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# Macworld

OCTOBER 2019 



**REVEALED:**

**iPhone 11,  
11 Pro &  
11 Pro Max**

**PLUS**

**EVERYTHING APPLE ANNOUNCED  
AT ITS SEPTEMBER EVENT**

-  New iPad
-  Apple Watch Series 5
-  Apple TV+
-  Apple Arcade

**BEST  
ANTIVIRUS  
SOFTWARE**

## CONTENTS

### NEWS

- 4** Apple responds to Google's security report
- 7** Apple apologizes for Siri grading programme
- 10** Apple sending 'genuine' parts to more repair shops
- 12** Geekbench 5 is released with all-new tests

### APPLE SPECIAL EVENT

- 16** iPhone 11 Pro and 11 Pro Max: 5 features that justify the 'Pro' designation
- 24** iPhone 11: 5 things you need to know about Apple's new entry-level phone
- 30** Hands on with the iPhone 11 Pro's cameras
- 39** The new 7th generation iPad: 6 cool features
- 44** Apple Watch Series 5: 5 things you need to know
- 47** Apple TV+: Only £4.99 for the whole family
- 55** Apple Arcade: 4 new things Apple revealed
- 57** All the things Apple didn't announce at its 'By Innovation Only' event

### REVIEWS

- 64** CleanMyMac X 4.4.1
- 70** Malwarebytes Premium

### BUYING GUIDE

- 76** Best Mac antivirus software





24



39



## FEATURES

How Apple consistently reinvents its core business **109**

The 10 best Apple Watch complications **115**

# Apple responds to Google's security report

Google's report created false impression among users that their devices were compromised, Apple says. [Jason Cross](#) reports



Last month, Google's Project Zero security research team posted information about a serious vulnerability in iOS – see [fave.co/2HV1NmM](#). The security exploit (or group of exploits, really) allowed a 'small collection of hacked websites' that would, when visited, install code to monitor certain activity on the iPhone.

The security holes were patched in iOS 12.1.4 on 7 February 2019, and there were even news

reports right after the patch about the holes that were closed. The sites that exploited the vulnerabilities were targeting an ethnic minority in China – the Uighur – and also sought to exploit holes in Android and Windows.

Apple has taken exception with the recent report, calling it out not for its technical inaccuracy, but for misrepresenting the scope and scale of the security flaw and the way it was exploited. In a statement issued on 6 September, the company said, “We’ve heard from customers who were concerned by some of the claims, and we want to make sure all of our customers have the facts.”

Apple goes on to detail two ways in which it feels the report was misleading. First, the report says it will, “share these insights into the real-world workings of a campaign exploiting iPhones en masse”. Apple says the attacks were anything but “en masse” and only represented a few dozen websites targeting the Uighur minority community in China. Apple says this misrepresentation caused the hundreds of millions of iPhone users around the world to feel that they were compromised, when that was never true. “Regardless of the scale of the attack, we take the safety and security of all users extremely seriously,” Apple concluded.


Second, the sites were operational for only about two months, while the report gives the impression that iPhones were being hacked for two years. While the vulnerability may have been present in iOS for two years, it was only found and exploited among this narrow community for a short period.

Apple claims that it fixed the exploits within 10 days of learning about them, and that: “When Google approached us, we were already in the process of fixing the exploited bugs.”

The short statement concludes by reassuring users that Apple takes security extremely seriously: “Security is a never-ending journey and our customers can be confident we are working for them. iOS security is unmatched because we take end-to-end responsibility for the security of our hardware and software. Our product security teams around the world are constantly iterating to introduce new protections and patch vulnerabilities as soon as they’re found. We will never stop our tireless work to keep our users safe.”

# Apple apologizes for Siri grading programme

“We realize we haven’t been fully living up to our high ideals, and for that we apologize.” **Jason Cross** reports



What can I help  
you with?

In July, a report in *The Guardian* exposed the fact that third-party contractors have been listening in on a small percentage of Siri requests as part of a ‘Siri grading’ programme. Apple promised to halt the programme while it conducts a “thorough review”, which left us wondering how the company would move forward, as human grading of any machine-learning process is an essential part of training the algorithms to improve them.

Apple now appears to have finished its review and has issued a statement apologizing for the way this programme had been carried out so far. The company plans to reinstate it later this autumn after making some important changes.

The apology begins with a familiar statement: “At Apple, we believe privacy is a fundamental human right.” It then describes how it designed Siri to protect your privacy – collecting as little data as possible, using random identifiers instead of personally identifiable information, never using data to build marketing profiles or sell to others.

The statement goes on to make sure you understand that using your data helps make Siri better, that ‘training’ on real data is necessary, and only 0.2 percent of Siri requests were graded by humans. After all of this, Apple gets round to the actual apology that should have been in the first paragraph.

“As a result of our review, we realize we haven’t been fully living up to our high ideals, and for that we apologize. Apple will resume the Siri grading programme this autumn, but only after making the following changes:

“First, by default, we will no longer retain audio recordings of Siri interactions. We will continue to use computer-generated transcripts to help Siri improve.

“Second, users will be able to opt in to help Siri improve by learning from the audio samples of their requests. We hope that many people will choose to help Siri get better, knowing that Apple respects

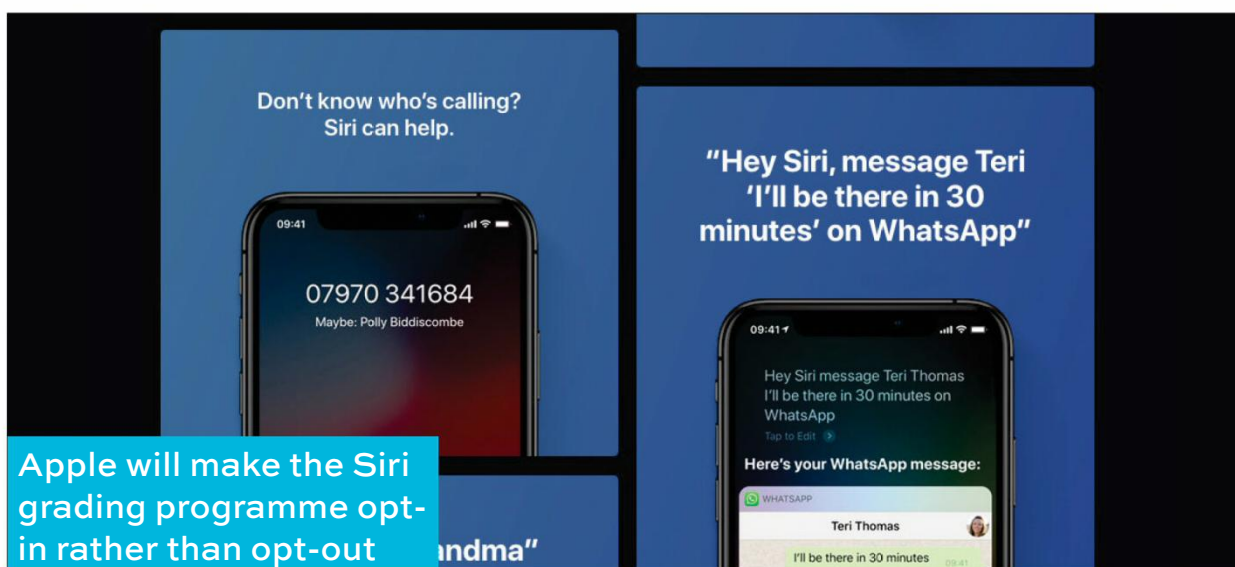


their data and has strong privacy controls in place. Those who choose to participate will be able to opt out at any time.

“Third, when customers opt in, only Apple employees will be allowed to listen to audio samples of the Siri interactions. Our team will work to delete any recording which is determined to be an inadvertent trigger of Siri.”

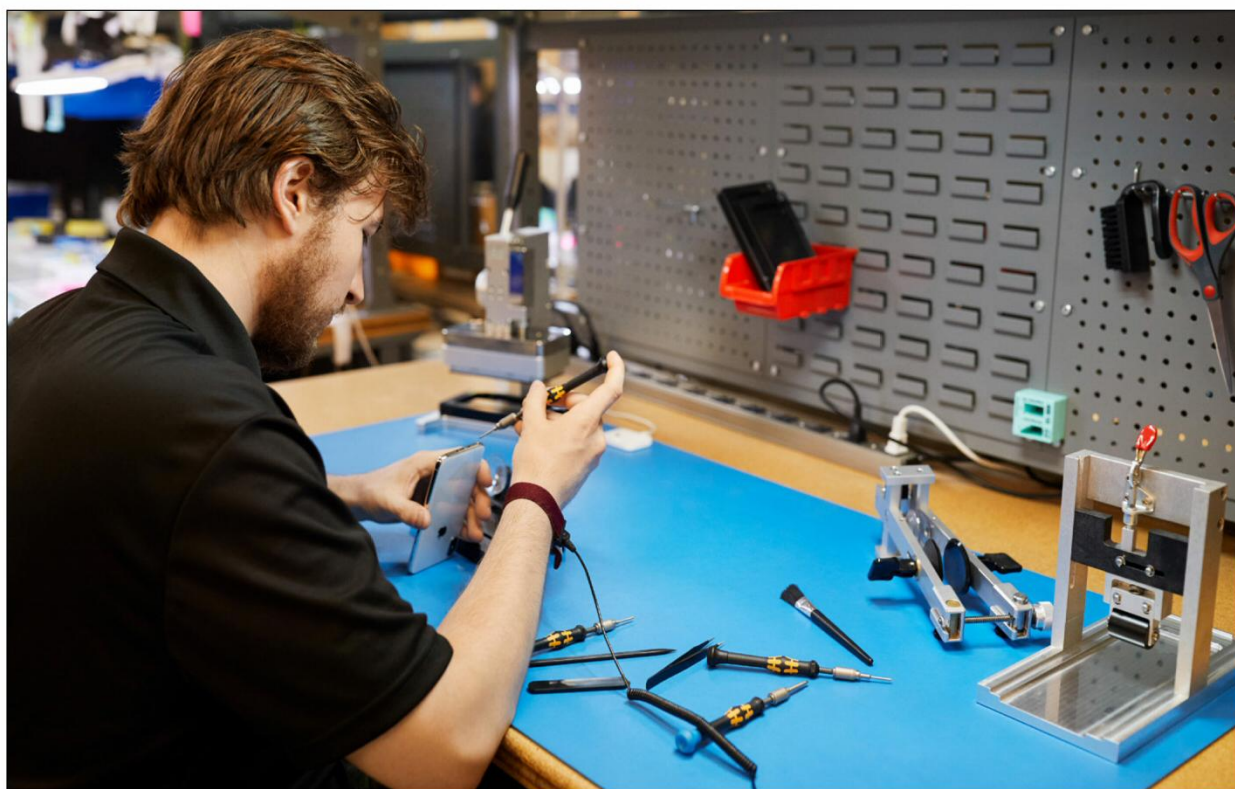
This is the right move, and it once again puts Apple ahead of other tech giants in protecting your privacy and security. It is making the programme opt-in rather than opt-out, an important distinction as the vast majority of users never stray from the default settings. It’s also going to make sure these audio samples stay in-house rather than going into the hands of third-party contractors.

Hopefully, this spotlight on Siri’s training, evaluation, and grading will have a positive effect not only for user privacy, but for helping Siri to improve more quickly.



# Apple sending ‘genuine’ parts to more repair shops

Apple’s new programme means your out-of-warranty iPhone has more repair options. [Michael Simon](#) reports



**A**head of the launch of the iPhone 11, Apple announced a new programme that might let you keep your out-of-warranty iPhone a little longer. Instead of taking your broken iPhone to a high-priced Apple Genius or roll the dice with third-party parts, you’ll now be able to go to an independent repair shop and get the same high-quality parts that you’d get from the Apple Store.

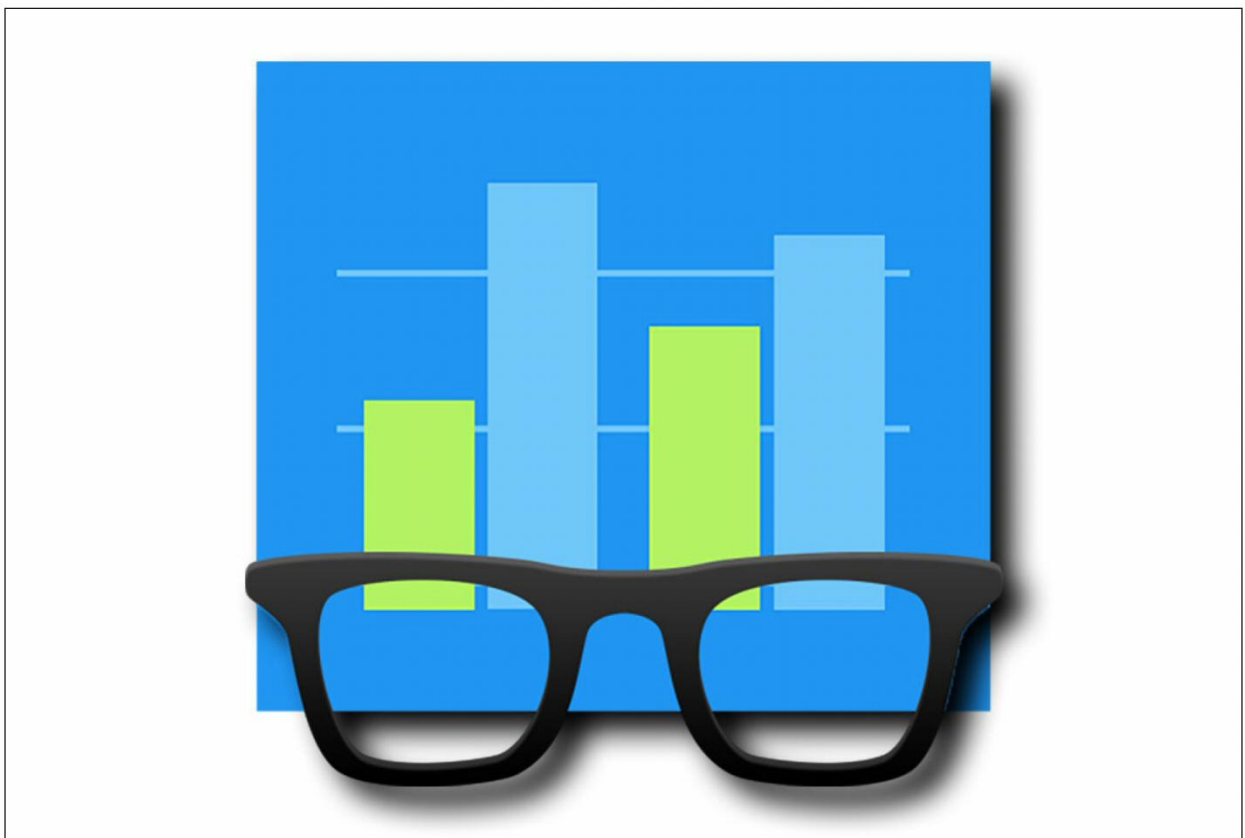
That's a big change. Previously, Apple kept its tools under lock and key, but under the new programme, it's promising "the same genuine parts, tools, training, repair manuals and diagnostics" as an Apple Authorized Service Provider. The programme is limited to out-of-warranty iPhone repairs at launch.

That means repair shops big and small will be able to take advantage of the new programme without going through Apple's rigorous certification to become an Authorized Service Provider. However, there are still limitations on who can join the new programme. Most notably, businesses need to have an Apple-certified technician who can perform the repairs, which requires a passing grade on both the Apple Service Fundamentals Exam and ACiT 2019 iOS Service Certification Exam. Additionally, shops must be located in a commercially zoned area, so people won't be able to run Apple-backed repair shops out of their garage.

Otherwise, there is no cost to join the independent repair programme. While it is limited to the US at launch, Apple said it has been working with 20 independent repair businesses in Europe and Asia as well as North America over the past year as a pilot.

# Geekbench 5 is released with all-new tests

Tests are more demanding and rigorous, and scores cannot be compared to Geekbench 4. **Jason Cross** reports



**P**rimate Labs has released a major new update of its popular Geekbench performance measurement tool. Geekbench 5 ([fave.co/2HXEU2c](https://fave.co/2HXEU2c)) comes three years after the release of Geekbench 4 and features all-new test methods, workloads, and a new measurement scale. As such, it should be a much more accurate

representation of modern workloads on modern hardware, and the scores are not at all comparable with those from Geekbench 4.

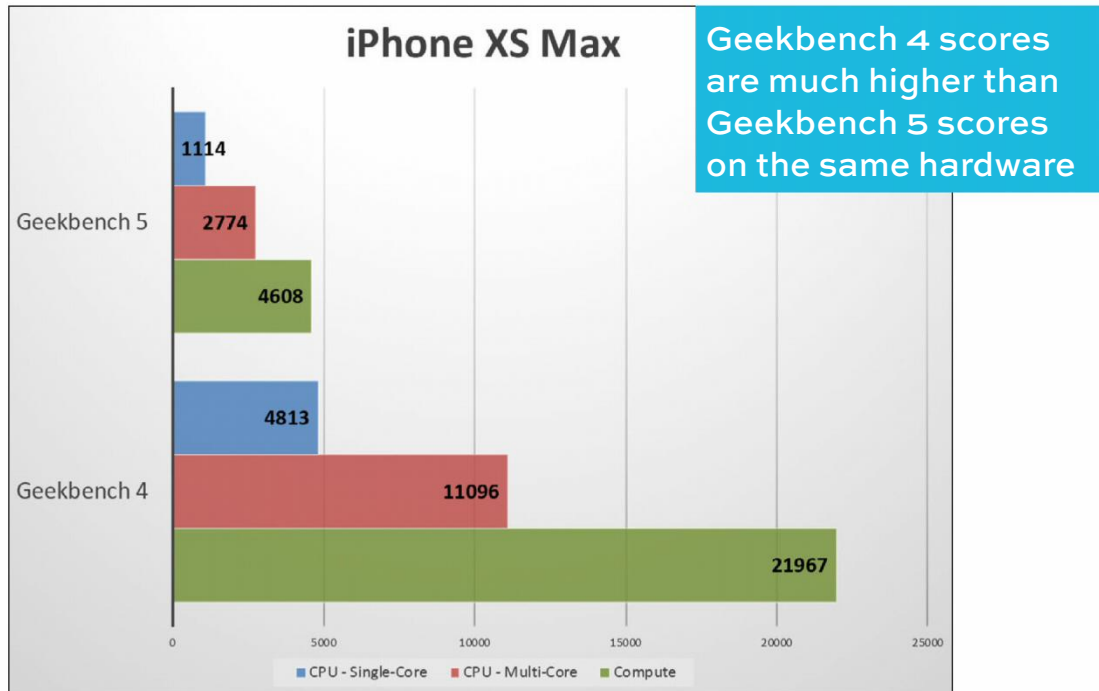
We often use Geekbench to give an overall picture of the CPU and GPU compute performance of iPhones, iPads, and Macs. It's one of the few cross-device and cross-operating-system comparable benchmarks available; while it doesn't paint a perfect picture of the difference in performance between an Intel chip running Windows, an Android phone with a Qualcomm processor, and an iPad with Apple's custom silicon, it is one of the best synthetic benchmarks available to at least attempt to make such a comparison.

