have the same gripe about FTP as we did with the RN212: You can't browse the remote site; instead, you must manually enter the path of the remote shared folder. Here's hoping you wrote it down.

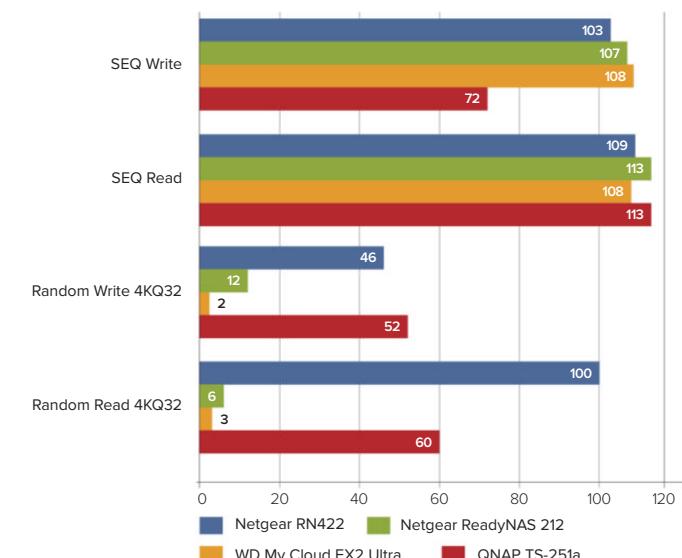
But that's hardly a deal-killer, and most users

will probably opt for the ReadyCloud backup clients that are available for major operating systems and mobile devices. Clients are the easier, albeit less transparent way to keep your PCs and devices backed up to the RN422.

A FAST PERFORMER

As we mentioned up front, Netgear boxes are usually very fast. Using a dual-core, 1.5GHz Intel Atom Processor C3338 CPU and 2GB of memory, and running the BTRFS (B-TRee File System, often called the "Better" or "Butter" FS), the RN422 clocked 108MBps writing and 103MBps reading large files in

CRYSTALDISKMARK



CrystalDiskMark. That's actually a bit slower than the RN212 we reviewed earlier this year (go.macworld.com/r212), but where the RN422 really took off was with queued reads and writes: It absolutely blew away every other box we've tested to date. That's particularly meaningful considering that's the way data is generally served up these days.

In our own real-world 20GB large-file copy tests, the RN422 read dead steady at 111MBps and wrote at 114MBps. With our 20GB mix of smaller files and folders, it managed 87MBps reading and 77MBps writing. Those are very good numbers.

Subjectively, the RN422 was a joy to use. The configuration pages popped up quickly and we didn't spend a lot of time waiting for folders to open or for the box to appear. The streaming performance was exceptional, with five devices streaming 720p video from the RN422 simultaneously with ease.



WE LIKE IT

The average user might be better off with a cheaper, easier WD My Cloud (go.macworld.com/wdmy); avoid the newer and dead-slow WD My Cloud Home [go.macworld.com/clo]) or Seagate Personal Cloud (go.macworld.com/seag). But if you're looking for something faster, even more reliable, and that has the exoskeleton to withstand major abuse, the RN422 is a great product. To be honest, we'd keep it plugged into the network in lieu of a lot of other boxes—including those we just mentioned—simply because of BTRFS and its performance. ■



Netgear ReadyNAS 422 (unpopulated)

PROS

- Excellent overall performance.
- Super-rugged construction.
- Web-portal setup and lots of apps.

CONS

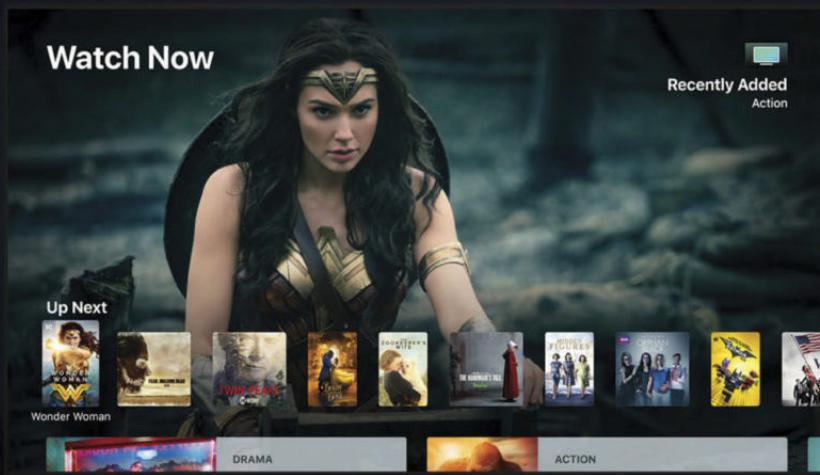
- Web serving and remote FTP access could be easier.
- Front panel control is limited.

PRICE

\$399

COMPANY

Netgear



Apple TV 4K: The ultimate iTunes box has finally arrived

Come for the clarity, stay for the free 4K upgrades.

BY MICHAEL SIMON

For a device that was at the forefront of the home streaming revolution, Apple TV (go.macworld.com/tv4k) has always been a bit behind the times. The first generation (go.macworld.com/fige) required a computer to stream content. Third-party app support didn't arrive until

the fourth generation (go.macworld.com/foge). And it's only the most recent model (go.macworld.com/recm) that embraces the most popular video standards.

It would be easy to dismiss Apple TV 4K (go.macworld.com/aptv) as a me-too release. Had Apple TV 4K launched in 2015, HDR10 and Dolby Vision would have

been pioneering features, but in 2017 they're practically obligatory. Apple had no choice but to add 4K support just to ensure Apple TV isn't completely overlooked by videophiles. It's late to the party, but it just so happens that Apple TV 4K doesn't feel like an afterthought. It might not bring anything to the table that you don't get with the far-less-expensive Chromecast Ultra, Roku Streaming Stick Plus, or Fire TV with 4K Ultra HD, but Apple's elegant simplicity, ease of use, and iTunes advantage are all on full display here. If you have a 4K television, this is the model you've been waiting for.

STILL HIP TO BE SQUARE

Other than the ability to play 2160p content, there's not a whole lot that's different about the new Apple TV. It's dressed in black with the exact same cubic dimensions as the fourth-generation model. The only changes to speak of are a gigabit ethernet port (another overdue addition) and the removal of the USB diagnostic port.

