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Macworld

OCTOBER 2020

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APPLE'S NEW 27-INCH

iMAC

MAGAZINE
EXCLUSIVE

YOUR
ULTIMATE
GUIDE
TO APPLE
MUSIC

PLUS

HOW
TO USE
ZOOM OR
FACETIME
WITH AN
APPLE TV

THE LAST
NEW INTEL
MAC GOES
OUT IN
A BLAZE
OF GLORY

I didn't talk
for a very long time

Jacob Sanchez

Diagnosed with autism



Lack of speech is a sign of autism. Learn the others at autismspeaks.org/signs.

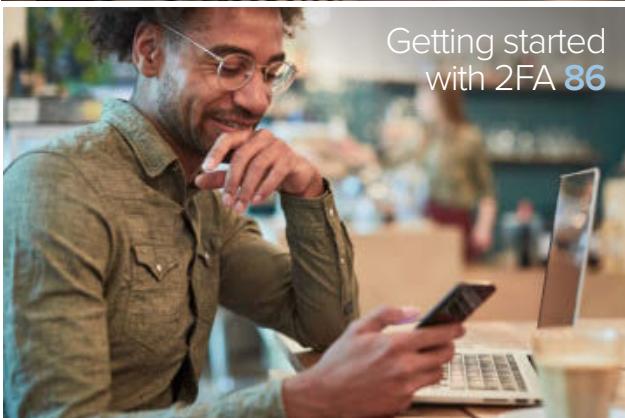


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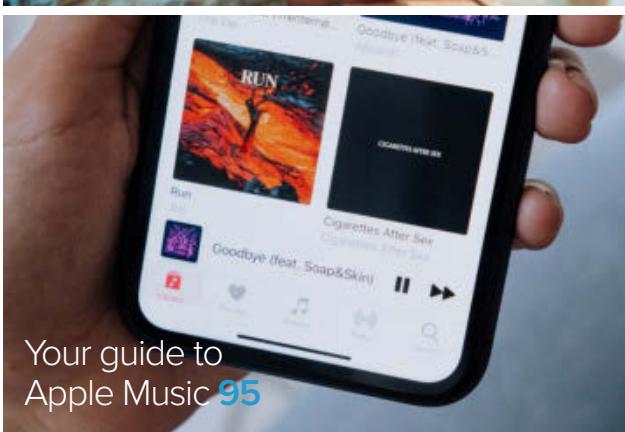
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What the iMac refresh can tell us about Apple's future products

Apple's business approach and position in the market has varied over the years.

BY DAN MOREN

August tends to be right in the middle of the summer doldrums, the time when everybody goes on vacation and thus news—including tech announcements—are few and far

between. Then again, 2020 isn't your average year, so perhaps it's not a shock that August saw a departure from the norm with Apple announcing a surprisingly substantial update to the iMac ([go. macworld.com/ifaq](https://www.macworld.com/ifaq)).

My colleague Jason Snell has already expounded upon what the revamp to Apple's popular desktop means for the future of that product (see page 11), but I think it's worth it to take a moment and see what we can extrapolate from this update and learn about the future of Apple's other devices. Apple is no stranger to introducing updates in one device that eventually migrate to the rest of its lineup, even from the Mac to the iPhone and iPad and vice versa, and this iMac update is certainly no exception.

YOUR FACE STAYS IN THE PICTURE

We've all become more familiar with the webcams in our devices, given the current world environment where many of us spend endless hours on videoconferences. Apple was taken to task not long ago for the poor quality of the front-facing cameras on its Macs, and the company seems to have taken that particular criticism to heart with the



The 27-inch iMac has an improved FaceTime camera, so your video calls will actually be clear.

iMac update. No longer does it boast a meager 720p webcam, but now features the same 1080p FaceTime HD camera as the iMac Pro. That means the desktop webcams should feature significantly higher quality than those on the company's laptops, if not quite measuring up to the cameras on its mobile devices.

But the webcam is only half the story. The company is leveraging the T2 chip that it includes in most modern Macs to improve the image processing of that camera, adding a little bit of extra intelligence that will hopefully make the quality even better.

I have a hard time imagining we'll ever see another Mac with a 720p webcam

after this (at least for the Macs that include them—the Mac mini and Mac Pro are on their own). Given that the 27-inch iMac is nearly the last Mac model to incorporate the T2 and that the transition to Apple silicon is about to begin, every Mac going forward is going to have some sort of Apple-designed chip, so it seems a given that this enhanced image processing will be standard.

JUDGMENT DAY

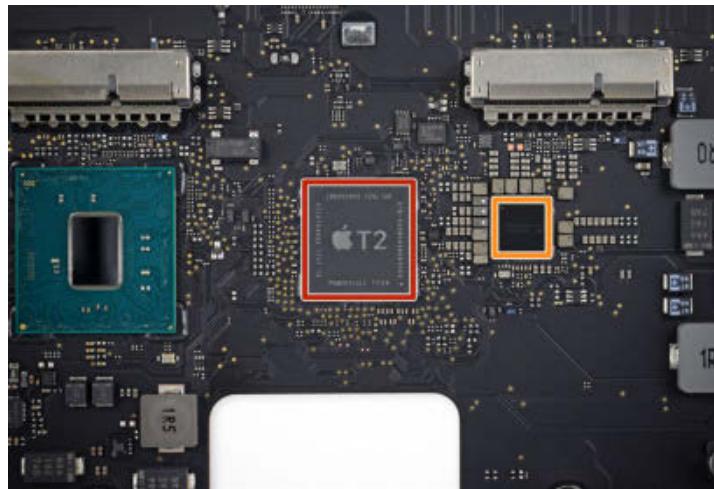
Speaking of the T2 chip, its importance shouldn't be underestimated. Apple's been rolling out its own custom coprocessors in Intel-based Macs for years now, and it seems clear that it's taken on an increasing amount of importance in the system architecture. Not only does it

handle the image processing for the aforementioned webcam, but it also handles security, encrypted storage, audio processing, and video conversion.

In some ways, the T2 is the progenitor of the Apple silicon transition, handling pretty much everything that's not covered by the CPU or the GPU. And that tells us everything we need to know about Apple's plans for Macs based on its own silicon: systems that are tuned specifically to enable features that we haven't seen before, because the general purpose chips simply couldn't accommodate what Apple wanted to do.

Machine learning, in particular, has become an important part of Apple's technology strategy, and being able to leverage all the tasks that use it via a chip

designed expressly for that purpose is going to have a big impact on the bottom line for all of Apple's products—as we've already seen on both the iPad and iPhone.



Apple's T2 chip is used to process images from the FaceTime camera.

NANO NANO

Among the biggest improvements in this latest iMac is the

ability to opt for a nano-texture display that provides significant glare reduction without compromising image quality. It's not cheap: adding it to the 27-inch display costs \$500. That said, it was previously only available on Apple's very high-end 32-inch ProDisplay XDR for an additional \$1000.

As with all technology, the nano-texture option is likely to get cheaper in time as Apple ups the scale of production and improves its processes. So it's not hard to imagine that this will make its way into the rest of the company's lineup eventually. And probably not just MacBooks, but even mobile devices like the iPad and the iPhone. While it's

certainly easier to adjust those devices to avoid glare, one of the big challenges with them has been use in direct sunlight; the nano-texture might help avoid that.

Is this technology good enough to become standard across Apple's device lineup? Probably not in the short term, but as it becomes available to more and more users, the company will surely be able to get an idea of how well it performs in all sorts of conditions. So it's quite conceivable that some day we might be enjoying this feature on all of our Apple devices and chuckling at the days when we suffered from terrible glare. ■



The nano-texture glass made its debut with Apple's Pro Display XDR. It is now an option on the 27-inch iMac. Could we see it come to MacBooks, iPads, and iPhones?



Where does the iMac go from here?

We will see big changes with Apple's popular desktop computer—it's a matter of when.

BY JASON SNELL

With an early August announcement of the new 27-inch iMac (go.macworld.com/ifaq), Apple seems to be clearing out some of the final major Intel Mac releases in its product pipeline.

The big question is, what's next for the iMac? While this new revision makes the current iMac a bit faster and a bit nicer, it's a fairly modest upgrade. With the move to

Apple silicon on the horizon, it's worth pondering where the iMac goes from here—and how soon we might see truly big changes when it comes to Apple's most popular desktop computer.

BIG iMAC: RESETTING THE CLOCK

The 27-inch iMac's update this week has bought Apple some time. With this update,

it feels like Apple could wait somewhere between 12 and 18 months before needing to update the larger of the two iMac models.

Yes, that means that Apple would be sitting with an Intel iMac at the top of the line until late 2021 or early 2022. But consider that most iMac buyers aren't hardcore pro users who want to be on the cutting edge. Even if this 27-inch iMac is the last major update to an Intel Mac ever, it's going to be a powerful computer that will serve its users for years to come.

And of course, some savvy computer users will even consider buying a new

iMac a savvy move—it's tried and true technology that will last for years during a time of great change. By the time they'll need to replace this iMac, all the furor involving Apple's transition to Apple silicon will have settled.

In any event, I have a hard time seeing Apple updating the 27-inch iMac with Apple silicon in the near future, now that it's made this update.

LITTLE iMAC: ON THE CLOCK

The 21.5-inch iMac, on the other hand, seems like a prime candidate to be converted to Apple silicon. It wasn't

actually updated this time, though Apple did change its base configuration to include SSD storage rather than a Fusion Drive. (Let's pause for a moment of applause, because spinning hard drives are slow and bad.)

But it's worse. Last year, the 21.5-inch iMac got updated—sort of. But it only got



The new 27-inch iMac buys Apple a considerable amount of time before the company unveils a model with its own CPU.

8th-generation Intel processors, while the 27-inch model got the 9th-generation processors. So it started a generation behind and is now another generation behind. It is an outdated computer in desperate need of a refresh.

According to a report from ace supply-chain analyst Ming-Chi Kuo (go.macworld.com/rdim), Apple's next iMac will be redesigned, run on Apple silicon, and will sport a 24-inch screen. If you consider that any iMac redesign would probably drastically reduce the bezels and aluminum chin found on the current iMac design, it's not unreasonable to consider that the 24-inch Apple silicon iMac would be the successor to the current 21.5-inch model—and might not even be that much larger.

Though Apple is the world's most valuable company, it's still limited in how many new Mac models it can roll out at once. A new 24-inch iMac would give Apple silicon a beachhead on the desktop—and the 27-inch iMac could be revised in a similar fashion a bit later on. It makes a lot of sense.

iMAC PRO: TIME'S UP?

That leaves the iMac Pro, a product near and dear to my heart (go.macworld.com/ibt1)—because I bought one and I love it. But the iMac Pro dates from the era before Apple recommitted itself to the Mac and



Even though the 21.5-inch iMac was updated with SSDs, its specs are looking old.

the Mac Pro—and was, according to numerous accounts at the time, designed as the replacement for the Mac Pro. Apple has changed its Mac strategy since then, and the iMac Pro hasn't received a single update. Things don't look good.

The truth is, the 27-inch iMac (or whatever size it might end up being once it is updated for Apple silicon) is already a powerful machine. Apple knows that there are a lot of professional users for whom the Mac Pro is overkill. Apple will always make sure that the top-of-the-line iMac is



The iMac Pro dates from the era before Apple recommitted itself to the Mac...

powerful enough to fulfill those users.

This leads to the classic *This Is Spinal Tap* dilemma: do you make your amp louder and add an 11 setting, or just keep the top setting at 10 and make that louder? Or to put it in iMac terms, do you create an iMac Pro—or just make the high-end iMac capable of serving pro users?

In the end, this is going to come down to marketing. In a couple of years, I can see Apple offering an iMac with lots

of processor cores, perhaps similar to what will be found in a future Mac Pro. If it finds value in calling that configuration an iMac Pro (and perhaps offering it in Space Gray instead of Silver), that's great. If it's "just" an iMac, that's fine too. It doesn't matter what's on the label if the computer is capable of doing the work.

Still, I'm sad that it looks like the iMac Pro might be an evolutionary dead end. With its integration of the T2 chip and vastly upgraded thermal system, it was a trailblazing Mac. Here's hoping that Apple takes what it learned in designing the iMac Pro and applies it to whatever iMac models are about to emerge from Apple's product pipeline. ■



...and is the model that seems like it may be hitting a dead end.



Phil Schiller steps up to Apple Fellow, Greg Jozwiak takes over as Senior VP of Worldwide Marketing

A rare shakeup in the senior leadership of Apple.

BY JASON CROSS

After more than 30 years at Apple, Phil Schiller is transitioning his role from Senior VP of Worldwide Marketing to Apple Fellow. Greg Joswiak will be promoted to fill that position.

Phil Schiller has been a mainstay of Apple events for as long as anyone can remember. Apple's press release quotes him as saying: "I first started at Apple when I was 27, this year I turned 60 and it is time for some planned changes in my life. I'll

keep working here as long as they will have me, I bleed six colors, but I also want to make some time in the years ahead for my family, friends, and a few personal projects I care deeply about.”

Schiller’s words make it sound as though he is getting ready to retire, or at least “semi-retire,” and is transitioning away from most of his duties at Apple. While Apple is framing Schiller’s new role as an advancement—and indeed he will attain a position of high esteem within the company—it is a clear reduction in his role and influence. Schiller will continue to report directly to Tim Cook, and will continue to lead the App Store and Apple Events.

His replacement as Senior VP of Worldwide Marketing is Greg Jozwiak, who has been with Apple in various marketing roles for more than 20 years and was VP of Worldwide Product Marketing under Schiller for the

last four years. The Worldwide Marketing group he leads is responsible for Apple’s product management and product marketing, developer relations, market research, and business management, as well as education, enterprise, and international marketing.

While these sorts of senior-level shakeups are rare at Apple, it doesn’t sound like we’re in for a dramatic change in the way Apple handles its marketing. Phil Schiller will still be a visible face within the company (as he is in charge of Apple Events), and his old role is being filled by a longtime Apple marketing exec who worked under him. ■



Phil Schiller will still be a visible part of Apple, but we can expect to see and hear a lot more of Greg Jozwiak.



For once, the Mac and iPad lead Apple's record financial results

Some insight about where Apple is and where it might be going next.

BY JASON SNELL

One of these quarters, Apple's going to announce financial results that don't result in some sort of record.

Perhaps as soon as next quarter, even. But on in July, Apple announced the

results of its financial third quarter of 2020 (go.macworld.com/q320)—and they were an all-time third quarter record. Literally every measurable category went up, year over year. It was so sunny a set of results that Apple CEO Tim Cook

seemed almost embarrassed to be reporting such huge growth amid a global pandemic and some powerful social upheaval in the United States.

In any event, here's what I gleaned from the results and Apple's regular post-results conference call with analysts that might provide some insight about where Apple is and where it might be going next.

TOPSY TURVY: MAC AND iPAD LEAD THE WAY

This quarter's banner numbers were led by, of all products, the Mac and the iPad. Mac revenue was up 22 percent versus the year-ago quarter. Mac sales were only slightly lower than during last year's holiday and back-to-school quarters, which are generally by far the two best quarters for Mac sales.

The iPad, meanwhile, only had its best quarter in four-and-a-half years, since the 2015 holiday season. Sales were up 31 percent, and Apple made

more money on iPads in the last quarter than in any non-holiday quarter in six years, and in any quarter since the 2018 holiday season.

How to explain it? This was a quarter where Apple shipped two new laptops with good keyboards, probably releasing a lot of pent-up demand. And the iPad had a good keyboard story, too, with the release of the new iPad Pro and its accompanying Magic Keyboard accessory.

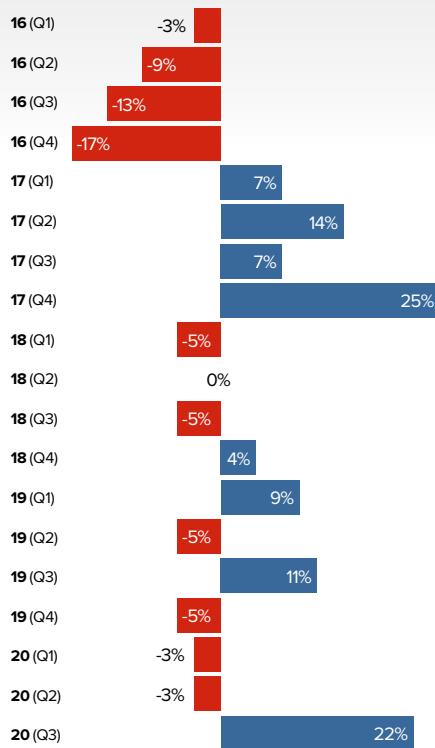
But I'd wager that the major contributor to this sales bump is people upgrading their work-from-home setups in response to not being able to return to their offices due to the pandemic. Cook suggested as much three months ago, based on some initial sales figures, and now we can see the numbers that motivated him to make



Mac revenue was up 22 percent versus the year-ago quarter.

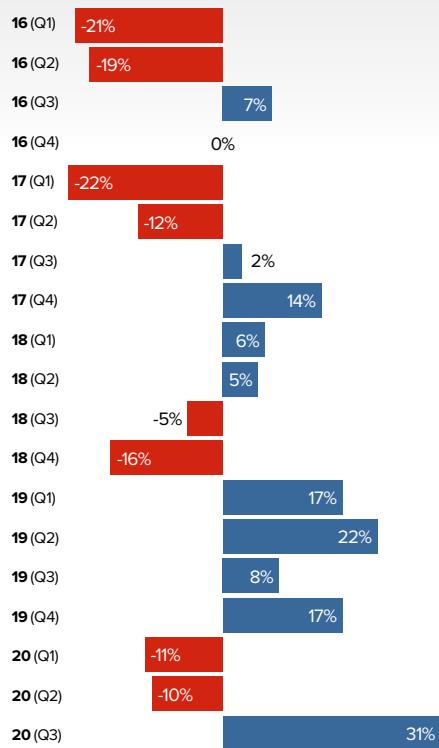
MAC REVENUE CHANGE

Year-over-year



iPAD REVENUE CHANGE

Year-over-year



that suggestion.

However, a few of the analysts on the call with Apple struck some warnings about the great quarter for the Mac and iPad. Doesn't this sales bump just mean that Apple pulled forward some sales that would otherwise have been made during the back-to-school and holiday quarters? Cook says that Apple expects strong

performance in the back-to-school period, but his attitude toward the holiday quarter seemed a bit more...iffy.

"I think we need to see a vaccine or a therapeutic or both, and, you know, there's some optimism around that in that particular timeframe," Cook said. "I think that would boost consumer confidence quite a bit if it began to happen." Unless Cook has access

to reports the rest of us don't have (and he specifically said he didn't), this seems a bit too optimistic. Given the current economic uncertainty, it would not be a bad bet to suggest that Apple will face a challenge at breaking any records during the upcoming holiday season.

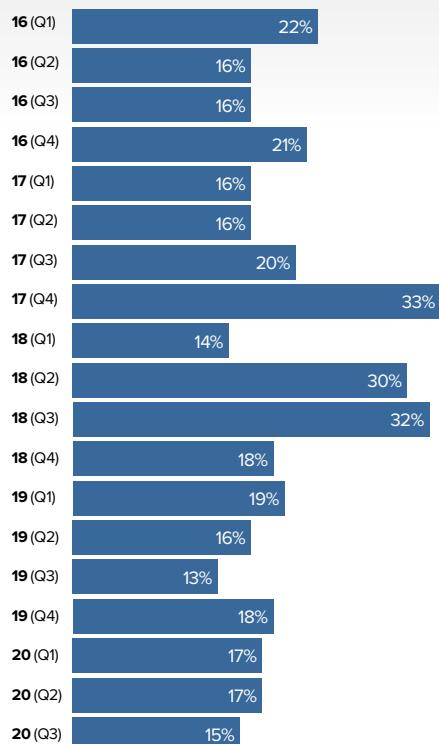
SERVICES AND WEARABLES MOTOR ON

Back in 2016 Apple set a goal for itself: double the amount of revenue it generates from the Services portion of its business within five years. Four and a half years later, it has met its goal a bit early. The Services business grew by 15 percent in the past quarter, a rate of growth that it has managed for about two years now. Apple's next goal: reach 600 million paid subscriptions before the end of calendar 2020.

The other fast-growing Apple product category, Wearables, actually had its slowest growth quarter in three and a half years, though it still grew by 17 percent. It is hard to keep growing at 20 to 30 percent every quarter, so it is not surprising that Wearables might cool off a little bit. Cook also ascribed some weakness in the sales of Apple Watch to the fact that many prospective Apple Watch buyers want to try the watch on in a retail store and look at watch band options as well—options that were stifled in many

SERVICES REVENUE CHANGE

Year-over-year



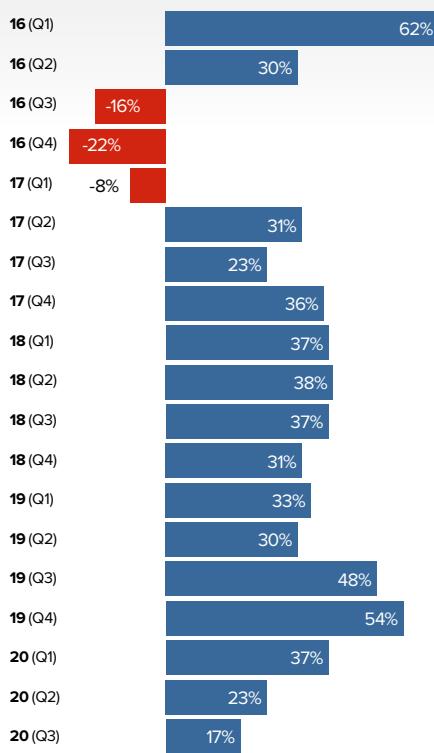
regions due to the COVID-19 pandemic closing stores.

MORE HINTS OF APPLE SILICON

We're at the point where we're parsing language and slides (go.macworld.com/5lid) for clues about how fast Macs running on Apple silicon might perform. So

WEARABLES REVENUE CHANGE

Year-over-year



let's parse this statement from Tim Cook: "This two-year effort will achieve both unprecedented performance for the Mac and a common architecture across all Apple products."

Unprecedented performance! That's a nice phrase. I like it. (I assume he doesn't mean unprecedently bad.)

Cook, while scrupulously sticking to

Apple's policy not to discuss future products, did also provide this tidbit: "What we'll wind up with is a common architecture across all of our products, which gives us some interesting things that we can do in products, that it sort of unleashes another round of innovation... we can envision some products that we can achieve with Apple silicon that we couldn't achieve otherwise."

I'm excited, and yet also frustrated. Well played, Tim Cook.

PEOPLE LIKE SMALL PHONES, OF COURSE

This quarter also brought a little bit of color about how well the new iPhone SE is selling. The answer is: it's doing well! "We're seeing a higher switcher number than we did in the previous year, which we feel very good about," Cook said. "And it also seemed to appeal to some people that were holding onto the device a little longer because they wanted a smaller form factor phone."

Yes, indeed, part of the iPhone SE's appeal is that it's not the size of the other iPhone models. But do I detect a little bit of seeding the audience for a reaction when Apple announces the new iPhone models this fall? After all, one of the rumors is that among the new iPhone models will be one that's even smaller than the iPhone SE. ■

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DIGITAL AUDIO WORKSTATION

UNIVERSAL AUDIO LUNA: LOOK OUT LOGIC AND PRO TOOLS, HERE COMES THE LUNA-VERSE

BY JON L. JACOBI

Universal Audio's new Luna Recording System (go.macworld.com/luna) is a digital audio workstation (DAW) aimed squarely at anyone who digs the analog vibe and tape recorder/mixing console workflow. Actually, in this case, a digital emulation thereof—something UA's Apollo audio interfaces with their on-board DSP processing and plug-in architecture are known for.

The kicker? Luna is free if you already own a UA Thunderbolt interface. If you don't, the ante is \$500 for UA's entry-level Arrow (go.macworld.com/arrw). Hardly chump change, but if my initial hands-on is any indication, you may be willing to pony up—in due time.

At the moment, there are minor bugs

and unimplemented features, though fewer than you might expect for a 1.x program that was released early for a world rife with clamoring shut-ins.

UNDER THE HOOD

I spent about 15 minutes luxuriating in Luna's new-car smell and getting used to the general layout. That was more than enough time for the schematical and operational resemblance to Pro Tools ([go.macworld.com/prt](https://www.macworld.com/prt)) to sink in. Even the keyboard shortcuts are largely the same. It's not note for note, but the users of Avid's flagship DAW will feel at home right off the bat.

After the break-in period, it was time to delve into some of the impressive stuff going on under the hood. First and foremost there's the largely seamless

melding of the Apollo interface DSP effects with those that are computer-rendered. Formerly, UA's separate Console application was required to set up the Apollo's DSP effects on cue mixes (what the artist hears in the headphones) and inputs. Now Luna handles all that so visits to Console are rare.

As a byproduct of this DAW/hardware integration, there's no configuring of the audio interface. Inputs appear automatically and there's no buffer size setting. When you create a cue mix it's actually happening on the interface, and you can even turn the 48 volt phantom power on and off.

Luna allows you to mix sample rates freely, which, while not unique in the DAW world, is completely transparent. The audio engine can re-sample and play anything from 44.1kHz to 192kHz on the fly, while background rendering creates files matching the current project sample rate that will be used eventually to reduce the processing overhead this rate juggling incurs. I



Universal Audio's Luna with two windows open showing the two main views: timeline and mixer.



UA's tape extension plug-ins.

tried importing a batch of files from 44.1kHz to 96kHz and there was never a hiccup.

Luna also features “extensions,” which are proprietary audio and MIDI plug-ins that embed into the mixer. Out of the gate there are two audio extensions that mimic the saturated sound of tape: Oxide (generic and included for free) and Studer A800 (\$299 if you don’t already own the DSP version); plus another that imitates the bus summing (mixing audio signals from multiple channels) of a Neve 80 series analog mixing desk (\$299).