## What's new

Since we so frequently discuss Geekbench performance results, we should reveal a little detail about some of the changes in Geekbench 5. Here's what you should know about this latest version.

**There's a new scale:** Geekbench 4 used a Microsoft Surface Book with an Intel Core i7-6600U processor as its baseline, with a score of 4,000 points. Geekbench 5 uses a Dell Precision 3430 with a Core i3-8100 processor as its baseline, with a score of 1,000 points. You can expect the same hardware to produce a score 75- to 80 percent lower on Geekbench 5.

**It's 64-bit only:** Support for 32-bit CPUs and operating systems is gone. This allows Geekbench



5 to use more strenuous tests with larger workloads that put more emphasis on memory performance.

### **There are no more individual memory tests:**

Geekbench 4 had memory copy, memory latency, and memory bandwidth tests. Together they accounted for 20 percent of the Geekbench 4 score. Geekbench 5 drops those tests, increasing the impact of integer performance tests on the score. Memory performance is still important to achieving high Geekbench scores, as the larger workloads require more memory access.

**All the tests have changed:** Tests that existed in Geekbench 4, like AES encryption and image compression, have been updated with new algorithms and larger workloads. Other tests

are new, such as calculating directions using OpenStreetMap data and a set of new Machine Learning and Augmented Reality related tests. GPU Compute tests have all been updated, too.

**Multi-threading is better:** Geekbench 4 used multiple threads to work separately on different problems... one could argue it was a better test of ‘multi-tasking’ than ‘multi-threading’. Geekbench 5 has new multi-threading modes where multiple threads work together on a single problem, which should better represent many multi-threaded apps.

**Vulkan support:** The GPU tests in Geekbench are still focused on using the GPU for compute rather than real-time 3D graphics. New to Geekbench 5 is support for the Vulkan API in Windows, Linux, and Android. On iOS and Mac, it continues to use the Metal API.

**Dark Mode:** Geekbench 5 supports Dark Mode on macOS Mojave. Support for Dark Mode on iOS is coming in a future update ‘later this year’.

**The battery benchmark is gone:** The battery benchmark from Geekbench 4 is not present in Geekbench 5. Geekbench 4 had no battery benchmark in its initial release, either; it was added in 4.2, over a year after the release of 4.0. We hope Geekbench 5 adds this more quickly, but in the meantime we’ll continue to use the Geekbench 4 battery test where appropriate.

# iPhone 11 Pro and 11 Pro Max: 5 features that justify the ‘Pro’ designation

Here are the differences between the iPhone 11 and the iPhone 11 Pro. [Michael Simon](#) reports



**A**t long last (and after months of rumours), the first ‘pro’ iPhones are here – the iPhone 11 Pro and 11 Pro Max have arrived. As the first iPhones with the Pro designation, they mark a real sea change for Apple’s iconic handset and join a lineage of devices that carry an expectation of not



just greatness, but also productivity prowess and cutting-edge performance.

But exactly what kind of pro device is the iPhone 11 Pro? It doesn't have a USB-C port or a Smart Connector like the iPad Pro. It doesn't stand alone as the fastest in its class like the Mac Pro, nor does it reinvent basic functionality like the MacBook Pro's Touch Bar. In fact, to look at them, you might not see much that's pro about them at all – at least no more so than the iPhone XS and XS Max.

But along with all of the new features that we get in the entry-level iPhone 11 (see [page 24](#)), the Pro is still very much a pro-level device for power users. In this article, we look at five reasons why this is the case, but first off we look at how much they will set you back and their specifications.

## Price

**iPhone 11 Pro:** 64GB, £1,049; 256GB, £1,199; 512GB, £1,399

**iPhone 11 Pro Max:** 64GB, £1,149; 256GB, £1,299; 512GB, £1,499

Both models are available to buy now.

## Specifications

### iPhone 11 Pro

- 5.8in (2,436x1,125; 458ppi) Super Retina XDR OLED capacitive touchscreen
- iOS 13
- Apple A13 Bionic (7nm+) processor
- 6GB RAM
- 64GB/256GB/512GB storage

- Three rear-facing cameras: 12Mp, f/1.8, 26mm (wide), 1/2.55in, 1.4µm, PDAF, OIS; 12Mp, f/2.0, 52mm (telephoto), 1/3.4in, 1.0µm, PDAF, OIS, 2x optical zoom; 12Mp, f/2.4, 13mm (ultrawide)
- Dual front-facing cameras: 12Mp, f/2.2; TOF 3D camera
- Dual-band 802.11ac/ax Wi-Fi
- Bluetooth 5.0
- A-GPS, GLONASS, GALILEO, QZSS
- NFC
- Face ID2
- Lightning connector
- Non-removable 3,190mAh lithium-ion battery
- 144x71.4x8.1mm
- 188g

### **iPhone 11 Pro Max**

- 6.5in (2,688x1,242; 458ppi) Super Retina XDR OLED capacitive touchscreen
- iOS 13
- Apple A13 Bionic (7nm+) processor
- 6GB RAM
- 64GB/256GB/512GB storage
- Three rear-facing cameras: 12Mp, f/1.8, 26mm (wide), 1/2.55in, 1.4µm, PDAF, OIS; 12Mp, f/2.0, 52mm (telephoto), 1/3.4in, 1.0µm, PDAF, OIS, 2x optical zoom; 12Mp, f/2.4, 13mm (ultrawide)
- Dual front-facing cameras: 12Mp, f/2.2; TOF 3D camera
- Dual-band 802.11ac/ax Wi-Fi
- Bluetooth 5.0
- A-GPS, GLONASS, GALILEO, QZSS

- NFC
- Face ID2
- Lightning connector
- Non-removable 3,500mAh lithium-ion battery
- 158x77.8x8.1mm
- 226g

## Display

Apple's OLED iPhone displays are hardly news at this point, but the ones in the new Pro line look to be among the best in any phone available. While the 5.8in display in the Pro and 6.5in screen in the Pro Max lack the high-refresh ProMotion feature of the iPad Pro, we're still looking at upgraded technology in the new handsets.

The new iPhone 11 Pro displays are packed with features

1200  
nits peak brightness

Tap to wake

Oleophobic coating

Haptic Touch

True Tone

15  
more  
ef

OLED

458  
els per inch

Wide  
color  
gamut

2,000,000:1  
contrast ratio

HDR

Apple calls its new display the Super Retina XDR – to match the branding of the \$5,999 (UK price to be announced) Pro Display – and it’s brought a slew of enhancements, including the highest pixel density in an iPhone screen and a 2,000,000:1 contrast ratio, which is twice as much as before. It’s also rated for 1,200 nits of max brightness and is 15 percent more energy efficient. And it won’t break as easily either – it’s got stronger glass than the iPhone 11, too.

### The battery

Apple iPhones have always had great battery life, but the iPhone 11 Pro and 11 Pro Max push it even further. On the iPhone XS and XS Max, Apple touted up to 14 hours of video playback, but on the 2019 Pro models, battery life has been vastly improved:

**iPhone 11 Pro:** 4 hours longer

**iPhone 11 Pro Max:** 5 hours longer

That pretty much means you’ll never have to worry about charging your phone throughout the day. It would have been nice to get an always-on display to go with all that extra juice, but we’ll take what we can get.

### The charger

After 11 years, Apple has finally realized that the 5W power adaptor that has come with its iPhones since the beginning isn’t enough for power users.

So if you buy an iPhone Pro, you'll get an 18W adaptor, which Apple normally sells for £29. That means the new iPhone Pros can take advantage of fast charging out of the box. Based on our testing of the iPhone XS, you'll be able to fill up about half of your battery in roughly 30 minutes, a massive improvement over the super-slow 5W charger.

## The camera

Obviously, the main reason to go 'pro' is for the top-of-the-line camera. For the first time ever, Apple has brought a three-lens array to the iPhone Pro's main camera, adding an ultra wide angle lens to a new telephoto and wide angle lens:

The iPhone 11 Pro's camera is the biggest selling point



**Camera 1:** Wide, f/1.8

**Camera 2:** Telephoto, f/2.0, 4x optical zoom

**Camera 3:** Ultra wide, f/2.4, 120-degree FOV

Depending on your needs, you can switch between each camera or take a shot with all three. Add that to the features in the iPhone 11, including Night Mode and Slofies, as well as powerful on-device editing, and you've got a true pro-level camera.

## The design

While the iPhone 11 Pros might look exactly the same as before, Apple has added some subtle changes that make them a high-class upgrade. The sides are still made of stainless steel, and the back is a single sheet of glass with an optical coating. But instead of the glossy, fingerprint-attracting back of previous models, the iPhone Pros have a matte finish across all colours: gold, silver, space grey, and a new midnight green. The back is also where you'll find the new square triple-camera array, which somehow looks way cooler than it did in the dozens of leaked images.

## The future

Along with Night Mode, which lets you take great, bright photos in low light, Apple also teased a new feature called Deep Fusion, which is basically Night Mode on steroids. When snapping pictures in low to medium light, the AI engine will snap nine images – eight before the shutter is snapped and then a



Apple has made some subtle design changes to make the 11 Pros a high-class upgrade

long exposure shot when the button is pressed – to get every possible exposure. Deep Fusion will then examine every pixel to optimize the shot for detail and noise, creating the best possible photo. As Phil Schiller exclaimed, it’s “computational photography mad science”.

# iPhone 11: 5 things you need to know about Apple's new entry-level phone

The successor to the iPhone XR is now Apple's baseline phone. [Roman Loyola](#) reports



**A**t its 'By Innovation Only' event, Apple revealed its newest entry-level iPhone – though you can't necessarily tell it's entry-level from its name. The iPhone 11 starts at £729,



which is £20 less than the introductory price for the handset it replaces, the iPhone XR. It's also significantly cheaper than the new chart-topping iPhone 11 Pro. Here we reveal five standout features of the new baseline phone, but first we'll look at its price and specifications.

## Price

**64GB:** £729

**128GB:** £779

**256GB:** £879

The iPhone 11 is available to buy now.

## Specifications

- 6.1in (1,972x828; 326ppi) Liquid Retina IPS LCD capacitive touchscreen
- iOS 13
- Apple A13 Bionic (7nm+) processor
- 4GB RAM
- 64GB/128GB/256GB storage
- Dual rear-facing cameras: 12Mp, f/1.8, 26mm (wide), 1/2.55in, 1.4µm, PDAF, OIS; 12Mp, f/2.4, 13mm (ultrawide)
- Dual front-facing cameras: 12Mp, f/2.2; TOF 3D camera
- Dual-band 802.11ac/ax Wi-Fi
- Bluetooth 5.0
- A-GPS, GLONASS, GALILEO, QZSS
- NFC
- Face ID
- Lightning connector
- Non-removable 3,110mAh lithium-ion battery

- 150.9x75.7x8.3mm
- 194g

## Dual rear camera, new Camera UI, and new Night Mode

Apple has upgraded the camera to a 12Mp dual-lens setup that replaces the single-lens camera that was on the iPhone XR. The setup includes a 26mm, 6-element, f1.8 wide camera with optical image stabilization and 100 percent Focus Pixels, and a 13mm, 5-element f2.4 ultra wide camera with a 120-degree field of view.

The camera includes a new Night Mode that triggers automatically, and dramatically brightens images shot in dark environments. Apple says that in this mode, multiple images with optical image

A look at the wide (left) and ultra wide cameras in the new iPhone 11



stabilization are taken, and then those images are used to fix motion blur, adjust contrast, correct the colour, and adjusts the image noise to produce an ideal photo. Android cameras have made a lot of progress in this area, and a new Night Mode has been a much-anticipated feature for Apple.

To support the new dual camera setup, Apple redesigned the user interface for the Camera app. When looking through the wide camera, the new immersive interface displays the ultra wide scene in the background of the camera interface, so you can get an idea of what the shot will look like in ultra wide.

The new Night Mode (right) compared to a shot without it



Night mode off

Night mode on

## Video improvements

The iPhone 11 can use both rear cameras to record 4K video at 60 frames per second. The ultra wide lens lets you see more scenery – up to four times more. Another interesting feature: when you zoom into your subject, the audio can zoom in, too.

There's also a new UI element called QuickTake. If you're in Photo mode and you decide that you want to shoot a video instead, all you have to do is tap and hold the shutter button and the iPhone will switch to video recording. iOS 13 also features new video-editing tools to make it easier to edit on the iPhone.

## 12Mp TrueDepth front camera

The front camera can shoot 12Mp photos, and it also has a wider lens. If you use the front camera in landscape mode, you can use the new slow-motion support to take slow-motion selfies, or what Apple calls “slowfies”. The slow motion capture uses 4K video either 60- or 120fps.

## A13 Bionic processor

The A13 Bionic is an upgrade from the A12 Bionic in the iPhone XR. Apple calls it the fastest CPU and GPU in a smartphone, and it says that it's 20 percent faster than its predecessor. Apple also says the A13 Bionic, “is built for machine learning”, sporting a faster Neural Engine Machine Learning Accelerators “that allow the CPU to deliver more than 1 trillion operations per second”.

# WHAT IS AVAXHOME?

# AVAXHOME-

the biggest Internet portal,  
providing you various content:  
brand new books, trending movies,  
fresh magazines, hot games,  
recent software, latest music releases.

Unlimited satisfaction one low price

Cheap constant access to piping hot media

Protect your downloadings from Big brother

Safer, than torrent-trackers

18 years of seamless operation and our users' satisfaction

All languages

Brand new content

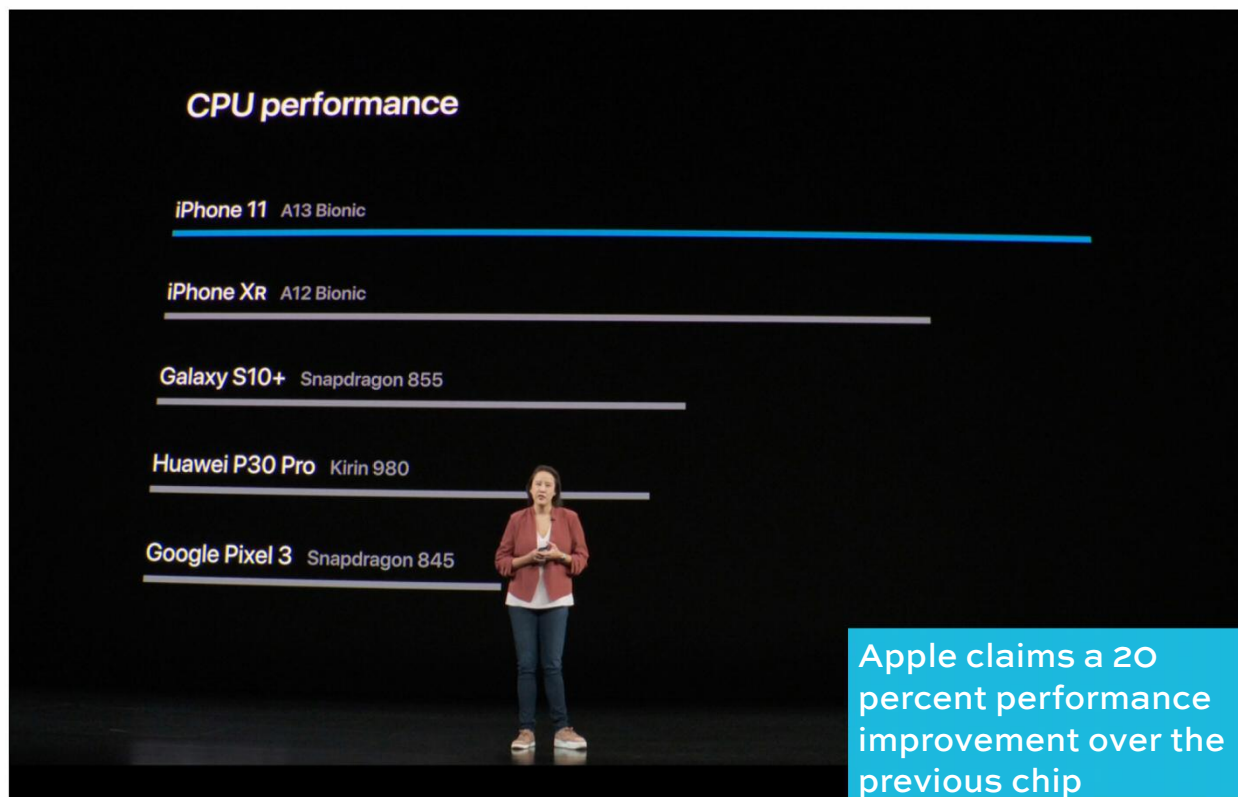
One site



**AVXLIVE** **ICU**

AvaxHome - Your End Place

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



## All glass design in six colours

The iPhone 11 features an all-glass body and a 6.1in liquid retina display. It has an IP68 rating for water resistance up to 2 metres for up to 30 minutes. It's available in six colours: black, green, Product(Red), purple, white, and yellow.