A 10/100/1000 port is great for those who have a weak wireless connection but still want lag-free 4K streams. However, I suspect most developers (and this reviewer)

will lament the loss of the USB port, if for no other reason than it was an easy way to record the screen and take screenshots.

Internally, the same 32GB and 64GB storage options remain but the processor has been upgraded to an A10x Fusion, the same silicon you'll find in the iPad Pro. That's three full generations ahead of the A8 chip in the non-4K model—apps launch quicker, navigation is faster, and streams (even 4K ones) start nearly instantly. With the 4K content library ever expanding, the extra power will certainly help.

PLUG AND PLAY

Setup on the Apple TV has always been one of its strongest suits, and the 4K model hasn't changed that. Hooking it up is as simple as plugging it in and attaching it to your 4K TV via an HDMI 2.0 cable. Apple still doesn't supply an HDMI cable in



Apple TV 4K requires just two cables to get up and running—but you'll have to bring one of them along.

the box, and its \$179 price tag would be a lot easier to swallow if it did.

Apple has utilized the same one-tap setup method it introduced with AirPods, and it's just as magical here. Instead of using the Siri Remote to tediously type your lengthy iCloud and Wi-Fi passwords, your Apple TV will automatically pull over all that information from your iPhone. As



If you have an iPhone nearby, setting up your new Apple TV is a piece of cake.

long as your phone is within range, a message will pop up on your screen that will quickly walk you through the authentication process.

After setup, however, the new Apple TV's main input device is still the Siri remote, and if you hated it before, you'll probably hate this one just as much. It's nearly identical, save one difference—there's a white plastic ring around the menu button. While it seems like a passive aggressive move to appease the critics, it actually does make it a little easier to use in the dark by feeling for the menu button. But otherwise, the remote has the same minimal six-button functionality.

4K QUALITY AT HD PRICES

When you get to the home screen, the 4K difference is instantly noticeable. App icons are crisper and clearer than before, and the dark mode (which can now be set to change automatically) is particularly impressive.

But all you're going to want to do is find 4K content. Apple has kindly updated your iTunes collection with any available 4K titles, an awesome perk if you're someone who has a large digital movie collection. This includes any movies that were purchased through the iTunes Store or digital copies that came with Blu-ray discs, so if you haven't been dutifully entering them, go dig them out.

Unfortunately, the Movies apps won't break down your iTunes library by resolution, so you'll need to go title by title to find out which ones have been updated. You can ask Siri for help, but it'll only retrieve a small list of newly released 4K movies, not necessarily ones that are in your library. To see if a title can be streamed in 4K, navigate to a movie, click on it, and look at the resolution box next to the year of release.

Of note, Disney hasn't agreed to the terms of Apple's 4K updates, so any Pixar or Marvel flicks won't get the 4K treatment. (*Star Wars* movies, too, but they aren't available anywhere in 4K yet.) There are two notable Marvel exceptions, however: *Deadpool* and *Spider-Man: Homecoming* are distributed by Fox and Sony, so Disney doesn't have control over them. The same

applies to the newest *Fantastic Four* flick, but you're less likely to want to watch that.

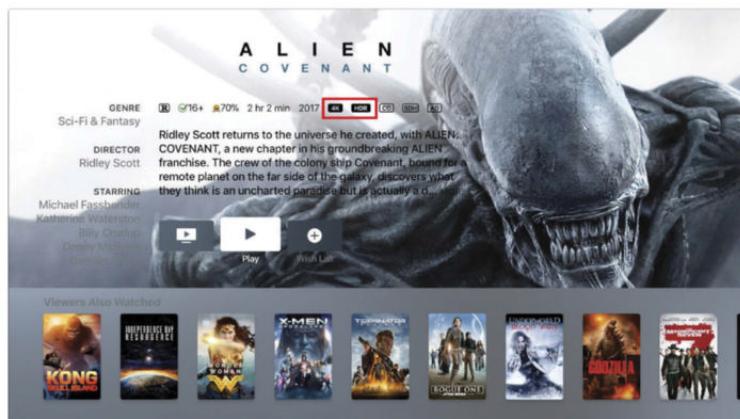
While the Apple TV certainly has enough internal storage for several 4K movies, you can only stream 4K movies, not download them, so the strength of your connection will be a factor, as will any bandwidth caps imposed by your broadband provider.

THE HUNT FOR 4K CONTENT

Elsewhere, 4K content is pretty limited. You can find some titles in the Netflix app, but the Movies Anywhere and Hulu apps only play in 1080p, and the Amazon Video player is still MIA. And Apple TV 4K also doesn't support YouTube's 4K content.

However, most of the iTunes titles I tested were quite impressive. My television supports 4K but not HDR10 or Dolby Vision, but video quality is still way sharper than on

my 1080p set. Newer movies such as *John Wick 2* or *The Lego Batman Movie* were stellar, with deep blacks and minimal motion blur, but older flicks weren't as good. My copy of *Goodfellas* looked much better in 1080p, and the 4K



To check if a video is available in 4K, click on a title and look at the resolution icons next to the year of release.



This image doesn't do them justice, but the 4K aerial screenshots are remarkable.

benefits on *Blade Runner: The Final Cut* were hit and miss.

Your Apple TV 4K will automatically detect your TV's output capabilities as before, but you can change them by heading to the Audio and Video option inside the Settings app. From there, you'll see a TV Resolution menu that will let you switch back to 1080p. You can't select which version of a stream you want to play, so for some movies you'll want to revert to HD.

One thing that's consistently stellar on the 4K Apple TV are the aerial screensavers. There aren't any new ones, but it's like you're looking at them for the first time. Every video has been updated and

optimized for 4K, and quite honestly, they might be reason enough to plunk down \$179 on a new box. Seriously, they're that good.

THE BEST OPERATING SYSTEM GETS EVEN BETTER

Above all, Apple's main Apple TV advantage is tvOS. The interface is leaps and bounds above Roku's and Amazon's, and far superior to Chromecast's beam-and-stream method. Even with the Siri remote, it's a joy to use.

tvOS 11 doesn't bring too many changes to Apple TV 4K, but there are a couple of notable improvements. My favorite is Home Screen Sync, which uses your iCloud account to keep your apps in

order across your various Apple TVs. This is a feature that seems tailor-made for Apple TV 4K, since most people will be shuffling older models off to older TVs.