The only MIDI extension in Luna 1.01 is the free ARP arpeggiator. It’s capable and easy to use, but nothing extraordinary. Its



The sole MIDI extension at Luna launch was the ARP arpeggiator.

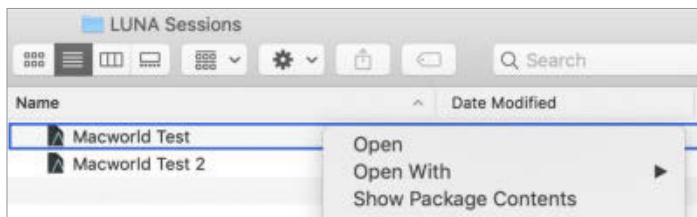
tough to avoid. UA lets you demo them for 14 days. Be strong, friends.

While UA’s plug-ins are expensive, Luna allows you to use your third-party AU (Audio Unit) plug-ins. Most of them at any rate; a few of my older instruments wouldn’t load, and at least one newer one wouldn’t make noise. All UA plug-ins run on the audio interface and are limited by its DSP power.

All audio files are stored in a single package (a folder abstracted to appear as a single file under macOS) with a database tracking them as well as your actions. They’re all saved as a matter of course—there’s no user initiated save function.

existence does, however, point out the potential for further MIDI mayhem.

You may have noticed that the Neve and Studer extensions cost a fair bit. As noted, they’re also exclusive to Luna, as are the instruments that I’ll cover in a bit. Big tip: If the free stuff won’t do, wait for the frequent UA sales or buy them in discounted bundles. After hearing the Neve summing demo, trust me—the slippery slope of plug-in collecting will be



Luna stores all MIDI and audio files, as well as settings and a history of actions in a macOS package for easy transfer. Continual save and tracking facilitate infinite undo and redo.

I can't tell you how much I enjoy the lack of "Save your work?" dialog boxes and infinite undo and redo across sessions. The latter is a handy and highly addictive feature I've been pushing on every software vendor I know since I first saw it in the Write! (go.macworld.com/wrt) text editor.

Luna also has easy drag-and-drop import of MIDI (songs and tracks), audio (WAV, AIFF, MP3, M4A, Apple Lossless, etc.), and the AAF (Advanced Authoring Format) files that other top pro-level DAWs understand. It exports most of those as well. Getting stems (the contents of individual tracks) in and out is as easy

as it gets; given that the feudal DAW industry has yet to develop a combined MIDI/Audio file format.

INTERFACE AND NAVIGATION

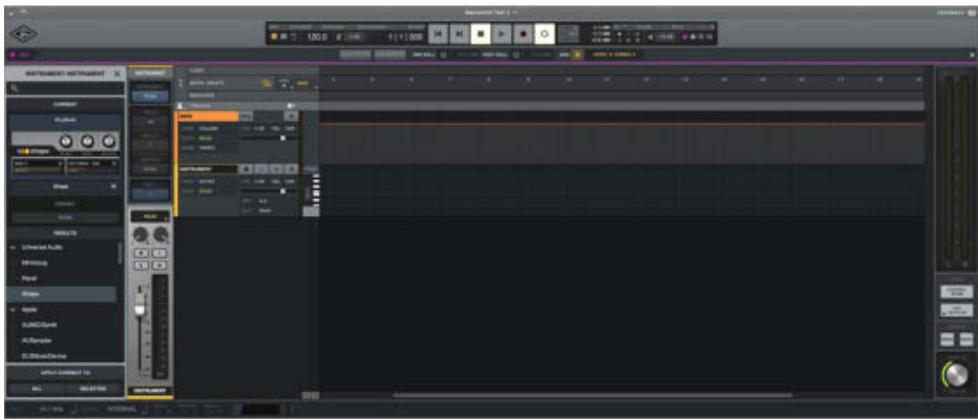
If you're at all familiar with DAWs such as

Apple's Logic or Avid's Pro Tools, you won't be startled by anything you see in Luna. Pleased perhaps, but not surprised. Run the program and there's the usual timeline with tracks that house audio or MIDI clips. Click on an icon and you have an equally familiar mixing console view with faders, knob, insert slots, etc.

As shown at left, you can have multiple alternate windows sporting variations on



Luna allows multiple "alternate" windows showing variations on the timeline or mixer layout. A nice take on screen sets or multiview.



This is a basic Luna timeline layout. On top are the transport and main options, as well as one version of the drop-down “workflow” menu. Below are the focus browser, focus channel strip, track headers and timeline, and monitor strip.

these two main layouts. The image shows three; you can have more.

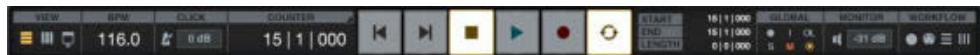
While not revolutionary, Luna’s layout is logically organized, allows you to show or hide just about everything, and the graphic designers somehow managed to marry skeuomorphism and 2D modernity in an agreeable fashion. Tastes vary, but I like the look.

That said, there’s quite a bit of tiny, low-contrast text. The interface doesn’t scale, so I had to crank my display’s brightness and run at 2048x1152 on my 27-inch 5K iMac. Sharper eyes probably won’t care.

From left to right, the timeline window contains a “focus browser” where you’ll find instruments, presets, track lists (show/hide) and options pertaining to the current

task or object; a “focus channel” mixer strip for the currently selected track; track headers that contain the arm, solo, mute buttons, etc.; the timeline/track display with rulers for beats, time, samples, tempo, time signatures, and markers; and a mixer strip for the monitor mix.

The mixer is the aforementioned classic design, with slots divided into areas for Luna instruments; Unison (see The UA Ecosystem below) effects; as well standard inserts for other DSP and AU effects. Various items on the mixer can be shown or hidden, and strips can be grouped for wholesale changes. The Power, Remove, Copy/paste, and Set default buttons to the left of the mixer strips are “modifiers” that let you easily perform detailed configuration of multiple tracks.



The transport/control bar has the usual playback functions but also controls layout configuration.

At the top of both the timeline and mixer windows are the transport console/display section that hides drop-down “Workflow” menus providing editing, MIDI, recording, and mixing options/commands. There’s also the UA logo at the upper left which you click on to see advertising, the extension/instrument store, and change settings. You can hide any of the panes or rulers I’ve described except the transport, the timeline and mixer in their respective

views, and the bars and beats ruler.

As I said, I like the look, but as of this writing there’s an abundance of oddities, inconsistencies, and omissions. Several that jumped out immediately were the timeline not scrolling to keep up with the song; the lack of keyboard shortcuts to show/hide screen elements; and the right mouse button at times invoking a context menu (not nearly often enough), and other times mimicking the left button.



The basic Luna mixer layout. UA uses the Power, Remove, Copy/paste, and Set default “modifiers” to configure the mixer strips en masse.

RECORDING

Recording was a breeze, and rock solid. You can kick in and out of record mode at will while playing and doing other work without dropouts. Luna allows multiple versions of whole tracks, à la Logic, as well as classic “takes” generated from loop recording. Comping, i.e., taking the best bits from multiple takes is a tad tedious, forcing you to copy and paste to the “comp” take. There are currently no take lanes as with Logic or splitting a clip and scrolling through takes as in Ableton Live.



Recording with Luna. If you loop record, takes are added, otherwise recording over an existing clip merely sends it to the back.

Latency (the time from playing to hearing through the speakers) with Luna and the Apollo Twin X Quad (go.macworld.com/twnx) that UA loaned me was minimal with ARM (Accelerated Realtime Monitoring) enabled, but I didn't stack plug-ins on the input channel or cue mix as some do. I used only pre-amps with microphones and amp sims with guitars, and latency was certainly low enough to sing or play to.

One very nice touch: when you finish a looped recording, the last partial take is discarded if there's nothing meaningful in it.

EDITING

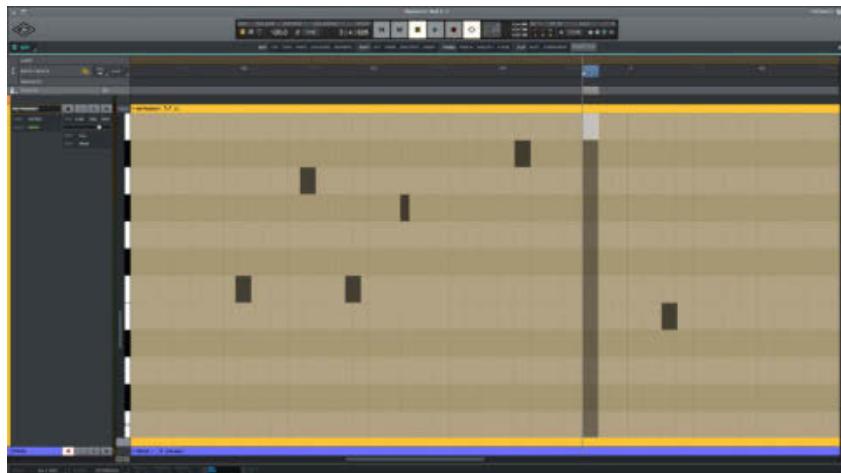
All editing in Luna is done inline on the tracks, directly to, or within the clips. Nearly all operations can be performed on multiple objects as well. The cursor

play, and affect only a portion of a MIDI/audio file.

There's a keyboard shortcut ("e") to expand clips to the full size of the visible timeline, so you won't miss a dedicated editor much, if at all. Automation can be edited either on top of the content, or in its



Gain and pitch transpose controls are available directly on audio clips but not MIDI clips.



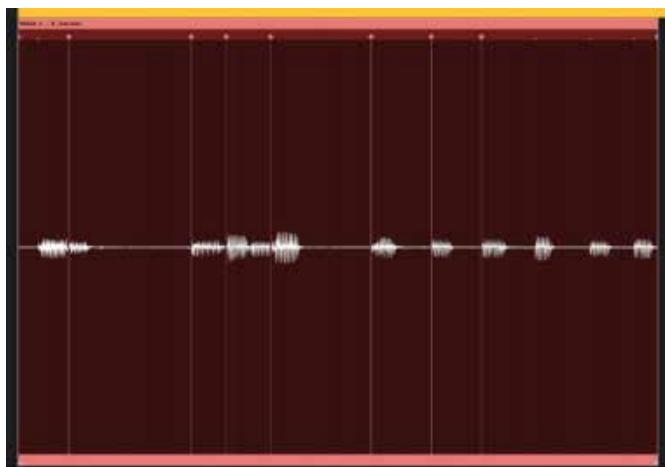
Editing a MIDI clip enlarged to fit the entire visible timeline in Luna.

own lane below.

MIDI editing can be destructive—you can change the actual contents of a MIDI clip, however, as with programs such as Ableton Live, audio editing is non-destructive. Instead, you alter the playback properties of clips such as start and end points, gain or pitch, and fades.

I found audio editing very straightforward and quick, and I like being able to adjust the pitch and gain right on the clip header. The exception was editing (moving, squeezing, or elongating notes) using Luna's audio

stretch/warp modes, of which there are six. Adding the warp markers is a breeze, but accurately moving them to the desired location was a bit difficult because the



Audio stretching and warping is laughably easy, if you have eyesight keen enough to see the faint grid lines.

ruler ticks and alignment grid are difficult to see. How difficult varied with the color of the clip. See below.

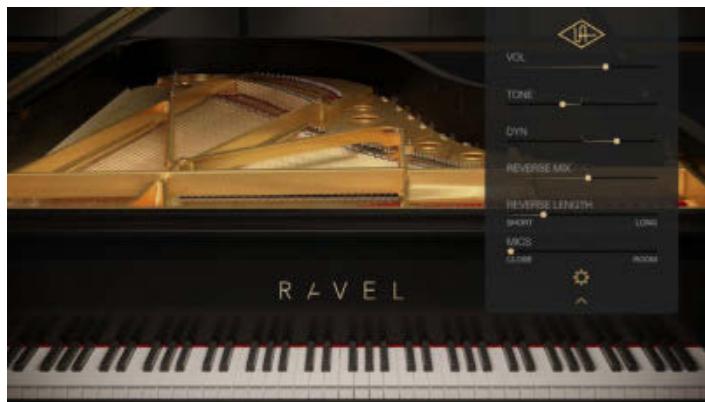
Basic MIDI editing, such as changing location, duration, pitch, velocity, muting, etc., is also a pushover. But you can't transpose the pitch of MIDI clips

as you can audio clips, and there's no stretching or compressing of notes in time to create tuplets, accellerandos or retardandos, etc.

Applying quantization (snapping notes to the grid) requires mousing to the focus panel, rather than a pop-up. Which brings me to my other observation about the Luna interface—it regularly forces your eye and cursor to the side (focus browser) and top (workflow menu) of the workspace rather than placing functionality where the user is currently focused. Do your eyes and hands a favor and learn the keyboard shortcuts ASAP.

INSTRUMENTS

UA has not only jumped feet first into the DAW market, it's entered into another related segment—virtual instruments. The



Universal Audio's Ravel piano instrument is a very nice sampling of a Steinway B.

included Shape features a remarkably high-quality set of sampled instruments; 10GB worth of keyboards, brass, strings and other stuff that all sounds great. UA is only the curator for many of the sounds, which are licensed from highly-rated vendors such as Spitfire and Orange Tree.

But this wouldn't be UA if there weren't pay options: Ravel, a splendid Steinway "B" grand piano, and Moog, a very nice rendition of the famous monophonic synth from the 70's. Both sound excellent, but are \$300 a pop and as with extensions, proprietary to Luna. You'll also find Spitfire symphonic instruments in the Luna in-app store.

Note that while it's not an issue for Luna's first generation Shape, Ravel, and Moog, there's currently no support for

instruments with multiple audio outputs such as EZ Drummer or Kontakt. You'll need to use multiple tracks and instances of the instruments as a workaround.

THE UA ECOSYSTEM

Luna is irrevocably entwined with UA's Apollo Thunderbolt interfaces, which feature anywhere from 1 to 6 DSPs (Digital Signal Processors) that run proprietary plug-ins, for recording or mix-down. How the Apollos sound is obviously key to whether you'll even want to consider Luna. Short answer: UA isn't stupid—they sound great.

The aforementioned \$1,399 Thunderbolt 2 Twin X Quad and its four DSPs impressed me with clean, virtually noise-free pre-amps and stellar output. But you can get that for a lot less. It's the DSP Unison plug-ins (go.macworld.com/unpg) that "...adjust the physical input impedance, gain staging response, and other parameters..." to mimic classic hardware that sets Apollos apart.

The Twin X interface ships with a bundle of useful, low-latency DSP-based plug-ins (Unison and not), ranging from famous channel strips, to reverb and compressors, and they all sound very good. If the free stuff doesn't do the trick, there's also a huge variety of pay-to-play offerings (go.macworld.com/p2pl). I demo'd a ton of them and each proved sonically superior.

I was particularly impressed by the

Ampeg B15 bass amp and Marshall guitar amp simulations and how responsive they were when I plugged into the high impedance (Hi-Z) input. With a Rode 1a and various other microphones, the pre-amp emulations rocked as well. There is a bit more input latency than with other interfaces due to the processing; however, it's not debilitating.

I'll leave the debate as to the quality or value of UA's interfaces and plug-ins versus other vendor's efforts to the forums—there's a lot of very good stuff out there. However, I will say that there's a very good reason that UA sells a lot of stuff.

The main drawback to the Twin X is that there are only three inputs and you can use only two at a time. UA, as with other vendors, lists the number of inputs and outputs (10/6 in this case) the interface can handle if you expand it with an ADAT preamp module.

But there's also the aforementioned DSP-only nature of the addictive UA plug-ins. There's a chart at the UA website (go.macworld.com/uawb) that tells you what percentage of the DSP's juice is used by each plug-in at 44.1kHz. Multiply by how many you'll use to determine how many DSPs and which interface you'll need.

Be aware that UA doesn't supply Thunderbolt cables with any of its interfaces. So if you're buying new, add one of these cables to your order, or seek a vendor that includes this cable for free.

Universal Audio's TwinX Duo audio interface. With two DSPs and two inputs (the Hi-Z interrupts one of the mic inputs), it allows tracking two instruments or processing two channels during mixdown. More inputs can be added via ADAT.



ENTICING, BUT NOT FOR EVERYONE

I'm incredibly impressed with Luna and its potential, but here's a quick dose/recap of the considerations.

- Luna requires a Universal Audio Thunderbolt audio interface and other brands of interfaces can't be used in conjunction (ADAT preamps excluded).
- Luna's extensions and instruments are proprietary and require iLok (account or dongle).
- All UA plug-ins are DSP-only and limited by its power.
- Luna doesn't currently support hardware controllers of any type. Push, Roli, mixing consoles, etc.
- There's no support for using interface I/O to loop in external hardware effects. (hardware inserts)

➤ Only the more recent Mojave and Catalina versions of macOS are supported, though some have reported success on High Sierra. I tried it, I had issues.

Luna isn't even for all UA owners, many of whom use Windows. A version for that OS has been hinted at, but not promised. USB Apollo interface owners are out of luck as well, as UA has said it needs the capabilities of Thunderbolt to perform Luna magic.

Additionally, Luna is singularly focused on recording and basic editing. Outside of the ARP arpeggiator extension, there are no features for those that like to dabble with beat, note, or sound creation. There's no side-chaining either, which is a huge deal for EDM (Electronic Dance Music) types.

I've already mentioned cost several

times, and UA hardware and plug-ins are indeed pricey by struggling musician—excuse me, *frugal* artist—standards. However, \$10,000 for a 16-channel Apollo setup with all the trimmings, i.e., all the DSP plug-ins, or around \$6,000 for just the hardware and bundled plug-ins that includes Luna is pretty reasonable for the audio heart of a small studio. It's sure as heck a lot cheaper than buying all the hardware it will emulate.

If the \$1,399 price tag of the Quad is a bit much for you, the Twin X Duo has the same preamps and AD/DA with half the DSP power for \$899, and would likely have done just as well in my low-stress tests. The X4 ([go.macworld.com/axp4](#)) has four preamps for \$1,799. If I were going UA, I'd opt for the latter, or step up to one of the rack mounts to be sure I never ran short on DSP.

BOTTOM LINE

Kudos to Universal Audio for releasing a largely stable, keenly-focused DAW with fantastic sounding plug-ins and instruments. It's highly

functional right out of the gate, if not feature-complete. Extra praise for letting it out into the world early so bored shut-ins can play with it. UA users will no doubt enjoy the experience.

Outsiders contemplating a move to the

UA/Luna-verse should probably hold off for at least a couple of months until the company has ironed out the wrinkles. Unless of course, you're intensely curious and have the bucks to scratch the itch. At the very least, those bucks will buy you some extremely capable, aurally pleasing hardware and plug-ins.

Luna is a shipping product, so it gets a rating based on its current state and suitability to task compared to similar products. There are just a few too many gaps to ignore, however—yes, no good deed (the early release) goes unpunished. But it's not hard to imagine Luna getting better when development is a bit further along.

As there's no way to preview Luna without UA hardware, you can check out the documentation here ([go.macworld.com/lndc](#)). ■



Universal Audio Luna Recording System 1.0

PROS

- Tight integration with UA Thunderbolt audio interfaces (required) and DSP plug-ins.
- Infinite undo and redo across sessions.
- Free if you own the proper hardware.

CONS

- Immature interface and feature set.
- No support for third-party hardware of any kind.

COMPANY

Universal Audio



Universal Audio Apollo Twin X Quad

PROS

- Great sounding mic preamps and Hi-Z input.
- Handsome and easy to use.
- Excellent sounding DSP effects plug-ins that can be used for recording and mixing.

CONS

- Very expensive for the average user.

COMPANY

Universal Audio



ANTIVIRUS SUITE

AVAST PREMIUM SECURITY FOR MAC: EXCELLENT, BUT SHOULD YOU BUY?

BY IAN PAUL

We heaped praise on Avast's top-tier product in 2018, then called Avast Security Pro (go.macworld.com/avpr), for its solid malware-fighting capabilities and a modern interface. In the two years since then, Avast renamed the product Avast Premium Security, but its protection is as strong as ever.

On the privacy front Avast has had a rougher time. In early 2020, the company suffered a huge privacy black eye related to data collection that has since been ameliorated. You can read all about it on *PCWorld* (go.macworld.com/blki).

AV-Test (go.macworld.com/tsav) most recently tested Avast's malware

capabilities (go.macworld.com/avml) in March 2020. The suite earned a 100 percent detection rate from 58 samples in its widespread and prevalent malware test. In December 2019, it also had a 100 percent detection rate from 145 samples.

AV-Comparatives tests (go.macworld.com/cmpt) Mac software once a year with its most recent tests at this writing dating from June 2019. Here, too, Avast received high marks earning 100 percent malware protection from 585 samples of Mac malware. It also had a 100 percent detection on 500 samples of Windows malware. Not a huge surprise considering Avast is equally effective on Windows.

In our own spot tests, Avast did very well detecting everything we tried the minute it was unzipped. It also prevented some online threats as soon as they were downloaded. The web threat test we used

isn't something the average user is likely to see.

To even get to the point of downloading known malware from the web you have to click through a lot of warnings from the OS. Still, it's nice to know that Avast can act as a final line of defense.

As before, Avast's Web shield doesn't rely on plug-ins and does an effective job. To make any adjustments to web protection, users have to jump into Preferences → Core Shields.

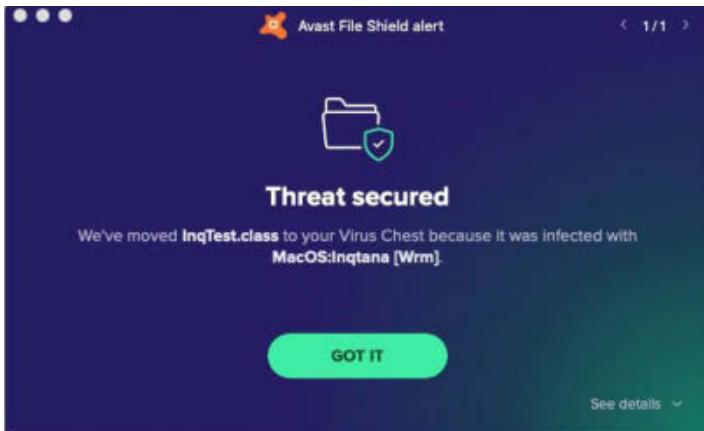
Avast calls its primary protection modules Core Shields: File Shield, Web Shield, Email Shield, and Real Site. Web Shield and Real Site comprise the web browsing protections.

From the primary dashboard all you can do with any of these shields is turn them on or off. To adjust them, you need to dip into Preferences → Core Shields. Here you can add exceptions for any of the shields, save Real Site, which appears to be inaccessible by the user. There isn't much here the average user would want to turn off, but it's there for power users who might need to make temporary adjustments.

Avast Premium Security



The Avast Premium Security Dashboard.



An example of Avast Premium Security's detection alerts.

is also packing ransomware protection. Click on the Ransomware Shield from the dashboard to specify which folders you want monitored. By default it adds

Documents and Pictures, and then it's up to you to add others if needed.

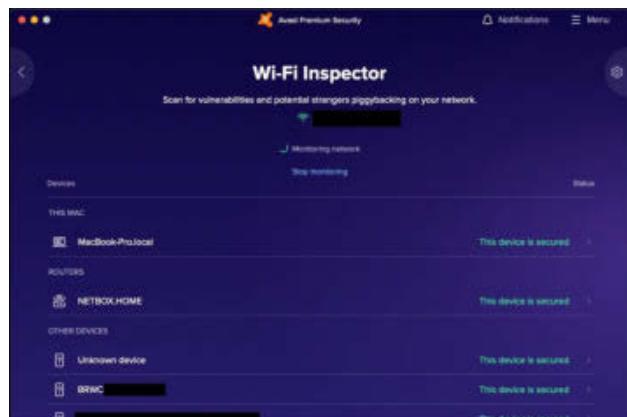
Avast has a Wi-Fi Inspector that displays all devices that are connected, or recently connected, to your home network. This is a nice feature and helpful for those who want to get a good sense of the devices on their network. Premium subscribers also get alerts when new devices join the network, which can help monitor for potential intruders. At first, however, you'll get a good number of

alerts as Avast sees phones, tablets, and other devices connecting for the first time.

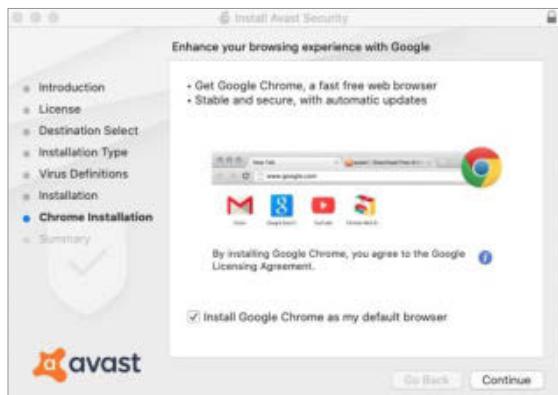
The network monitoring feature is nice, but it needs some work. Many of the devices aren't properly named. Instead, they're identified by vendor or some other cryptic

identifier. If you know how to find the local IP address of each device then you can figure out which is which, but it takes a little work.

During installation Avast tries to install Google Chrome onto your Mac. Chrome is a well respected web browser, and you can



Avast for Mac's Wi-Fi Inspector.



Avast Premium Security for Mac tries to install Chrome and make it your default browser.

opt out, but depending on your views on privacy and security you may classify it as a “potentially unwanted program.” Plus, it just doesn’t help the trust factor when a security program is trying to install software you didn’t ask for.

There are also upsells that you’ll come across in the early moments with Avast Premium Security. Avast sells subscriptions to SecureLine VPN as well as Avast AntiTrack. The latter is an online feature that disguises any identifying features of your PC to prevent tracking and targeted ads, and it automatically clears your browsing data. AntiTrack costs about \$70 per year, but a lot of these features can be had for

free with the right browser add-ons and adjustments to your browser settings.