# Hands on with the iPhone 11 Pro's cameras

A look at what's new and how it fits together. [Jason Snell](#) reports



**W**hen it comes to smartphone features, photography reigns supreme. The new iPhones' cameras were the main focus of the most prominent product images in Apple's event, and consumed the most overall time on stage. The latest handsets feature major upgrades to the camera system across the product line, which is good, because the perception among



smartphone-market watchers is that Apple's photography game had fallen behind competitors such as Google, Samsung, and Huawei.

After the event I got to spend some time with an iPhone 11 Pro and its Camera and Photos apps, both of which have been modified to support the new features of the iPhone 11 line. Here's a look at what's new and how it all fits together.

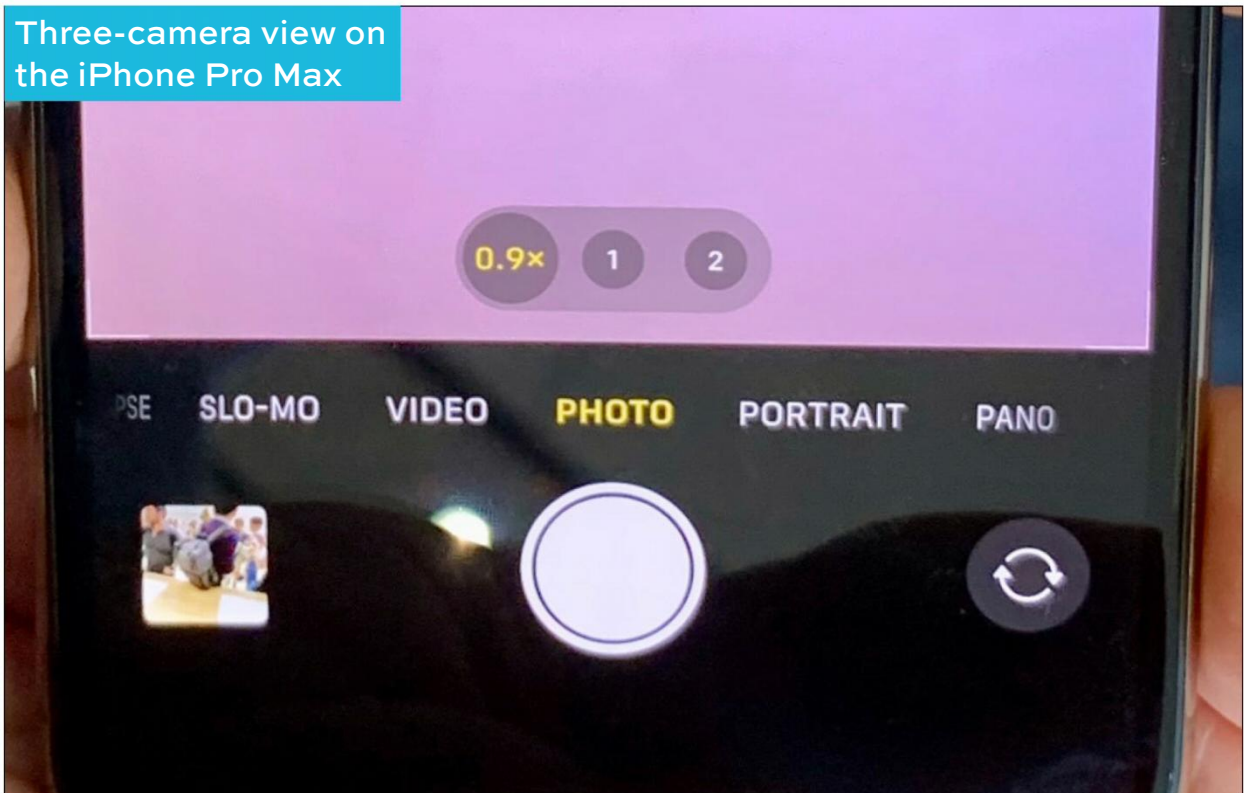
### Adding the 'ultra wide' camera

All iPhone models gained a camera in this update, which Apple is calling the "ultra wide". It's a 12Mp lens with a 120-degree field of view. In iPhone camera terms, it's the '0.5x' camera, versus the 1x 'wide' camera and the 2x 'telephoto' camera. You can toggle between the lenses by tapping buttons right on the Camera app – and yes, that means that the iPhone 11 Pro's Camera app now has three different buttons as shown in the photo on [page 32](#). You can also slide your finger over the buttons to bring up a zoom dial, which prominently displays the 'home' zooms of the available lenses, and subtly snaps to them when you get close.

While you're taking video, you can also zoom in and out using that swiping gesture. The iPhone software will translate that into a smooth zooming effect, and hand off between one camera and the other imperceptibly (a nice trick that requires a lot of calculations and image manipulation).

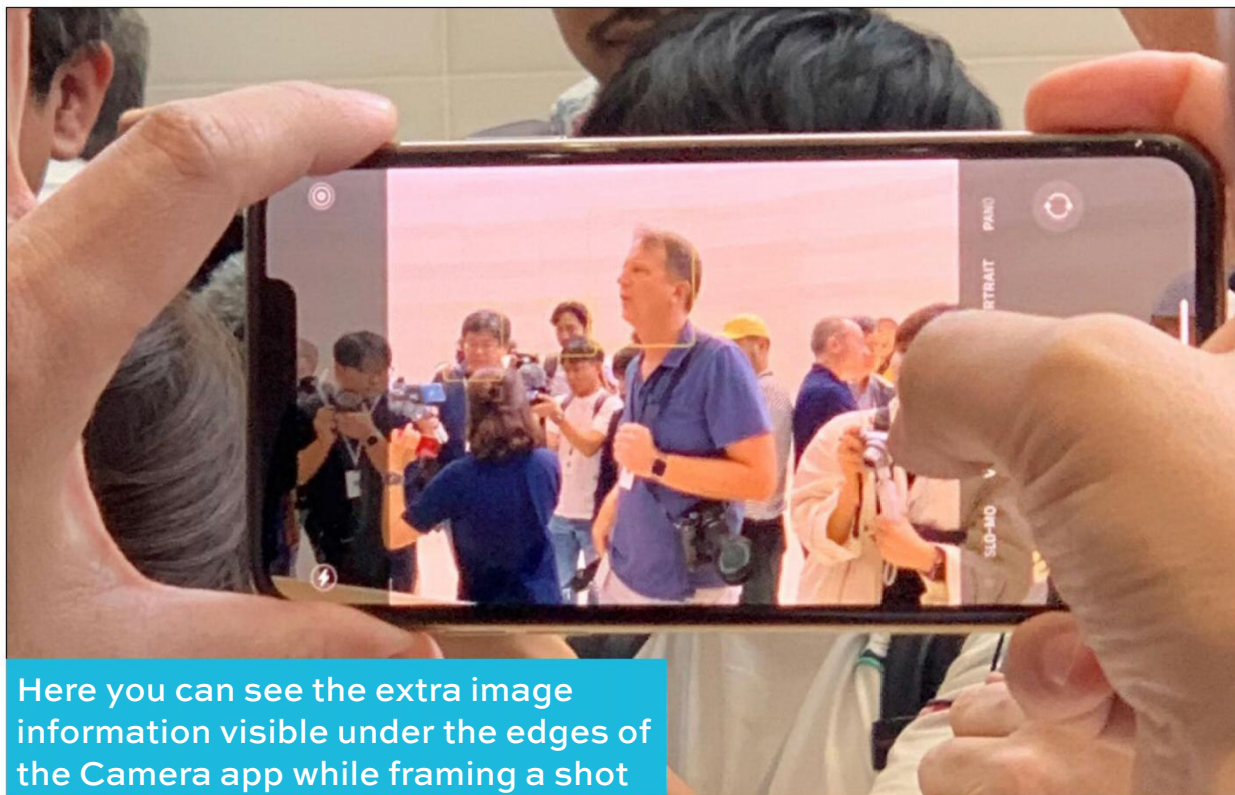
Yes, the ultra wide camera is there to help you take broader shots – especially in scenarios where you can't just take ten steps back to get that

## Three-camera view on the iPhone Pro Max

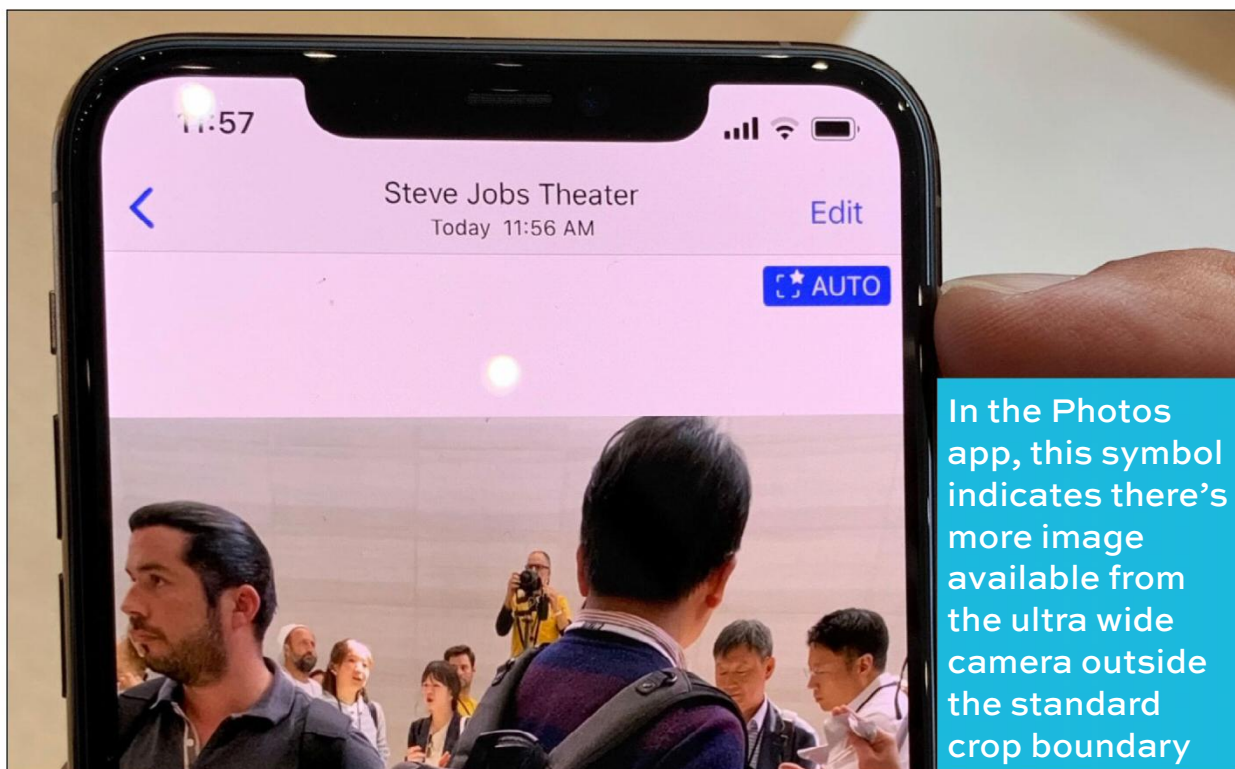


broader view. If you've ever had to resort to taking a small panorama just to encompass the view, you'll get the idea. But it gets more impressive when it's used in conjunction with the other cameras.

You can optionally set the iPhone 11 – for both video and stills – to capture data from both the wide and ultra wide cameras. The iPhone retains both versions for an undetermined period of time; eventually, if you do nothing with the ultra wide version, it will get thrown away. What's really happening here is that the iPhone is stashing away a broader view of the image or video you just took, in case you end up realizing after the fact that an important part of the scene was cropped off the edges of the frame.



Here you can see the extra image information visible under the edges of the Camera app while framing a shot



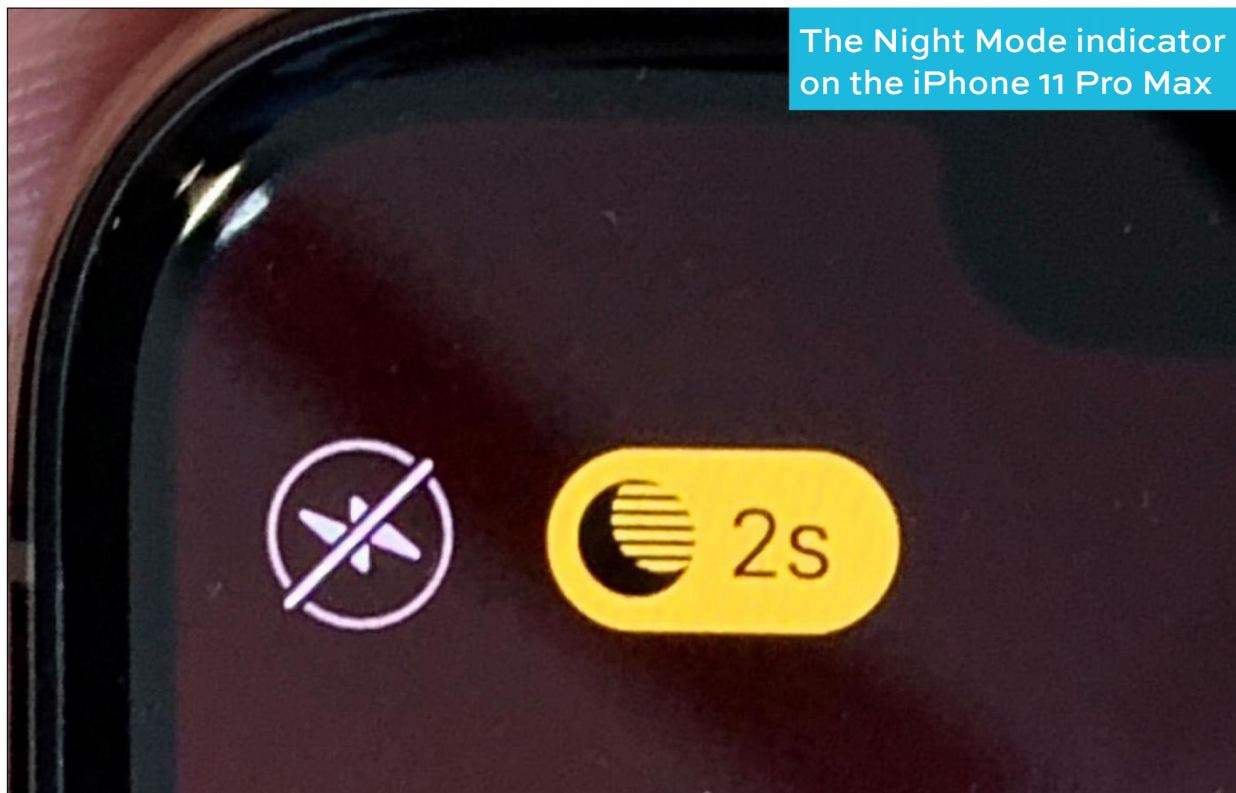
In the Photos app, this symbol indicates there's more image available from the ultra wide camera outside the standard crop boundary

To fix that issue, you do exactly what you'd expect – open the image in the Photos app and tap Edit, then select the Crop tool. You'll discover that there's more image beyond the crop marks. This is image data from the ultra wide camera that has been seamlessly stitched into your photo or video, and if you want to use it, you can just change the crop to reveal more information. It's a very clever way to provide a safety net via the ultra wide camera. Once you've tapped that Edit button, that extra off-camera information will continue to be available for later tweaking – iOS won't throw it away.

## The mysteries of Night Mode

Ever since Google introduced its Night Mode, a feature for Pixel phones that uses multiple exposures, including long exposures, and a whole lot of image processing to create vibrant, bright scenes out of locations with very little light, Apple's grainy, realistic approach to shooting images in dark locations has seemed out of step. With the iPhone 11, Apple finally gets in the game.

In the Camera app, when you are attempting to take a picture in a dark scene, a Night Mode indicator will appear automatically – you don't have to do anything. The yellow Night Mode indicator will display, next to a crescent-moon icon, the amount of time you'll need to hold your phone still to get a long exposure. That exposure time will also be displayed down by the shutter icon. Tap and hold the camera still, and the iPhone will collect not



The Night Mode indicator on the iPhone 11 Pro Max

just one image but numerous ones, process them, apply Apple's own brand of image processing magic, and generate a photo that looks like it was taken in a much brighter environment.

While I got my hands on this feature, I was in a brightly lit demo room at Apple Park – so I had to cover the lens of the iPhone 11 Pro's cameras until it thought things had darkened. As a result, I wasn't able to take any test images. Apple's sample images look promising, but of course they do. I look forward to trying this feature out in person.