Apple has also made it easier to connect AirPods. Apple's wireless earbuds will automatically show as a speaker when in Bluetooth range, bringing the one-tap pairing from iOS to tvOS. tvOS 11 also brings AirPlay 2 support, which lets you stream audio to multiple rooms and speakers, but the feature isn't available yet. Neither are the new live news and sports tab for the TV app.

A FEW STEPS FROM PERFECT

Apple TV 4K is awfully close to being an iTunes fan's dream cutting-edge home theater streamer, but it's missing one key

Apple TV 4K is awfully close to being an iTunes fan's dream cutting-edge home theater streamer, but it's missing one key component.

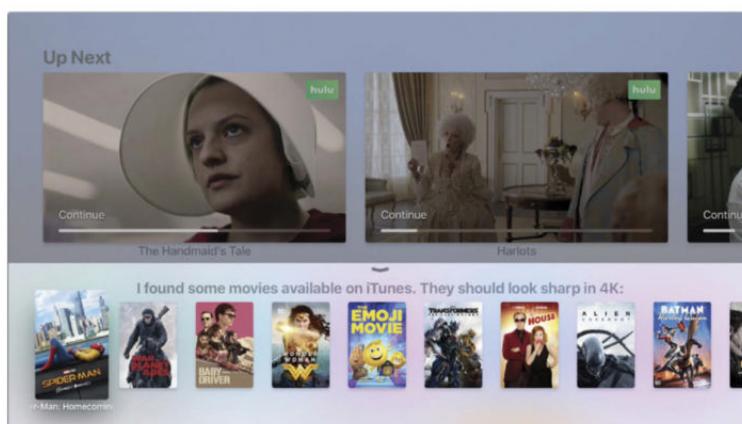
component. Apple TV 4K supports the same Dolby Digital Plus 7.1 surround sound as the non-4K Apple TV, which means it won't sound as good as some of its peers.

That's because it doesn't support Dolby Atmos, the latest in 3D sound tech. Granted, you'll need a system that supports it and the vast majority of listeners won't be able to tell the difference even if they do, but if you're spending \$179 on a 4K streaming box, you'd expect it to check off every box.

Apple told *The Verge* that it will be adding

support in a future update, but that doesn't make it any less of an unfortunate limitation, especially since Roku's Streaming Stick Plus and Amazon's Fire TV with 4K Ultra HD both support it.

Siri is also something of a



Siri on Apple TV will show you 4K content, but it won't let you know which ones are in your library.

disappointment. It's not all that much smarter than it was before. For example, if you ask to see 4K movies in your iTunes library, it will take you to the Movies app but won't suggest any titles. And while you can use your Echo to control Fire TV or your Google

Home to send videos to Chromecast, Siri is still mostly a navigation tool on Apple TV 4K, accessible via the bundled remote or the iOS app. It's possible that HomePod changes that when it arrives in December, but Apple hasn't tipped us off to that level of functionality. It would be nice to say, "Hey Siri, put on the Warriors game," some day, but that may have to wait until the next revision.

BOTTOM LINE

Before you open up your wallet, ask these questions:

- Do I have a 4K television?
- Do I have a large iTunes collection?
- Do I mind paying a premium for interface design and ease of use?



Apple TV 4K will look great under your giant 4K television.

If your answers are yes, yes, no, then Apple TV 4K is just right for your living room. The lack of Atmos support out of the box will surely be an initial deal-breaker for higher-end audiophiles, but for most people it shouldn't matter. And there's also the price

hurdle, but at least it doesn't cost any more than the previous Apple TV, despite the addition of 4K support.

There may be other digital media players that can match the Apple TV 4K when it comes to picture quality and even beat it with sound, but none of them can rival the experience it delivers. From the ease of setup to the interface, Apple TV offers an unrivaled system that never needs an ounce of troubleshooting or a restart. ■



Apple TV 4K

PROS

- 4K movies look fantastic on a supported television.
- Setup is easier than ever.
- iTunes movies are upgraded to 4K versions for free.

CONS

- No support for Dolby Atmos sound.
- More expensive than its 4K streaming peers.

PRICE

\$179

COMPANY

Apple



How Apple can build a better video streaming service

With its video push, Apple rows gently down the stream. Here's how it can keep up with the competition.

BY DAN MOREN

So, you want to build a streaming service.

At this point, the evidence that Apple is jumping into streaming is incontrovertible. You don't pony up a boatload of cash for the likes of Steven Spielberg and not build a streaming service. Nor do you just shove that into Apple Music, a platform which has

proved to be only half-baked when it comes to streaming video.

No, this kind of \$1 billion investment seems to call for a major revision to infrastructure as well. This is a serious investment, and so of course Apple's going to want to be serious about how it builds a service. So, let's take a look at what's critical in such an endeavor.

PUT IT ALL TOGETHER

Here's the thing: Apple's already got all the ingredients for a successful streaming service. It's got massive data centers, it's used to delivering huge amounts of content, and it has tons of deployed devices in the mobile and living room spaces. In some ways, the only surprise is that Apple has waited this long to deploy a service—all it seemingly lacked was the will to do so.

But, as with music, the company took a very purchase-oriented approach to video at first. The late Steve Jobs famously said that nobody wanted to rent their music—streaming audio services have proved that wrong. People are plenty happy to rent music, assuming that the system doesn't unduly hamper them in the enjoyment of that music by putting onerous restrictions on where, when, and how they can listen.

And, as in music, purchasing digital video has been losing ground to streaming. You need look no further than the recent launch of Movies Anywhere (go.macworld.com/movi) to see that the content producers are finally trying to make buying digital movies work the way they always should have. That's because streaming is eating their lunch.

Meanwhile, Apple is watching all the companies raking down money from video streaming and realizing that it too can have a piece of the pie—if it's willing

to invest. And that's led us to where we are today.

THE WAY IT WORKS

Now that it seems pretty certain an Apple streaming service is in our future, the question is only what such a service looks like.

Some of this we can make educated guesses about, based on the company's experience with Apple Music. There will probably be single user and family options. There will likely be a free three-month trial to get people accustomed to using the service. And it will almost certainly be tightly integrated with Apple's existing video options.