BOTTOM LINE

We really question whether it’s worth it to pay for Avast Premium Security right now. Not because the program isn’t top notch (it is), but because you get so much with Avast’s free version. The difference between Avast Free and Premium comes down to two features: Wi-Fi Intruder Alerts and the Ransomware Shield.

For some people, ransomware protection is a no-brainer and well worth the cost of \$70 per year, per Mac. Others willing to do without, however,

can be served well with the base package that includes nearly everything we’ve touched on including the Wi-Fi Inspector (sans real-time alerts when new devices hit the network).

With extra services such as AntiTrack and even a small free amount of VPN every month, Premium Security would be well worth the cost. We’re just not convinced that ransomware and network alerts are enough to seal the deal for most people. ■



Avast Premium Security

PROS

- High rated protection.
- Simple, straightforward interface.
- Ransomware is configurable by file type.

CONS

- Premium Security value may not be enough for some.
- Tries to install Chrome and change it to your default browser.

PRICE

\$70

COMPANY

Avast

Hot Stuff

What we're raving about this month

ADT BLUE INDOOR CAMERA

bluebyadt.com

The Blue Indoor Camera offers several features that cost a premium on competing cameras. The first is the ability to set motion detection zones. There are also settings to restrict alerts to certain hours of the day. When the camera is triggered, it will record for up to 10 minutes. The camera offers a 130-degree view, which is plenty wide enough to see most of what's going on in most rooms. It also packs a carbon monoxide and smoke alarm siren sensor. —**MARTYN WILLIAMS**





Hot Stuff

MEURAL CANVAS II

meural.netgear.com

Available in two sizes (16x14 and 19x29 inches), the Meural Canvas II is essentially a digital picture frame. But it's nothing like the cheap tabletop photo frames introduced in the 1990s. The Meural consists of an Advanced Hyper-Viewing Angle LCD panel capable of displaying 16.7 million colors at a resolution of 1920x1080 pixels. In addition to that, the Meural glass is treated with an anti-glare coating that prevents reflections from detracting from the art. You can upload your own digital images and also subscribe to a service that provides over 30,000 curated works. —ROMAN LOYOLA



ELECHOME A3B

elechomes.com

The A3B uses a medical grade HEPA 13 filter with a 4-stage filtration system to capture 99.97 percent of common airborne pollutants. It also provides convenient Wi-Fi control and plenty of data to optimize your air quality around the clock. The A3B covers up to 325 square feet and is also extremely quiet; you won't hear it unless you're in the same room, and even then, it makes a gentle hum. —MICHAEL ANSALDO



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8 kids a day are accidentally killed or injured by **FAMILY FIRE**.

FAMILY FIRE is a shooting involving an improperly stored gun, often found in the home.

ENDFAMILYFIRE.org

Ad
Council

Google Pixel 4a vs. iPhone SE: Can a cheap Android handset beat Apple's best-ever budget iPhone?

Look out Apple, there's a new low-cost competitor in town.

BY MICHAEL SIMON



The iPhone SE might be Apple's unexpected hit of 2020, but there's a new competitor in town: the Google Pixel 4a (go.macworld.com/4arv). But Google's newest midrange handset is going to need a lot more than a low price to

take on Apple's mighty budget blockbuster. Here's how the two smartphones measure up.

DESIGN

I never thought I'd see the day when Google designs a nicer phone than Apple,

but it is hard to deny the Pixel 4a's good looks. It has relatively slim and uniform bezels all around thanks to its hole-punch camera, an extremely compact and light frame, and a classy all-black exterior. Even with a far-bigger display, the Pixel 4a has similar dimensions and weight as the SE:

Pixel 4a: 144 x 69.4 x 8.2mm, 148 grams

iPhone SE: 138.4 x 67.3 x 7.3mm, 143 grams

When it comes to the back of the phone, the SE has the advantage. Not only does the Pixel 4a have an ugly and largely unnecessary camera array, it's also made of plastic and comes in just one color—black. The SE, on the other hand, comes in three colors and is made of glass, so it

feels more luxurious and is less prone to scratches. Even the camera bump is nicer on the SE, with a single circle surrounded by an aluminum ring.

But the front is all that really matters when buying a phone, and the 4a excels. The iPhone SE isn't an ugly phone by any stretch, but it certainly shows its age compared to the 4a. From the gigantic bezels to the small display, the iPhone SE simply isn't as modern as the Pixel 4a, and Google has put some pressure on Apple to update its design with the SE 2.

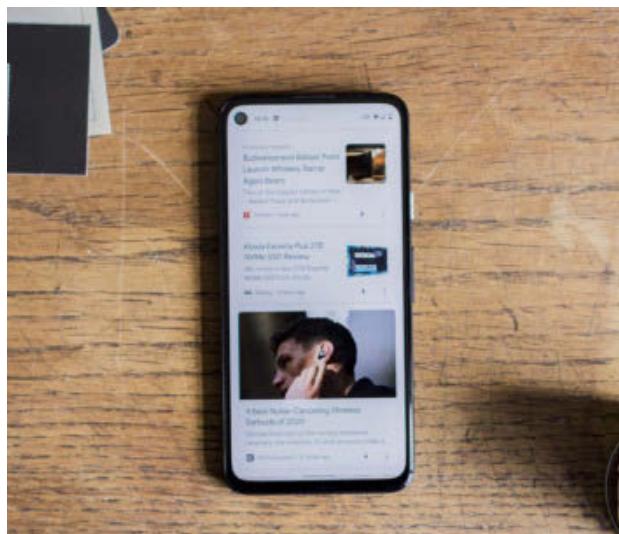
DISPLAY

Along with the iPhone SE's outdated design comes an outdated display. Nearly every other phone has better screen specs, and the Pixel 4a is no exception:

Pixel 4a: 5.81-inch Full HD+ OLED, 1080x3240, 443ppi

iPhone SE: 4.7-inch HD LCD, 750x1334, 326ppi

The Pixel 4a also supports HDR, 10,000:1 super contrast ratio, and of course, the true blacks of OLED displays. The iPhone SE's screen is probably the best LCD ever made for a smartphone, but it can't hold a candle—or even a high-res photo of a candle—to the Pixel 4a.



The Google Pixel 4a has a much higher screen-to-body ratio than the iPhone SE.



The Pixel 4a isn't slow, but it's nowhere near as fast as the iPhone SE.

SPECS AND PERFORMANCE

Here's where things start to even out. The Google Pixel 4a is a midrange phone with midrange specs while the iPhone SE is more of a high-end phone trapped in a budget body:

Pixel 4a

Processor: Snapdragon 730G

RAM: 6GB

Storage: 128GB

iPhone SE

Processor: A13

RAM: 3GB

Storage: 64GB

You get twice as much storage with the Pixel 4a, but don't be fooled by the iPhone's seemingly smallish amount of RAM. Apple

doesn't play the spec sheet game with its phones, but the iPhone SE is one of the speediest phones around, with a processor that runs circles around the latest Snapdragons, let alone the 730G here.

Both phones have Bluetooth 5

and NFC for contactless payments, but the SE also supports Wi-Fi 6 (802.11ax) while the 4a stops at Wi-Fi 5 (802.11ac).

Neither phone has 5G on board, but Google has announced that a 5G version will be arriving later this year for a \$150 premium over the LTE 4a. As far as we know, there won't be a 5G iPhone SE until at least next year, so that could give the 4a a speed advantage even with a higher price tag. But for now, the iPhone SE is a better performer.

BATTERY AND CHARGING

Neither of these phones are going to win any awards for their batteries, but on paper Google takes the crown:

Pixel 4a: 3140mAh

iPhone SE: 1821mAh

But like the specs above, numbers don't tell the whole story. Google says the

Pixel 4a will last up to 24 hours “based on a mix of talk, data, standby, and use of other features” (down from the 30 hours in the Pixel 3a), while Apple claims you can get up to 14 hours of talk, 12 hours of internet, and 12 days of standby. So the two phones will likely both last you through a full day before they need to be charged.

Both handsets support 18W fast charging, but only the Pixel 4a includes the appropriate adapter. You’ll need to BYO with the iPhone SE. However, you’ll get wireless charging with the iPhone SE (also with a supplied adapter).

CAMERA

The Pixel 4a and the iPhone SE both have single cameras, and the specs are quite similar:

Pixel 4a: 12.2MP wide, f/1.7, OIS

iPhone SE: 12MP wide, f/1.8, OIS

But the hardware similarities are very skin deep. While both phones support portrait mode with depth control, HDR, and excellent zoom up to 5X even without a proper telephoto lens, the Pixel 4a is the superior performer, with a slew of premium features that you won’t find on the SE, at least not without third-party apps.



The iPhone SE has a very similar camera to the Pixel 4a, but it doesn't have as many tricks.

Chief among them is Night Mode, which is stellar on the iPhone 11 but completely absent from the SE. There’s also astrophotography, which lets you take pictures of stars with the aid of a tripod, as well as dual exposure controls for adjusting highlights and shadows. The iPhone SE has a great camera, but the Pixel 4a is just a little better, at least on paper.

OS AND UPDATES

We won’t get into the iOS versus Android debate here, but both phones come with the newest version of their respective OS (Android 10 and iOS 13), but the difference between the two systems is more than apps and features. Google promises just three years of Android updates with Pixels,

while Apple doesn't put a limit on how many updates you'll receive. But it's almost guaranteed to be longer than three years.

Take, for example, the iPhone 6s, which launched in 2015 with iOS 9. It will receive iOS 14 in the fall, representing five years of updates and four full version upgrades. With that in mind, it could mean the iPhone SE will likely be able to install iOS 18 when it lands in 2024.

The Pixel 4a, on the other hand, will get Android 11 in a few months, then Android 12 and 13, but that's probably it. Even if Google throws users a bone and lets them update to Android 14, which will likely launch just weeks after its cut-off date, the phone probably won't receive any updates once the calendar changes to 2024.

PRICE

Apple is selling the iPhone SE at an aggressive \$399 price tag, but Google is going even cheaper with the Pixel 4a: \$349. That might be just 15 percent less, but it is a pretty significant psychological discount, especially when you factor in the traditional

Pixel discounts Google and other retailers often run.

BOTTOM LINE

The iPhone SE has been the phone to beat since its launch in March, and there hasn't been much in the way of any serious competition. But Google might have done it with the Pixel 4a. From the design to the camera and lower price tag, the Pixel 4a is truly Android's answer to the iPhone SE, and Apple just might have met its first serious threat. We'll have comparisons and a full review soon on PCWorld. ■



The \$50 difference in price between the iPhone SE and the Pixel 4a is bigger than it seems.



I tried switching from the 13-inch MacBook Pro to the 12.9-inch iPad Pro. Here's why I failed

I learned a lot though.

BY MICHAEL SIMON

I really wanted it to work. A while ago, I closed my MacBook on a Friday afternoon with no plans to open it for a week. I wasn't going on vacation—rather, I was testing the theory that the iPad could actually be "a computer."

My setup was as high-end as you could get: a 12.9-inch iPad Pro with 1TB of storage and cellular connectivity, a Magic Keyboard, and an Apple Pencil—a setup that's more expensive than the 13-inch MacBook Pro I got it in 2016. It looked

great on my desk and felt every bit like the future Apple sells. When I snapped the iPad into its magnetic enclosure, I truly hoped it could replace my MacBook with a sleek, modern, and versatile device.

Sadly, it didn't work out. I spent more time fighting my iPad than loving it, and when push came to shove, it was just too difficult to get things done as quickly and efficiently as I do on my Mac. Some of it is muscle memory, of course, but there are still fundamental issues with the iPad that prevent it from being the work-first device Apple wants it to be. So I'm giving it up.

While there's a lot to like about the iPad Pro and Apple's whole tablet experience, it isn't as simple as a trackpad being the missing link between it and the Mac.

THE CURSOR ISN'T REVOLUTIONARY

The iPad Pro didn't just gain a trackpad, it also gained a "reimagined cursor experience" that Apple says is "the biggest thing to happen to the cursor since point and click." Its circular design is definitely unique, but I found it to be more



The cursor needs some help.

frustrating than fun.

From the size to the slight parallax effect when the cursor hovers over an icon, the whole system feels surprisingly amateurish and cheap. Even beyond aesthetics, the cursor just felt more laborious than it should. The contextual awareness took too long with some fields, wasn't always recognized by text fields, and made me long for the classic arrow on my Mac.

MULTITASKING IS REALLY NOT GOOD

One of the main reasons why Apple split iPadOS from iOS is its multitasking advantages. But while multitasking with my Mac is effortless and seamless, on the iPad



Switching between apps is great on the iPad, but multitasking is a confusing mess.

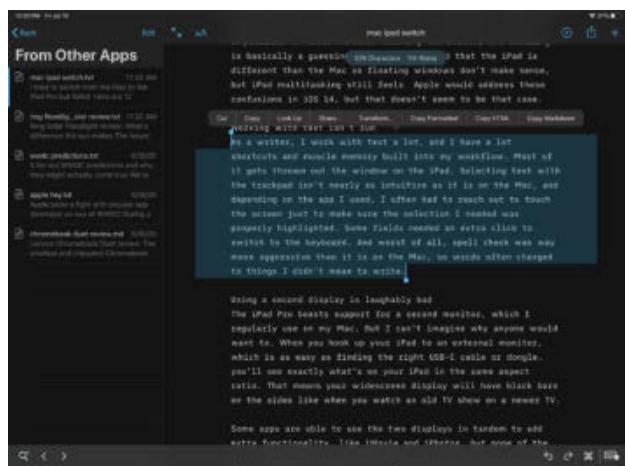
it's kind of a confusing mess, especially when using the trackpad. Split View apps need to be opened from the Dock, a Slide Over window is impossible to close without touching the screen, and resizing is basically a guessing game.

I understand that the iPad is different than the Mac, so floating windows don't make sense, but iPad multitasking still feels perplexing. I thought Apple would address these confusions in iPadOS 14, but that doesn't seem to be that case.

WORKING WITH TEXT ISN'T FUN

As a writer, I work with text a lot, and I have a lot of shortcuts and muscle memory built into my workflow. Most of it gets thrown out the window on the iPad. Selecting text with the trackpad isn't nearly as intuitive as it is on the Mac, and depending on the app I used, I often had to reach out to touch the screen just to make sure the selection I needed was properly

highlighted. Some fields needed an extra click to switch to the keyboard. And worst



Whether using touch or trackpad, text on the iPad Pro is frustrating to work with.

of all, spell check was way more aggressive than it is on the Mac, so words often changed to things I didn't mean to write.

USING A SECOND DISPLAY IS LAUGHABLY BAD

The iPad Pro boasts support for a second monitor, which I regularly use on my Mac. But I can't imagine why anyone would want to. When you hook up your iPad to an external monitor, which is as easy as finding the right USB-C cable or dongle, you'll see exactly what's on your iPad in the same aspect ratio. That means your widescreen display will have black bars on the sides like when you watch an old TV show on a newer TV.

Some apps are able to use the two displays in tandem to add extra functionality, like iMovie and Photos, but none of the apps I regularly use benefitted

from the extra space. So even though I can expand my display on the Mac and gain three times the space for apps, hooking up my iPad to the same display merely made it a little bigger.

The iPad desperately needs a desktop mode, but unless Apple has a surprise up its sleeve, it looks like we'll be waiting until at least iPadOS 15.

THE MAGIC KEYBOARD ISN'T SO MAGICAL

As soon as I put my fingers on the Magic Keyboard's keys, I was in love. Typing is a million times better than on my butterfly MacBook Pro and on the Smart Keyboard, and I really hated to give it up. I like it so much, in fact, I just bought a Bluetooth Magic Keyboard to go with my MacBook.

But the magic ends there. It's too heavy, too rigid, and too hard to open. The

iPad doesn't easily come off like it does in Apple's marketing shots. The trackpad is too small compared to my Mac, and it's missing a function row. And the Apple logo is still sideways when you restart.



This isn't gonna cut it, Apple.

I do like that I'm



With the Magic Keyboard attached, the iPad Pro is about the same size as the 13-inch MacBook Pro—but it's way heavier.

able to use it on my lap thanks to its excellent weight distribution, but the iPad Magic keyboard is still a few generations away from being perfect.

WORKING WITH PHOTOS IS A STRUGGLE

The iPad has come a long way as a productivity tool, and there's a lot I can do now that I couldn't before. My VPN and CMS worked very well, my external hard drive was instantly recognized, and working with Word was a breeze. In fact, I only had to open my Mac twice. To print and to properly crop a photo I took.

On my Mac, working with photos is easy. Just pop in the card, transfer the pictures to my desktop, open them in Photoshop, and make the necessary

edits. On the iPad, it's not so simple. While my camera's card was recognized, it wasn't so easy to edit my photo—and all I needed to do was crop it to a specific size. Photoshop doesn't recognize RAW, Lightroom wouldn't let me easily customize a crop, and Photos balked at properly importing the images so other apps couldn't access them. I couldn't

even find a way to rename a photo in Photos to upload it to my CMS. Thankfully my Mac came to the rescue when I got desperate, but the iPad still has a long way to go when it comes to photo editing.

THERE AREN'T ENOUGH USB-C PORTS

Even if you spring for the Magic Keyboard, you still only get two USB ports on the iPad Pro—and only one of them can handle peripheral devices. If you want to plug in a monitor and a hard drive, you're out of luck with buying a hub.

And while I'm wishing, it's in the wrong spot. It should be near the bottom edge so you don't need to see a cable dangling every time you need to plug something in.



The single USB-C port on the iPad Pro isn't good enough.

FACE ID IS GREAT WITH ONE ANNOYING LIMITATION

When it works, Face ID is nothing less than a revelation. Pop open your iPad, look at the screen, and violà, it's unlocked.

The same goes for logins and authentication. It's far superior to Touch ID and needs to make its way to the MacBook.

But that magical experience stops at the App Store. Face ID is supported for buying apps, of course, but the system isn't nearly as seamless as it is with unlocking password managers and other apps. Just like your iPhone, you need to double-click the power button to confirm your purchase,

which isn't the easiest thing to do when docked. It might seem like a small thing, but when you're buying a few things each day, it takes you out of your element.

PRINTING IS ANNOYING

I have a relatively old Brother printer that works perfectly well with my Mac,

Chromebook, and PC. But when I plugged it into my iPad to print something I needed for work, nothing happened. That's because, despite its USB-C port, the iPad



Face ID would be a welcome improvement over Touch ID on the MacBook.

only works with AirPrint-enabled printers. Apple lists a lot of them on its support site, but I don't see any reason why the iPad can't just work with any USB printer.

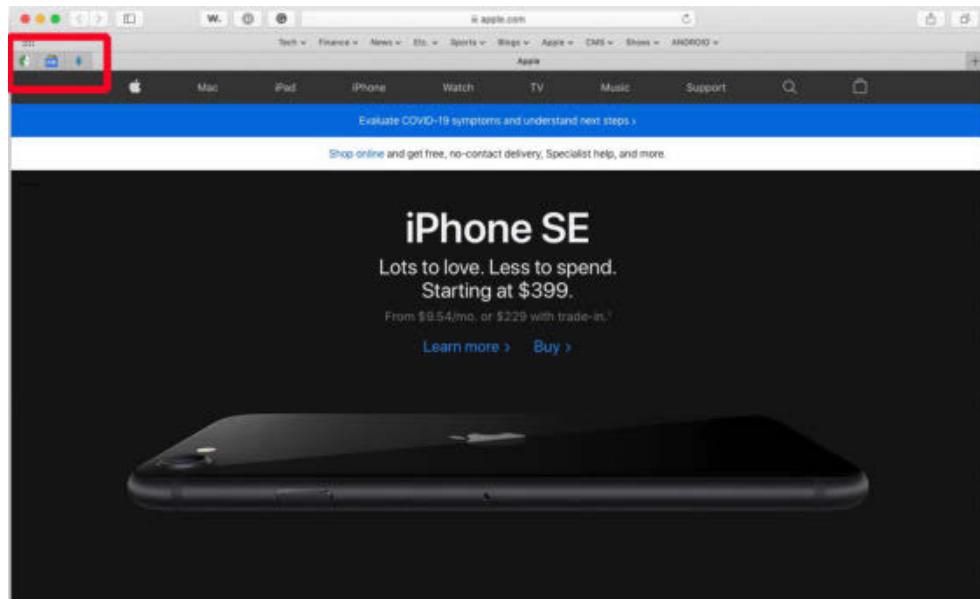
A STOCK CALCULATOR REALLY IS IMPORTANT

It's easy to point to one of the numerous calculators in the App Store or buy into the ridiculous excuse that Apple won't ship one until "we can do it really, really well," but the fact of the matter remains: a stock calculator app is sorely missing. It's not the kind of thing you think of until you need it, and on more than one occasion I had to reach for my iPhone just to do a simple

math problem. (A reader pointed out that you can do quick calculations using the search bar, but that's a workaround not a substitute—all I want is the Mac app in a PIP window when I need to do quick calculations.)

CHIP SPEED ISN'T EVERYTHING

Compared to the 2017 MacBook Pro I was using, the iPad Pro is insanely fast—and that's with an A12Z chip, not the newer A13. While apps and animations fly, the benchmarks didn't translate into a speedier experience, at least when it comes to my workflow. Even after I was



Pinned tabs on the Mac's Safari are more useful than they look.

comfortable with the gestures and navigation, everything on the iPad just took longer due to its less-intuitive multitasking and menus. But Apple's chips are ridiculously fast at the things they do, making the upcoming Mac transition extremely exciting.

I MISS TABS

If this was the iPad's only issue, I would probably be able to overlook it, but when added to the others here, it's just another frustrating example of the iPad's inexplicable shortcomings. On my Mac, I can keep small tabs to the left labeled with favicons so they're easy to access without intruding on my other tabs. Even with the changes coming to iOS 14, pinned tabs remain elusive on the iPad, making Safari on the Mac superior.

And speaking of tabs, why doesn't Ctrl-Z undo an accidentally closed tab like it does on the Mac?

MANY APPS HAVE A FRUSTRATING MIX OF MOBILE AND DESKTOP CONTROLS

On the iPhone and the Mac, you know what you're getting. Touch targets are big, navigation and menus are sensible, and the user experience is smart and adaptive. That's not quite how it is on the iPad. With an environment that straddles the iPhone and Mac, I often felt like I was fighting the

interface. No matter how fast they were, apps often felt like they were simultaneously too simple and too complicated. From Word to Tweetbot, even Photoshop, interfaces didn't know whether they wanted to be mobile or desktop, forcing my actions to be more deliberate than with my Mac. Even after a week, I never grew as comfortable with any of the interfaces as I am with my phone or PC, particularly when the keyboard was attached. Consequently, I worked slower than I did on either device.

BACK TO THE MAC

Suffice to say, I'm writing this on a MacBook Pro. There are plenty of things to like about the iPad Pro—the design, display, Face ID, and the overall zippiness—but it's just not ready to replace my Mac just yet. Perhaps it never will. With the upcoming transition to Apple's own processors, the line between the Mac and the iPad Pro will blur even further, but if anything, the core differences will only get deeper.

My main issues here—multitasking, display spanning, and the cursor—might never get to the point where longtime Mac users are comfortable with them, which might be the point. My biggest problem with the iPad Pro isn't that it's not a Mac—it's that Apple hasn't clearly defined what, or why, it is. ■

Looking at Apple's AR glasses with more clarity

What exactly would such a device do and what are the challenges it would face?

BY DAN MOREN

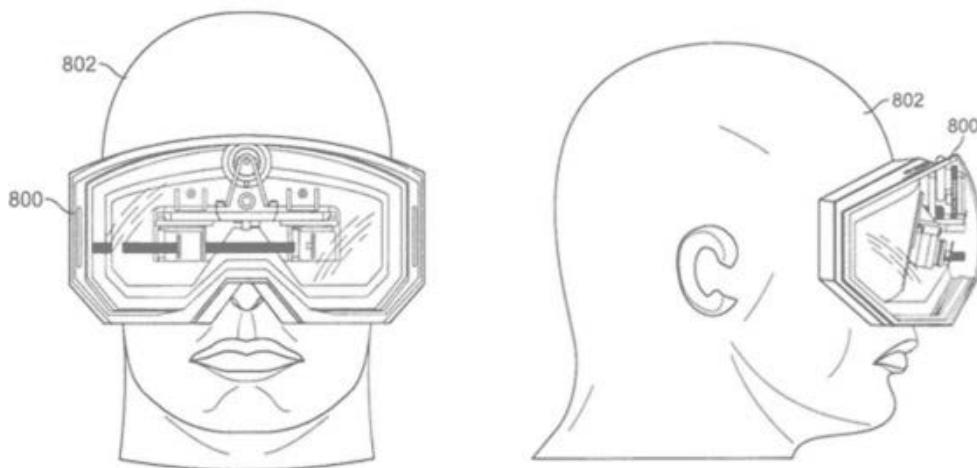


FIG. 8D

Rumors of an Apple augmented reality headset have been around for years, but in the last few weeks speculation has rapidly begun to ramp up, alongside suggestions (go.macworld.com/arap) that the product could be shown off as early as this year, and might even ship as early as next year.

On the one hand, maintaining skepticism is still healthy. Though Apple has had its share of product leaks over the

years, it's still a company that plays things extremely close to its chest—especially when it comes to prototype hardware. (Unsurprisingly, after the infamous incident [go.macworld.com/inct] in which a pre-release iPhone 4 was left in a bar nearly a decade ago, it's been extra cautious.)

But the sheer number of rumors and amount of speculation are probably based on something, so it's not a bad time to take a look at what a pair of Apple smart glasses could be, and the

challenges that they have to overcome.

AR, MATEY

Apple's been talking up augmented reality for what seems like forever, with Tim Cook frequently calling it out as a specific area of interest. What seems like hours of interminable AR

demos have graced the stage at Apple events, with people pointing iPads and iPhones at blank tables to show how they can interact with virtual objects. And the company recently rolled out the new iPad Pro (go.macworld.com/lpr0), its first device with LIDAR, which is a technology that has a lot of potential for AR.