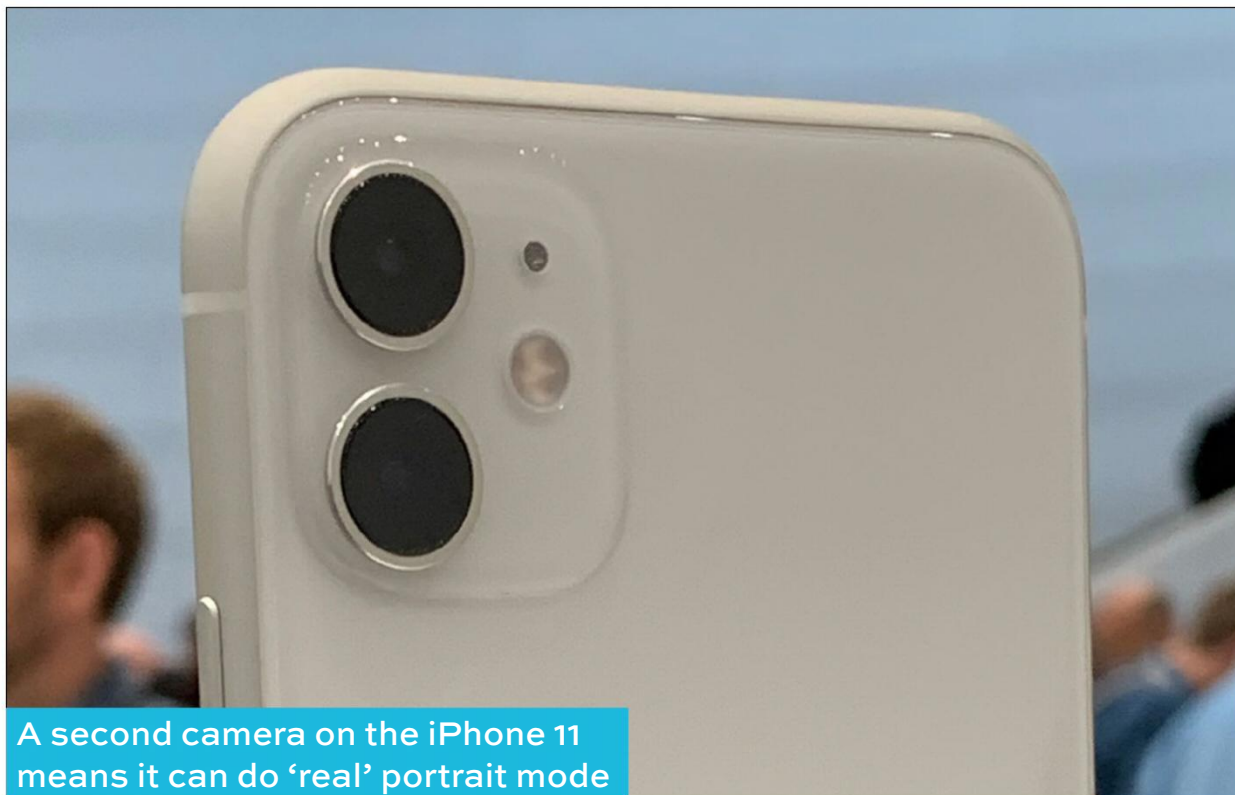
Oh, another fun note: according to the Apple employee I spoke to in the demo area, Night Mode isn't just for quick handheld shots. If you put the iPhone on a tripod so that it's stable – and it'll

know, because it's equipped with plenty of motion sensors – it will let you take even longer exposures, which would be handy for outdoor night shoots, for example. So there's more to Night Mode than you might have thought.

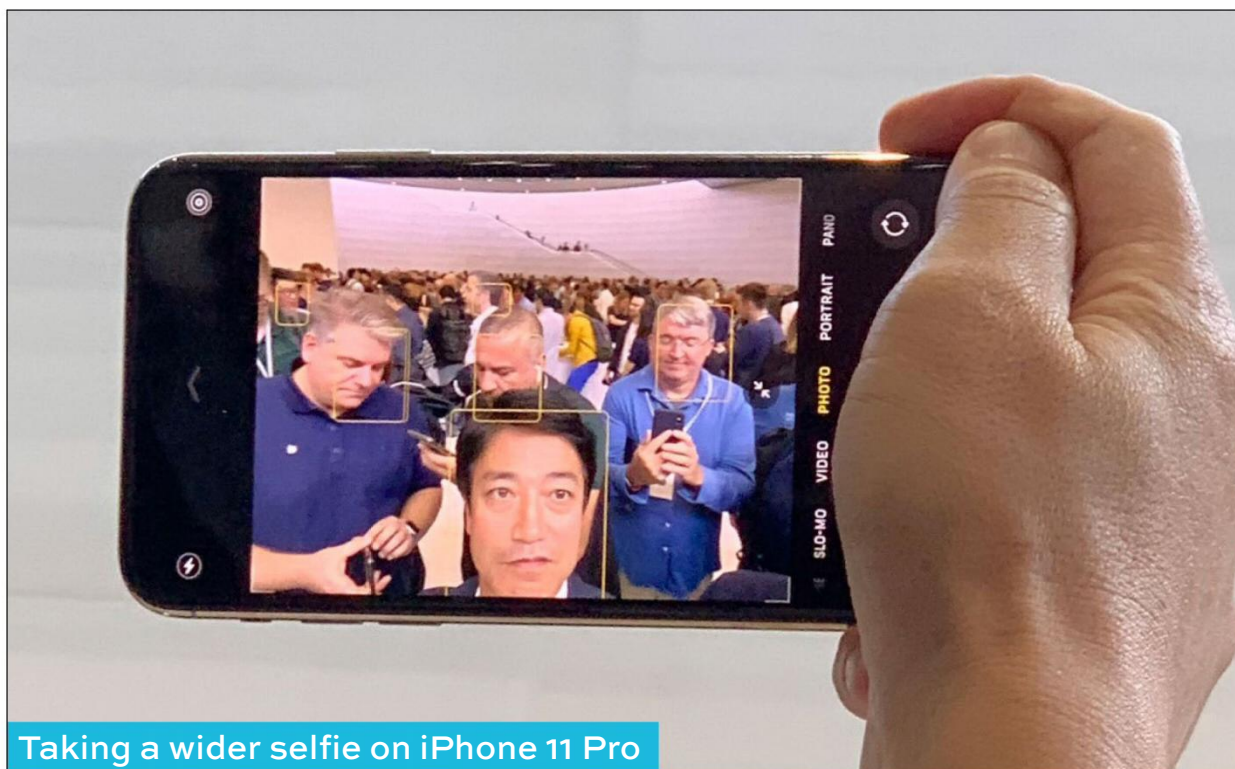
### QuickTake videos, wider selfies, and more

While the addition of the ultra wide camera and Night Mode are the headline features, there are plenty of other additions to the Camera app with the iPhone 11. Here's a quick look:

- The new QuickTake video mode lets you hold down the shutter button in still-image mode in order to quickly shoot some video for as long as you keep the button pressed. What Apple didn't show on stage is that if you swipe that button to the right, you can 'lock' video recording on, so it continues even after you lift your finger. And if you swipe the shutter to the left, you can still take a giant pile of photos in Burst mode – the feature that used to be triggered if you held your finger on the shutter. (Also, longtime Apple watchers will recognize the QuickTake name – before it was an iPhone feature, it was the name of Apple's pioneering digital camera.)
- The iPhone XR had to fake portrait mode using machine learning to make guesses about depth, but its successor, the iPhone 11, has a second camera. That means it can finally do the real thing by using the parallax between the two cameras



A second camera on the iPhone 11 means it can do 'real' portrait mode



Taking a wider selfie on iPhone 11 Pro

to detect depth. As a result, portrait mode on the iPhone 11 supports non-human subjects, whether they're dogs or flowers.

- The new widescreen selfie camera on the iPhone 11 is cropped to appear more or less like the current iPhone selfie camera by default. You can get access to the full widescreen image by turning the phone horizontally or by tapping the zoom button at the bottom of the preview image. Either way, you can fit more people in your selfies now.

Finally, while it's not quite a new feature, I have to comment on how natural these additions to the Camera app feel. Apple has worked very hard to add an enormous number of processor-intensive features to its photography system – and has also worked to hide the hard work away behind the Camera interface we are all used to. As a result, while there were a few new icons and buttons here and there, I was able to pick up an iPhone 11 Pro and start taking pictures without feeling anything was appreciably different.

If you ask me, that's the right approach – because while I want Apple to use its most impressive hardware and software to make my photos look their best, I don't really want to think about any of that. I just want to take good pictures. At first glance, it looks like the iPhone 11 will deliver on that front.



# The new 7th generation iPad: 6 cool features

Apple's most affordable iPad just got a lot more exciting. [Leif Johnson](#) reports



We normally expect Apple to focus on iPhones during its September event, but this year we also got to see the new 7th generation entry-level iPad. The internals haven't changed much, but Apple tinkered with enough features to make this an enticing buy if you haven't upgraded your iPad in a few years. Here are the features we're most interested in checking out.

## Price

**32GB:** £349

**32GB (Cellular):** £479

**128GB:** £449

**128GB (Cellular):** £579

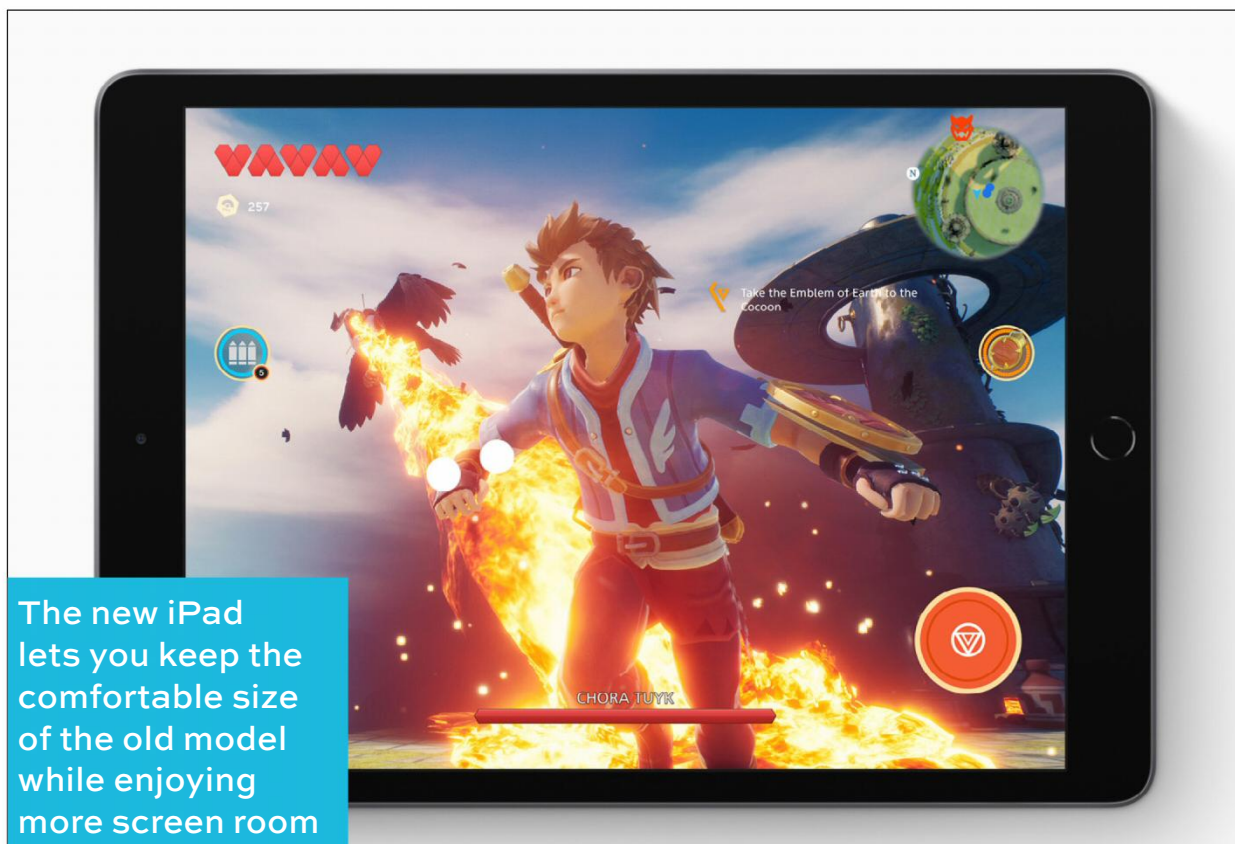
Apple's latest iPad is available to buy now.

## Specifications

- 10.2in (2,160x1,620; 264ppi) IPS LCD capacitive touchscreen
- iOS 13
- Apple A10 Fusion (16nm) processor
- Quad-core 2.34GHz (2x Hurricane + 2x Zephyr) CPU
- PowerVR Series7XT Plus (six-core graphics) GPU
- 2GB RAM
- 32GB/128GB storage
- Rear-facing camera: 8Mp, f/2.4, 31mm (standard), 1.12µm, AF)
- Front-facing camera: 1.2Mp, f/2.2, 31mm (standard)
- Dual-band 802.11ac Wi-Fi
- Bluetooth 4.2
- A-GPS, GLONASS (Wi-Fi + Cellular model only)
- Fingerprint scanner (front-mounted)
- Lightning connector
- Non-removable 32.4Wh lithium-polymer battery
- 250.6x174.1x7.5mm
- 483g

## The display is bigger

Apple has been content to keep the display of the entry-level iPad at 9.7 inches for a while now, but



today it announced that it's boosting that to a 10.2in Retina display with nearly 3.5 million pixels. This may not seem like huge difference, but it should be palpable when you're drawing or scribbling notes. Unfortunately though, unlike with the new iPad Pros, you'll still have to put up with big bezels.

### **It works with Apple's full-sized Smart Keyboard**

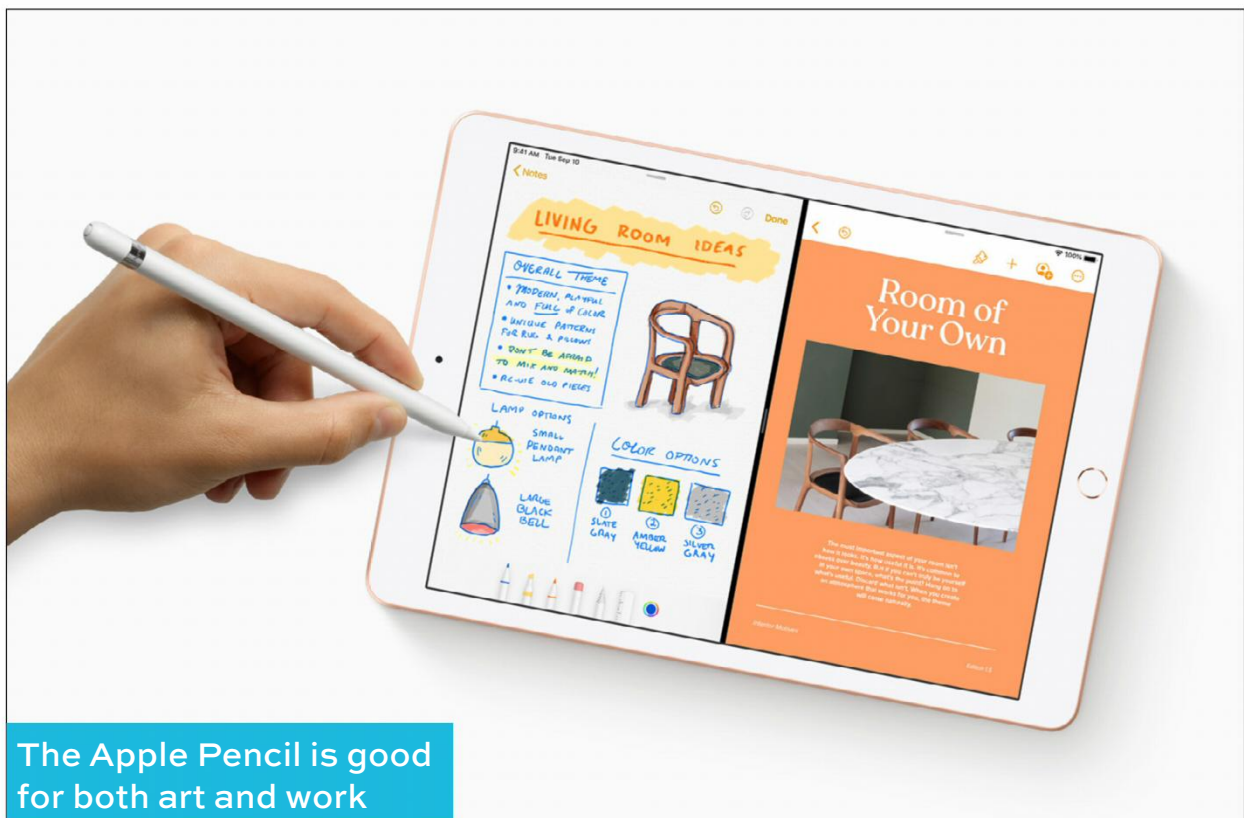
So here's a big change: you can now use Apple's detachable Smart Keyboard with the entry-level iPad. In the past, you had to rely on third-party units. Especially with iPadOS, that will make it easier to use as a laptop replacement.

## It's got a powerful chip

Apple has packed in the A10 Fusion chip, which is quite powerful for a relatively inexpensive iPad. The sixth-generation model also contained the A10 Fusion, but as a frequent user of the 9.7in iPad, I can attest that it's more than enough power for most of the apps you'll use. Apple says the A10 “brings up to two times faster performance over the top-selling Windows PC4 for powerful multitasking and smooth gameplay in Apple Arcade”.

## It supports the Apple Pencil (first generation)

This isn't really a surprise, as every recent iPad supports at least one model of the Apple Pencil.



Unfortunately, it's just the first-generation model, so you'll still have to deal with its famously losable cap.

### **You get one year of Apple TV+ for buying it**

One of Apple's stunner announcements was that it will be giving away one year of Apple TV+ service for anyone who buys a new iPhone, iPad, Mac, or Apple TV. That impressive deal extends to anyone who buys this model.

### **It's made from 100 percent recycled aluminium**

Apple is proud of its commitment to the environment, and it's leaning into that tradition by making the casing out of recycled metal

# Apple Watch Series 5: 5 things you need to know

The Series 5 is an iterative release, but adds several welcome features, including an always-on display. [Jason Cross](#) reports



Last year's Apple Watch Series 4 was perhaps the first major revision for Apple's marquee wearable. Apple changed the size and shape of the watch (while keeping band compatibility), upgraded all the sensors and, of course, made the watch a lot faster. All that, plus it was the first smartwatch with a built-in ECG.

So it's no surprise that the Apple Watch Series 5 is a much more iterative upgrade, akin to the leap from Series 2 to Series 3. That doesn't mean there's nothing in the new watch to get excited about. Here are five of the most important new things to know about Apple Watch Series 5.

### It's got an always-on display

Finally, Apple's smartwatch has a display that stays lit at all times. Thanks to a new LTPO (Low-Temperature Polycrystalline Oxide) panel, a new light sensor, and new display driver, the watch face no longer goes black when you put your wrist down. Instead, it simply becomes dimmer.

### There's a built-in compass app

The iPhone has had a digital compass for a long time, and it's finally coming to Apple Watch. There's a new Compass app and compass complications for watch faces, and you can see the direction you're facing in Maps. Developers will be able to tie into the compass as well, which is great for outdoor activities like hiking.



The Apple Watch's  
Compass app

## You can call emergency services anywhere

On cellular-enabled version, the SOS function can call emergency services internationally. In almost any country you're in, your watch will call the emergency services when you have a bad accident.