That last one is important. Back when Apple first announced its TV app for both iOS and tvOS, I postulated that the current version of it was just the beginning ([go.macworld.com/tvpl](#)):

But it makes perfect sense when you imagine [the TV app] as the distribution point for Apple's upcoming in-house content. The company may not have conclusively won the battle for Input 1 in the living room, but if screenshots of the new TV app are any indication, it's aiming to have spot number one on your Apple TV's home screen. That app will be a prominent place to feature all of Apple's upcoming series, easily

surfacing them for viewers who want to watch them as well as anyone who hasn't heard about them yet.

I strongly believe that Apple's video content will live, and of course be prominently featured, in the TV app. Not only does it already have a spot on Apple's platforms, but it's also been integrated with users' existing library of videos from iTunes. More to the point, putting video anywhere else would be a bit of a head-scratcher, as Apple has worked to promote the TV app as a one-stop shop for your video content.

PASSION PLAY

Besides Apple's own push into original content, there remains a question of what else an Apple streaming video service might contain. Of the many pieces of original content the company is going to be developing, not all are going to be ready when Apple wants to launch the service—nor should they be, since Apple's not going to want to dump them all at once. So it's likely that catalog will need to be filled out with content from other sources.

Which brings us back around to the long-running idea of an Apple streaming television service. Look, I have to believe that the bottom has

fallen out of the à-la-carte-TV-episode market. With Netflix, Hulu, and everybody and their dog offering some sort of streaming option, very few people are likely to pony up the cost to buy a full season of TV. (At least in the U.S., where such things are broadly available.) If Apple can strike a deal for streaming of current TV, I think that would be appealing—if it can't, then the company's going to have to rely on a back catalog of TV shows. And, if this is truly a serve with serialized content, it's going to need at least some TV shows—especially in this current climate of Peak TV.

Apple's already made huge strides in pushing forward digital music, but video has always been a tricky proposition for the company, for the simple reason that it doesn't seem to care as much about TV and movies as it does about music. The hiring of key personnel to handle the content side of the business has made strides in that direction, but Apple's got to tap into that same passion if it's going to sell its customers on this service. ■

Besides Apple's own push into original content, there remains a question of what else an Apple streaming video service might contain.



Sonos One smart speaker: Sonos and Alexa, a match made in heaven

Okay, it's not quite all puppies and rose petals, but this union is strong.

BY MICHAEL BROWN

Sonos has multi-room audio down to a science, but it desperately needed a speaker capable of voice recognition if it was to fend off the veritable flood of smart speakers coming to market. The Sonos One is that speaker.

It sounds better than the last entry-level Sonos speaker, it's compatible with

Amazon's Alexa digital assistant, and it will be compatible with Google Assistant soon. It's a great speaker for the price, and it's a must-have component for music lovers living in modern smart homes.

If you already have Sonos speakers in other rooms, you can control all of them with voice commands with the addition of a single Sonos One to your network.

Once you have that, you can control any Sonos speaker from any Amazon Echo.

There are some limitations you'll want to be aware of: You'll need to use the Sonos app to group two or more Sonos speakers together (and to split them apart). But once you've done that, you can tell Alexa to play the artist or song of your choice on any of the speakers in that group.

Including the Sonos One reviewed here, my Sonos system has six speakers: Garage, Kitchen, Living Room, Master Bedroom, Media Room, and Sun Room. If I click the Everywhere button in the Sonos app, I can tell Alexa to play music in any of those rooms, and she'll play the same music all over the house. If I group the Media Room and the Sun Room together, I just need to tell her play music in either the Media Room or the Sun Room, and music will play in both rooms. And if I split all the rooms apart again, I can stream different music to each room. That's not the only time you'll need the Sonos app, but I'll get into that later.



The top of the 2013 Sonos Play:1 (left) compared to the all-new Sonos One (right).

SPEAKER DESIGN

The Sonos One bears a very close resemblance to the Sonos Play:1 ([go](#). macworld.com/plv1), introduced this time of year way back in 2013. Both speakers are two-way models with separate woofers and tweeters, and the cabinets are nearly identical. But Sonos says it carried very little over from its older design. The onboard amplifier is the same, but the power supply has been redesigned. “Other than that,” according to my contact, “the only shared parts are the bottom rubber feet and bottom plastic cap.”

Beyond the color of the grille, the most noticeable difference between the new and old speakers is the top. The Sonos One is perfectly flat, with the type of touch-sensitive controls for play/pause and

volume up/down that you'll find on its big sibling—the Play:5. You'll also find a touch-sensitive button for muting the on-board mic that you'll use to summon your digital assistant of choice, and an LED that glows when the mic is on.

That's the opposite behavior of Amazon's (and Google's) smart speakers. Those of us who have an aversion to the light pollution created by the proliferation of LEDs won't like it at all. Another feature I don't like: The speaker emits a tone when it hears its wake word. If you've been cranking the tunes and forgot to turn the speaker down, that tone can be startling when the room is otherwise silent. No big deal, right? You can just change those settings in the Sonos app. Except you can't. The locked-in arrangement "... ensures that the customer has confidence in the status of the microphone at all times," was the response to my fact-check question.

One other major difference: The new speaker has a pairing button where the ¼-inch threaded mount is located on the older model. Sonos tells me this enabled them "to maximize the

components in the speaker, and also made room for our partners to innovate on great ways to mount the" speaker. Okay, but there's already a world of mounts available for Sonos speakers. Was it necessary to render them obsolete?

AUDIO PERFORMANCE

Any lingering doubt that Sonos simply added mics and new firmware to transform the Play:One into the Sonos One will be dispelled as soon as you hear the new speaker. Sonos' entry-level speaker has long been my least favorite in the company's lineup. It's not a bad product, it's just too bright to my ears. It desperately needs to be paired with the gut-punching (but wallet-punishing) Sonos Sub. Then again, \$699 is a lot of dough just to reinforce a \$200 speaker.

When I queued up Tower of Power's



The ethernet port is still there, but the threaded mount has gone.

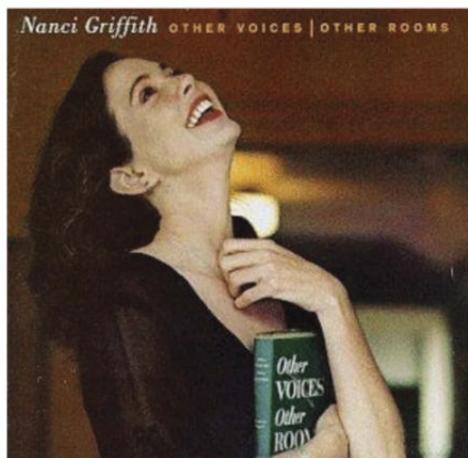
"Squibb Cakes," from the band's album *Back to Oakland*, which I'd ripped from CD and encoded to FLAC, the Sonos One impressed me with its much bigger bass response and improved midrange.