But all of it has seemed lacking. Because, fundamentally, when you're using an iPhone or iPad to peer into a virtual environment, it's like peeking through the windows of a fancy house—hardly the kind of immersion that you're aiming for when you're pitching something as an improvement on reality.

Hence the potential of a device you wear on your face, where you don't have



Using AR on an iPad lacks a sense of immersion into the environment.

to hold up a rectangle to see the melding of the real world and the digital. It certainly seems like precisely what a company like Apple would be building to, after all this time of laying the groundwork. But Cupertino's not the first to try it.

IN YOUR FACE

Real, compelling AR devices are, if not quite the Holy Grail, then at least one of those products that tech companies have been trying to nail for years. Google Glass was the most prominent example when it launched back in 2013, and while it garnered a lot of attention, it never really caught on with the public. In some cases, it even earned a negative reputation, as its built-in camera raised many a privacy



Can Apple learn from the failures of Google Glass?

concern. Since then, companies from Microsoft to Snapchat have tried their hands at smart glasses or head-mounted displays, with varying levels of commitment and success.

But Apple's no stranger to entering markets late. It gets the benefit of seeing where those earlier projects have misstepped, which is one reason I'm guessing that we haven't heard, say, specific rumors about outward-facing cameras in the Apple glasses. As with the Apple Watch, iPhone, iPod, and even the Mac, Apple is no doubt biding its time to

produce a highly polished product that will seem like the natural expression of such a technology.

Another key factor that has hurt adoption of previous smart glasses is something tech isn't always great at: style. After all, smart glasses have to be something that you choose to wear on your face, not a piece of tech that can be hidden under a sleeve or tucked into a pocket. But Apple has always focused on making its devices beautiful and, with the Apple Watch, it spent some energy into trying to make them fashionable too.

Apple glasses are going to have to take that idea and put it at the forefront.

(Editor's note: The graphic at the top of this article is from a patent [go.macworld.com/pt13] Apple filed several years ago. Presumably, the company has moved beyond the design depicted in the image and patent.)

IF APPS COULD KILL

Looks and potential pitfalls aside, one big question remains: what exactly is this device for?

Apple's showed off a lot of things that augmented reality *can* do, from letting you play games that interact with the real world to apps that allow you to, say, measure a person's movement to help them treat an injury. That's a huge range of applications, and it certainly speaks to the potential of AR.

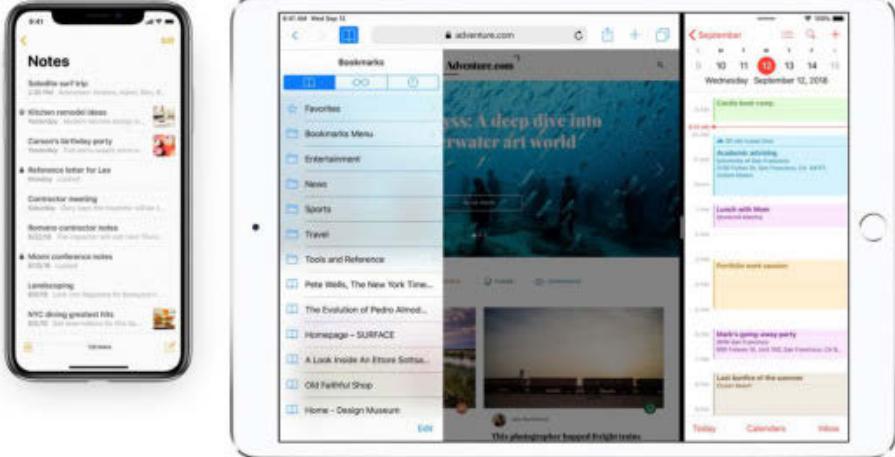
But rumor has it that the glasses will at first act as a satellite device, much like early versions of the Apple Watch, which makes the smart watch an apt precedent to look toward. What's needed with AR is a narrowing of focus, the same way that the Apple Watch at first attempted to be everything to everyone, but found more purchase once it ended up primarily dealing with fitness and notification.

As with the Apple Watch, I think unobtrusiveness is a key part of the device. I can't think of anything worse than a barrage of notifications floating in front of my eyes. Mapping and directions have always seemed a natural fit for AR, especially with Apple's recent re-building of its maps infrastructure, though in the current world environment, it may not be as compelling a use case as it once was.

But ultimately, it comes down to vision—if you'll pardon the expression. One thing Apple stresses whenever it introduces a new device or feature is the story of that technology. It helps transform something from a mere gadget into something that we look and say "Oh, that's what it's for." So while we might think we know what Apple's AR glasses are for, we're still missing the whole story. ■



It's thought Apple's glasses will at first act as a satellite device, much like early versions of the Apple Watch.



How to disable Wi-Fi on an iPhone or iPad and always use cellular data

You can set your device so it never connects to Wi-Fi, if you follow the right sequence.

BY GLENN FLEISHMAN

Sometimes, you want your iPhone or iPad to never connect to Wi-Fi. Instead, you'd prefer it to always use cellular data. You can disable Wi-Fi, but you have to use the right set of options and sequence to ensure it remains off.

Why disable Wi-Fi? Sometimes local service is poor or intermittent. While Wi-Fi Assist can help, you may want more reliable and consistent access, and not

want to "forget" the flaky Wi-Fi network, as you may need it in the future. (To forget a Wi-Fi network, go to Settings → Wi-Fi while the network is in range, tap the network's info button (i), and then tap Forget This Network and confirm it.)

One *Macworld* reader explained that they have no broadband, and rely on a combination of two iPhones and a portable hotspot, each of which is

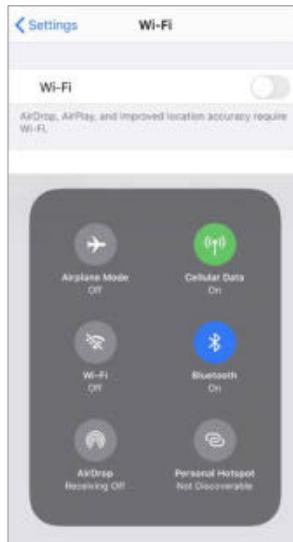
restricted to 15GB a month. Even using the phones as personal hotspots, they wind up in a battle of Wi-Fi connections to balance usage across devices; automatic Wi-Fi connections from the phones wind up causing problems. They use Airplane Mode at night to ensure no accidental background app or other unwanted usage.

The key to solving this is the right button and order.

Apple modified the Control Center in iOS 11 (go.macworld.com/mdcc) to provide better access to more options. One of the additions was the network “card,” a lozenge with four network icons in the Control Center’s upper left: Airplane Mode, Cellular, Wi-Fi, and Bluetooth. You can also long-press the card and have it expand to show two more options (AirDrop and Personal Hotspot).

Before iOS 11, the Control Center’s Wi-Fi button let you turn Wi-Fi networking on or off entirely. But starting with iOS 11, the Control Center Wi-Fi button is more like standby than off. Tap the button in its blue state and it turns white, which means you’re disconnected from the most recent network and the device won’t reconnect to a Wi-Fi network until 5 a.m. the next day.

What you want to do instead is open Settings → Wi-Fi and tap the Wi-Fi switch. When you look again in Control



Turn Wi-Fi off in Settings (top) and the Control Center expanded network view shows a gray icon with a slash through it and the Off label underneath.

Center, the Wi-Fi icon is gray with a line through it, and in the expanded six-icon view, the label Off appears below it.

In order to keep Wi-Fi entirely off while Airplane Mode is either on or off, don’t use the Control Center button. Rather, use Settings → Wi-Fi. If you tap Off there and tap Airplane Mode, you see that Wi-Fi remains off; tap Airplane Mode again to disable it and Wi-Fi is still off.

You can then toggle Wi-Fi networking as you will, including through the Control Center, until the next time you want to enable Airplane Mode. Be sure you use Settings → Wi-Fi before tapping, and that setting will be remembered when you disable Airplane Mode again. ■

Two Screen Time tips to keep kids from working around limits

Screen Time is a powerful tool for managing kids' screen time, but a couple settings make a big difference.

BY GLENN FLEISHMAN



The Screen Time feature available across iOS 13, iPadOS 13, and macOS 10.15 Catalina—as well as being part of Family Sharing—provides parents with strong tools for keeping track of their kids' screen usage and making sure they can't use their devices at all hours or for purposes that a parent hasn't allowed.

But I've found in my own household and from readers there are two critical

settings surprisingly easy to miss that let kids bypass management settings.

In Settings → Screen Time, you need to start with Use Screen Time Passcode. (You can also manage this in Family Sharing from Settings → account name → Family Sharing → Screen Time.) You can set a quiet period, called Downtime, control the apps that may be used, and set which contacts are ok for phone calls and messages during regular time and

Downtime.

What I have found I've sometimes missed and readers have, too, is a critical step: in the Downtime section, the Block At Downtime button at the bottom has to be set to on. If it's off, your child will be notified when they launch an app or visit a website that's not whitelisted, but they can tap to get more time or ignore the restriction for the rest of the day. (I have Downtime turned on for my devices to remind me to stop using software in the evening, but when I still need access, I can just tap.)

With Block At Downtime enabled, they can typically tap to get one more minute in an app or, with Family Sharing enabled, request more time. Or they can ask you in person to enter a code to grant more time. Without it, it's self regulated, though you can check via the Screen Time activity view if they're using it outside of agreed-upon hours.

The other setting to pay attention to is Screen Time

Downtime will apply to [REDACTED]'s devices. A downtime reminder will appear five minutes before downtime begins.

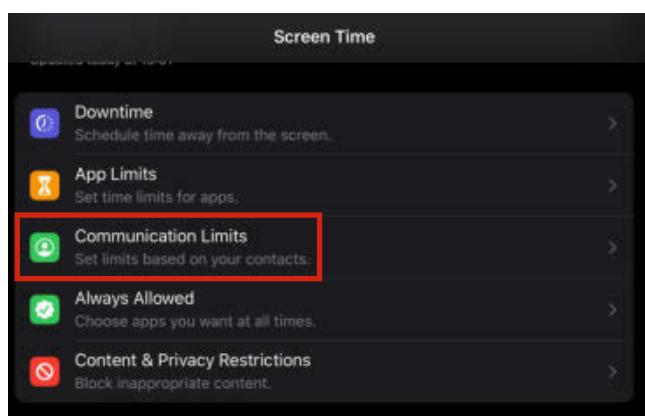
Block at Downtime



The device will be blocked at downtime. Benjamin will be able to ask for more time from a parent or guardian.

Block At Downtime puts the teeth into Screen Time limits.

→ Communication Limits. You can opt to restrict calls, texts, and audio/video chat separately for at all times and during Downtime. However, if you don't flip the Allow Contact Editing switch off, youth have a way around this: they can add phone numbers and email addresses to existing approved contacts. ■

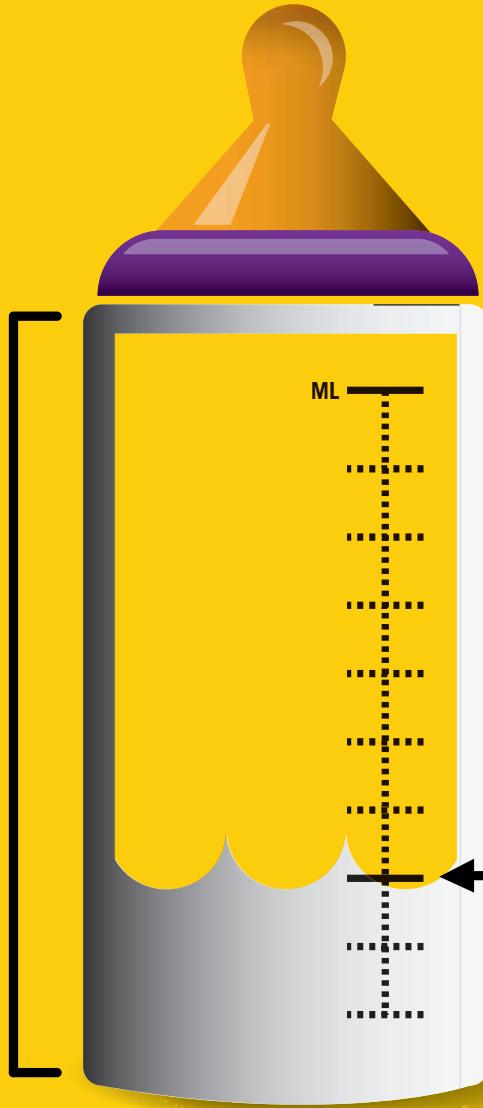


In Communication Limits, you can opt to restrict calls, texts, and audio/video chats.

**THE NUMBER
OF PEOPLE**

**WHO
THINK**

**THEY HAVE
THEIR CHILD IN
THE RIGHT
SEAT.**



**THE ONES
WHO
ACTUALLY
DO.**

**KNOW FOR SURE
IF YOUR CHILD IS IN THE RIGHT CAR SEAT.**



APPLE WATCH APP

WATCHSMITH: PERSONALIZE YOUR APPLE WATCH WITH CUSTOM COMPLICATIONS

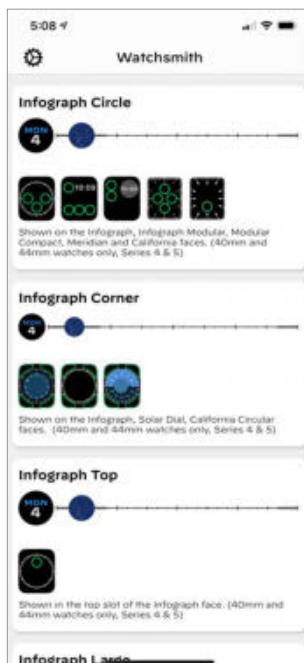
BY J.R. BOOKWALTER

Smartwatch owners love being able to customize the appearance of the Apple Watch face. With just a few taps on the screen or rotations of the digital crown, no two wrists look the same. But in typical Apple fashion, that personalization stops just short of perfection, since there's no way for developers to create truly unique third-party watch faces of their own.

Instead, Apple Watch lovers must rely on an extensive battery of complications to populate favorite watch faces with data relevant to each person. For those looking to go beyond this limitation, there's now an ingenious app designed to automatically display a wide range of complications on a given schedule throughout the day. It's the closest we'll likely come to custom Apple Watch faces.

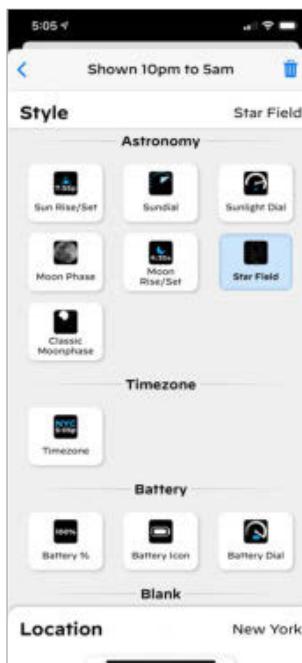
DYNAMIC COMPLICATIONS

Watchsmith (go.macworld.com/wsmt) is a clever iPhone app that allows Apple Watch owners to change what information



Watchsmith uses the iPhone app to personalize complications from several watch faces, although only newer models support all of the available Infograph options.

gets displayed from its supported complications, and when such data will be updated. In total, there are 43 different source options supported across 10 category styles: Date, Time, Calendar, Activity, Weather, Tides, Astronomy, Timezone, Battery, and Blank. (The latter provides a way for users to effectively “remove” a



With support for 43 styles across 10 different categories, Watchsmith offers a wide range of complication personalization choices.

complication entirely by replacing that part of the screen with solid black instead.)

Along with a number of variations like Meridian and California, there are currently six core watch faces Watchsmith is capable of working its magic on: Infograph Circle, Infograph Corner, Infograph Top, and Infograph Large for Series 4 and 5 models only, as well as Modular Small and X-Large, which also work on Series 1, 2, and 3. As the owner of an Apple Watch Series 3, this was initially somewhat of a disappointment, but thankfully Modular Small is our preferred watch face anyway. (The developer

plans to introduce support for other watch faces in the future.)

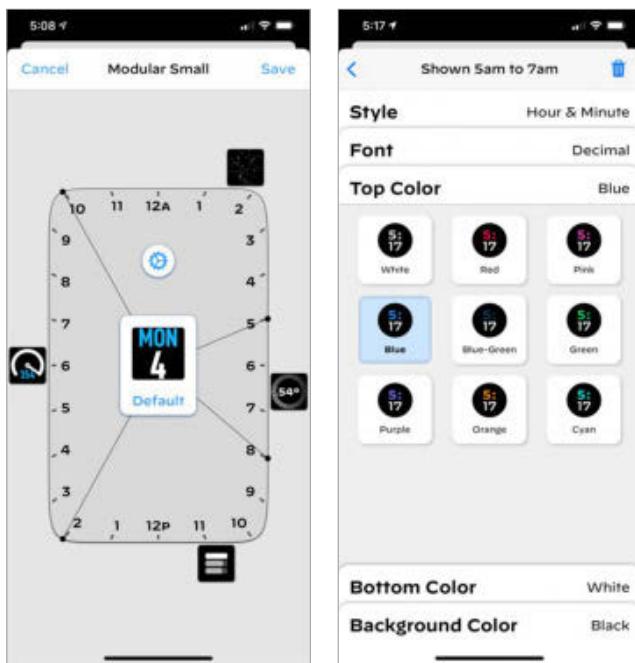
Everything is configured from the iPhone app, where you are first presented with a list of available watch faces, along with thumbnail images denoting which complications can be customized. As changes are made, they appear on a horizontal timeline relative to the daily

schedule you've configured. When the scheduled time arrives, Watchsmith replaces the default complication with one of your choosing—perfect for those with a similar routine each day.

ON SCHEDULE

To get started with Watchsmith, select a watch face you wish to personalize. The default complication is positioned at center, surrounded by a 24-hour analog clock used to determine when additional styles will be displayed. New complications are added by tapping the plus button, selecting a desired style, then adjusting start and end times.

Should you wish to keep the same length but change which hours a complication is active, simply tap, hold, and move that block to any unoccupied space on the clock dial. There can be as many different entries as there are hours in the day, although it's hard to imagine who might want to see a complication update 24 times between each sunrise.



Personalizing your complications is as easy as choosing a style, then selecting what time you want it to appear on your Watch.

Infograph watch faces can be configured in different colors, but older models are limited to the single color set in watchOS.

For any of the Infograph styles, Watchsmith can also change the color of the background, as well as top and bottom data. Modular Small and X-Large watch faces aren't supported since monochrome colors are dictated by watchOS, but any style with text also offers the option to change typestyle from six available fonts. (Note: The app requires watchOS 6 or later.)



Tapping on a Watchsmith complication opens the watchOS app, which includes shortcuts for displaying activity and other tools.

BONUS FEATURES

Despite primarily being geared toward personalization, Watchsmith has another trick up its sleeve. Tapping on any of its complications opens the watchOS app, which doubles as a handy dashboard with seven color-coded shortcuts for accessing Workouts, Weather, Health, Calendar, Astronomy, Games, or Timezones.

While few of these mini-apps are as full-featured as standalone solutions, they're still pretty good and conveniently

implemented. (One of two included games, Bounce is simply Pong in a circle, but quite addictive nonetheless.) Best of all, most of Watchsmith's features are free—only those requiring data from outside sources (currently Tide and Weather) require a recurring Premium subscription priced at \$2 per month or \$20 annually.

As versatile as Watchsmith is, there are one or two things it can't do because of watchOS limitations, such as add multiple copies of a single complication type to the same watch face. (The app won't prevent you from doing this, however. You'll just wind up displaying duplicates of the same data.) Other features I'd like to see implemented in future updates are support

for HomeKit shortcuts, Music controls, and Walkie-Talkie, all features I use on a regular basis, but not enough to dedicate precious complication resources to them.



Watchsmith

PROS

- Personalize, dynamically schedule Apple Watch complications.
- 43 available style options from 10 different categories.

CONS

- Series 1-3 models limited to Modular Small, X-Large watch faces.
- Can't add multiple instances of single complication type to same watch face.

PRICE

Free (in-app purchases)

COMPANY

Cross Forward Consulting

BOTTOM LINE

Although not quite the same as having real third-party watch faces, Watchsmith makes the experience of owning an Apple Watch more fun, especially if you prefer a more customizable experience and own one of the most recent models. ■



WEBCAM APP

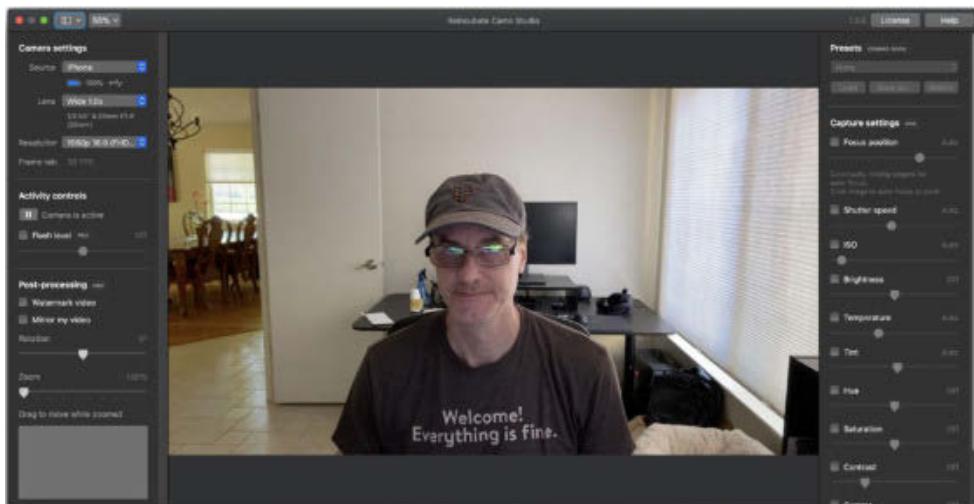
CAMO: TURN YOUR iPhone INTO A STUNNINGLY CAPABLE MAC WEBCAM

BY JASON CROSS



Every Mac (other than the Mac Pro and Mac mini) includes a built-in webcam, which Apple calls a FaceTime camera. And every single one, without exception, is total garbage. They top out at a paltry 720p resolution, with the exception of the iMac Pro's 1080p model. Resolution aside, they produce video that is grainy, blotchy, relentlessly underexposed, and with horrible dynamic range.

This is weird, because Apple also makes some of the best cameras you can buy on a phone or tablet. The iPhone and



The Camo interface is simple and straightforward with lots of useful controls.

iPad's cameras put not just Apple's crummy Mac webcams to shame, they outshine any webcam. Even the front-facing iPhone cameras!

Enter Camo (go.macworld.com/camo), a handy utility by Reincubate (go.macworld.com/rinc) that turns your iPhone into a Mac webcam. It's not the only method of doing so (go.macworld.com/nton), but it may be the best. With the steep price of \$40 per year, it'll cost you, but it's less than buying a new webcam (and because it's software, it's not sold out like all the good webcams are).

THE BEST WEBCAM IS THE ONE YOU HAVE WITH YOU

Now that millions of people who are lucky

enough to still have a job are working from home, we're all doing a lot more Zoom and Microsoft Teams meetings than ever before. Users who have never bothered to use the built-in camera on their MacBook are suddenly relying on it multiple times a week.

That's one good reason why decent USB webcams are perpetually out of stock these days. Instead of buying a new webcam, you can buy a piece of software that turns your iPhone into one.

The iOS app is free (go.macworld.com/iotr), but is just a connector to the Mac app, where all the magic happens. The free Mac app is limited to 720p resolution and only the standard wide or selfie cameras on your iPhone, and you can't disable the annoying

watermark. If you can live with it, it's already going to be a much better solution than any camera built into any Mac.

A one-year license costs \$39.99, but lets you remove the watermark and opens up 1080p video, all the cameras on your iPhone, and a whole mess of useful settings. You can adjust shutter speed, ISO, focus, temperature, tint, hue, mirroring, and more. It's a simple and intuitive interface, and it's all on your Mac—once you mount your iPhone into some sort of clip, you don't want to have to change settings with it.

On the opposite page, there is an example of the Camo interface. You don't have to know anything about cameras to quickly see where everything is and what it does; nothing is hidden under nested menus. The preview shows you all changes in real time. And while it's quite annoying to have your iPhone flash in your face, you can even turn that on and adjust its level if you're having a meeting in the dark.



Want to know how good it looks? The comparison shots show the Zoom meetings screen in identical lighting with three different cameras: the built-in FaceTime camera on my 2017 iMac, a Logitech C920, and my iPhone 11 Pro with Camo.

It's not even close. To beat your iPhone as a webcam, you'll need to use your DSLR (go.macworld.com/dslr), which can be a fairly expensive proposition.

Your iPhone will get a little warm while using Camo, as Reincubate does as much processing as possible on the phone side to reduce the load on your Mac.

BOTTOM LINE

Camo is simply one of the most full-featured, easy-to-use, and delightful ways to rectify the absolutely terrible Mac cameras with the iPhone you've already got. It doesn't yet work with *everything*, but the compatibility list (go.macworld.com/cmls) is long and growing. Odds are, it works with what you need it to work with.

Supported apps	
App	Supported
Zoom	✓ Yes, from 5.0.5 and above
Meet	✓ Yes, with Chrome, Firefox, Edge
GoToMeeting	✓ Yes
BlueJeans	✓ Yes, from 2.20 and above. Users report that Bluejeans' "Check for updates" function doesn't work, and it needs to be manually downloaded when an update is required
OBS Studio	✓ Yes
Streamlabs	✓ Yes
Twitch	✓ Yes
Twitch Studio	✓ Yes
Ecamim Live	✓ Yes

The list of supported apps is long and growing.

If I had to gripe about something, it would be the fact that it currently is only a camera, and does not pull audio from your iPhone's microphone. That feature is on the roadmap and should be available in an

update soon. Also on the roadmap: 4K resolution, Windows support, support for Portrait mode, chroma-keying, reduced iPhone power consumption, and Wi-Fi pairing.