## There are more finishes than ever

Apple promises more case finishes than ever before for the Series 5. Specifically...

- Aluminium watches will be available in silver, gold, and space grey. And the cases are made with 100 percent recycled aluminium.
- Steel watches will come in gold, space black, and polished.
- Ceramic is available in white.
- And new to Series 5 is a titanium case, available in two shades – silver and grey.

## Starts at £399, available now

The Series 5 will start at £399 for the aluminium 40mm model with GPS, and £499 for the same with cellular. The 44mm variant is £30 more, starting at £429. That's the same price as the Series 4.

Apple revealed that the Series 3 will continue to be sold at a price starting at £199. The fact that the Series 4 was not mentioned probably means that it will no longer be offered after existing stock has sold out.



# Apple TV+: Only £4.99 for the whole family

Apple's streaming service will compete with the likes of Netflix, and Amazon Prime. **Leif Johnson** and **Jason Cross** report



**T**his autumn, Apple will make a risky venture outside its familiar spheres of hardware and software when it launches Apple TV+. The new service will offer a wide assortment of TV shows funded by Apple's mountainous cash pile, and the Cupertino company is sparing no expense

in its attempt to lure viewers with some of the best-known actors, writers, and directors.

Below, you'll find a round-up of everything we know about the ambitious service.

### **Availability**

Apple TV+ will be available from 1 November in over 100 countries, including the UK.

### **Price**

Like Apple Arcade, the TV+ streaming service will cost £4.99 per month. Plus, when you buy an Apple product such as an iPhone or iPad, you'll get a year of the service thrown in for free.

### **How to get Apple TV+**

The content will be available via a redesigned TV app, and it will be possible to watch it on iPhones, iPads, Macs, Apple TV, as well as Amazon Fire TV, LG, Roku, Sony and VIZIO platforms in the future.

The app comes pre-installed on iPhone, iPad, Apple TV and iPod touch and will soon be on Mac with macOS Catalina.

### **How many shows will be available at launch?**

Apple is said to be spending a couple billion dollars over 2018 and 2019 on the development of exclusive original programming. That's a lot of TV. It's nothing compared to the \$12 billion Netflix spent on content in 2018, but it's still a very big investment. What can you get for a couple billion dollars? Apple hopes

to attract some of the best talent in TV and film production, including huge stars and directors, and to lock down the television and movie rights to best-selling books. Though the company has only given us a glimpse at a handful of shows, the Hollywood trade press has uncovered many more through its reporting on deals from casting agents and production companies.

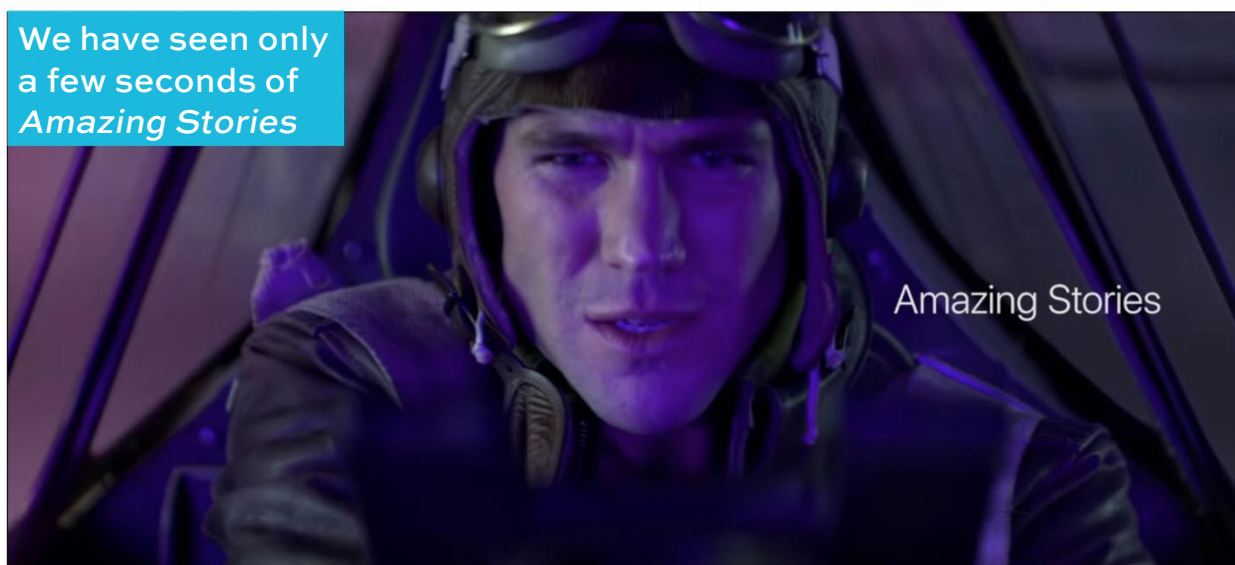
Here are just a few of the programmes that will be available to watch.

### **Amazing Stories**

There aren't a lot of companies in the world that can announce its new streaming TV service by bringing Steven Spielberg on stage to talk about how his production company (Amblin Entertainment) is going to revive one of his favourite anthologies from his youth.

The prominent director said, "The Amblin team and I will be resurrecting this 93-year-old brand and

We have seen only a few seconds of *Amazing Stories*



offering to multigenerational audiences a whole new batch of *Amazing Stories*. We want to transport the audience with every episode. Like the World War II pilot whose plane magically travels through space and time from the past and into the present day. Who will he meet? Can he return? Does he want to? What happens if he doesn't?

“It's the universal human trait to search for meaning. So in these disconnected stories, we think the audience will find that one compelling narrative that will make the first season of *Amazing Stories* into a single thematic experience for them.”

## The Morning Show

Is Apple going to air a morning talk show? Not quite. *The Morning Show* is a drama about making a morning TV news show. It supposedly draws heavily from the book *Top of the Morning: Inside the Cutthroat World of Morning TV* by Brian Stelter.

This new series stars Reese Witherspoon, Jennifer Aniston, and Steve Carell, which alone is enough star power to ensure a sizable audience.

Witherspoon explained on stage at Apple's event that the show “pulls back the curtain on the power dynamic between men and women in the high-stakes world of a morning news show”.

## See

A futuristic, post-apocalyptic drama, *See* imagines a world where with no sight. A devastating virus wipes out all but a few million of the Earth's population, and those that survived were stricken



permanently blind. The series takes place hundreds of years later, where humans have been without sight for so long that it's disputed whether such a thing ever even really existed.

The series is written by Steven Knight (*Peaky Blinders*, *Dirty Pretty Things*) and directed by Francis Lawrence (*The Hunger Games: Catching Fire* and *Mockingjay Parts 1 & 2*). It stars Jason Momoa (*Game of Thrones*, *Aquaman*) and Alfre Woodard (*Luke Cage*, *12 Years a Slave*, *Captain America: Civil War*).

A recent *Wall Street Journal* article claims that *See* is costing almost \$15 million per episode, making it one of the most expensive TV productions around.

## Little America

Fresh off their big indie hit *The Big Sick*, husband-and-wife team Kumail Nanjiani and Emily V. Gordon will co-write and executive produce a new half-hour anthology series about immigrants called *Little America*. They will share writing duties with Lee Eisenberg, who will serve as showrunner. Alan Yang, known as the co-creator of *Master of None*, together with Aziz Ansari, will also executive produce the show. It will be based on the true stories of immigrants, many of which were printed in *Epic Magazine's Little America* series. It will focus not on the huge famous immigrants that have made worldwide impact, but the everyday lives and struggles that we all share. "These are human stories that feature immigrants," explained Nanjiani.

## Helpsters

Big Bird took the stage at Apple's 25 March event along with a new muppet, Cody ('a monster who loves to help'), to introduce a new children's series called *Helpsters*.

It's an educational entertainment series aimed at preschoolers. The show is meant to help introduce toddlers to the simplest core concepts of coding as a means of helping people. The pitch is: coding helps foster collaboration and critical thinking skill, and is an "essential language that every child can learn". The show is one of several projects in the works in collaboration with Children's Television Workshop, but is the only one that has been announced so far.



Can a muppet teach your preschooler to code?

## Will Apple make movies in addition to TV shows?

Yes. According to a June report from the *New York Post*, Apple wants to make six ‘small-budget’ movies every year, and it wants these films to be so good that they’ll be nominated for Academy Awards.

Apple was reportedly inspired by the stunning success of Alfonso Cuarón’s 2018 monochrome drama *Roma*, which won 2019 Oscars for Best Director, Best Cinematography, and Best International Feature despite being made for Netflix. The company then started approaching ‘elevated’ directors in the hopes of producing Oscar-worthy films of its own, each with a budget

of around \$5 million to \$30 million. These Apple-produced films would be in addition to the multi-year agreement Apple has with A24, the studio behind the 2016 drama *Moonlight*. The first film to come out of that agreement is *On the Rocks*, directed by Sofia Coppola and starring Bill Murray and Rashida Jones.

It's currently not clear if Apple only plans to release these movies on Apple TV+ or if it's seeking limited theatrical runs (as Netflix did with *Roma*).

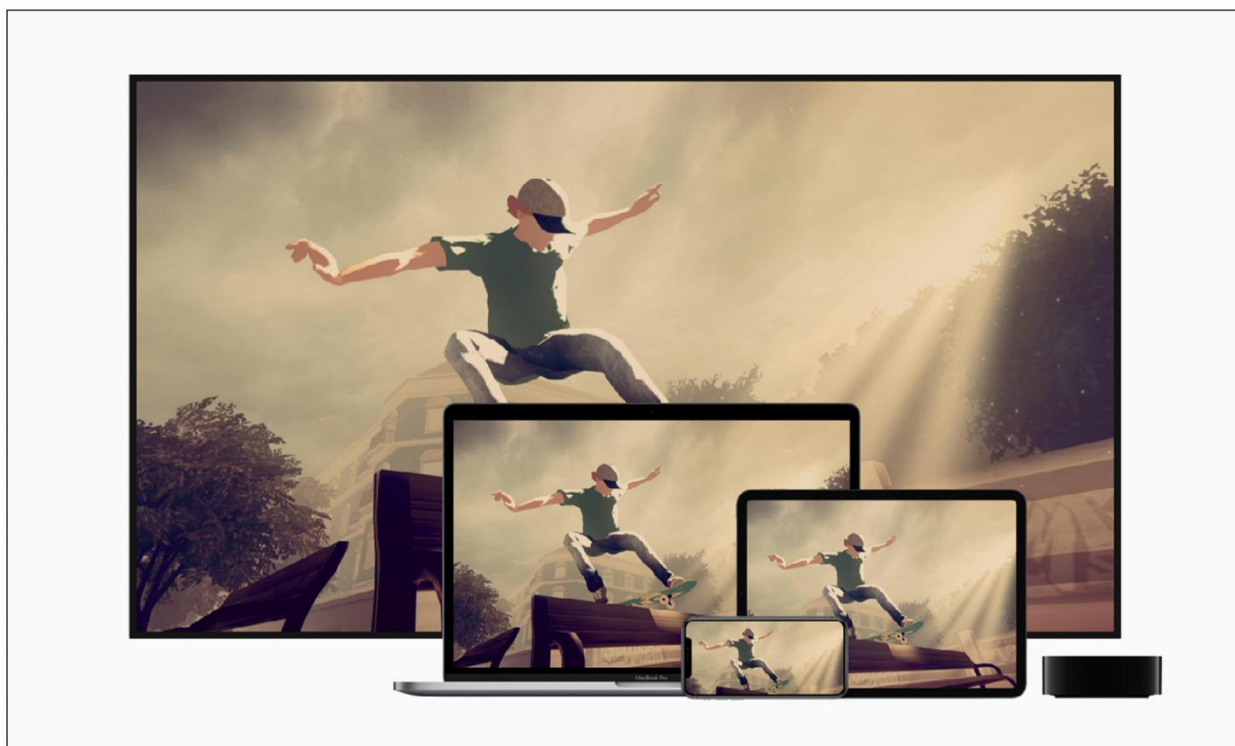
### **Will you be able to download its programmes for offline viewing?**

Yes, Apple TV+ allows users to view content both on and offline.



# Apple Arcade: 4 new things Apple revealed

Apple's new gaming service will drop on 19 September and only cost £4.99 per month. [Leif Johnson](#) reports



**A**pple surprised everyone by kicking off its 'By Innovation Only' event not with the traditional rundown of corporate achievements, but with more information about its Apple Arcade service. Not only was it strange to see the Cupertino company start off with releases from third-party partners, but it also showed how just how much of an emphasis Apple is placing on its new services. Here's what you need to know.

## Release date

The good news is that it's available now.

## Price

We've been worried about Apple being able to compete with all the subscription services out there, considering Apple's association with higher prices. But Apple Arcade will only cost £4.99 per month, which is reasonable considering that the service has over 100 mobile games that are exclusive to Apple.

## You'll get a one-month free trial

Not only is Apple Arcade affordable, but you can also play it for a month for free. Just keep in mind that your service will probably end the second you cancel the free trial, much as with Apple News+. Other companies are fine with letting you ride out a free trial for its full duration, but not Apple.

## Apple showed off three demos

Apple Arcade is all about the games, of course, so Apple showed off demos of Apple Arcade-exclusive games from three different publishers. First, we got to see Konami's Frogger in Toy Town, which is a modern 3D reimaging of the popular 1981 arcade hit Frogger. Then Capcom showed off Shinsekai Into the Depths, which is a simple but beautiful game focused on underwater exploration. Finally, Apple showed off Annapurna Interactive's Sayonara Wild Hearts, a catchy pop music-oriented game that's also heading to the Nintendo Switch.

# All the things Apple didn't announce at its 'By Innovation Only' event

Apple's event was packed with new releases, but some of the early rumours didn't pan out. [Jason Cross](#) reports



**T**here can be no denying that Apple's 'By Innovation Only' event was packed full of rapid-fire announcements. We got a new 10.2in iPad, Apple Watch Series 5, iPhone 11, and 11 Pro (in two sizes), along with pricing and release details for Apple Arcade and Apple TV+.

That was a busy event. But we didn't get everything we expected or hoped for. The rumour mill was abuzz with lots of leaks leading up to the event, and it painted a picture that, as usual, didn't quite match reality. Here are some of the things we heard about and hoped to see, but didn't.

### Apple Tags

The most obvious omission (if you can call it that) was Apple's Tile-like trackers, which most have taken to calling "Apple Tags". There were multiple rumours – from reliable sources, no less – of their existence prior to the event, with some even claiming references to them in internal iOS 13 software builds.

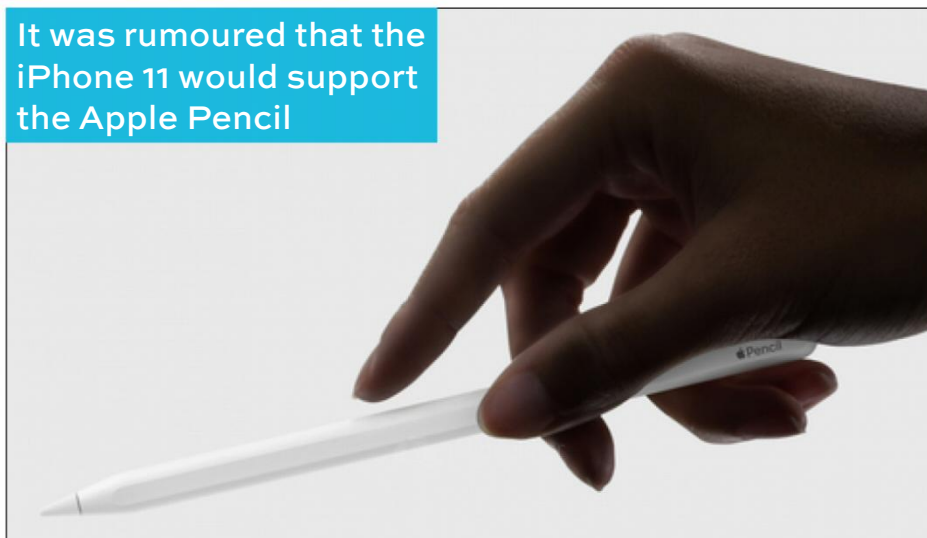
The tags would supposedly use Bluetooth and/or Ultra-wideband technology to allow you to find objects in the Find My app, including an AR mode.

We still think these are coming, maybe even this year, and they just weren't ready to be revealed yet. If Apple has an event in October, we could see them there. Otherwise, we might see them in a spring event (typically held in March).

### Photo re-framing

As expected, all iPhone 11 models come with a new super wide-angle rear camera. Prior to the event, it was rumoured that a feature called 'Smart Frame' would use that camera to capture some additional imagery around regular-angle shots, which we could then use to re-frame our photos after they were taken.

It was rumoured that the iPhone 11 would support the Apple Pencil



We didn't hear a single word about a feature like this on stage, and it's nowhere to be found on Apple's iPhone 11 promo sites.

### Apple Pencil support

We always thought the rumour that the new iPhone 11 Pro would support the Apple Pencil (or that the company would even make a smaller one just for it) was sketchy at best. Sure enough, the new iPhones don't support the Apple Pencil.

### Bi-directional wireless charging

Part of the Qi wireless charging standard is support for an option 'bi-directional' wireless charging feature. So not only could your phone be charged wirelessly, but it could serve as a wireless charger for other devices. In other words, you could place AirPods (inside their wireless charging case) or another iPhone on the back of your new iPhone 11 to wirelessly charge them.

Apple even reportedly moved the Apple logo down to the centre of the back of the iPhone 11 to make it clearer exactly where devices should be placed to charge. But this feature seems to have been scrapped at the last minute. Apple made no mention of it, it's not on the Apple site, and it's not even rumoured for a future software update. The logo has been moved down to the centre of the back of the iPhone 11, though.

### Sleep tracking on Apple Watch

We've also heard reliable rumours, backed up by some early internal code references, about sleep tracking coming to Apple Watch. Perhaps that will land in a future software update, but it's not being promoted as a core feature of the Apple Watch Series 5, nor of iOS 13 or watchOS 6.