Stephen Kupka's bari sax sounded so much fatter than it did on the older speaker. And where Chester Thompson's frenetic work on the Hammond B3 seemed to have difficulty emerging from the Play:One, it happily bubbled up to its due prominence on the Sonos One.

The Play:One delivered great performances with more acoustic fare as well, beautifully rendering the two-part harmony of The Unthanks' aching rendition of the Scottish folksong "Anachie Gordon," from the duo's release *A Retrospective*. I acquired that recording in Apple Lossless format from Bowers & Wilkins' Society of Sound download service.

PERFORMANCE AS A SMART SPEAKER

When I first tested the Sonos One, I set it up in my kitchen, where I was also testing Amazon's Echo Show. When I'd forget to mute the Sonos, its more sensitive mic array would invariably cause it to beep when it heard the wake word, but the Echo Show would always wrest control and respond to my commands—even if it was farther away. The problem disappeared as soon as I moved the Sonos One into my



Other Voices, Other Rooms

Nanci Griffith

A screenshot of a Sonos mobile app interface. At the top, there's a play button, the album title 'Across the Great Divide • Nanci Gri...', and a shuffle button. Below that is a progress bar showing 'Kitchen + Garage + Living Room + 3' segments. At the bottom is a navigation bar with icons for 'My Sonos' (star), 'Browse' (music note), 'Rooms' (house), 'Search' (magnifying glass), and 'More' (three dots).

Add a Sonos One and you can control every Sonos speaker on your network with voice commands.

home theater for my critical listening tests. In there, the speaker consistently impressed me with its ability to hear my voice even when it was playing music very loudly. Actually, when any Amazon Echo hears the Alexa wake word, all of the speakers will shush until you've finished speaking and the Echo (or the Sonos) in control has responded to you. The music then returns to its previous level.

For all the praise I've heaped on the Sonos One, there are a couple of things that I really don't like about it. My first complaint: Sonos supports more than 80 music services from within its app: Spotify, Tidal, Deezer, LastFM, and many, many more. But when you ask Alexa to play a song, an artist, or an album on one of your Sonos speakers, you'll get music only from the services that Amazon supports. And if you don't specify which service you want to use, Alexa defaults to Amazon Music.

Amazon also supports iHeartRadio, Pandora, SiriusXM, TuneIn, and Spotify, but you must ask for those services by name. And Amazon won't pass Spotify streams through to its partner's hardware—even if you're a paid Spotify subscriber. The good news: Sonos says it will be Amazon's first partner to gain that privilege later this year.

My second complaint: As with Amazon's own Echo speakers, Sonos offers no way to ask Alexa to play music that's stored on my own local network. I use both Spotify and Tidal, and I've been dallying with SiriusXM. But I've also amassed a large collection of music on CD over the years, and I've painstakingly ripped each of those discs, encoded

them to the lossless audio codec FLAC, and stored them on a NAS box. I've also purchased and downloaded many albums in lossless formats—that album from The Unthanks that I mentioned earlier, for instance. Some of those albums aren't available for streaming from any service.

If you initiate a stream from your own server—or from one of the services that Sonos supports but Amazon doesn't—using the Sonos app, you can ask Alexa to move back and forth through your playlist or queue. You can even ask her what song is playing, and she'll tell you the name of the song, album, and artist. Ask her to play a specific artist, album, or song, however, and she'll go back to Amazon Music.



Sonos One

PROS

- Great sound in a compact package.
- Powerful voice-recognition capabilities.
- Fantastic Alexa integration, with Google Assistant.

CONS

- You can't use voice commands to stream music from your own local server.
- You can use voice commands with only a handful of the 80+ streaming services Sonos supports.

PRICE

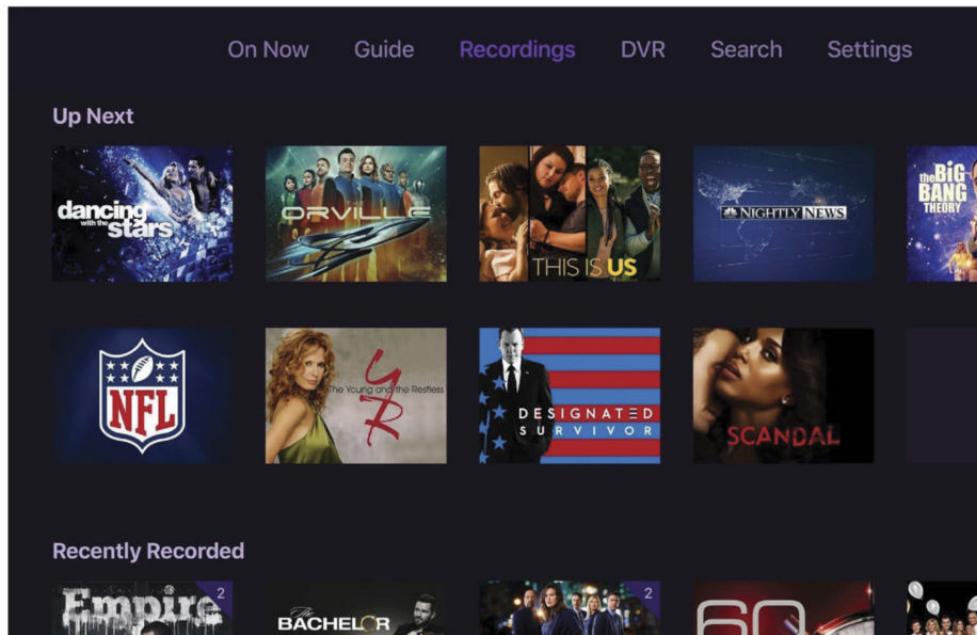
\$109

COMPANY

Sonos

THE BOTTOM LINE

Unless you find the drawbacks I've described to be deal-breakers, the Sonos One is a no-brainer. That goes double for anyone who already owns Sonos components, and triple for Amazon Echo users. We'll have to wait and see if Sonos executes as expertly with its Google Assistant and Apple AirPlay 2 efforts, but I'm optimistic on those counts based on past experience. The Sonos One is the best smart speaker I've heard yet. ■



Channels DVR: Ad-skipping helps justify the price for Apple TV owners

This over-the-air DVR has high barriers to entry, but one killer feature.