Even with those features, the \$39.99 price seems steep. That would be a reasonable price to pay as a one-time fee, but a one-year license feels like it should cost half as much, or even less. ■



Camo

PROS

- Top notch video quality.
- Lots of controls, all from your Mac.
- Broad compatibility.

CONS

- Expensive at \$40 per year.
- No audio support yet.

PRICE

\$40 per year

COMPANY

Reincubate Camo

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There are career paths that you might not know about.
Whether you're making a change or just starting out,
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THESE COULD BE THE LAST VERSIONS OF TH



27-INCH iMAC (2020) REVIEW

THE LATEST
INTEL iMAC
LEAVES A
LASTING
IMPRESSION



THE iMAC AS WE KNOW IT. **BY ROMAN LOYOLA**



This could be it, you know. There's a pretty good chance this is the last version of the iMac as we know it, with its iconic all-in-one design and Intel processors. Maybe there's a chance that those Intel processors get a speed bump upgrade before switching over to Apple silicon (go.macworld.com/swth), but regardless, they're on their way out.

The iMac isn't going out quietly, though. The 2020 27-inch iMac gets your attention by being a top performer with a CPU boost, SSD storage, and updated graphics. It has other features to take into consideration—namely, a new nano-

texture glass front—but the emphasis is on speed. If you rely on software that takes advantage of multiple processing cores (video editors, graphics software, databases, etc.), the new iMac will satisfy your need for speed.

The iMac in this review is a built-to-order model with upgrades to the graphics card, processor, memory, storage, and the nano-texture screen. With those upgrades, the price of our review unit is \$4,499.

WHAT'S INSIDE: INTEL, MORE MEMORY, FAST GRAPHICS

At the heart of the 27-inch iMac are new 10th-generation Intel Core processors,

GEEKBENCH 5

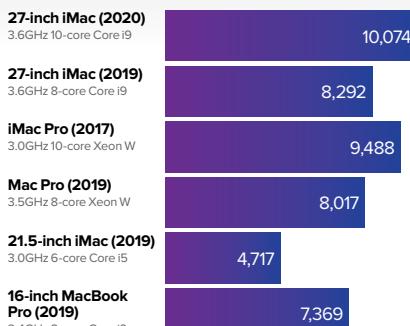
Single-core results



HIGHER SCORES ARE BETTER

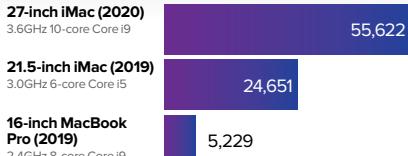
GEEKBENCH 5

Multi-core results



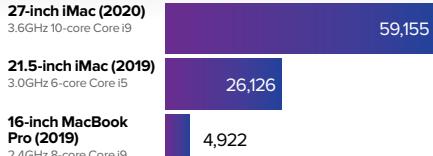
HIGHER SCORES ARE BETTER

GEEKBENCH 5 OPEN CL



HIGHER SCORES ARE BETTER

GEEKBENCH 5 METAL



HIGHER SCORES ARE BETTER

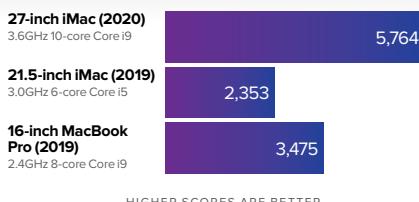
replacing the 9th-generation CPUs introduced in 2019. The processor in our review unit is a 3.6GHz 10-core Core i9 with Turbo Boost up to 5.0GHz. This is a build-to-order option, which adds \$400 to the price of the high-end \$2,299 standard configuration model.

This generation of the 27-inch iMac now has Hyper-Threading standard in the CPU across all models. Hyper-Threading allows each processing core to run two

threads simultaneously and should help CPU performance. Before, only the 27-inch iMac with a build-to-order 9th-generation 3.6GHz 8-core Core i9 processor supported Hyper Threading.

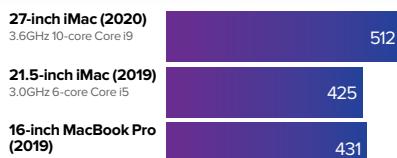
To get an idea of the speed our review iMac is capable of, we ran several benchmark tests. To start with, we ran Geekbench 5 (go.macworld.com/rng5) and compared the results to other Macs that Geekbench has on record on its website.

CINEBENCH R20 CPU



CINEBENCH R20 CPU

Single



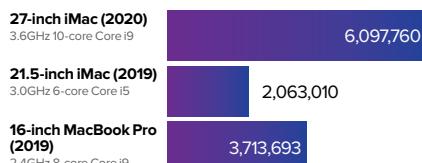
HANDBRAKE 4K TO 1080P

Seconds



CORONA BENCHMARK

Rays per second



In Geekbench's single-core tests, the new iMac was 10 percent faster than the built-to-order option in its predecessor, a 3.6GHz 8-core Core i9. A little more impressive is the 19 percent increase over the current entry-level iMac Pro with a 3.0GHz 10-core Xeon W, or the 26 percent improvement over the 3.5GHz 8-core Xeon W in the base model Mac Pro.

In Geekbench's multi-core tests, we saw an 18 percent improvement by the new iMac over its predecessor, and a 20 percent boost over the base model Mac Pro. The new iMac and the iMac Pro come close in performance, with the iMac being

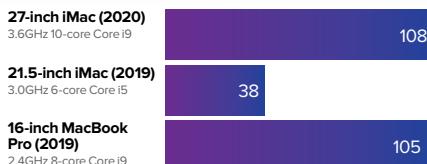
6 percent faster.

Apple still offers only 8GB of RAM in the standard configurations, but the maximum amount of memory supported has increased from 64GB to 128GB. However, Apple's prices for the higher RAM upgrades are insanely expensive; upgrading to 128GB is \$2,600.

You can find cheaper RAM prices from third-party sellers, and fortunately the 27-inch iMac's RAM is user-accessible and you can add more RAM yourself. At the time of this writing, a 64GB memory kit (which includes two 32GB DDR4 2666MHz SODIMMs) at Crucial is \$310 (go.macworld.com).

UNIGINE HEAVEN

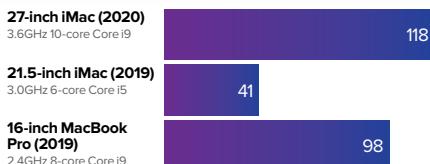
Frames per second



HIGHER SCORES ARE BETTER

UNIGINE VALLEY

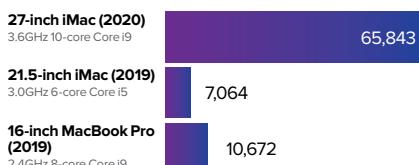
Frames per second



HIGHER SCORES ARE BETTER

V-RAY CPU

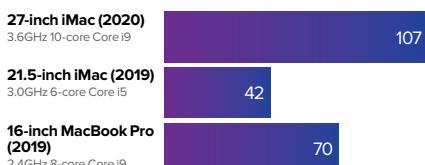
Ksamples



HIGHER SCORES ARE BETTER

V-RAY GPU

Mpaths



HIGHER SCORES ARE BETTER

BLENDER BMW

Seconds



LOWER SCORES ARE BETTER

com/c310). Buy two of those to fill the iMac's four memory slots, and you'll have 128GB for \$620 (before shipping and taxes). That's a savings of nearly \$2,000, even if you consider the cost of dumping (or maybe selling) the standard 8GB.

What you can't upgrade on your own is the solid-state drive that comes with the 27-inch iMac, because the SSDs are part of the iMac's motherboard. Apple used to offer Fusion Drives—combination SSD and hard drives that compromised on speed (but were still faster than just a stand-alone hard drive) while offering spacious capacity. This time, Apple decided to prioritize speed, ditching the Fusion Drive.

SSDs are more expensive than hard drives and Fusion Drives, so to keep the prices of the standard configurations at the \$1,799/\$1,999/\$2,299 levels Apple likes to sell, the amount of storage is lesser than

previously offered. That means you have to pay for an upgrade if you want more space—if it's available. The \$1,799 model includes a 256GB SSD and has no upgrade options. The \$1,999 and \$2,299 models have 512GB SSDs, and you can upgrade to 1TB for \$200, or 2TB for \$600. (The \$2,299 model also has 4TB [\$1,200] and 8TB [\$2,400] SSD options.) You can also connect an external drive via Thunderbolt 3/USB-C or USB-A.

Want more speed enhancements? You can find it in the graphics card. Apple is now using Radeon Pro 5000 XT series graphics, an upgrade from the Radeon Pro 500X series (a Radeon Pro Vega 48 option was available for the previous \$2,299 model). Our review unit came equipped

with a 16GB Radeon Pro 5700 XT, which is a \$500 upgrade for only the \$2,299 iMac.

There are a couple of other updates that speed up the iMac. There's now a \$100 option to upgrade the built-in gigabit ethernet to 10 gigabit ethernet. And the SDXC card slot on the back now uses the UHS-II bus interface, which has faster read/write speeds than the previous UHS-I implementation.

SAY GOODBYE TO GLARE—FOR \$500

The iMac comes by default with a glossy glass front that Apple calls “standard glass.” The main reason Apple uses glossy glass is because the contrast is better than on typical matte displays. The thing is, I've

always hated glossy displays because of the glare. The reflections I could handle; I've trained myself to look beyond those. But glare is more difficult to overcome, especially when dealing with limited placement options in a workspace. I have a window behind my office



The 27-inch iMac has four memory slots, which are user-accessible through a hatch at the back of the computer.



On the back of the 27-inch iMac, the standard ports are (left to right): a headphone jack, a SDXC card slot, four USB 3 ports, 2 Thunderbolt 3/USB-C ports, and gigabit ethernet.

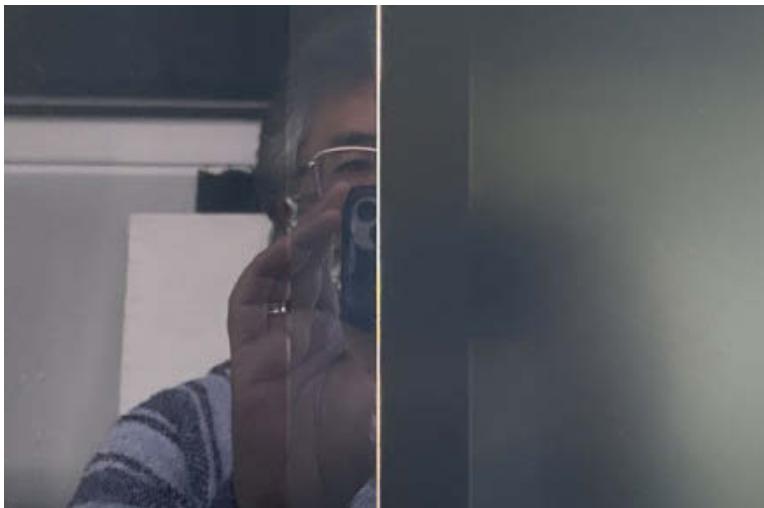
desk, and during certain times of the day, I've accepted that I have to contort myself to work around glare until the sun moves out of the way.

Before Apple redesigned the iMac to have tapered edges, the front glass was held on with magnets and you could remove it with the proper tools. And third-party companies have tried to offer products that could cut glare with an overlay. But going glassless or using a third-party solution disrupted the elegance of the iMac's design.

On the new 27-inch iMac, Apple now offers a nano-texture glass option, the same that was introduced with Apple's Pro

display XDR (go.macworld.com/axdr). It's a matte-like finish that, instead of using a coating, etches "nano structures" into the glass. According to Apple, this helps maintain image quality and contrast better than a matte coating.

Our review unit from Apple comes with nano-texture glass. Having seen so many iMacs over the years—not to mention older glossy Apple displays, MacBooks, and even the iPhone and iPad—it was odd to see a non-glossy iMac *from Apple*. With the iMac powered off, the glass looks like it's frosted, and the mirror effect was hardly visible. When I turned on the iMac and used it for a few hours, I didn't notice



On the left is Apple's standard glass, the glossy front we're all familiar with. On the right is the new nano-texture glass that creates a matte screen that cuts down on reflections and glare.

any reflections, and while glare wasn't completely gone, it was much more manageable. As for the contrast, I had a hard time noticing a difference compared to a glossy screen. Overall, the nano glass display was oh-so-satisfying, and my eyes didn't feel strained as usual at the end of the day.

The nano-texture glass is a winner, but it's a pricey proposition: it's an extra \$500. It's worth it if you need to manage eye fatigue or you're in an environment where display work is critical to your production. I've heard tech analysts, journalists, and other pontificators say that they think the nano-texture glass is the type of thing that

less critical, like in a shared family or office setting, or as a general personal computer for yourself? Maybe not.

Behind the glass—nano-textured or standard—is a Retina 5K display, with a 5120x2880 pixel resolution, support for the P3 (go.macworld.com/dcp3) color gamut, and 500 nits of brightness. It's always been a top-notch display and still is, but what makes it even better now is the new support for True Tone, where the iMac uses sensors to automatically adjust the display's white balance based on the ambient lighting of your workspace. If you don't like True Tone, you can turn it off in the Displays section of System Preferences.

will come down in price over time, but I'm not so sure. If you want this iMac but you're holding off because you're hoping the nano-texture glass option will come down in price, stop waiting.

However, do you need it if your plans for the iMac are

BETTER AT VIDEO CONFERENCING

We're in an era where more people are working at home, and video conferencing has become more important in business, remote education, and entertainment.

Features for video conferencing in a computer are now a priority.

After having a 720p FaceTime camera for what seems like forever, Apple has upgraded to a 1080p FaceTime camera in the 27-inch iMac. The new FaceTime camera works with the iMac's built-in T2 chip ([go. macworld.com/alt2](#)) that handles the camera's image processing. (The T2 is also used for the iMac's security features.)

In the examples at right, the difference in image quality is quite obvious. The first image, which is from

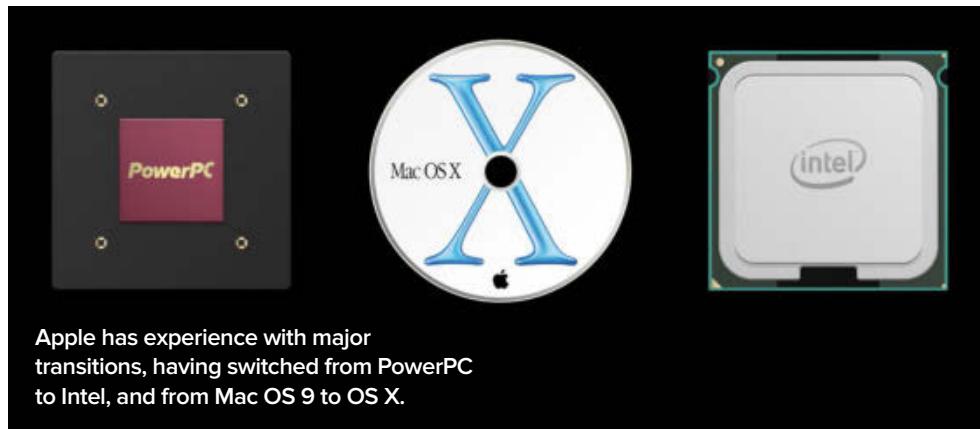
the 720p FaceTime camera, is a hot mess. The second image, from the new iMac 1080p FaceTime camera, is a vast improvement, with better handling of light, less image noise, and better color



Image sample from the old 720p FaceTime camera. Ugh.



Image sample from the new 1080p FaceTime camera and T2 implementation. Much, much better.



consistency.

Let's not forget about the audio component of video conferencing. The 27-inch iMac has three built-in microphones that Apple calls "studio quality" and stereo speakers that are loud and clean. There is a headphone jack if you prefer to use wired headphones or external speakers, as well as USB ports and Bluetooth as additional options for connecting audio gear.

APPLE SILICON ON THE HORIZON

As I said at the opening of this review, this is most likely the last iteration of this generation of the iMac. That's because Apple has announced (go.macworld.com/swth) that it is making its own Mac processors and that you could see the first Apple silicon Macs by the end of this year.

With that in mind, you might be hesitant to invest in an Intel-based Mac.

Apple has said that it will continue to support its Intel Macs, even when the Apple silicon transition is in full swing, but how long that support will last, Apple won't say. In 2006, the company did a similar transition when it switched from PowerPC to Intel (go.macworld.com/pwin) processors, and those PowerPC Macs were supported for several years.

If history is any sort of guide, expect the company to hold true to its word. This is Apple, though, and the company will eventually do something to push you to the new hardware. There are millions of Intel-based Macs out there, so it'll be a long while before that happens.

Another thing to consider is how Apple will roll out its new Macs. Apple hasn't officially announced a release schedule,

and speculation has been that Apple silicon will make its debut in machines geared more towards the general consumer, while the high-performing computers will be the last ones to be updated. So that could mean that perhaps the MacBook Air and Mac mini are the first Apple silicon Macs. And since the 27-inch iMac was just released, it could be at least a year before an Apple silicon version is released.

Then there's the idea that a new Apple silicon iMac will have a new design. It's been rumored that it could take a form similar to that of Apple's Pro Display XDR. It could also include features that we've been waiting for like Face ID, Wi-Fi 6, smaller bezels, and compatibility with most iPhone and iPad apps. That's an exciting proposition.

Suffice to say, the eventual release of an Apple silicon iMac makes a buying decision a little more complicated. To help you decide, consider your work. If you absolutely need a faster machine to get things done, invest now, knowing that Apple will support you for several years, and have confidence that your software will run efficiently. If your consideration is more about

the desire of having something new and less about productivity, it won't hurt to wait for Apple silicon.

BOTTOM LINE

If you have an older iMac in a production environment, you'll reap the benefits if you invest in the new iMac. Don't worry about Apple's commitment to supporting you in the next several years. They will. And you can rest assured that your software will be able to get the most out of the iMac's CPU.

If you bought an iMac or even an iMac Pro within the past year, the new iMac's speed advantage is incremental. Consider waiting for the second or even third

generation of Apple silicon Macs. By then, there could be native versions of the software you use for Apple silicon, insuring that you'll get the most performance.

As the last iteration of a memorable design, the new 27-inch iMac leaves quite an impression. It has new features that users have been waiting for, and will be a very serviceable machine while Apple silicon Macs are introduced, and the software evolves. The time is right for a change, but it's nice to see this iMac go out as a winner. ■



27-inch iMac 3.6GHz 10-core Core i9 (2020)

PROS

- Fast performance.
- Nano-texture display greatly reduces reflections and glare.
- User-accessible RAM.

CONS

- Pricey RAM upgrades at Apple.
- Nano-texture display is an expensive upgrade.
- SSD not user-accessible and can't be upgraded after purchase.

PRICE

\$4,499

COMPANY

Apple



GETTING STARTED WITH 2FA

A blurred background photograph showing a person's hands using a laptop keyboard and a smartphone. The laptop screen is visible, and the phone is held in the left hand. The scene is set on a wooden desk in what appears to be a home office or study area.

SECURE YOUR
ACCOUNTS
NOW OR
REGRET IT
LATER!

UNIQUE PASSWORDS ARE
ESSENTIAL, BUT THEY'RE NOT
ENOUGH. YOU SHOULD SECURE
ALL IMPORTANT ACCOUNTS WITH
TWO-FACTOR AUTHENTICATION.

BY JASON CROSS



Millions of users have their online accounts compromised every day. Password lists are traded on the dark web, and bad actors use automated processes to try them against lots of accounts and services. Sophisticated phishing attacks attempt to trick you into giving away your password (or the info necessary to reset it) by posing as legitimate services or customer support.

Obviously, the best defense against this sort of thing is to have a different, strong, hard-to-guess password for every single account you own. A good password manager like 1Password (go.macworld.com/1pwd), LastPass (go.macworld.com/lastpass)

([Ipas](#)), or Dashlane (go.macworld.com/dshl) is a key component in managing that.

But good passwords are not enough! Not a month goes by without another report of millions of passwords potentially compromised, and a computer infected with a virus can simply watch the passwords as you type them in. You need another layer of protection. You need 2FA.

We've already told you how to enable 2FA on your Apple account (go.macworld.com/a2fa), but what about all your other accounts? Those should be protected



VIDEO: GETTING STARTED WITH 2FA

Watch now at go.macworld.com/2fa

with just as much care. Here's how to get started.

WHAT IS 2FA?

Two-factor authentication (usually abbreviated 2FA) is a way to prove that you actually are the owner of a particular account by providing two “factors” of evidence. One factor is a piece of knowledge—your password or PIN, for instance. Another factor may be possession of a particular object—a phone that receives texts sent to a certain number, a USB key fob, or access to an email address. Another factor may be inheritance—something inherent to you, like your fingerprint or a retinal scan.

In other words, 2FA secures your account by making you provide *something you know* (your password or PIN) along with *something you possess* (your smartphone, an email address, or a physical key) or *something you are* (your fingerprint or a detailed face scan).

Consider the front door to your house. If you can open it with just a key, that's one-factor authentication; you only must possess that specific object. If you had to open your door with both a physical key as well as dial in a four-digit pin into an electronic lock, that would be two-factor authentication.

Some companies call this sort of security MFA (multi-factor authentication) or two-step verification. While these terms are a little different than 2FA, for most

consumer applications they essentially mean the same thing.

SMS, EMAIL, OR APP?

The vast majority of 2FA methods for the kinds of everyday accounts consumers have will be your regular password or pin, together with one of three other methods of proof:

E-mail: When you try to log in, the service will send an email to the email address already associated with your account that contains a short code. The code is only usable for a limited time. You check your email, type in the code, and access your account.

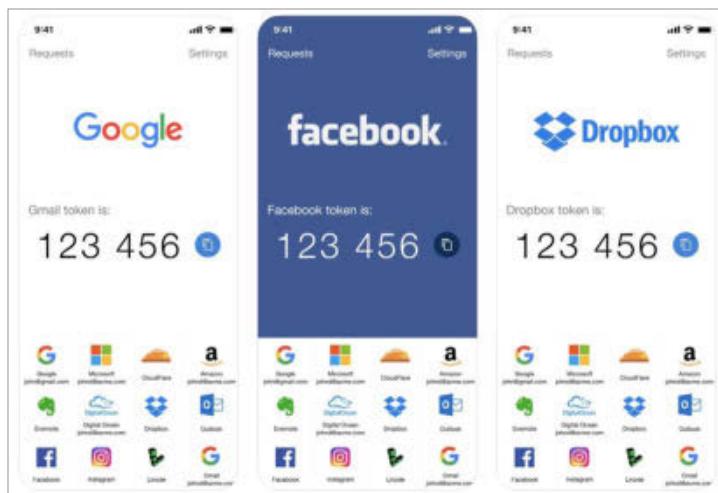
Text message: The service sends an SMS text message to the phone number it has on record for you, containing a code (typically a six-digit number). The code is only good for a few minutes.

TOTP app: A special app on your smartphone generates a TOTP (Time-based One Time Password) based on a unique secret string shared with the service. The password (usually a string of six numbers) is only good for 30 seconds to a minute, after which another code is generated.

Of these methods, the TOTP app approach is best. A single good 2FA code app can be used for lots of services at once, and it's more secure than having codes sent to your email (if your email

login is what has been hacked, you're in trouble!) or via SMS (a process called SIM-jacking (go.macworld.com/smjk) can enable scammers to transfer your phone number to a new SIM card and intercept your text messages).

TOTP apps are not as convenient as text messages. You have to load an app onto your phone, open it, and check for codes whenever you log in from a new computer, browser, or device. But it's the best blend of convenience, ubiquity, and security, so it's the method that we recommend. Our favorite TOTP app is Authy (go.macworld.com/athy), but you should also check out LastPass Authenticator (go.macworld.com/lpat), Microsoft Authenticator (go.macworld.com/math), and Google Authenticator (go.macworld.com/gauth).



Apps like Authy generate one-time codes for lots of sites and services.

macworld.com/goau).

Unfortunately, some sites and services only offer 2FA through email or SMS. If that's the case, take what you can get! It's still a lot more secure than not enabling 2FA at all.

WHAT ABOUT HARDWARE KEYS?

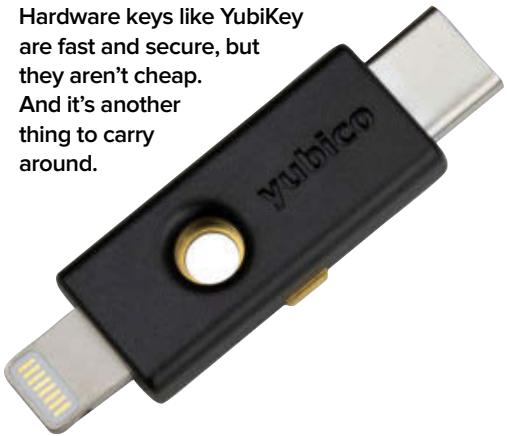
A hardware security key device is probably the most secure means of locking down your account. Someone would have to physically steal the hardware key fob from you in order to get in.

The best option for Mac and iPhone users is probably the YubiKey 5Ci (go.macworld.com/yfci), which has connections for both USB-C and Lightning and support for a pretty wide array of security protocols and services. The downside? It's \$70 for a single key!

There are some cheaper options, but any way you slice it, it's another physical thing you need to have with you at all times, or else you won't be able to get into your accounts.

And if you lose it (it's tiny!), you have to go through every

Hardware keys like YubiKey are fast and secure, but they aren't cheap. And it's another thing to carry around.



service for which you enabled it and use whatever secondary authentication method they have to recover access to your account.

Hardware keys are great if you're so inclined, but we still think the best intersection of security, cost, and ease-of-use is a TOTP app.

HOW TO PROTECT POPULAR ACCOUNTS WITH 2FA

We've already told you how to set this up on your Apple ID (go.macworld.com/a2fa). That's important, but you can't stop there. Many of your other accounts are critically important to secure, too.

The process for enabling 2FA is a little different for each account and service you may have. A simple Google search will help you find some instructions, but we've compiled a helpful list of the most

popular internet accounts here, with links to their help pages describing how to enable 2FA.