## 128GB starting storage for iPhone 11 Pro

Some tipsters led us to believe that the iPhone 11 Pro's base model would have 128GB of storage, up from the 64GB storage of the iPhone XS. That didn't happen – the iPhone 11, 11 Pro, and 11 Pro Max all come with 64GB of storage in the entry-level versions, with higher storage options available.

## The 'Rose' sensor co-processor

A late iPhone 11 rumour stated that a new sensor co-processor, code-named 'Rose' or 'R1', will handle processing for many more types of sensors, including Ultra-wideband (UWB) radio and even camera motion tracking.

There was no mention of it, and it's not called out in Apple's specs at all. The page does make mention of a new U1 chip that enables Ultra-wideband support, which can be used to precisely position and orient the iPhone 11 in relation to other UWB devices. But that's not quite the same thing.

Maybe 'Rose' is a part of the iPhone 11, and is simply not specified by Apple. The company did make mention of M-series motion coprocessors when they were new, but hasn't called them out in the past few years.

## A smaller notch

Lots of early rumours claimed that the TrueDepth module that houses the Face ID hardware and front-facing cameras would shrink by a significant margin on the new iPhones. While Face ID is now claimed to work at a wider angle than before, the actual 'notch'

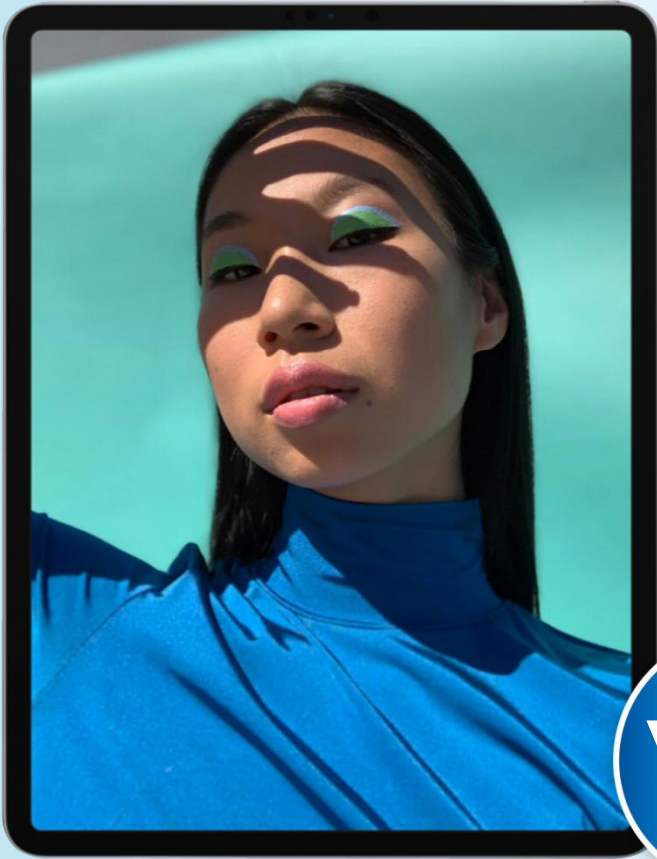
that contains the TrueDepth hardware looks to be about the same size as before.

### An upgraded Apple TV

A rumour circulated shortly before the event claimed that Apple had new Apple TV hardware on the way, with an upgrade to the A12 processor. It wasn't a shoo-in for this event, but would have gone well with the release date and pricing announcements for both Apple Arcade and Apple TV+. An updated Apple TV makes sense, but everyone agrees that the product needs a redesigned remote far more than a more powerful processor. Perhaps we'll hear more about a new Apple TV device during an October event, still before the launch of the first Apple TV+ shows on 1 November. Maybe it has been shelved until next year. Or maybe, with the TV app available on smart TVs and much broader AirPlay 2 support, Apple doesn't necessarily see a need to update the Apple TV hardware just yet.



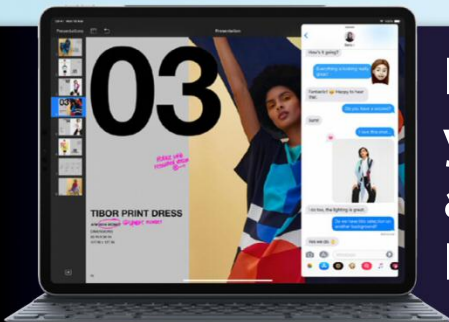
# iPad & iPhone **user**



## iPad Pro

VS

## Samsung Galaxy Tab 6



How to use  
your iPad as  
a secondary  
Mac display

+

Latest  
iOS  
games





## CleanMyMac X 4.4.1

RATING: ★★★★★

Price: **£34.95 (inc VAT)** from [fave.co/2A4lgwX](https://fave.co/2A4lgwX)

**M**acPaw has shot for the stars with its new version of CleanMyMac X, its catch-all Mac utility that serves as a software gunk remover, as well as a malware scanner, macOS extensions manager, and a universal updater for your installed app.

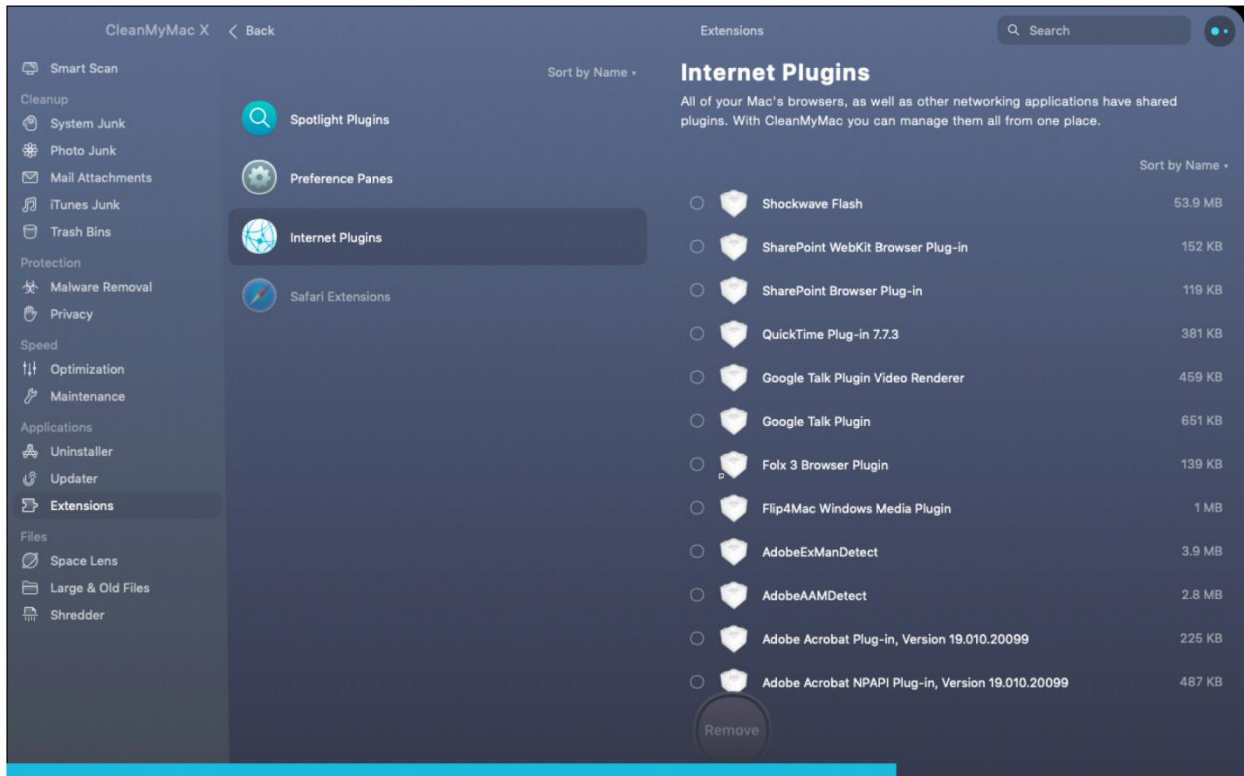
Since my initial review of CleanMyMac X, MacPaw made some nice improvements, although some features still fall short of what they could be.

## Handy modules

MacPaw set out to make its Menu Bar utility much better and has succeeded. A quick click on the icon reveals handy information such as how much space is left on each of your drive partitions, your Mac's CPU load, how much RAM is available, your computer's operating temperature, and other useful information. This is a nice touch and the menu can be customized as you see fit.

The modules are the key to CleanMyMac and it's handy to be able to quickly enable and disable macOS extensions with the Extensions module, or hunt down extraneous files with the Large & Old Files module, which lets you see which files are devouring space and erase them quickly. The Uninstaller module was able to quickly locate and pick off unnecessary applications during testing and accomplished something I'd never seen before in an application removal utility: it removed multiple applications at once, which is quite useful. The Maintenance module handles tasks such as clearing RAM, running maintenance scripts, clearing the DNS cache, and repairing file permissions quickly, tidying up the macOS's underpinnings as needed.

CleanMyMac X 4.4.1's new claim to fame is the Space Lens module, which offers a quick look at your hard drive's most sizable folders. This is where the truth as to what's eating your drive space comes out, as a 73GB Pictures folder inside your Users folder could stand to be slimmed down a bit.



CleanMyMac's Extensions module provides a central location for enabling and disabling software extensions, like those for Safari or macOS

## Malware removal

Unfortunately, the Malware Removal module shot the previous version of CleanMyMac X in the foot, and in the latest version, it does so yet again. MacPaw cites extensive changes to this feature, and I was curious to try it. After installing every questionable piece of adware and malware I could find, I ran the Malware Removal module to see what the utility would find, categorize as suspect, and what it would remove.

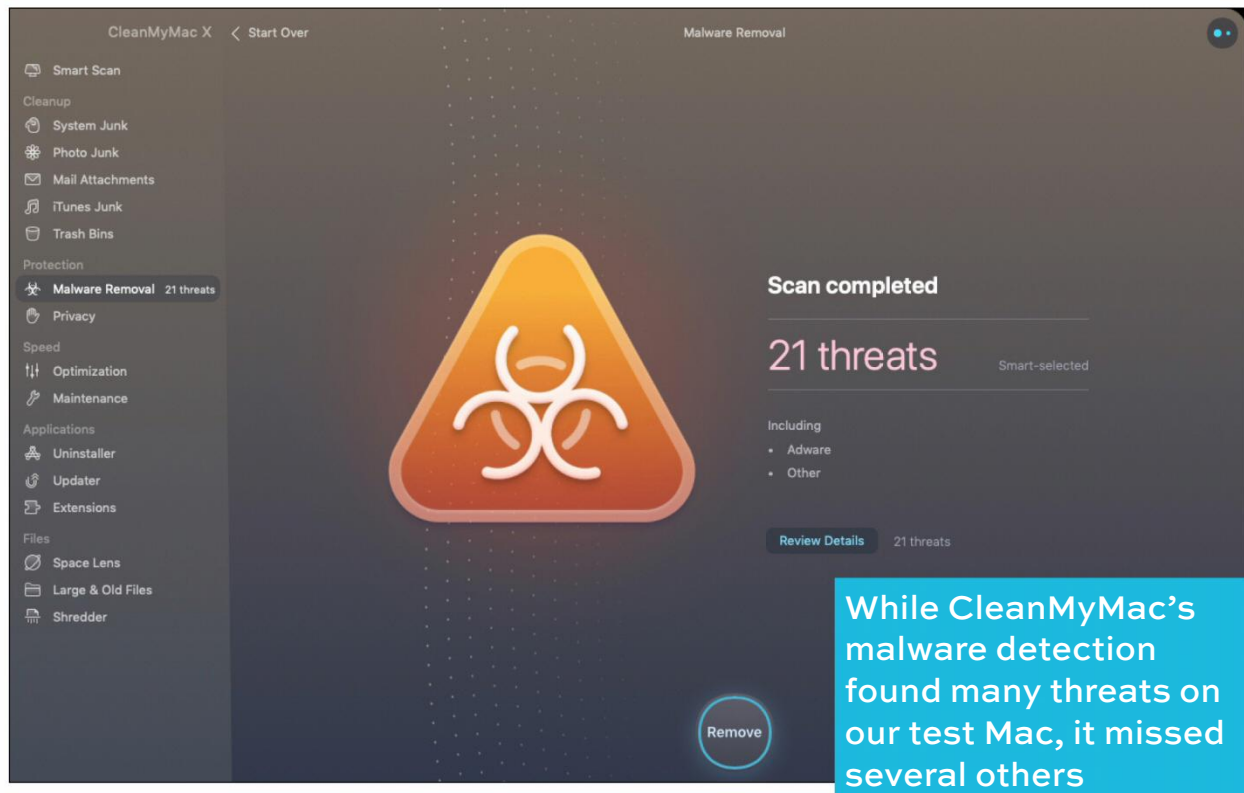
The results were not what I had hoped for. In spite of CleanMyMac X 4.4.1 locating 21 potential threats, it missed several suspect programs,

including the infamous MacKeeper and Advanced Mac Cleaner, which, once installed, loads itself into your Mac's startup items, informs you of how many threats it's noticed, then offers a phone number to call for 24/7 live tech support.

Upon noticing the malware that was still left over after rebooting, I switched over to a free copy of Malwarebytes, which picked up 11 threats during its scan, including questionable applications such as Advanced Mac Cleaner, Advanced Mac Tuner, and MacKeeper, and proceeded to tear them out by the roots.

Even with CleanMyMac X 4.4.1 and Malwarebytes working together, there were some chunks of adware and malware that still needed to be hunted down and removed on their own. A search engine utility had to manually remove from the Safari > Preferences > Extensions settings and a questionable PDF reader had to be uninstalled through CleanMyMac X 4.4.1's Uninstaller module, which became another chore.

Neither CleanMyMac X 4.4.1 or Malwarebytes was perfect for the task at hand, but after months of development and promises of significant releases and improvements in this feature, the end result was a letdown. Granted, MacPaw isn't working to be a malware prevention or security company, but they've touted this feature as a prominent component of CleanMyMac X and I feel that it gave far too much questionable software a complete pass, leaving behind software that will happily change your search engine settings to



route your web traffic through questionable engines or inform you that your Mac is entirely infected and only a strange firm that charges £30 per month to remotely ‘clean’ your Mac is to be trusted.

CleanMyMac X retails for £34.95 for a one-year subscription or £76.95 as a one-time payment for a single user; the MacPaw store offers different purchase tiers depending on license needs. The software is also available in a trial version, which lets you test its modules and clean up to 500MB of system junk at a time.

## Verdict

CleanMyMac X 4.4.1 has seen some nice improvements and it’s a reliable, speedy way to

remove gigabytes of gunk from your hard drive. Its Uninstaller and Updater modules have become admirable in their functionality and utility, but the Malware module is still a wash and five months of development haven't brought it to a level where I'd feel comfortable recommending it to other Mac users for its intended purpose. **Chris Barylick**

### System requirements

- MacOS 10.10 or later
- 145MB storage space



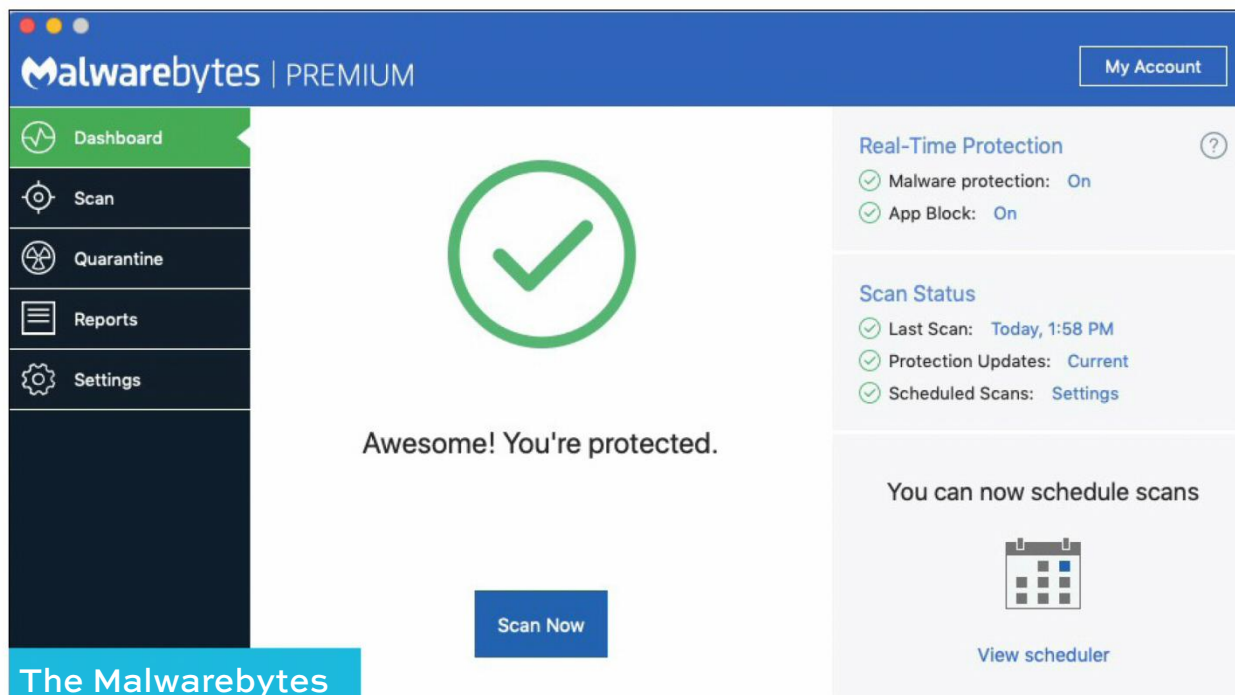
# Malwarebytes Premium

RATING: ★★★★★

Price: **£39.99 (inc VAT)** from [fave.co/2UO4Nqu](https://fave.co/2UO4Nqu)

**M**alwarebytes began life as a complement to antivirus suites. It was a backstop to catch and remove particularly troublesome malware that your primary security program couldn't. That all changed in December 2016 when the company announced its paid version, Malwarebytes Premium, was capable enough to be your primary security program. "With the launch of





The Malwarebytes dashboard for Mac

Malwarebytes 3.0, we are confident that you can finally replace your traditional antivirus,” the company said in a blog post.