BY JARED NEWMAN

In some ways, Channels DVR is tough to recommend. The subscription cost is greater than other over-the-air DVR options, the hardware requirements are more stringent, and even some basic features—like conflict resolution—are absent.

Yet one feature manages to compensate for those weaknesses: With the press of a button, you can skip through entire commercial breaks in any recorded program. Only TiVo's Roamio OTA (go.macworld.com/roam) offers similar ad-skipping powers, and Channels is a

much slicker solution that runs on Apple TV and iOS devices rather than a clunky set-top box.

Channels also excels at the little things, like loading live channels quickly, and preserving the full video and audio quality of broadcast TV. If the service could just fix some of its other shortcomings, it could be the undisputed DVR champ—at least for Apple device owners.

FOR APPLE USERS ONLY

Channels DVR runs on Apple TV (fourth-generation and higher) and iOS devices, with each app priced at \$15. But those apps are only part of the equation.

To capture live TV, Channels requires one of SiliconDust's HDHomeRun networked tuners (go.macworld.com/hdhr), which connect to a Wi-Fi router via ethernet cable for streaming video throughout the house. For antenna users, the HDHomeRun Connect costs \$100, while the \$180 Extend model adds built-in transcoding, which requires less bandwidth for streaming live TV. (Transcoding also shrinks the size of recorded video, but Channels' software can handle this for Connect users.) Either model can watch and record up to two programs at once,



To use Channels, you'll need an HDHomeRun tuner connected to your router.

but Channels can also combine input from multiple tuners if you want to record more. For cable subscribers, Channels also works with HDHomeRun Prime, which uses a CableCARD to record unencrypted pay-TV channels.

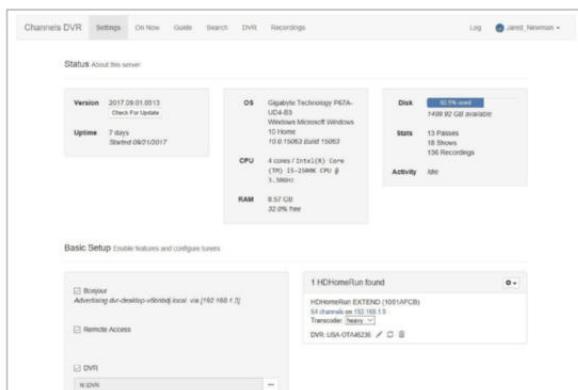
Beyond the tuner itself, you also need a device to record the videos, along with a hard drive that has ample storage. To that end, Channels offers server software for Windows, Mac, NAS boxes (go.macworld.com/nabo), and the Nvidia Shield TV (go.macworld.com/nvsh). (Just bear in mind there is no client app for watching video directly on the Shield.)

Channels also requires a DVR subscription for \$8 per month. That's \$3 per month more than DVR service through Plex (go.macworld.com/p1ex) or Tablo (go.macworld.com/tabl), and there are no

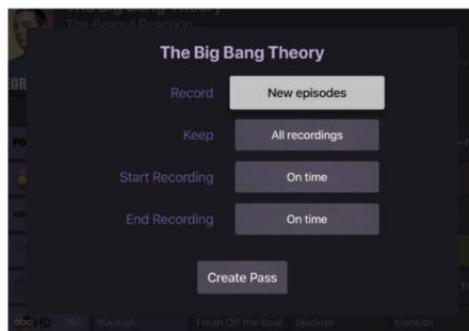
discounts for annual or lifetime service. All told, you could pay upwards of \$500 for an HDHomerun tuner, server device, hard drive, and at least one Apple TV, and that's before the subscription fees. That's a tough sell if you have none of the requisite hardware, but it becomes more economical if you already own a desktop computer or NAS box.

SLICK SOFTWARE (WITH A FEW MISSING FEATURES)

Channels does get much simpler once everything's in place. After installing the server software, a browser-based tool lets you scan for channels, specify a DVR storage location, and adjust advanced settings such as transcode quality and tuner priority. You can then manage recordings through iOS, Apple TV, or the web tool.



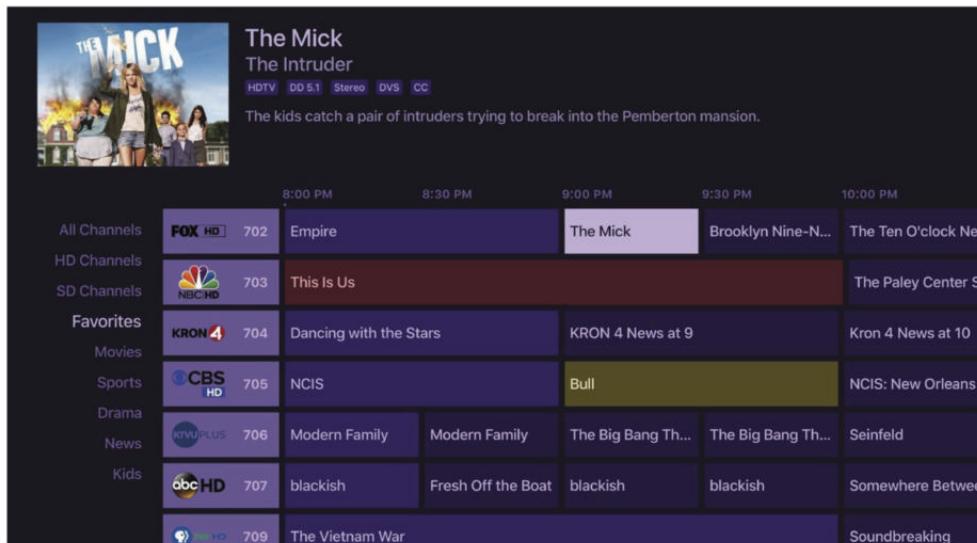
The Channels web tool lets you manage DVR settings and watch TV.



Channels provides lots of ways to fine-tune recordings.