Google

Google supports many different 2FA methods and has a helpful site (go.macworld.com/g2fa) describing how it all works.

Twitter

Twitter's one of the most frequently—and publicly—compromised accounts on the internet. Here's how to get 2FA enabled (go.macworld.com/t2fa) on your account.

Facebook

With over 2 billion people on Facebook, it's an enormous target for hackers. This help article (go.macworld.com/f2fa) shows you how to set up 2FA.

Instagram

Instagram has a help page for 2FA (go.macworld.com/i2fa) that tells you how to set it up on your account.

Amazon

Your Amazon account likely has payment methods associated with it, and is a huge target for thieves looking to buy stuff using your money. This help page (go.macworld.com/am2f) shows you how to enable two-step verification.

Reddit

Like all major social media accounts, you should protect your Reddit account with 2FA. Here's the help page (go.macworld.com/r2fa) describing how to do so.

Microsoft (Xbox)

You may have your own Microsoft account, or one for work, or both. If you have an Xbox account, that's a Microsoft account, and it's a huge target for scammers and hackers. Here's the page (go.macworld.com/m2fa) describing how to enable 2FA for your Microsoft accounts.

PlayStation

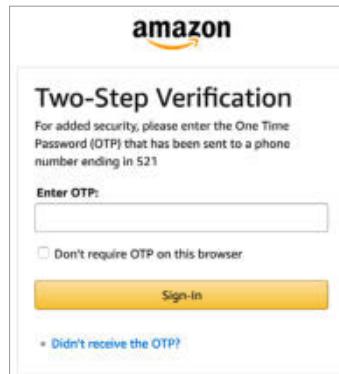
PlayStation gamers will want to secure their account with 2FA (go.macworld.com/p2fa) as well. Sony, unfortunately, only supports text messages as its 2FA method. But it's a lot better than nothing.

Nintendo

A Nintendo account may be used on a Switch or Wii system, but also in some Nintendo mobile apps. As with all gaming accounts, you'll want to enable 2FA (go.macworld.com/n2fa) to lock it down. Nintendo tells you to use Google Authenticator for TOTP codes, but we've used other apps just fine.

Password managers

A password manager is the gatekeeper to



It's a good idea to secure all your accounts.

all your passwords. How could you not enable 2FA on it? Each one has its own instructions for how to enable 2FA, but here are the help pages for: 1Password (go.macworld.com/1pwd), LastPass (go.macworld.com/lpas), and Dashlane (go.macworld.com/dshl).

Bank accounts

If someone gets access to your bank account online, they can basically take all your money. You'd be crazy not to secure those accounts with 2FA.

There are too many banks, credit unions, and financial institutions to list them all here. Just be sure you have 2FA enabled for every place in which you store or borrow money. Don't forget about credit card accounts and stock trading services, too. Fortunately, many banks enable 2FA by default these days—at least via email or text message. But some offer more secure options that you might want to explore. ■



Shaun & Aaron

Married September 26, 2015

Shaun & Aaron
were denied a wedding
announcement in their
local newspaper.

In 30 states in this country, it's legal to discriminate against LGBT Americans. That means you can be fired from your job, evicted from your home, or even denied medical services because of who you are or who you love.

Everyone has the right to marry. Not everyone has basic rights.

Get the facts at [Beyond IDo.org](http://BeyondIDo.org)



LUNG CANCER WON'T QUIT.
EVEN IF YOU DID.

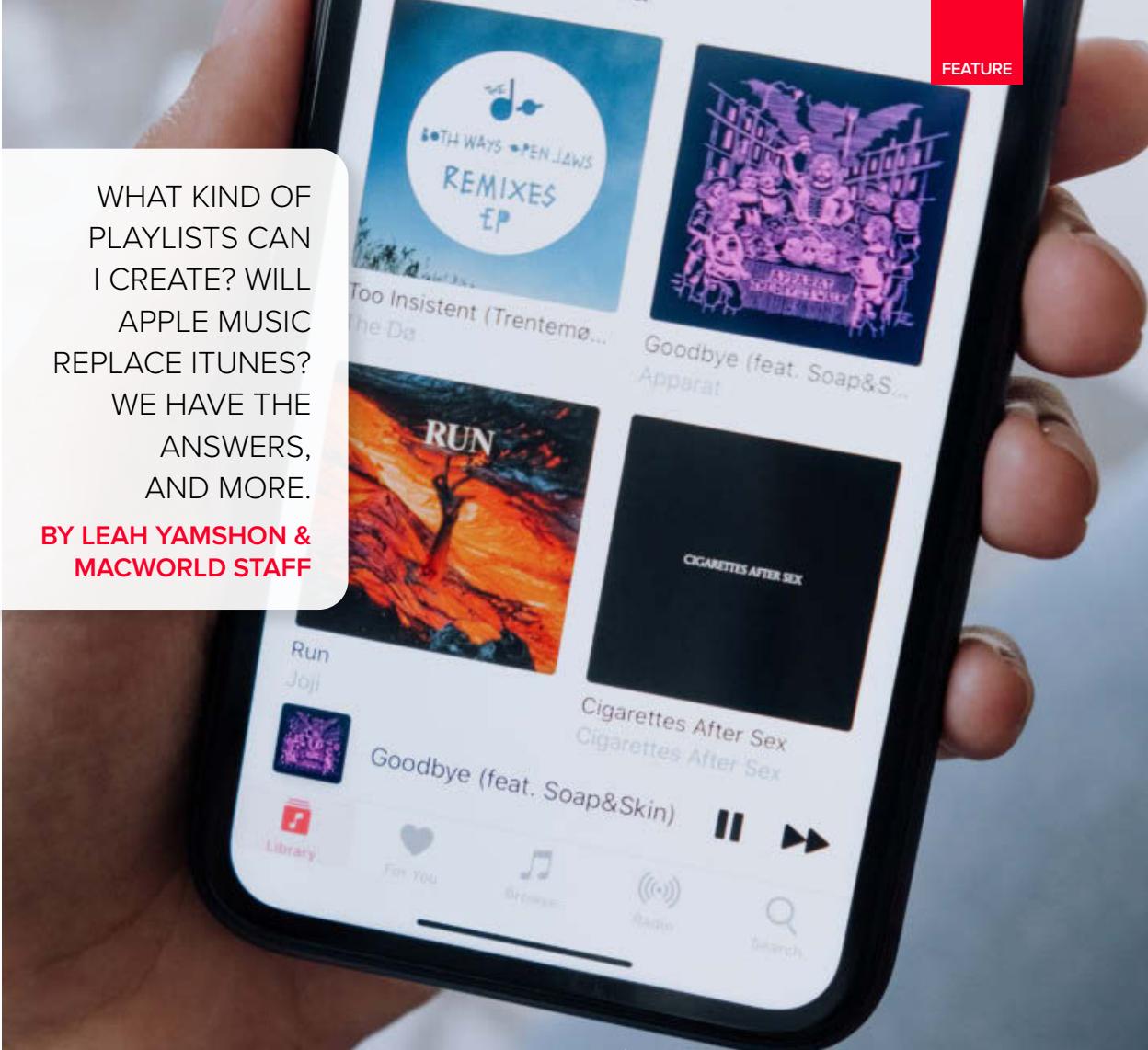
Thanks to a new scan, lung cancer can be detected early when it's more curable. If you smoked, get scanned.

Talk to your doctor or visit SavedByTheScan.org



WHAT KIND OF
PLAYLISTS CAN
I CREATE? WILL
APPLE MUSIC
REPLACE ITUNES?
WE HAVE THE
ANSWERS,
AND MORE.

BY LEAH YAMSHON &
MACWORLD STAFF



THE INS
AND OUTS
OF APPLE'S
STREAMING
MUSIC SERVICE

APPLE MUSIC FAQ



Apple singlehandedly turned the digital music marketplace on its head when it launched the iTunes Store in 2003 (go.macworld.com/is03). Since then, the iTunes Store has evolved into Apple Music (go.macworld.com/evam), a music streaming service to compete with the likes of Spotify, Tidal, and other services.

Whether you're new to Apple Music or have been a subscriber since day one, there's a lot to take in—especially if you're considering jumping ship from another service. Our guide to everything Apple Music can help set the record straight.

APPLE MUSIC: GETTING STARTED

What the heck is this thing? Apple Music combines subscription-based music streaming with global radio-like



The original iTunes Store in 2003.

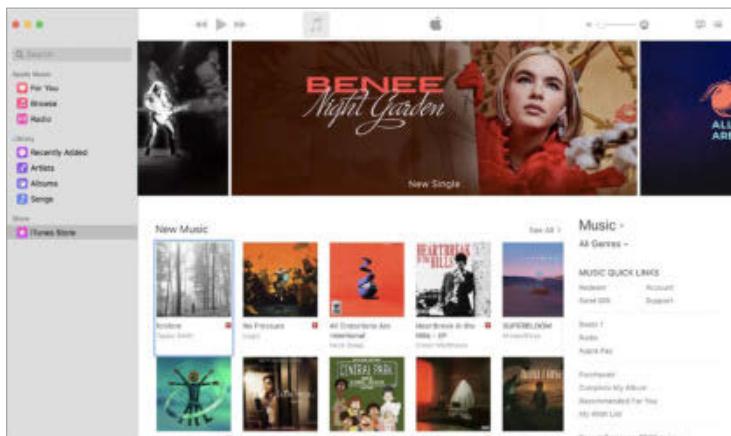
programming. It's an all-you-can-eat service for subscribers: Pay a flat fee, and you unlock all of Apple Music's extensive 60 million-song library.

The Music app, which is how you use the service, comes pre-installed on all new iPhones, iPads, iPod touches, and Macs. You can also access Apple Music on the web at music.apple.com (go.macworld.com/muap).

Isn't Apple Music the same as the iTunes Store? Not at all. The iTunes Store is all about media ownership, functioning as both a virtual record store and an efficient digital library for music that you own personally. On the iPhone, iPad, and iPod touch, you'll find an iTunes Store app separate from the Music app.

On the Mac, the iTunes app went away; Apple released new Music, Podcasts, and TV apps. The iTunes Store is now a section of the Music app and you can still buy music there.

If the iTunes Store is about buying music, then what is Apple Music about? Apple Music is all about streaming. You



Starting with macOS Catalina, the iTunes Store can be found in the Music app on the Mac.

pay a flat fee to unlock access to Apple Music's entire catalogue, but you don't actually own the music you listen to. The files don't live individually on your devices; you're instead just listening to tracks stored remotely, that are owned by Apple. If you subscribe to any other media streaming subscription service—be it a music-only service like Spotify or Tidal, a TV service like Hulu, or a movie/TV combo service like Netflix or HBO Now—Apple Music functions the same way.

Is iTunes dead? Not exactly. It has taken on new forms. You can access your entire iTunes library from within Apple Music—just tap the My Music tab (think of your iTunes library now as your music library). The iTunes Store still exists if you prefer to continue to buy music à la carte.

If you had TV shows and movies in iTunes, you will find them in the TV app.

What makes Apple Music different from Spotify/Tidal/every other music subscription service? Apple puts a lot of emphasis on Apple Music's Beats 1 and its curated playlists.

Beats 1 (go.macworld.com/btrd) is its radio offering, which features an around-the-clock worldwide live broadcast from DJs based in Los Angeles, New York, and London. It delivers a curated selection of songs, pop culture news, and interviews with artists.

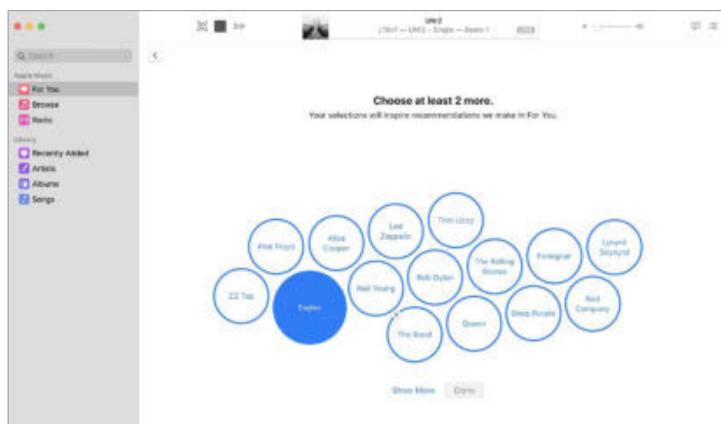
Speaking of curation, Apple Music also offers up recommendations tailored to your tastes, looking at artists you like and serving up other artists and playlists for you to listen to. But instead of being built by algorithms, they are built by real people, according to Apple. You can find these in the For You section of the app—but first you'll have to set it up by following the prompts to select genres and artists you like.

Apple Music's library has over 60

million songs. Oh, and you can also watch music videos without ads, and check out Apple's exclusive original content.

Apple Music used to have an artist-based social networking feature called Connect. Artists were able to share special content with fans through Connect. For example, hip-hop artist Drake used the service to post behind-the-scenes photos of his life, share snippets of new songs, and other content. But Apple discontinued the Connect service (go.macworld.com/cnsv).

How much does this cost? Apple Music costs \$9.99 per month, or \$14.99 per month for a family subscription for up to six people (which requires iCloud Family Sharing [go.macworld.com/ifsh]).



When you sign up for Apple Music, you'll be asked about the types of music you like and your favorite artists. This is used to get started on the curation of the music the service feeds to you. (Apple Music on macOS Catalina shown here.)

College students can subscribe for \$4.99 per month.

Can I try before I buy? Yes. Apple offers a free trial for new subscribers. If you cancel during the trial, you do not get another opportunity at a free trial.

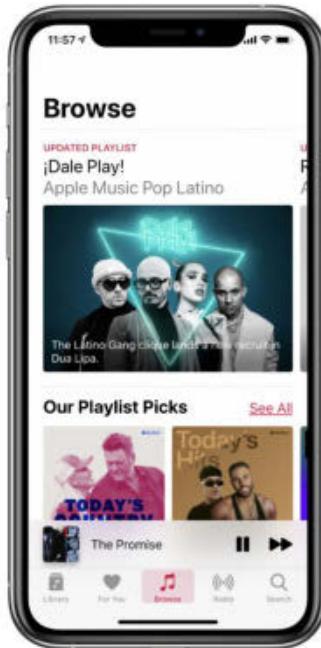
Is there a free, ad-supported version?

Sadly, no. Some aspects will be available to anyone who logs in with an Apple ID—namely, Beats 1, and the ability to listen to Apple Music radio stations with a limited number of skips. But a paid subscription is required to access Apple Music's entire library.

What devices can I use this on? Apple Music is available for all iPhones, iPads, and iPod touch models that are running iOS 8.4 or later. It's also available on the Mac and PC (via iTunes 12.2 or later, or through the Music app starting with macOS Catalina), Apple TV (running tvOS 9 and newer), and on Apple Watch. Android users can join in on the fun, too, if their device is running Android 4.3 (Jelly Bean) or newer.

Wait, did you say Android? Yes! Android users can sign up and have access to Apple Music's complete catalogue, but they'll miss out on its full array of features (like voice commands). Music for all!

Does it work with AirPlay? Yes! Each song or music video has an AirPlay button next to it—just tap it and select the device you want to beam to.



Apple Music on the iPhone.

Which countries have access to Apple Music? Apple Music is available in more than 100 countries worldwide, including the U.S., Canada, the U.K., Australia, Japan, Brazil, and India. Check out Apple's complete list for more information (go.macworld.com/avam).

MOVING TO APPLE MUSIC FROM OTHER STREAMING SERVICES

I have an iTunes Match subscription. If I subscribe to Apple Music, do I still need iTunes Match to keep my complete music collection together? According to Apple, iTunes Match and Apple Music are

completely separate services ([go.macworld.com/spsv](#)), so it will be up to you to decide if you'd like to keep iTunes Match. If your personal music collection has a lot of rare tracks and content that you can't get through Apple Music, then you may want to consider keeping both subscriptions. Check out our explainer ([go.macworld.com/xpln](#)) to learn more about how Apple Music and iTunes Match work together.

I spent years perfecting my playlists on Spotify and iTunes. Can I import these into Apple Music? Your iTunes playlists will automatically be pulled into Apple Music when you set up your account, as will the rest of your iTunes library.

However, if you use Spotify, Google Play Music, or any other music subscription service, you're out of luck. There is no

easy way to directly import your playlists into Apple Music. There are some third-party playlist importers out there, like Stamp ([go.macworld.com/stmp](#)), but we haven't tried any of them.

MUSIC 101: QUALITY, COMPATIBILITY, OFFLINE LISTENING, AND MORE

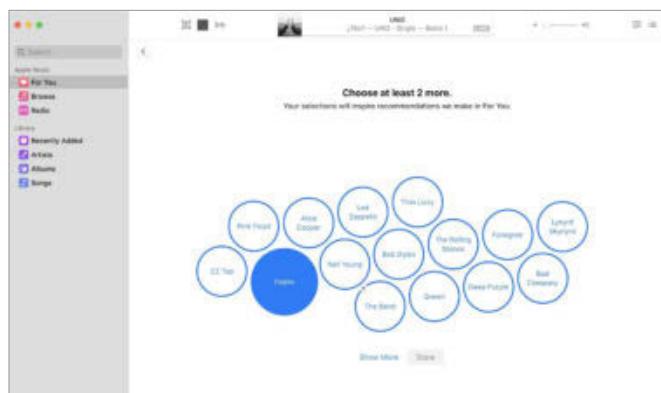
How's the music quality? Apple Music streams songs at 256kbps, which is the same rate as iTunes Match. That's a bit of a drop from Spotify, which uses a 320kbps bitrate. And competitor Tidal boasts more than just major celebrity endorsements: It offers a high-bitrate option (1411kbps lossless FLAC [[go.macworld.com/141k](#)]) at a pricier subscription rate, the "HiFi" tier ([go.macworld.com/hftr](#)), of \$19.99 a month.

Does Apple Music work with Apple's HomePod?

It sure does, but you need an Apple Music subscription to control your music via Siri.

Does Apple Music link with Sonos?

Yes! If you have Sonos speakers set up in your home, getting started with Apple Music streaming is easy. Just open the Sonos app and choose Add Music Services. Select Apple Music and log in.



Apple still offers iTunes Match ([go.macworld.com/spsv](#)), a service that lets you store the music that you own in iCloud. You can then access it anywhere you have an internet connection.

Can I save music to listen to offline? Yep!

Apple Music lets you save tracks to listen to offline—you can save as many songs as you'd like, as long as your device has space for them.

But remember: You won't own those files and you won't be able to offload them anywhere else. You can't burn them onto a disc, use them in separate video projects, or put them on other devices that aren't linked to your Apple Music account. If you decide to cancel your Apple Music subscription, you'll lose access to those songs.

The offline listening feature is a great option if you're concerned about data overages, or if you know you'll be in an area without a good wireless connection.

How does Beats 1 differ from iTunes Radio? iTunes Radio takes the Pandora-style approach to radio, where users create their own stations based around songs, artists, albums, or genres, and iTunes serves up songs that flow well around that theme. You can still use a



Beats 1 has interviews with artists, such as this Gaslighter interview ([go.macworld.com/chck](#)) with The Chicks.

version of iTunes Radio within Apple Music—but it's now called Apple Music radio stations. However, iTunes Radio stations were built by algorithms, and Apple Music's radio stations are mostly hand-built.

Beats 1, on the other hand, is more like a traditional radio station, with a 24/7 live radio stream anchored by three DJs based in New York, Los Angeles, and London. Former BBC personality Zane Lowe is leading the effort from Los Angeles, with Ebro Darden of Hot 97 in New York, and Julie Adenuga in London. Beats 1 features a combination of songs handpicked by these DJs, plus celebrity interviews, pop culture news, and other music-related content.

What's really neat is that every user

around the world hears the same content at the same time, and these stations take a much more curated approach to radio than iTunes Radio does.

Will standalone iTunes Radio remain a free service? Will iTunes Radio stations sponsored by record labels be moving to Apple Music, or will they be dropped?

Beats 1 and Apple Music's radio stations are free to anyone with an Apple ID—though the genre- and artist-based radio stations will be ad-supported and have a limit on song skips. If you created your own stations, they'll sync over, and you can find them in the Radio tab. However, many of iTunes Radio's former stations sponsored by record labels have disappeared, so you may be out of luck.

For more, check out our how-to on personalizing your own Apple Music radio stations ([go](https://macworld.com/psam).

[macworld.com/
psam](https://macworld.com/psam)).

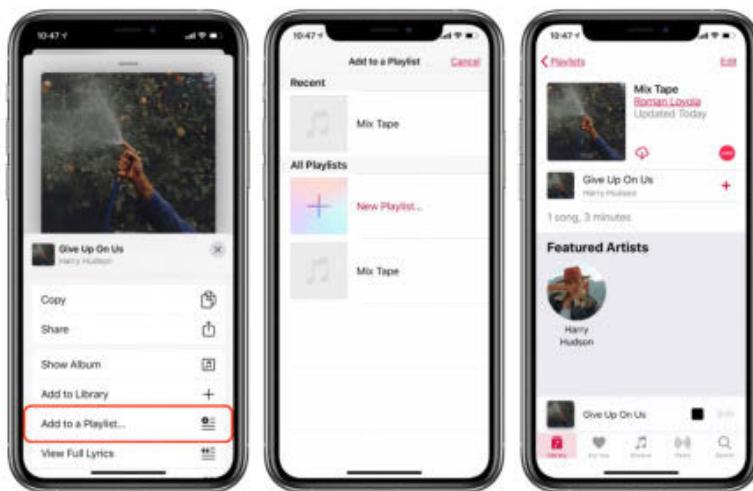
What genres does Beats 1 focus on? Beats 1 doesn't really focus on one specific genre like traditional AM/FM radio stations do. On any given day, you'll hear a

healthy mix of indie rock, hip-hop, pop, funk, electronic, classic rock, dance music, and more, all artfully woven together in a way that doesn't sound like a hot mess. DJ Zane Lowe mentioned in the station's opening remarks that Beats 1 is simply about great music, and it serves as a solid jumping off point for discovery.

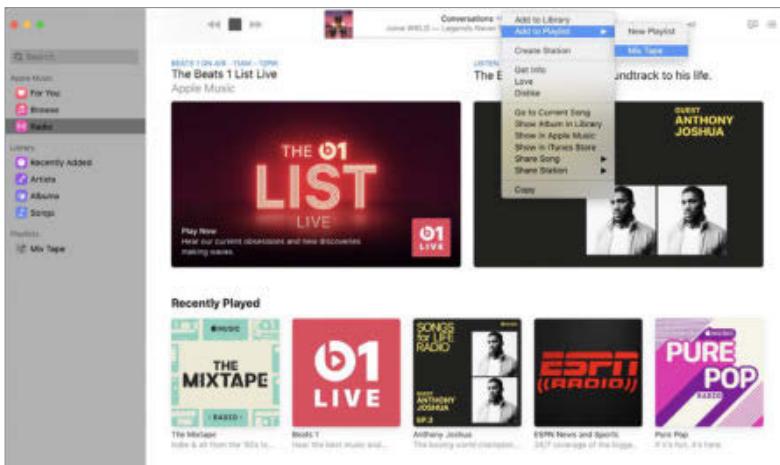
The Beats 1 DJs also select one track as their daily World Record, and that song gets played hourly on the half-hour mark. Besides the daily rotation of DJs, Beats 1 includes special programming from other artists as well, like exclusive content and interviews from DJ Khaled.

How do I add songs from Beats 1 to playlists? Heard a song on Beats 1 that's so good, you know you'll want to listen to it again? Here's how to track it.

In iOS/iPadOS:



1. While listening to Beats 1 or another Apple Music radio station, tap on the song listing at the bottom of the screen, but above the control panel.



2. A song panel should fill the screen, with cover art, the song and artist names, and player controls. Tap the three-dot button next to the song and artist names.

3. A task list should appear. One of the tasks is Add To A Playlist. Tap that one.

4. A list of your playlists will appear. Tap the one to which you want to add the song. You'll see an Added To Playlist pop-up to confirm that the action was performed.

Now, if you go to that playlist (Library → Playlists), you'll see the song there.

On a Mac:

1. While listening to Beats 1 or another Apple Music radio station, right-click the song in the Now Playing section at the top of the Music app. Or, move your cursor over the song name in the Now Playing section, and then click on the three-dot

button that appears.

2. A pop-up menu will appear. Select Add To Playlist.

3. A list of your playlists will appear. Select the playlist to which you want to add the song, or select New Playlist to start a new playlist. At the bottom of the Music sidebar, an alert will appear to tell you that the song is being added to the playlist.

That's it. When you click on the playlist in the sidebar, you should see that the song has been added.

Is there a limit to the number of songs you can have in a playlist? Not that we're aware of! Add away.

How do you tell it what songs you don't like? When listening to a playlist or radio station, you can skip any song you don't like (except for in Beats 1, which is live).

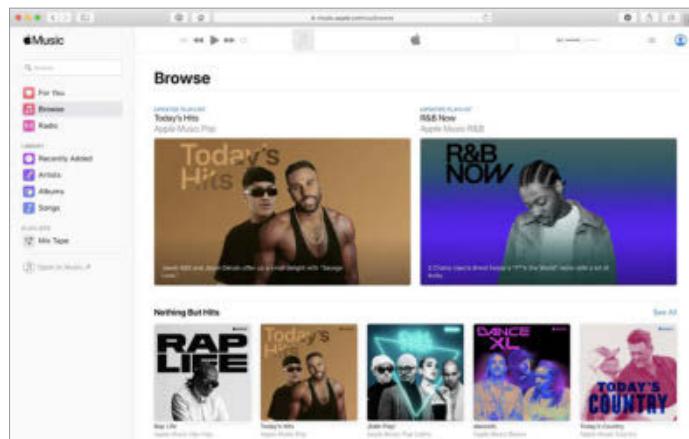
While this should signal to Apple Music that you don't want to hear that song or artist again, it might be finicky at times. Alternatively, tap the "heart" icon next to any song you like.