Malwarebytes comes in two flavours. The first is the free version that is only capable of removing malware infections during a scan. Upgrade to Malwarebytes Premium at an annual cost of £39.99 for a single device or \$60 (around £56) for 10 devices, and it adds real-time protection, adware and unwanted program blocking, automatic updates, and scan scheduling.

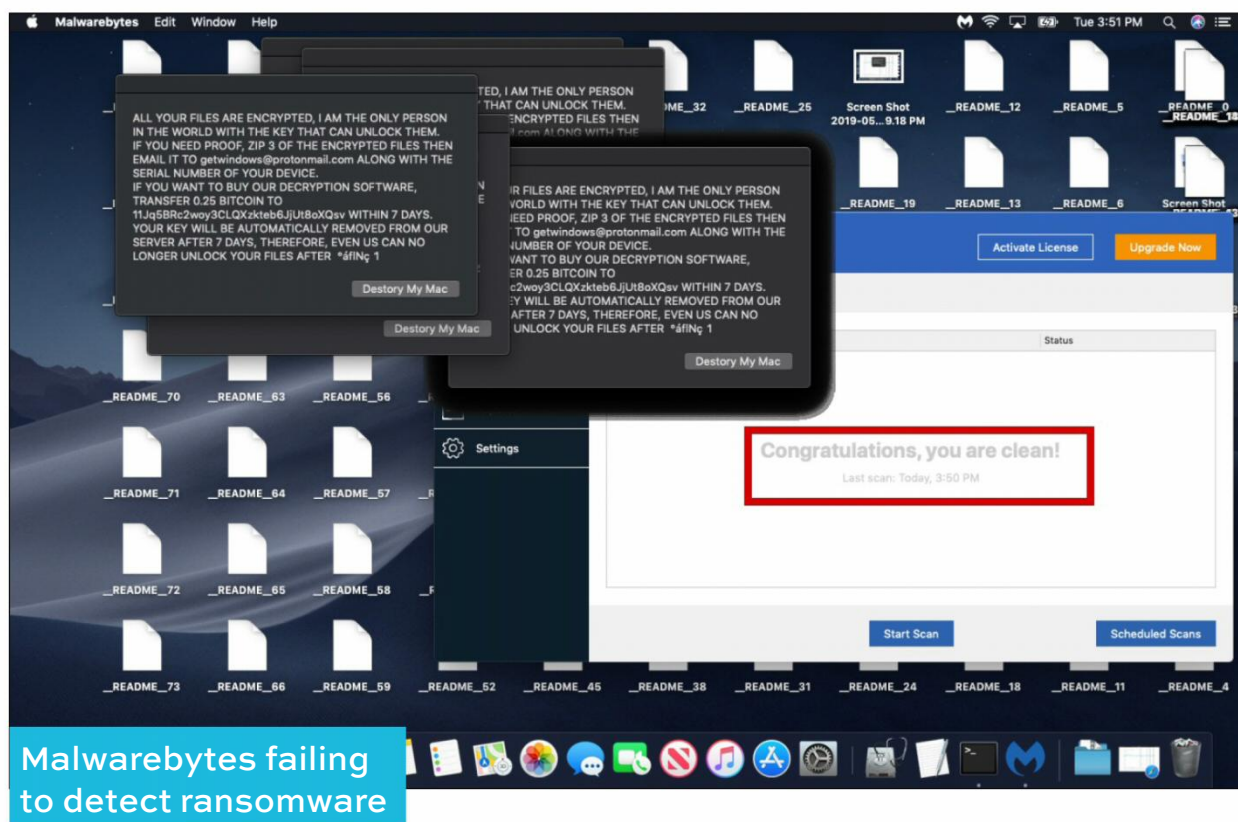
This isn't like your usual security suite. The company has been a trusted name in malware removal for years, but it didn't perform as well as other antivirus suites when we put it up against samples in the ObjectiveSee malware library. That

is by design, according to the company, but it leaves us in a difficult spot to make a judgement.

## The spot checks

Malwarebytes did fine with a number of well-known bits of malware. It had no trouble detecting Calisto malware, for example. When it came to Ocean Lotus it was hit-and-miss. Apple's own security detected a few variants, while others were not detected at all by macOS or Malwarebytes. On the plus side, Malwarebytes did find Ocean Lotus during a scan after infection, which has always been the strength of the product.

Finally, I decided to see how it would stand up against a piece of ransomware and chose the



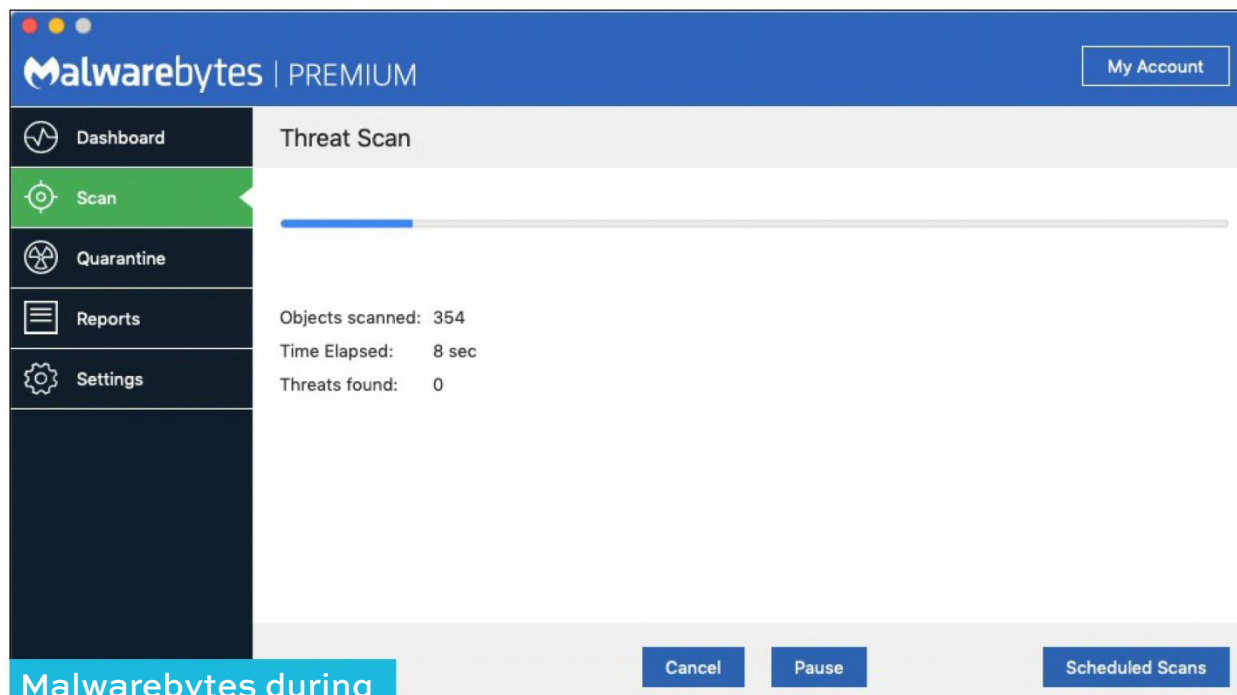
MacRansom sample. Malwarebytes didn't detect it while it was downloading, installing, or active. But as I mentioned earlier, that is by design.

When I asked Malwarebytes about its failure to detect MacRansom the company said that it was guarding against MacRansom in 2017, but a year later it had stopped. "In summer of 2018, we saw that we had not detected even a single sample of MacRansom in the wild. Because of that, we culled those rules from the database," said Thomas Reed, Director of Mac & Mobile for Malwarebytes. "We don't believe in continuing to detect extinct malware, because that simply causes extended scan times without any actual benefit to the customer."

As Reed told us, this is not a common approach in the industry, but Malwarebytes believes it's more practical.

Ransomware in 2019 is an odd issue. If a home user gets infected, it is without a doubt one of the most damaging pieces of malware to come up against. It's designed to encrypt all of your files, and then demand a ransom (usually in the form of pseudonymous Bitcoin) to decrypt your files. To make matters worse, sometimes the bad guys won't even decrypt your stuff after you pay. These days ransomware is a bigger issue for businesses than people at home, which is in part why Malwarebytes felt comfortable pruning certain kinds of it from its active database.

It's true that Malwarebytes scans more quickly than other security suites, and that likely means



Malwarebytes during an active scan

faster remediation for more common threats. But to me that sounds like something you want in a secondary defence, not a primary one. That is my opinion, however, and I'm sure there are Mac users who would disagree.

On Windows, Malwarebytes is very highly rated. AV-Test gave it a 99.2 percent protection rating in March 2019, and a 100 percent protection rating in April 2019 on its 0-day malware attacks and web and email threats test. In AV-Test's widespread and prevalent malware test it earned a 99.5 percent rating in both March and April.

## Interface and features

The overall look of Malwarebytes is basic and functional. Navigation happens from the left side

rail with options for the primary dashboard, which indicates whether you're protected or not, as well as a button to start a scan. There are also sections for scans, managing the quarantine for infected files, reports, and settings.

For features there isn't much here. Malwarebytes Premium monitors your computer for threats and removes them. That's pretty much it.

## Verdict

So here we are with a highly respected suite from a highly respected security company, but one that doesn't quite fit into our testing method. That means it's hard to make a call. There's no doubt that Malwarebytes is excellent as a secondary defence, but can it be your primary one? If you leave your Mac's default settings as-is, then probably. MacOS has a number of built-in security defences that make it much harder to get hit with malware in the first place and a backstop may be just what's needed. But if the unique approach of Malwarebytes gives you pause, then I'd advise looking elsewhere. **Ian Paul**

## System requirements

- MacOS 10.10 or later

# Best Mac antivirus software

Safeguard your data with our buying guide. [Keir Thomas](#) reports



If you own a Mac and are wondering which antivirus software you should choose, or even whether you need antivirus at all, you've come to the right place. Over the following pages we reveal the best Mac antivirus software available.

## Do Macs need antivirus?

Plenty of Mac aficionados will tell you that Apple computers are inherently secure and don't require protection. We'd argue that they are wrong – or

overconfident, at least. Across 2018, there were 14 new instances of Mac malware, with some finding new and innovative ways to infect their targets.

Macs are generally more secure than their Windows brethren for two reasons. On the technical side, macOS is a Unix-based operating system. As a Unix-based operating system macOS is sandboxed. Sandboxing is like having a series of fire doors: even if malware gains access to your Mac, it is unable to spread to the heart of the machine. Macs are not unhackable, but they are more difficult to exploit than Windows PCs.

Another reason is that there are fewer Macs than there are Windows PCs. Fewer targets, and these are harder to hack. Is it any wonder that cybercriminals focus on the Windows world?

Macs are not entirely safe though, and as they grow in popularity and cybercriminals become smarter and greedier, the risk is increasing. As a result, cybersecurity is more important than ever, and good antivirus software is the best place to start if you want to stay safe.

## Selecting an app

Features fundamental to all are two ways for the app to find viruses: on-demand protection, and via always-on protection. The former finds viruses by examining one file after another during scheduled scans, or when you choose to undertake a scan, perhaps because you're worried you're infected. The speed at which the anti-malware app can do this is important, because some take a long

time and also hog the Mac's CPU while they do so. Waiting six hours to find out if your Mac is infected is nerve-wracking.

Always-on malware protection is what protects the user outside of the times when scans are run. If some malware arrives on the disk, perhaps via an email or a downloaded file, then the always-on protection should be able to detect it and either quarantine it (copy it to a safe folder so the user can decide what to do with it), or simply delete it. Usually a notification is shown when malware is detected in this way, but not all anti-malware apps show the same amount of explanation of what's happened – and this was one of the factors we examined in our testing.





Outside of direct malware detection, many anti-malware apps include additional tools such as ransomware protection. Ransomware is a new kind of malware that, once it's infected a computer, encrypts all the user's files and then demands a fee to decrypt them. To protect against this infection, anti-ransomware features typically block any app from writing to a user's home folders, such as Documents or Photos, unless the app's preapproved (a process called whitelisting). Lots of apps come already preapproved, of course, such as Microsoft Word, or Apple's own Photos app. But you can add others.

Several anti-malware apps also include virtual private network (VPN) add-ons. These protect an Internet connection by encrypting it, and this is useful when utilizing unsafe open Wi-Fi such as that provided by a café or hotel.

Web protection via browser plug-ins or extensions is also popular and aims to stop the user (or their children) doing anything they regret online, such as visiting dodgy websites or handing over personal information.

Price was an obvious factor in our test. All the antivirus apps are sold as yearly subscriptions. That's right, you can't just pay once and use forever. Often there's a hefty discount for that first year's subscription, but this can burn the user when automatic renewal occurs a year later and the full retail price is charged. Alternatively, users can purchase several years' subscriptions at once, receiving a discount.

Notably, some subscriptions include permission to use the anti-malware app on more than one computer (including Microsoft Windows computers), which can sometimes add significantly to the value – all computers within a household can be protected for one payment.

## How we tested

For various reasons, quantitatively testing anti-malware apps is difficult to the point of near-impossible, and for this reason the results of our testing are intended to be indicative rather than definitive. For example, we ran a full scan using each app and our goal was to determine relative speed and CPU loads. One anti-malware app scanned the system in 30 minutes, while another took six hours. Your own scans might be quicker than this, or take longer. However, it's clear that the former anti-malware app has a faster scanning engine compared to the latter.

This is the kind of difference we hoped to identify.

The full scans were run on a MacBook Pro running macOS Mojave with an i7 2.8GHz CPU, 16GB of RAM and 512GB flash-storage based disk, around 400GB of which was occupied. This Mac effectively has eight CPU cores – four actual cores and four hyperthreaded virtual cores – and is used daily for tasks such as email, web browsing, watching movies, listening to music, and more. As such, it's very much a typical system.

In order to test always-on malware protection for each app, we downloaded 26 malware samples



We used a MacBook Pro running macOS Mojave as our test system

from a Mac security site representing most malware targeting the Mac from 2018 until the first quarter of this year. Because placing these onto a ‘live’ system represents an obvious security risk, we unleashed them within a virtualized Mac running on VMware Fusion, with macOS Mojave installed. This VM was assigned four CPU cores, plus 8GB of RAM, so represents an average Mac system.

Notably, we did not actively infect the system with this malware. This is generally impossible because of Apple’s XProtect technology that’s built into macOS that blocks the majority (if not all) malware for the Mac.

Instead we simply placed the malware sample files on the disk by extracting them from password-protected archives. This was enough for most

malware apps to respond and either quarantine or delete the malware files, and was enough to test the extent of each app's malware database.

If an anti-malware app didn't catch a particular malware sample, we checked the VirusTotal database for more information. VirusTotal is an open project intended to act as a freely-accessible information repository covering most malware and anti-malware apps.

Our goal was to find if the anti-malware app claimed to defend against any malware that it ignored. We found that in most cases it did indeed claim to do so.

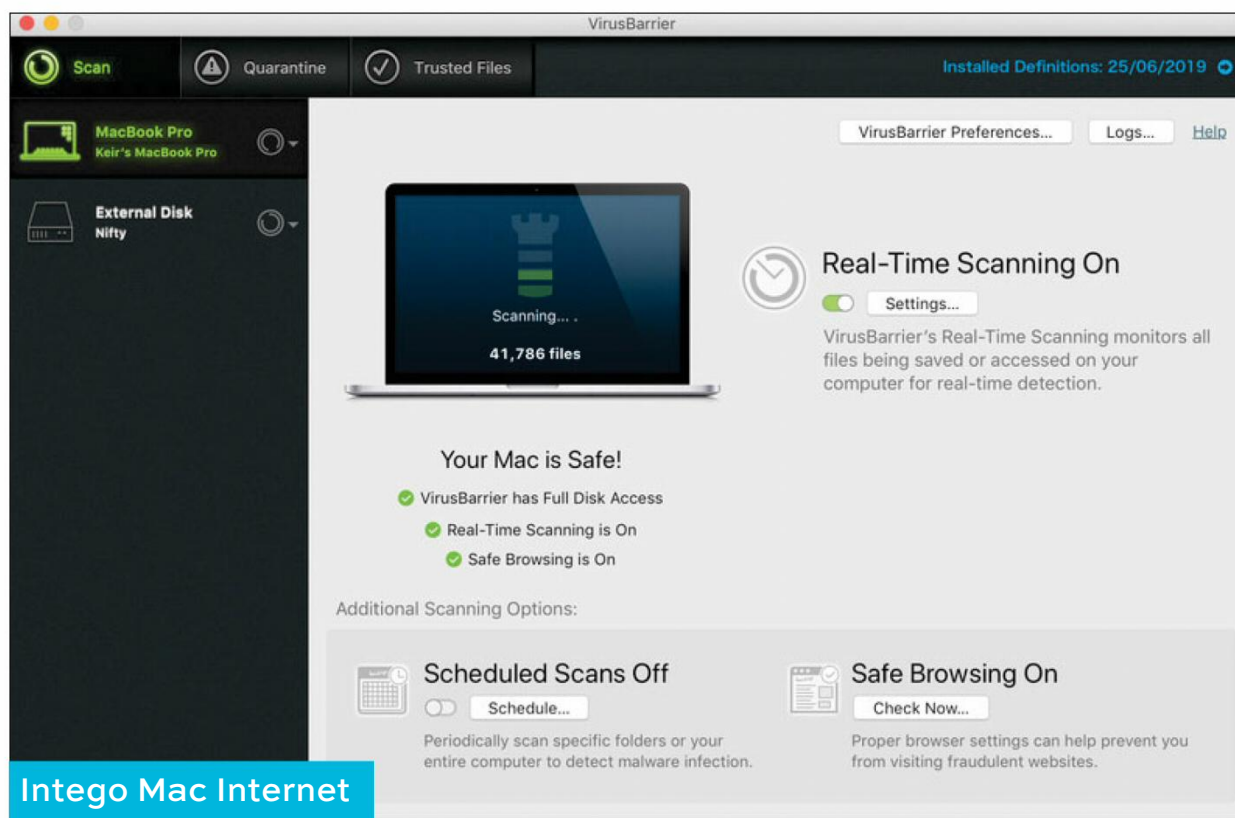
So, what's going on? Perhaps it's this: we tested the Mac version of an anti-malware app, and there are likely to be Microsoft Windows, Linux and even Android versions of that app. The Mac version might have a weakness in that it can't spot that malware, even though it should.