The app provides plenty of control over how those recordings behave. In the server app, you can set global settings for recording buffer times and how many recent episodes of a program to keep. Those same settings are available on a per-show basis in the Channels app. And beyond just TV shows and movies, you can set up series passes for sports teams, which Channels will record across any channel. That's handy for when your favorite football is playing on Sunday or Thursday night. The only thing that's absent is a way to filter out recordings by resolution or by channel.

Still, Channels is missing a few options that would make recording easier. Although you can search for individual programs, or browse the grid to see what's coming up,



Grid-based channel guides: The security blanket of modern day DVR.

you can't browse programs by genre or channel. And while Channels' web app offers suggestions on shows and movies to add, these don't appear in the iOS and Apple TV apps. One of the joys of over-the-air DVR is discovering all the great movies and shows that air on random channels, but Channels makes this trickier.

Conflict resolution is also lacking. Although you can prioritize programs so that your favorites don't get passed over, Channels provides no warnings when you've overbooked the DVR. To weed out conflicts, you must manually scroll through the recording schedule, looking for instances of overlap in each time slot. Out-of-home viewing is also supported

for live and recorded programs after you've linked an account through the Channels app, and it works with both iOS and Apple TV. You can also access Channels remotely through a web browser at my.channelsdvr.net.

ADS BEGONE

After completing a recording, Channels DVR analyzes the video for commercial breaks, which then appear as dark lines in the video progress bar. By double-clicking the Apple TV remote's fast forward button during a break, Channels jumps directly to the point where programming resumes. If you haven't used a TiVo or other ad-skipping DVR before, this will probably

feel like magic. (It also illuminates how many ad breaks get stuffed into some broadcast programs.)

There are some caveats: Channels acknowledges that the detection isn't 100-percent accurate, so you might still have to fast forward through a block of ads on occasion, or click forward or backward to reach the right spot. And because the analysis doesn't happen until after the recording is over, you can't automatically skip ads partway through a live broadcast. Still, having an option to ad-skip is far more convenient than manually scrolling through ads in 30-second increments.

Ad-skipping aside, Channels offers some pleasant touches that other solutions lack. Unlike Tablo's networked DVR, Channels loads live broadcasts almost instantly, supports smooth motion interpolation on 1080i channels, and passes



Channels DVR

PROS

- Automatic ad-skipping.
- Includes some handy features like tuner stacking and sports-based recording.
- Pristine video quality and speedy channel load times.

CONS

- Requires Apple devices and a lot of other hardware.
- No easy way to resolve recording conflicts.
- Pricier than other over-the-air DVR services, with no lifetime service option.

PRICE

\$8 per month

COMPANY

Fancy Bits

through 5.1-channel surround sound. It also has a grid-based channel guide, which Plex DVR lacks, and is easier to set up than Emby DVR (go.macworld.com/emby).

But Channels is more expensive than all of those solutions, works on far fewer devices, and still lacks a few basic features. Ad-skipping isn't quite enough to forgive those issues, but it does lay a foundation for what could someday become a superior product. Apple users should have no qualms paying extra for that. ■



Those dark purple bars represent all the ads you can skip.

LET'S SAVE THE PLANET ONE ACRE AT A TIME

A photograph showing a person from behind, standing on a rocky mountain ridge. They are wearing a dark jacket and pants, and appear to be looking out over a vast, misty landscape of mountains under a clear, light blue sky.

What if everyone took responsibility for one small piece of the planet?

Now, you can do your part. When you Adopt an Acre,[®] you help the The Nature Conservancy preserve the diversity of life on Earth, in places close to home, and around the world.

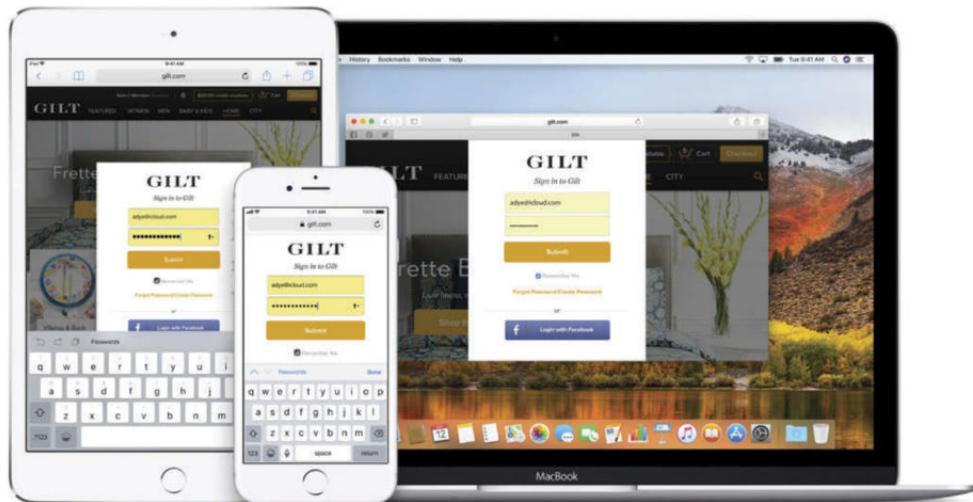
To adopt your acre, visit **nature.org/adopt**

The Nature
Conservancy
Protecting nature. Preserving life.[™]

Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN



Safari bookmark sync out of whack? Here's the solution

iCloud has a feature that lets you sync your Safari bookmarks across your Macs, iPhones, and iPads. However, *Macworld* reader Mark has a tale that sounds nearly appropriate for Halloween: disappearing and haunted bookmarks:

I upgraded my MacBook recently and transferred everything across surprisingly easy. After a few weeks, the bookmarks disappeared in favor of the defaults (Apple, Netflix, BBC iPlayer,

YouTube, Facebook). I recovered following your advice with Time Machine, but after a few minutes or hours or even days, they switch back to default again.

I suggested to Mark that this sounded like an out-of-phase synchronization problem. With iCloud enabled to sync Safari in iOS and macOS, it sounds as though iCloud decided the “truth” of the bookmark state was the defaults loaded before his upgrade. Every time he restored to an earlier version via Time

Machine, iCloud sync kept deciding that was out of date and replaced it with what it thought was “newer.”

My advice was to disable Safari in the iCloud system preference pane. Restore the bookmarks. Let things settle down. Then re-enable. Sure enough, that stopped the default/correct bookmark flapping.