When a song is playing, how can you go to that artist page, or album? This used to be quite complicated (go.macworld.com/qtcm), but Apple has since made it much easier—just tap/click on the artist's name.

Where do songs or artists show up when I add them to my Library? They automatically appear in the Library tab, where you can sort your collection alphabetically by artist, album, or song title. You'll also find all of your playlists, and your list of downloaded music saved for offline listening. Scroll down to find your recently added music.

Why is there stuff on the iTunes Store that isn't on Apple Music? It all comes down to the deals Apple has made with various artists and record labels. Some artists are not interested in streaming services.

What about podcasts? Apple makes podcasts available through its Podcasts app on the iPhone, iPad, iPod touch, and Mac.

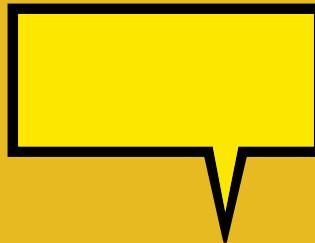


Apple Music is available on the web at music.apple.com.

Can I use Apple Music through the web?

Yes, there is a web interface. In your web browser, go to music.apple.com (go.macworld.com/muap). You can log in to your account and access your playlists, songs, and more. The web interface is a lot like the Music app for the Mac, and it's a handy way to access your music when you're not using one of your own devices. Don't forget to log off if you're using a computer that others can use.

How do I cancel my free trial subscription before Apple charges my credit card? We have a separate article that details how to cancel your Apple Music (go.macworld.com/cnam) and other Apple subscriptions. The article has instructions for cancelling on your iPhone/iPad, Mac, and on the web. ■



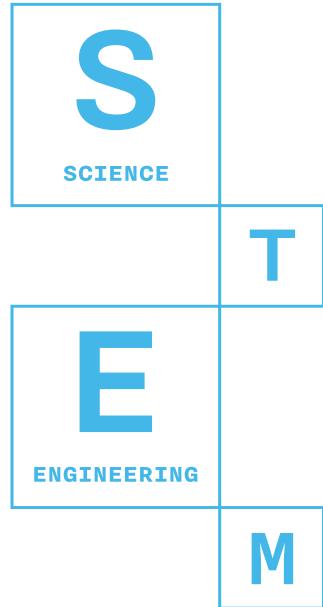
Reach out to a friend about
their mental health.

Find more ways to help at SeizeTheAwkward.org

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ad
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How to use Zoom or FaceTime with an Apple TV (or any TV)

Make other people's faces larger, but watch out for the audio.

BY GLENN FLEISHMAN



Speaking for myself and seemingly everyone I know, we are all on Zoom, FaceTime, Teams, Hangouts, Meet, Webex, or some other videoconferencing tool all the time, whether for paid work, volunteering and nonprofit involvement, the PTA, or socializing and family chat.

Unless you've got an iMac and it's set up in the right place, you might find yourself squinting to see everyone on screen—or leaning in or balancing a laptop on your lap. It's distracting for you and anyone with whom you're conversing.

There's a better way, if you have an Apple TV or a newer TV that supports video streaming over AirPlay 2 ([go. macworld.com/spa2](https://macworld.com/spa2)): you can use AirPlay or AirPlay 2 to stream your Mac, iPhone, or iPad's screen to the TV. If you purchase an HDMI adapter for a Mac or a mobile device, you can instead hardwire yourself into any TV with a spare HDMI port.

SET UP YOUR DEVICE RELATIVE TO THE TV SET

If you're using the built-in webcam in your Mac, iPhone, or iPad, you need to set it up

in such a way that you're looking at least mostly in the direction of its camera. It's often hard to place a device safely above a TV set, so you might want to position it on a surface just in front of the TV. Looking past the device, to other people it looks like you're looking into the camera—and at them—instead of off to the side.

I have a GorillaPod flexible tripod and a Glif iPhone camera mount that I use for photography, and they work perfectly well for setting up my iPhone on a small table in front of the TV. Small tripods or stands for iPhones and iPads are readily available at almost any price. With a laptop, a small

table or a few books can put it in position, since you can angle the lid with the camera to your best advantage.

With a laptop, you could also purchase an external webcam for \$30 to \$80 with a clip or stand. Attach the webcam to the top of the TV set or at least right near it, making sure you have a long enough run of USB cable to reach your computer.

STREAM VIA AIRPLAY

You can send your video and audio output for your entire device over AirPlay.

On a Mac: From the Displays preference pane, select your Apple TV

from the AirPlay Display menu. You can also check “Show mirroring option in the menu bar when available,” which makes the AirPlay menu faster to access. When done, use the menu in the preference pane or the system menu bar to set AirPlay Display to Off.

In iOS or iPadOS: Swipe up (iPhones with a Home button) or down from the upper-right corner



Positioning the device with the camera in front of the TV helps you look in the right place.

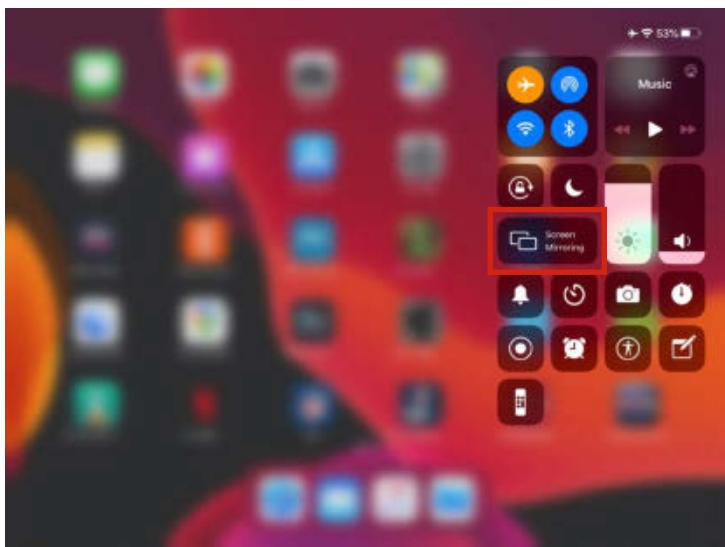
(iPads, iPhones with Face ID) to show the Control Center. Tap Screen Mirroring and select your Apple TV. When finished with a session, show the Control Center again and tap Stop Mirroring.

You can have already launched or started a video chat or you can start after connecting.

It makes sense to rotate an iPhone or iPad into the landscape position to match the wide orientation of a TV set. The mirroring will follow that rotation. There's one exception: FaceTime on iPhones stopped rotating via AirPlay several releases ago of iOS. It works fine in all other apps—include Zoom, Hangouts, etc.—and on iPads. (Apple's failure to fix this is baffling.)

AirPlay passes the audio to the Apple TV by default. This can result in echoing and ever-louder feedback loops, depending on how loudly you have sound coming out of your speakers and where your input device's mic is positioned.

On an iPhone or iPad, you can't separately control audio output. But in



In iPadOS you can access Screen Mirroring via the Control Center.

macOS, you can use the Sound preference pane to choose the built-in speakers or headphone jack on your Mac.

You can also pick an audio output source in most video chat software. In FaceTime, choose the Video menu and then select an audio output option. In Zoom, click the upward-pointing arrow next to the mic icon and select an output option. In Skype, select Skype → Audio & Video Settings and then choose an output option under Speakers. (Depending on the software, you may not be able to control output volume select within the app unless you switch system audio output to the same device and use the Sound preference pane to set the volume.)

If you choose to have the sound carried by your TV set or receiver, you can reduce feedback and echo by adjusting the input settings in the Sound preference pane. Click the Input tab and use the slider to find the right balance between being audible to people on the call and avoiding distracting sound. You should adjust output volume on the TV or receiver and input value to find the right set of levels.

CONNECT VIA HDMI

An alternate to AirPlay, and one that works with any HDMI-equipped television set, is to use a USB-C, Thunderbolt 2, or DisplayPort adapter or dock with an HDMI jack.

Mac output: A seemingly endless number of adapters exist for Macs at all prices—as one example, this USB-C to HDMI adapter (go.macworld.com/ushd) with passthrough USB-C power and a USB Type-A port from Monoprice.

iPhone/iPad

output: You need a Lightning-to-HDMI adapter, an easily acquired item. Apple's version, the Lightning Digital AV Adapter (go.macworld.com/ltaav), is \$50. A number of third-party adapters with similar features

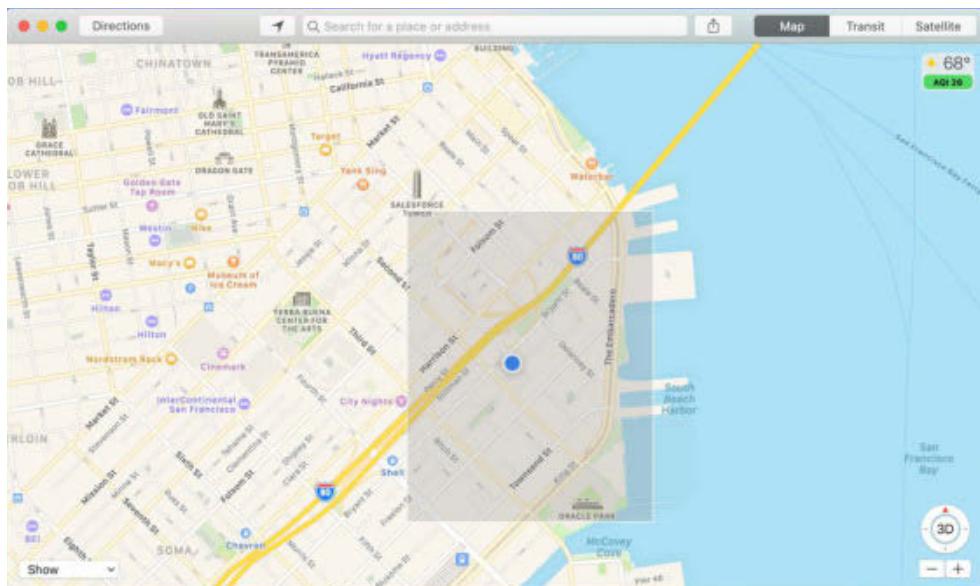
can be found all over, but read reviews carefully. This Aictoe adapter via Amazon (go.macworld.com/atoe) is just \$18 and at this writing has largely positive reviews about compatibility and quality.

Remember to buy an HDMI cable of the right length to reach from your TV to your device if you don't own one already.

Though HDMI can handle both audio and video in a single digital stream, you can opt where audio goes in a Mac via the Sound preference pane (or by holding down Option before clicking the speaker icon on the system menu bar). In iOS and on the iPad, Lightning adapters route audio locally instead of via the TV set. Depending on your setup, you may be able to modify that. Some TVs need to have their audio input changed to HDMI from a nested menu to handle incoming sound. ■



Aictoe HDMI adapter cable.



How to take better screenshot selections in macOS

A number of extra keys can help you better shape a screen selection.

BY GLENN FLEISHMAN

Making screenshots of parts of your Mac display can be a valuable tool when you're trying to remember settings or a sequence of actions or explain them to someone else. I know that I'm an oddball as a technology writer, as I'm constantly capturing pieces of a screen in order to write these columns. But my correspondence with readers over many

years reveals that a lot of you also use built-in (and in some eras, third-party) screenshot tools.

Also over many years, *Macworld* has covered the basics and advanced features, but Apple has kept monkeying with how screen captures work, so here's a fairly full refresh including a few secrets I only learned days ago from Twitter.

In macOS 10.14 Mojave, Apple got rid of

the long-running Grab app, a screen-captured utility with several features beyond what you could manage with keystrokes. Instead, it embedded most of those features into a new shortcut. From the keyboard you can now press:

Command-Shift-3: Capture all active screens as separate files.

Command-Shift-4: Capture a selection you drag to define.

Command-Shift-5: Capture a selection, window, menu, or screen, record a video, or modify screen-capture settings.

Command-Shift-6: Capture the Touch Bar on Macs so equipped.

Add the Control key while pressing Command-Shift-3 or Command-Shift-4, and the screenshot is copied to the Clipboard

instead of being saved to your drive. You can paste that into any image editor, like Preview or Pixelmator. (Use Command-Shift-5 and click Options to change the storage locations of all subsequent screen captures, instead; destinations include the Clipboard.)

Command-Shift-4 (also available via Command-Shift-5 as click Capture Selected Portion) is one of the most flexible tools, though its options are mostly hidden away.

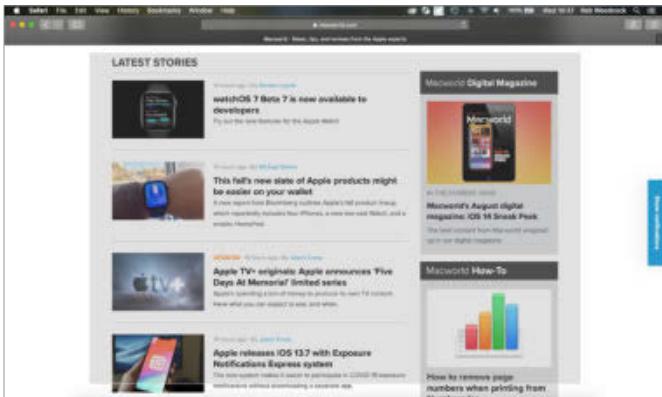
You can capture a menu by clicking it, pressing Command-Shift-4, and then moving the crosshairs icon over it. Capture a window by first pressing the keystroke and then moving the crosshairs over it. In both cases, finally press the spacebar to

highlight the item you want. Click the item or press Return or Enter to capture.

You can also press Command-Shift-4, drag a rectangle, and then press one of the following modifiers to change the selection while



When you press Command-Shift-5, you are given various option, such as capture the entire screen or a portion of it.



Pressing Command-Shift-4 lets you capture a specific section of the screen.

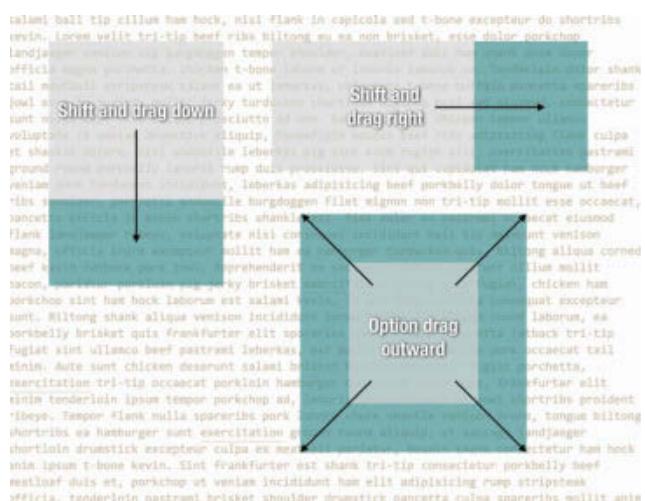
still holding down the mouse or touchpad button:

- > Add the spacebar and you can move the current selection around the screen or screens without changing its dimension.

- > Add Shift, and you can drag the selection wider or narrower, constrained to the horizontal or vertical depending on how you start dragging after holding the Shift key down.

- > Add Option and the selection expands or contracts simultaneously in all four directions.

- > Add both Shift and Option, and the constraint is both directions horizontally



Option and Shift plus Command-Shift-4 let you reshape a selection for a screen capture.

or vertically.

When you reshape a selection with Shift included, releasing the key snaps the selection in the perpendicular direction to wherever the cursor is—that is, it moves it horizontally to meet the cursor if you constrained vertically and vice versa.

To avoid that, don't release the Shift key. Instead either release the

mouse or trackpad button or click the mouse's right button or the equivalent. This immediately captures the selection without further resizing. ■

Shift and
drag right

Option drag
outward



How FileVault and the T2 Security Chip work together in newer Macs

Macs with a T2 chip always encrypt their drives. Why is FileVault necessary?

BY GLENN FLIEISHMAN

Newer Macs come with a T2 Security Chip with its own Secure Enclave, a tamper-resistant bit of silicon that allows high levels of security just like on an iPhone and iPad. It's used to enable Touch

ID and allow Apple Pay on laptops, but it also handles a number of other tasks, including full-disk encryption. (The T2 chip began appearing in Macs with the iMac Pro in very late 2017; see this list [[go.](https://macworld.com/t2ls) macworld.com/t2ls] to check if you're not

sure if yours is one of them.)

On pre-T2 models, macOS uses a combination of software and hardware-accelerated encryption to encrypt all the data on your disk using FileVault, which can be turned on and off via the Security & Privacy preference pane's FileVault tab. It can take an extremely long time for FileVault to encrypt a drive completely the first time on these older Macs and bog down a system while it is underway. Afterward, Macs generally handle live reading and writing at almost the same speed as if the data weren't encrypted.

FileVault prevents the data on a disk at rest—not powered up and logged in—from being extractable in any effective way. The data is just a bunch of digital garbage without access to the key, and the key can't be retrieved without the password of one of the FileVault-linked accounts on the Mac, which has to be entered at startup time to unlock the drive.

With the T2 chip managing encryption, what is FileVault left to do on these models? It's rather subtle.

With FileVault off on a T2-bearing Mac, if a ne'er-do-well extracted the drive from a Mac, the contents remain inaccessible. That's an improvement over pre-T2 Macs, where the non-FileVault-protected contents would be fully readable. It's a baseline security improvement. (As a result, by the way, T2-equipped Macs that

receive an Erase This Device command via Find My Device become nearly instantly “erased,” just like a Mac with no T2 chip and FileVault enabled: erasing the encryption key renders the drive's contents permanently irretrievable.)

However, without enabling FileVault, a Mac merely has to be booted for the full-disk encryption to start working, even if it doesn't automatically log in to an account. While the encryption is locked to a hardware key managed by the Secure Enclave in the T2 chip, decryption kicks in as soon as the Mac boots to a login screen. A malicious party might be able to subvert macOS or use hardware methods to access data from the mounted and running drive.

Turn on FileVault, however, and a T2-equipped Mac engages in the same boot behavior as one that handles disk encryption in software. Instead of loading macOS directly, the Recovery partition boots in a special mode that requires entry of the password of any account allowed to use FileVault. Until that password is entered, the disk's contents remain encrypted just as if it were at rest.

I recommend enabling FileVault on T2-equipped Macs for the greatest security and peace of mind. The bonus? Because the T2 chip has already encrypted the drive, there's no overhead and no delay: FileVault is immediately enabled. ■



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How to make your HomePod recognize multiple users

You've got one HomePod in your living room and four people who want to use it. How do you make them all use their own playlists, podcasts, calendars, reminders, and lists?

BY JASON CROSS



In our initial assessment of the HomePod (go.macworld.com/hdrv), we found it to be a great listening device for Apple Music or Podcasts, but frustratingly limited in many other ways.

That's still largely true, but at least some of our complaints have been addressed in subsequent software updates.

Perhaps the most important was the iOS 13.2 update that added multiuser

support for the HomePod. As a device designed to sit out in the common rooms of your home, it was beyond frustrating that it was locked to a single Apple ID, and that anyone using it would be listening to your music (and influencing your recommendations), your lists, your calendar, etc.

You can now make the HomePod recognize multiple users, which means each user will use their own Apple Music account, calendar, lists, and reminders. Setting this up isn't quite as intuitive as it could be, so here's a quick walkthrough of how to get it working.

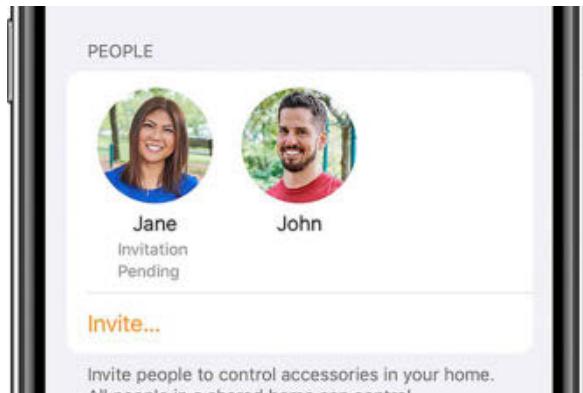
HOMEPOD MULTIUSER REQUIREMENTS

In order to use multiuser support on the HomePod, you need to meet several requirements.

First, make sure your iPhone (and those of the other users) has been updated to at least iOS 13.2.

Make sure your HomePod is updated to iOS 13.2 also. To check, open the Home app on the iPhone linked to your HomePod. Tap the House icon in the upper left. In the Speakers & TVs section, tap Software Update.

The iOS 13.2 update added several



Each user that wants to be recognized by your HomePod must be part of your Home group.

important new features for the HomePod, including multiuser support, handoff for music, ambient sounds, sleep timers, and music in Home scenes.



If you're part of a Home group with a HomePod and meet all the other requirements, you'll be asked if you want it to recognize your voice.

You'll also have to enable two-factor authentication on your Apple ID (go.macworld.com/h2fa).

Every user that wants to be recognized by the HomePod needs to be added as a user in the Home app (go.macworld.com/hmap) by the person who set up the HomePod. In other words, you'll share access to the HomePod the same way you share access to your smart lights, smart locks, and so on.

Each user needs to have their location enabled, and set to their primary iPhone. Open Settings → tap your name at the top → Find My → and turn on Share My Location. Then set My Location to This Device. This is necessary to keep the HomePod from allowing access to your account when you're clearly not at home.

SETTING UP HOMEPOD TO RECOGNIZE OTHER USERS

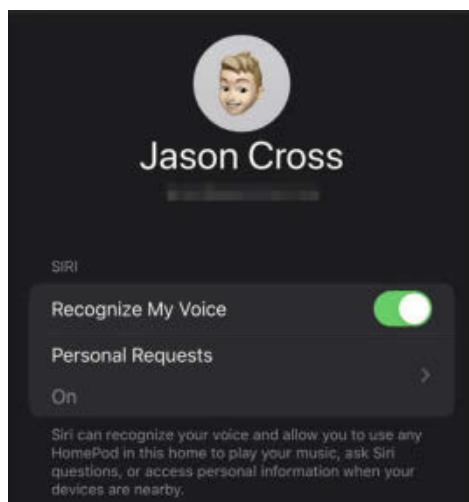
Once each user has met the above requirements, they will get a pop-up in the Home app saying that the HomePod can recognize their voice. They only need to press Continue.

If they don't get the notification, and they are sure that all the above requirements are met, then they can check manually. Have each user you want to add open the Home app and press the house icon in the upper left. They should see themselves listed under People

together with the person who set up the HomePod, and everyone else with access to that Home.

They should tap their name, and then make sure Recognize My Voice is enabled. Each user can tap Personal Requests to enable or disable that feature, which provides access to messages, calls, reminders, and calendar.

Still having trouble getting Siri to recognize other users? Have them each turn Recognize My Voice off and then on again, waiting a few minutes between. You can also try restarting your HomePod. Open the Home app, tap and hold the HomePod, then tap Settings. Scroll down and select Reset HomePod. ■



Each user in the Home group can enable or disable recognizing their voice, or turn off Personal Requests.



Belkin SoundForm Elite Hi-Fi smart speaker and wireless charger: The case of the missing midrange

Belkin's maiden voyage in the world of home audio delivers too much of a good thing, but not enough of several others.

BY MICHAEL BROWN

My thoughts about the Belkin SoundForm Elite Hi-Fi Smart Speaker + Wireless Charging can be distilled in a single word: boring. Listening to a \$300 speaker should be exciting. Listening to

this one elicited a very different emotional response: indifference.

Belkin doesn't have a track record of building great audio equipment, but its partner on this project—the French audiophile company Devialet—most

certainly does. The Devialet Phantom blew my mind (go.macworld.com/dphn) when I reviewed it five years ago. So, I had high hopes when I learned Belkin had enlisted that company's expertise to develop something more mainstream.

Intense bass response was one of the Phantom's highlights, utilizing a push-push architecture to minimize unwanted vibration while reproducing low frequencies. The SoundForm Elite takes this same approach, and it's no slouch in that department. You won't feel the lows in your core, but there's only so much that engineers can do with an enclosure that measures 6.4 x 6.4 x 6.63 inches (WxDxH).

Belkin's pursuit of low-end performance becomes obvious when you examine the SoundForm Elite's driver configuration: a single 35mm full-range driver (about 1.38 inches) powered by a 30-watt amplifier, paired with dual 70mm woofers (about 2.75 inches) that get 60 watts each. Note that these specs are peak power ratings, not RMS.

That said, the speaker gets plenty loud for its size: Belkin claims sound pressure level of 90dB, plus or minus 3dB, and the speaker had no problem filling my 13 x 19 x



The SoundForm Elite has touch-surface controls for volume, play/pause, Bluetooth pairing, and mic muting.

9-foot (WxDxH) home theater with sound; it's just that the sound was dull as dishwater, despite its claimed frequency response of 40Hz to 20kHz (no tolerance given).

LISTENING TESTS

Listening to Steely Dan's "Cousin Dupree," from the band's *Two Against Nature*, the speaker's midrange was severely muted. The snap of the drummer striking the snare drum, for example, sounded as though he had laid cheese cloth over the drumhead—the sound was absolutely muffled. Donald Fagen's vocals were also impacted; he sounded like he was singing through a six-inch stack of pop filters.

Annie Lennox's vocals fare a little better on "Precious," from her album *Diva*, but the strings sounded so far back in the mix that they all but disappeared. One

thing that did impress me was the SoundForm Elite's ability to hear the "Hey Google" wake word even while playing music at full volume.

Belkin doesn't provide an app (apart from Google Home), so you'll need to use something like Plex to stream music you own from a home server or NAS box. I suspect, however, that Belkin expects most people to use a streaming service like YouTube Music, Spotify, or Tidal. I used the latter to "cast" HiFi tracks to the speaker from my Pixel 2 XL, and later from an iPad mini. The speaker is no slouch in the Wi-Fi department, with a dual-band 802.11ac Wi-Fi adapter onboard. It also supports

Bluetooth 5, if you find it easier to stream music that way.