Why Apple shows a strange location for a two-factor login confirmation

Erich Riehl uses Apple’s two-factor authentication (2FA) system with his iCloud account. This is the system that Apple released in September 2015, and which replaces the older two-step system entirely in iOS 11 and macOS 10.13 High Sierra. (If you’re using two-step and upgrade to either of those, Apple converts you to 2FA.)



The first step in Apple’s 2FA is a location alert that appears on every computer and iOS you own logged into the same Apple ID account. The notion is that you should validate that the location is correct before you proceed to get the code. Clicking Don’t Allow terminates the login attempt.

For Erich, however, he’s seeing a login attempt from Monroe, Louisiana, which he found confusing. He gets this alert when he is trying to log in at iCloud.com, and wondered if it were legitimate.

Because Apple doesn’t explain when you log in that it’s going to alert you on all your connected devices, this can seem counter-intuitive when you’re using a browser—because the device from which you’re logging in tells you there’s a login attempt.

The location can also be imprecise. My wife routinely is told she’s logging in from about 30 miles south, although on the same home network, it’s more accurate for me. If we both had this issue, I’d expect that the IP address of our network was misplaced in whatever geo-identification system Apple relied on to match IPs with a rough place on the globe. (I checked with Erich, and his ISP is based in Louisiana, and it only happens when he tries to log in.)

If you’re using a VPN (virtual

private network), you may be told that you're logging in from far away as well! Keep that in mind if you're worried about someone intercepting your connection—the far end of your session, where Apple "sees" you connecting to the Internet, is almost always going to be one of the data centers at which the VPN service has its servers located.

I wrote earlier about whether it's a good idea (go.macworld.com/goid) to allow you to confirm your identity from the same machine you're trying to log in from.

How to remove old sent messages from Mail in macOS

Email is one of those programs that you use, and then you realize that you have files dating back from a long time ago.

Macworld reader Chris want to take control of the message in Apple's Mail, specifically the messages he has sent.

I swear I used to be able to control how long my sent mailbox kept old sent messages—I'm sure I set it to 1 month! Now, however, I cannot find any pop-up or drop-down menus (like Junk Mailbox, which I have set to erase after one week). I don't want all my old Sent messages from 1998!

I don't recall a way to delete sent messages automatically in Mail. However,



you can create a rule that will solve the problem for you:

- Select Mail ➔ Preferences and click the Rules button.
- Click Add Rule.
- Name the rule "Delete Sent Messages" or however you'd like to identify it.
- From the conditions area, choose Date Sent, Is Greater Than, and then enter the number of days. In this example, I used 365 days.
- In the Perform the Following Actions section, choose Delete Message.
- Click OK.
- You're prompted to apply to existing messages. If you click Apply, this will immediately (and irrevocably) delete all sent message that meet that criteria.



This rule deletes old Sent mail, but has to be triggered manually after the initial creation.

Now, Mail won't apply this rule after this point, because active rules apply only to your inboxes. However, you can every once in a while select the Sent mailbox in the Mailboxes list and then choose Message → Apply Rules.

You can choose a different tactic if you just want to archive messages locally. Create an archive mailbox in the On This Mac section of the Mailboxes list: hover over On This Mac, click the +, and then name the mailbox. In step 5, choose Move Message and then pick the mailbox you created under On This Mac.

How to better manage your iCloud file storage

Apple's iCloud is handy in that it lets you have access to your files on multiple devices that have internet access. But what's actually stored in iCloud isn't that obvious to the user.

This seems to be the case for

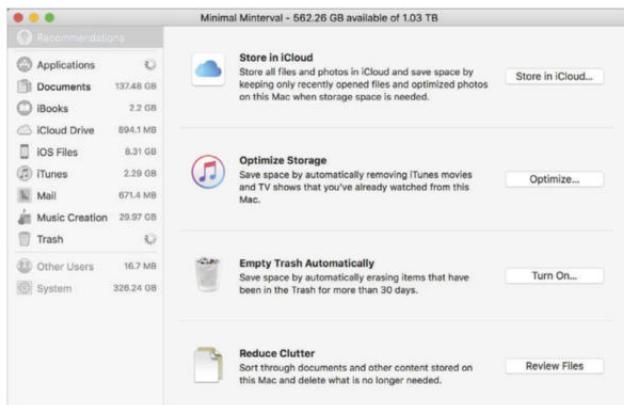
Macworld reader Izabella. She asks why iCloud isn't reducing storage on her MacBook more than it is. She sees iCloud storage on her computer taking up 80GB of storage but says she's paying for 200GB of iCloud storage. "I want to use this space for other things," she notes.

iCloud doesn't necessarily save you storage, as confusing as that is, because it's a mix of synchronization and cloud-based storage options.

➤ iCloud Photo Library syncs all your photos and videos, but unless you set Photos (in Photos → Preferences → iCloud to Optimize Mac Storage), the full-resolution file for each piece of media remains on your Mac. Check that box, and you could save 80 to 90 percent of a library's size.

➤ iCloud Music Library also syncs music, but lets you keep local files unless you take action. You can select songs or albums and Control-click to select Remove Download, which deletes locally stored files and leaves the backups in iCloud. (Be sure you have a backup of your music files before you do this! Things can go wrong.) If you want to know which songs are only in the cloud, create a Smart Playlist with the criteria Location Is Not On This Computer.

➤ iCloud Drive is always synced: a



You can dump gigabytes of locally stored files on your Mac by using System Information's storage recommendations.

copy is always on your computer and in iCloud for everything listed except for the next item!

► Desktop & Documents is an option (introduced in macOS 10.12 Sierra) to shift and sync less-used files from those two Home folder locations to the cloud, and only download them locally as needed. You can access that option via → About This Mac → Storage and click Manage (or via Applications/Utilities/System Information, and choose Window → Storage Management), and then click Store in iCloud. You want a high-speed broadband connection for the times you need macOS to retrieve those files.

► iTunes purchases. Also in the storage manage tab of System Information, you can opt to delete what can turn out to be gigabytes of downloaded media that

remains available for retrieval or streaming on demand from the iTunes Store.

Making a few changes could free up tens to hundreds of gigabytes of storage, depending on the amount of media and kinds of documents you store on your Mac.

A warning, though: you're relying on iCloud and Apple to keep all that data safe for you. I'd rather have more

storage on my computer, keep all the iCloud items copied from and to my main Mac, and separately clone and archive all those files myself in addition to iCloud. ■

Ask Mac 911

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

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