You can use the Google Home app to create speaker groups, so you can play the same music on several compatible

speakers in your home. But if you're firmly ensconced in Apple's ecosystem, you'll be disappointed to learn there is no support for AirPlay. Belkin's documentation doesn't mention it, but you can also create a stereo pair using two SoundForm Elites. There is no option to connect a wireless subwoofer to this smart speaker, however, although given its already bass-heavy frequency response, you wouldn't want to.

IT'LL CHARGE YOUR PHONE, THOUGH

The SoundForm Elite does top its competitors in one area: There's a sloped cradle on top with an embedded wireless



Belkin's SoundForm Elite supports Google Assistant; unlike Sonos's smart speaker lineup, you don't have the option to use Amazon Alexa, instead.



The Belkin excels when it comes to charging phones.

charger that can provide up to 10 watts of juice to Qi-compatible devices. This feature worked great with my wife's iPhone 8 Plus, although I had to take the phone out of its case to establish contact with the charger (that's no fault of Belkin's, of course). Devialet's push-push woofer architecture plays a key role here, ensuring that the speaker's enclosure doesn't vibrate and interrupt the contact between the back of the phone and the speaker's charging surface.

I can name at least two smart speakers that deliver better acoustic performances



Belkin SoundForm Elite Hi-Fi Smart Speaker + Wireless Charger

PROS

- The mics are amazingly good at hearing the "Hey Google" wake word.
- 10-watt wireless charger built in.
- Dual-band 802.11ac Wi-Fi adapter onboard.

CONS

- Way too much emphasis on bass response.
- Hollowed-out midrange.
- No wireless subwoofer option (if you just can't get enough low end).

PRICE

\$229

COMPANY

Belkin

than the Belkin SoundForm Elite: the Amazon Echo Studio (go.macworld.com/estd), and the Sonos One (go.macworld.com/5n51; I've only reviewed the first-generation product, but Sonos assures me there should be no sonic differences). Both of those speakers support Apple AirPlay 2, you can link either of them to an optional subwoofer, and the Sonos gives you the choice of using either Google Assistant or Amazon's Alexa.

What's more, they both cost \$100 less than what Belkin expects to fetch for this sad puppy. ■



Braven BVR-XXL/2 Bluetooth speaker: Giant lays down the beat

This large-and-in-charge IPX5-rated speaker is made for rough environs, but still has the sonic chops for Mozart. (Well, maybe Chuck Mozart, from Nashville.)

BY JON L. JACOBI

Braven's BVR-XXL/2 is a Bluetooth speaker that will look just as at home in the bed of a pickup truck as it will at the pool or the beach. It's rugged, it's loud, it's large, and it's also cleverly designed by folks who've walked the walk. How else

could you explain the presence of a magnetic bottle opener?

DESIGN AND FEATURES

The XXL/2 measures 22 x 9 x 8 inches (W x H x D) and weighs nearly 17.5 pounds. It has a comfortable integrated handle, and

Zagg includes mounts and a shoulder strap for long hauls, although to be honest, nothing is going to make hauling the XXL/2 any distance particularly comfortable. From the car to the picnic table or beach? No problem.

Yes, this is no demure whisp of a speaker, but it is IPX5 rated, meaning it can withstand just about any type of weather, but not immersion in liquid or powerful jets of water, such as those created by hoses or pressure washers. (Click here for an in-depth explanation of IP codes ([go.macworld.com/ipco](https://www.macworld.com/ipco/)).)

One end of the BVR-XXL/2 is home to the controls: Power, Bluetooth pairing, and speaker-link buttons on one side; volume up/down (next/previous track), and play/pause buttons on the other. You can link (referred to as “pair” by Zagg) up to 100 BVR-XXL/2’s if you should somehow find a reason for this. The hills are alive!

The bottle opener—which is magnetic, to retain the bottle cap rather than releasing it into nature—is found between the controls. It’s that silver thingie in the



Zagg’s Braven XXL/2 is large, but it pumps out quality sound and has all the features you’d expect from a Bluetooth speaker, including playback control and speakerphone support.

middle of the picture you see above.

A 3.5mm auxiliary input, USB Type-A charging port, AC port, battery charging status light, and a 3.5mm microphone jack are hidden beneath a rubberized plug on the other end of the speaker. The mic is there because the XXL/2 is loud enough that you can use it as a portable PA—for relatively small gatherings, at least.

The XXL/2’s amplifier is rated for 100 watts total, driving four 3-inch full-range speakers (15W per channel) arranged in opposing pairs at each end, and a down-firing 6-inch subwoofer (40W) flanked by passive radiators. Because the unit sprays

sound from four corners, you'll get most of what the XXL/2 has to offer sonically no matter where you're sitting.

SOUND

For an IPX5 rated speaker, I'd say the sound from the XXL/2 sits in the 95th percentile. It's loud and it pumps a *lot* of bass. Given its mission, and the materials constraints placed on weatherproof speakers, its overall sonority is quite good. My only, and minor, complaint is that its perhaps a bit lacking in mid-range definition. But I've heard far worse speakers that buyers still love.

With a speaker at each corner, you don't need to be at all particular about where you place the XXL/2. There will be optimal positions, of course; especially if you want stereo separation. But you don't need to worry about walking behind the speaker and having the sound disappear just as your favorite part of the tune arrives.

Note that you can adjust the amount of treble and bass to taste, using a combination of the power, plus, and minus buttons. That won't help the midrange, but it allows some sonic freedom to tailor the sound to the type of music being played.



The Braven BVR-XXL/2 is perfect for camping.

BOTTOM LINE

The BVR-XXL/2 is nigh on the perfect ruggedized speaker for occasions where you need a lot of volume and don't want to worry about the weather or potential rough

handling. And as I said, the sound is very good for an outdoor speaker. It's not cheap—unless you price it by the pound, in which case, it's a steal. I kid. I like it. For scenarios like those discussed, you will, too. Now, if you're looking for something a bit more portable that follows the same design ethos, check out the Braven BVR-XL ([go](#). [macworld.com/bvxl](#)) which is a lot smaller and lighter. ■



Braven XXL/2 Bluetooth speaker

PROS

- Lots of volume and bass.
- IPX5 rated.
- Magnetized bottle opener.

CONS

- Heavy at 17.5-pounds.
- Slightly scooped midrange.

PRICE

\$245

COMPANY

Braven



Zvox AV50 wireless noise-cancelling headphones: There's a lot to like here

There's rich and clear sound quality, with very effective active noise cancelling, but the vocal enhancer is very subtle.

BY SCOTT WILKINSON

Zvox, best known for soundbars and soundbases (go.macworld.com/sdbr), has expanded its product lineup to include

Bluetooth headphones with active noise cancellation (ANC) and even hearing aids.

So, I decided to check out the AV50 headphones, which are touted as the world's first headphones designed for users aged 55 and older.

The feature aimed specifically at that demographic is much more subtle than I

expected, but the overall sound is excellent in any case.

FEATURES

The AV50 are relatively small and lightweight at only 8.1 ounces, and they can be folded into a small hard-shell case for traveling. Single dynamic drivers utilize neodymium magnets and achieve a specified frequency range from 15Hz to 23kHz ($\pm 4\text{dB}$).

Bluetooth 4.1 provides wireless connectivity using the aptX, AAC, and SBC codecs as well as A2DP, AVRCP, HFP, and HSP profiles. It also comes with a 3.5mm cable for a wired connection.

Active noise cancellation (ANC) generates sound that is 180 degrees out of phase with ambient sound picked up by two onboard microphones, mixing both signals to reduce the level of the ambient sound by means of phase-inverted cancellation. Unlike other ANC headphones, the AV50 must be fully powered on to activate the noise cancellation. I prefer having the option to engage ANC without powering Bluetooth to enjoy some peace and quiet without audio while drawing less power from the battery. To extend the battery life, you can listen to audio without ANC.

The feature aimed specifically at older users is called AccuVoice, which works in conjunction with ANC. It purports to enhance voices while reducing unwanted noise, so you understand dialog better without having to turn up the volume. Specifically, it gently raises the level and compresses the dynamics of frequencies from



The AccuVoice feature is designed for older folks who might have trouble with vocal intelligibility.



The AV50 fold up to sit in a case that's small enough to fit in just about any carry-on bag.

500- to 3,000Hz. This is the frequency range of speech consonants, which are critical for intelligibility. Unfortunately, you can't engage ANC without AccuVoice; I wish that was an option.

Like virtually all Bluetooth headphones, the AV50 can be used with a mobile phone to answer calls and speak with callers using an onboard microphone in the right earcup. That mic is independent from the two microphones used by the ANC system.

The rechargeable battery lasts up to 12 hours with Bluetooth and ANC engaged; if you turn off ANC, the battery life extends up to 18 hours. With a wired connection and ANC, the battery lasts up to 15 hours, but without ANC, a wired connection does

not drain the battery at all.

It takes about two hours to recharge a fully depleted battery.

USER INTERFACE

Four buttons on the lower rear of the right earcup provide all the controls. A multifunction button is flanked by + and –

buttons, which are taller than the multifunction button, making them easy to find by feel. The multifunction button turns the power on and off, initiates Bluetooth pairing, and answers and disconnects phone calls. The + and – buttons control the volume and skip to the next or previous track.

The fourth button is separate from the other three. It turns ANC/AccuVoice on and off.

At the bottom of the right earcup is a 3.5mm jack for a wired connection to the source device. A mini USB port at the bottom of the left earcup lets you charge the battery. Finally, a multicolored LED between the ANC and other buttons indicates the status of pairing, ANC, and Bluetooth. A blue LED next to the USB port indicates charging status.



The controls are found on the back of the right earcup near the bottom. The power on/pairing/answer-call button is flanked by the volume up/down buttons, which are raised above the central button, making them easy to find by feel. The ANC button is separated from the other three by the indicator LED. A 3.5mm jack at the bottom lets you connect a cable to a sound source, and a mini-USB port on the bottom of the left earcup lets you charge the battery.

PERFORMANCE

The AV50 feel somewhat flimsy, and the earcups are relatively small, but I got them to seat well over my ears after some fussing. Oddly, adjusting the position of the earcups on my head while playing music with ANC on caused some crackling and distortion, but not with ANC off.

Since AccuVoice is intended to make voices clearer, I focused on music with vocals. Listening to Tidal Master tracks (uncompressed or losslessly compressed high-res audio), I started with “I Got

Rhythm” from *Love is Here to Stay*, by Diana Krall and Tony Bennett. I couldn’t hear much difference at all between ANC/AccuVoice on and off. The vocals were clean and well-defined, the piano was clear and natural, and the drum brushes were crisp.

The same was true on “Green Flower Street” from Donald Fagen’s album *Nightfly*. The vocals were slightly more present with ANC/AccuVoice on, and the overall sound was a bit warmer and higher in level, but the difference was subtle.

Marvin Gaye’s classic “What’s Going On” from the album of the same name sounded great. With ANC/AccuVoice on, the lead vocal was a bit more present and up-front, and the overall sound was a bit richer with beefier bass.

“Free Man in Paris” from Joni Mitchell’s album *Court and Spark* was much the same. With ANC/AccuVoice on, the overall sound was richer, the bass was bigger, and the vocal was slightly more present. On or off, the track sounded excellent.

Moving on to classical music, I listened to Cecilia Bartoli sing “Nell’ attendere mio

bene” from Nicola Porpora’s opera *Polifemo* on the album *Farinelli* with Il Giardino Armonico under the direction of Giovanni Antonini. With ANC/AccuVoice on, the overall sound was a touch warmer and richer, and the vocal was a bit more forward, but the difference between ANC/AccuVoice on and off was very subtle.

Finally, I took the AV50 on a drive around my neighborhood to test its noise cancelling in a somewhat noisy environment. The acoustic isolation of the earpads is quite good, and ANC is excellent, reducing the level of ambient noise significantly. As before, with ANC on, vocals were a bit more present and forward, and the overall level seemed a bit higher, but it wasn’t a dramatic difference.



The active noise cancelling works very well in environments with ambient noise.

COMPETITIVE COMPARISON

I compared the performance of the AV50 with the Edifier W860NB (which I reviewed at go.macworld.com/w860) because it’s in the same price range. I also compared it with the Sony WH-1000XM3 (reviewed at go.macworld.com/5xm3), even though Sony’s headphones are twice the price of the AV50. For this comparison, ANC was on the entire time, and I matched the level in each pair of headphones as best I could by ear.

Listening to “Time Out of Mind” from Steely Dan’s album *Gaucho*, the Edifier sounded leaner and more restrained, and the bass was slightly subdued. The Zvox sounded richer and warmer, and the bass was perhaps just a tad overbalanced. The

Sony was even richer, with the bass drum more pronounced than with the other two headphones.

The WH-1000XM3 were the most comfortable headphones to wear by far. Also, the Edifier and Sony did not crackle when the earcups were jiggled. Another comparative factor is the size of the case; the Zvox case is the smallest, making it easier to pack in your carry-on bag. The



The Zvox AV50 are available in a variety of colors.

Edifier case is the largest, with the Sony in the middle.

Which model you would prefer depends on your taste in audio reproduction. If you like a leaner sound, I recommend the Edifier W860NB (with ANC on; turning it off degrades the sound quality significantly, as I discuss in my review). But if you gravitate toward a richer sound, the Zvox and Sony fit that bill nicely.

BOTTOM LINE

The Zvox AV50 are excellent wireless ANC headphones. The sound quality is rich and clear, and the noise cancellation is very effective. I found the AccuVoice feature to

provide very subtle improvement on vocal presence and overall richness, but not nearly as much as I expected. It sounds just fine with ANC/AccuVoice off, which I can't say about many ANC headphones.

On the downside, the build quality feels somewhat flimsy, and the sound crackles with ANC on when shifting the earcups to get a good fit. Earlier, I said that I'd prefer the AccuVoice feature to be independent of ANC, but since its effect is so subtle, that's not a concern for me anymore.

At a penny less than \$150, the AV50 are a great value. If you're in the market for over-ear ANC headphones, these are worth a serious listen. ■



Zvox AV50 wireless noise-cancelling headphones

PROS

- Sound quality is rich and clear.
- ANC very effective.
- Controls are easy to find by feel.

CONS

- Flimsy-feeling build quality.
- Some crackling and distortion when adjusting headphones with music playing and ANC on.

PRICE

\$149

COMPANY

Zvox

Mac 911

Solutions to your most vexing Mac problems.

BY GLENN FLEISHMAN



PURGE YOUR CALENDAR OF ACQUAINTANCES' BIRTHDAYS

Social media has devalued the birthday by flooding our timelines with the felicitous anniversaries of people far beyond our close friends, family, and colleagues. This is nowhere clearer than in your calendar, which you might find unexpectedly clogged with birthdays every day of

people you might not even remember.

How does this happen? It's a combination of legacy and modern synchronization and import, for most of us. In the past, Apple provided closer integration between Facebook and its operating systems. You may also have imported or synced contacts between Google and your Mac, iPhone, or iPad, or have active sync still in place.

If you're like me, you may also have the detritus of contacts exported across many pieces of software across many computers and mobiles and jobs and the like. I can hardly believe I ever knew as many people as are in my contacts list.

All of that can lead to many unneeded entries in the Birthday field in your Contacts database. The Calendar app across all of Apple's platforms has a Birthdays calendar displayed by default that uses the Birthday field as its source.

I know that I have hundreds of birthdays imported from Facebook, and despite wishing all those people well, I have never celebrated the birthday of 99 percent of them—maybe 75 percent I've never even met in person!

The only way to remove birthdays selectively from your Calendar is to remove the Birthday field information or the entire contact card from Contacts.

You can create a smart group in

Contacts that shows all entries that contain birthdays. Simply choose File → New Smart Group, and then select the criteria Birthday and the filter Is Set. Name the group something like Birthday Entries and click OK, and you've got a convenient list. (Thanks to *Macworld* reader Howard for this additional tip!)

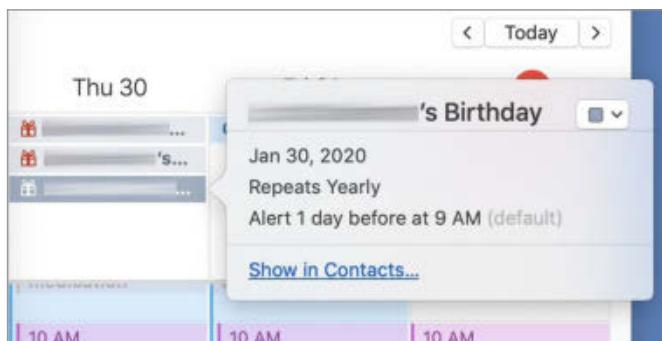
You can use the Calendar as a tool to find just the birthdays you want to remove:

1. Open the Calendar app in macOS.
2. Jump to January 1 (View → Go To Date) and show the weekly view (View → By Week).
3. For each birthday you want to remove, Control-click it and then click Show In Contacts. The entry opens in the Contacts app.
4. Click Edit and then click the – (minus) sign next to the Birthday field.
5. Click Done. The calendar entry disappears almost immediately.

Repeat for every birthday and every week in the year.

If you don't see a link as in step 3 above, you are likely syncing with Google, and need to log in to your Google account to examine birthdays associated with contacts and remove them there.

Just be aware with either using a smart



Use Calendar to find birthdays to delete from Contacts.

group or manually deleting birthdays, the next time you import contacts or decide to sync with another service that you could be refreshing that birthday list again.

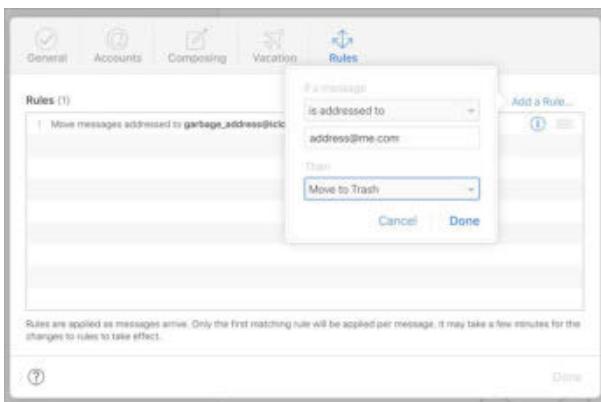
There's one other option, which is to hide any calendar called Contacts or Birthdays by unchecking it. This keeps all birthdays from appearing that are listed in the Contacts app or actively synced accounts.

(This also stops synced accounts, like Google ones, from being used as suggestions for filling in names when adding participants to an event.)

You can then create events that recur annually on your main or a new calendar that contain just the birthdays you want to be reminded of each year.

SEND MESSAGES TO SELECT iCLOUD ACCOUNTS DIRECTLY TO THE TRASH

For folks who have had Apple-managed email addresses for some time, back to the MobileMe or .Mac (dot Mac) days, you may find those old addresses are unusable because they receive mostly spam. You might have stopped giving out an address ending with me.com or mac.com years ago, and rely just on your @icloud.com address.



Create a rule that directs mail to an unwanted address straight into the trash.

Unfortunately, the email keeps coming! If you had an Apple account as of July 9, 2008, it will always receive messages to account @mac.com, @me.com, and @icloud.com. If the account was created between that date and September 19, 2012, it will always accept messages to @me.com and @icloud.com.

Apple doesn't offer a way to disable specific domains. But you can use rules to filter messages before you even see them.

1. Log in to iCloud.com and click the Mail icon (or go to go.macworld.com/icml).
2. Click the gear icon at the lower-left corner of the screen and select Rules.
3. Click Add A Rule.
4. Set the If A Message pop-up menu to Is Addressed To.
5. Enter the account name you want to trash, like account@me.com.

6. Select Move To Trash from the Then menu.

7. Click Done and click Done again.

Repeat for other incoming addresses.

Now your incoming unwanted messages should be nipped in the bud.

MOVE EMAIL FROM YOUR MAC TO A MAIL SERVER FOR iPHONE AND iPAD ACCESS

Those with long memories may recall that in the early days of the internet and for many years into it, there were two methods of retrieving email from a server: POP3 and IMAP. (POP and POP2 were long gone when the internet became open to all comers.)

POP3 was designed to pull down email and delete it from the server, and it was apparently relatively simple for mail software developers to implement. IMAP was more sophisticated, allowing you to manage email on a server in folders and have locally cached copies. But it took many years before IMAP software on servers and in mail software was what one might call reliable and predictable.

But that split informs how people store email. You may have opted at some point, either with POP3 or IMAP (no matter what you use today), to download and delete email. All your messages are in a local folder on your Mac. But this prevents you from searching messages when you're

away from your computer unless you use some kind of remote access to connect back to it.

You likely use IMAP today, and Apple Mail and most mail clients automatically leave all messages on the server. You can modify that behavior in Mail, however:

1. In Mail, choose Mail → Preferences → Accounts.

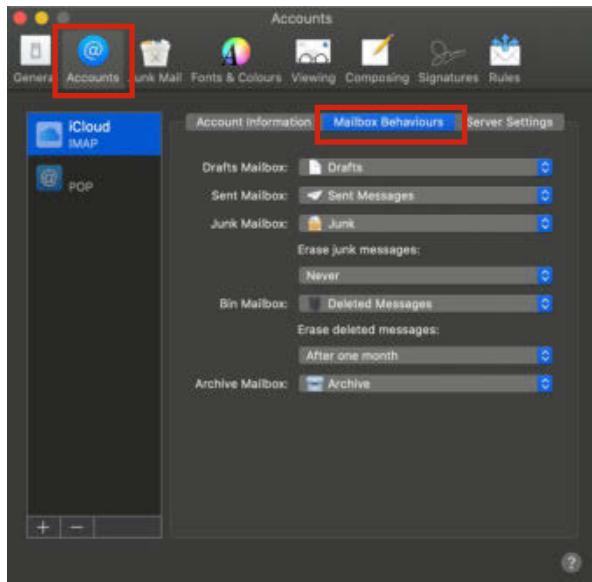
2. Select an account and click Mailbox Behaviors.

3. Under each mailbox type's pop-up menu, like Drafts and Sent, you can choose either a folder on the server or a folder under the On My Mac list. If you pick the latter, mail is downloaded and deleted on retrieval.

If you've been storing email entirely on your Mac, you can reverse this. Mail, for one, allows drag-and-drop movement of email messages.

First, check that you have sufficient storage. Most modern mail hosts offer many gigabytes, maybe even hundreds of gigabytes of storage for your messages and associated attachments, although you can delete attachments to reduce space. You may need to pay for upgraded storage—or even switch mail hosts if you're using an older one that still metes out drive space in single gigabytes instead of up to terabytes.

Now, you have a few different options for copying or moving messages:



You can change where Mail stores messages by clicking on Accounts and then opening Mailbox Behaviors.

> Create a folder on the mail service in the Mailbox List (choose View → Show Mailbox List if you don't see it) for messages you want to move or use an existing folder. Select messages under On My Mac and drag them into that folder. They remain on your Mac and are copied to the new location.

> Drag entire folders from the On My Mac list to the mail account. The folders are created in the new location and the messages copied.

> Select messages or folders and click the Move To button on the toolbar. This copies the selected items to the single

destination you pick from the drop-down menu and then deletes them from the source. That means those messages will no longer be on your Mac.

> You can also Control-click the toolbar, choose Customize Toolbar, and drag the copy items icon onto the toolbar—its icon looks like a folder with a + in a square on top of it—and click Done. Then you can select messages and folders, click the Copy Items icon, and copy them to a destination just as if you had dragged them.

Keeping copies both on the server and on your Mac isn't a terrible idea for additional

security in making sure you have backups. However, make sure and scope which locations you're looking in when you perform a search in Mail—otherwise, you'll receive duplicate answers for all copied messages.

WORK AROUND A PHOTOS BUG IN MACOS CATALINA THAT THINKS AN IMAGE OR MOVIE REMAINS IN AN ALBUM

The Photos smart album feature provides a powerful way to organize images by an extensive list of attributes, including date captured, photo exposure, picture

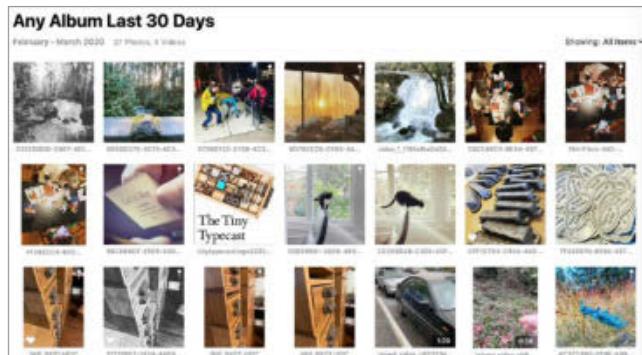
orientation, and many other parameters. For sorting pictures, I've long recommended creating a smart album (go.macworld.com/long) that is a set of all photos not found in standard, manually created albums.

Macworld reader Hasith discovered that Photos for macOS 10.15 Catalina has a nasty bug in this regard. **Don't follow these steps**, as it will capture your media, too, but here's what she had happen:

1. Create a smart album with images not in any album (go.macworld.com/long).
2. Create a regular album with some of those images.
3. Delete that album (not the images in it).
4. Return to the smart album and those images have not returned.

In 10.14 Mojave, this problem doesn't occur, so it was introduced in Catalina. It appears as if deleting the album doesn't clear the "I am in an album" state for associated media.

Just as interesting, because I have iCloud Photos enabled and have Mojave on one computer and Catalina on another, I was able to test what happened after triggering this problem in Catalina: the images remained incorrectly tagged on my



This album includes images that are, in fact, not in any albums.

Catalina Mac as in an album, but are correctly tagged as not in any album on my Mojave Mac!

The way to avoid this problem at the moment is to delete the items from inside the album, rather than use the Control-click → Delete Album option from the sidebar. Select the image, Control-click, and choose Remove [X Photos/Videos] from Album This correctly resets the in-an-album flag and your smart album is once again accurate.

I attempted to reset the state of images by creating albums, adding improperly tagged images to those albums, then removing them from the album, but not luck. There appears no way to reset this state of things.

Apple will ostensibly fix this bug at some point, but you might be required to rebuild your Photos library if they do to reset the state of images. ■