Alternatively, it might be an issue with our particular sample of that malware – although we note that some anti-malware apps we reviewed got a 100 percent detection and clean-up score, so claiming it's 'the wrong type of malware' is perhaps a weak excuse.

## 1. Intego Mac Internet Security X9

Price: **£39.99 (inc VAT)** from [fave.co/2HYox5c](https://fave.co/2HYox5c)

Intego's Mac Internet Security X9 is our favourite security package for Mac. It consists of two components: VirusBarrier X9 and NetBarrier X9.



## Intego Mac Internet Security X9

NetBarrier is an incoming and outgoing firewall and it's a nice bonus to have, but we're here for the main star: VirusBarrier X9.

### Price

Intego Mac Internet Security X9 costs £39.99 for a one-year subscription for one Mac, after which the usual price is £49.99 per year.

You can also purchase Intego Mac Premium Bundle X9, at £69.99 for the first year (with a normal retail price of £84.99). This includes other tools such as the Mac Washing Machine X9 system cleaning app, ContentBarrier XP for parental control, and Personal Backup 10.9.

There is a free trial available, but it provides limited functionality in that you can only quarantine anything the app finds, rather than ‘repair’ it. This latter option attempts to delete the malware from the file concerned, and is present in the full version of the app.

## Installation

Installation of Intego Mac Internet Security X9 involves authorizing the always-on virus scanning kernel module, and enabling full disk access, but a very good wizard interface walks the user through the steps, making it simple. This really matters if you’re not the kind of person to know the technical side of Mac operation.

Following this you must choose the kind of protection you want – minimum, standard, or maximum. The differences between standard, which is the default option, and maximum, is that the latter means a quick scan is run each time the malware definitions are automatically updated. Any attached iOS devices are also scanned upon connection. Honestly, we can’t see an issue with either option, so opted for maximum protection on our test setups.

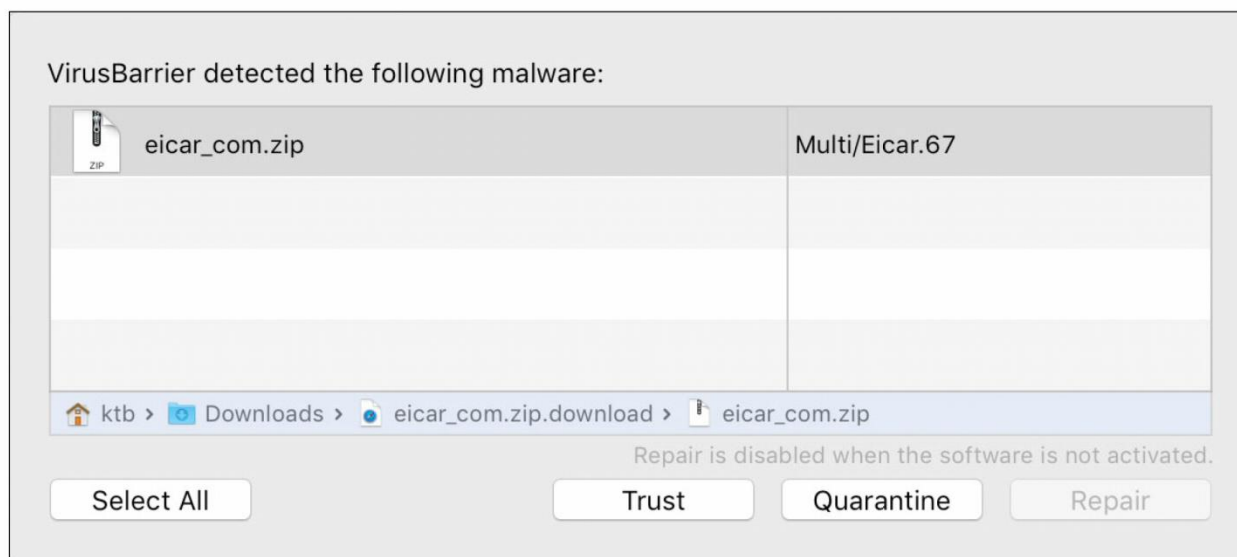
## Malware scan results

The first test was to undertake a full system scan, which took just 25 minutes or so to complete on our real-world test Mac (remember that your own scans could be quicker or slower than this). Subsequent full scans were even faster, at just two minutes

(yes, two). This is very probably because Intego Mac Internet Security knows which files haven't changed, and therefore doesn't bother scanning them all over again.

This scan speed is fast compared to most other malware apps we've seen, although it did sometimes utilize up to 70-80 percent of the eight virtual CPU cores on our test setup, causing the fans to spin up sometimes too. In the preferences we spotted an option to limit CPU usage, which should lessen the scan's impact on what you're doing on your computer at the time, although likely at the expense of scan speed.

Next, we attempted to deliberately infect our virtualized Mac test bed with 26 percent Mac malware virus samples in an unscientific but hopefully representative test. The results were



When Intego Mac Internet Security X9 find malware, it pops up the above dialog box to ask you what you want to do about it

nearly a perfect detection and clean-up rate, with some caveats.

Before testing we opened Intego Mac Internet Security X9's preferences and enabled the option to scan mounted volumes, and we advise you to do this too. It means malware in apps you attempt to install via downloaded DMG archives are caught immediately.

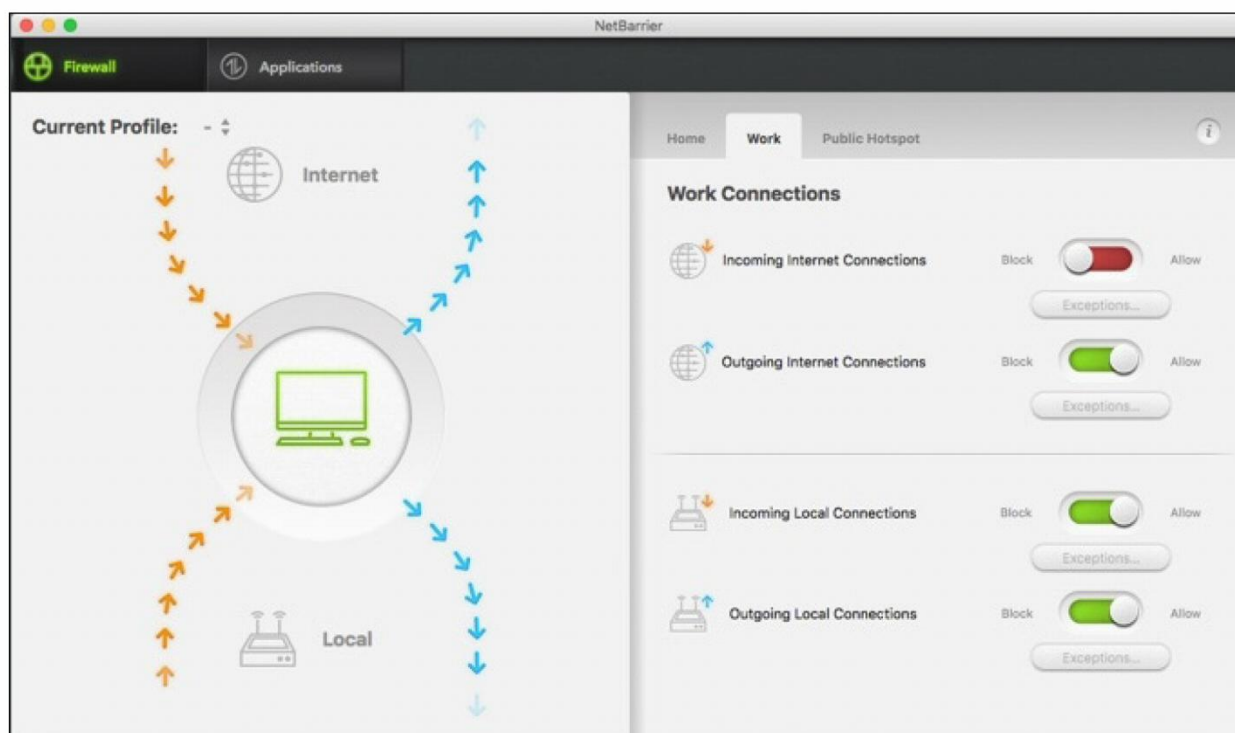
One malware sample was entirely ignored by Intego Mac Internet Security X9 when we placed it into the system – CrossRAT. Weirdly, Intego's blog contains a write-up about CrossRAT and claims it protects against it ([fave.co/31e1ZW3](https://fave.co/31e1ZW3)), so this might be a peculiarity with our sample of this malware (although we note that many other anti-malware apps detected it just fine).

We again appreciated the speed of Intego Mac Internet Security X9's always-on protection – it typically spotted the virus before the malware samples could even be fully extracted from their zip files, which had the effect of blocking entirely the unzipping process and ensuring nothing worrying was saved to the hard disk. This is better than all other apps here that let us unzip the contents completely before they spotted anything.

### **Other security features**

The application's interface includes an option to schedule scans (off by default), but other than that there isn't much to report – and this is a good thing. Intego Mac Internet Security X9 is happy just to sit





This is the fastest anti-malware app we've seen

in the background, which is what 99 percent of us require from an anti-malware app.

## Verdict

There's a lot to recommend Intego Mac Internet Security X9. It's the fastest anti-malware app we've reviewed. The clean-up rate was impressive. And although it's more expensive than some offerings, you do get that awesome firewall app as part of the bundle, which will set you back over £30 on its own for a competitor product. This is enough to justify the price as far as we're concerned, but the very budget conscious who need only malware protection might look at

other apps we've reviewed, such as Bitdefender Antivirus for Mac (see below).

### System requirements

- MacOS 10.8 or later
- 1.5GB hard disk space

## 2. Bitdefender Antivirus for Mac

Price: **£29.99 (inc VAT)** from [fave.co/2lO3saH](https://fave.co/2lO3saH)

Bitdefender Antivirus for Mac secures second place in our overall round-up of the best Mac antivirus thanks to its excellent clean-up rate, useful features and low price. There's one major caveat, though – adware.

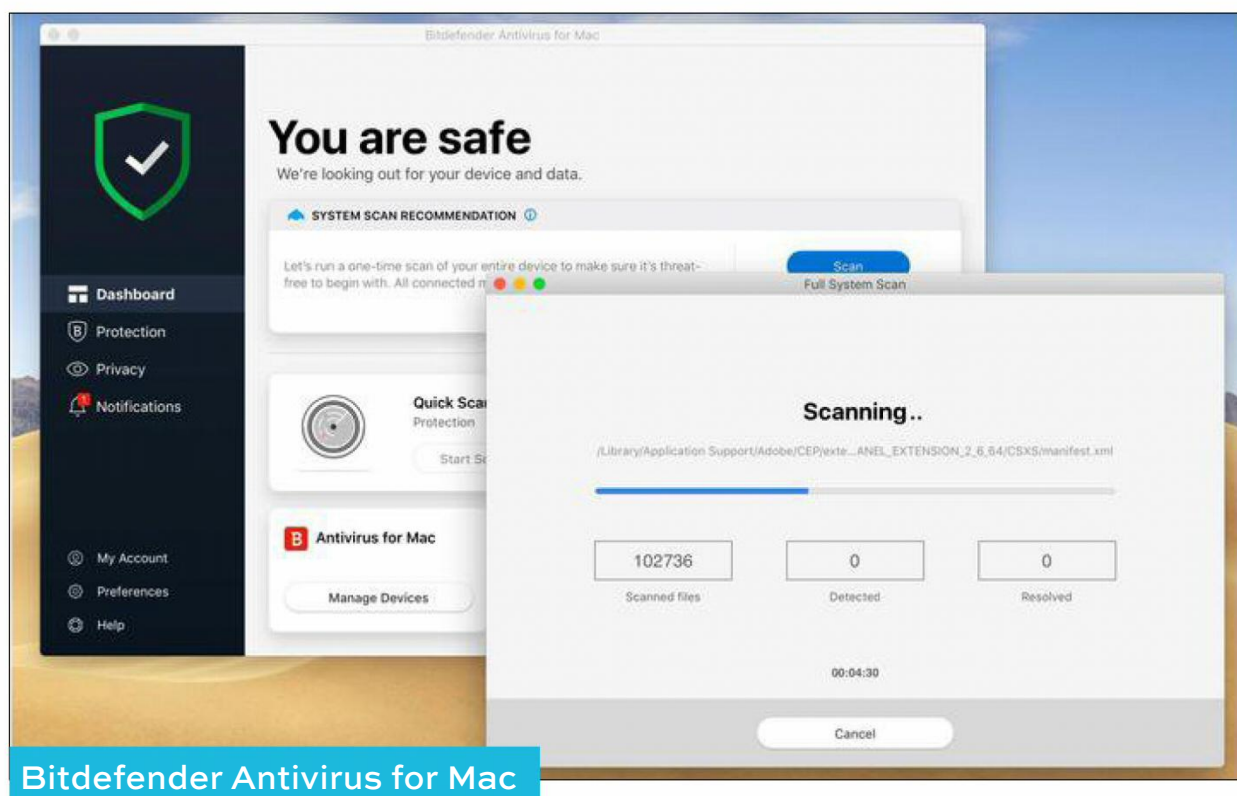
### Price

Before we start, a reminder that Bitdefender Antivirus for Mac is sold on a subscription basis. At time of writing, it can be had for £29.99 for the first year, but the standard cost is £39.99 for subsequent years. (There are lower per-year costs if you commit to a two- or three-year subscription.)

This is among the least expensive of the anti-malware apps we've reviewed, and is very good value for what you're getting.

### Installation

Installation was easy, with a step-by-step guide to authorizing the all-important kernel module that enables the always-on malware protection, as well as full disk access.



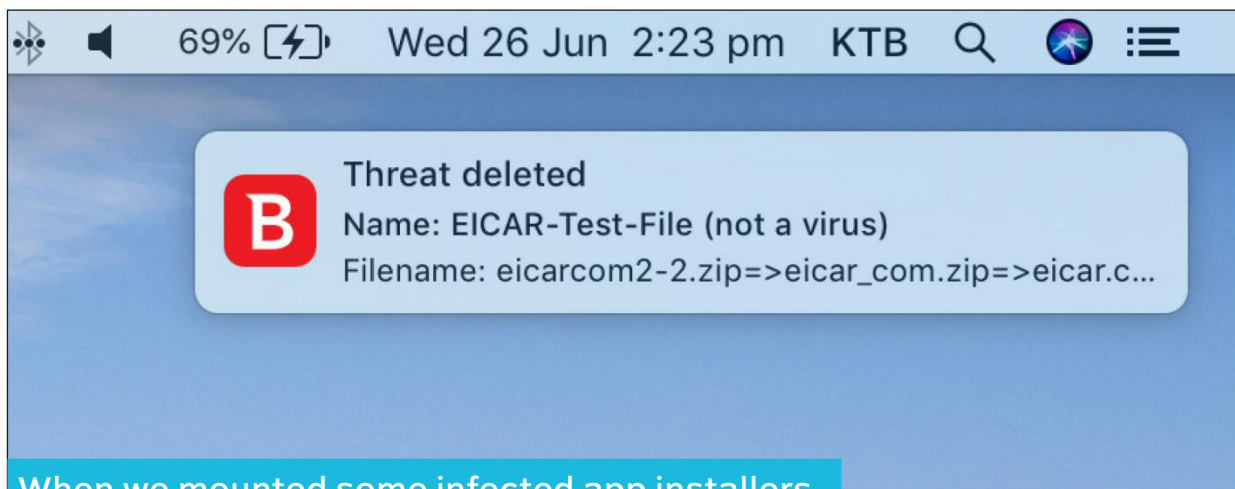
Bitdefender Antivirus for Mac

## Scan results

Once installation was complete the Bitdefender Antivirus for Mac program window declared “You are safe” – yet directly beneath pointed out that we hadn’t yet undertaken a full scan to “make sure it’s threat-free”. So, are we really safe?

When we started the full system scan on our real-world test Mac we initially found it on the slower side compared to other anti-malware apps we’ve seen, completing in at around two and a half hours (remember that your scans might take less or more time).

When we tried another full system scan later on it whizzed through, taking just five minutes or so. This is clearly because Bitdefender Antivirus



When we mounted some infected app installers, the app not only spotted the malware but also instantly unmounted the DMG file

for Mac knows which files haven't changed. These therefore don't need to be scanned afresh. So, it's only that inaugural scan following installation that you're likely to be waiting around.

CPU usage seemed modest during scanning that initial scan, evidently pegged at around 80 percent of just one of the eight virtual CPU cores in our i7 2.8GHz test setup, with around 10-20 percent of three other cores used. This left plenty of system resources for other apps.

The next step was to unleash our 26 malware samples on our virtualized Mac test bed, representing most malware from the start of 2018 until the end of the first quarter of 2019.

The result was 100 percent clear-up. Nice work. A nice feature within Bitdefender Antivirus for Mac is that, when we mounted some infected app installers, the app not only spotted the malware but also instantly unmounted the DMG file.

## Other security features

Outside of direct malware scanning and detection, Bitdefender includes a Safe Files feature. Turned off by default, this protects your Desktop, Documents, Downloads and Pictures folders so that no unauthorized app can delete or change files there. You can add any additional folder of your choice to the list.

Safe Files is designed to avoid ransomware locking your files. Already on the whitelist are apps including Microsoft Word and Google Chrome, and indeed all apps from most reputable vendors. However, if any non-whitelisted app tries to write to the folders, you'll see a pop-up warning you asking if you want to authorize it.

You also get a VPN tool included in the subscription. This is a cutdown version of Bitdefender Premium VPN, which costs £2.55 per month. The main limitations are that you can't choose which country you connect to (that is, UK users will always use a UK end point), and you're limited to a measly 200MB of data per day, per device. Still, this might be useful for a little light browsing if you're connecting to untrusted Wi-Fi in a café or hotel.

Curiously, the VPN tool uses macOS's own VPN tools, so by opening System Preferences and clicking the Network icon, you can connect or disconnect from the VPN without the need to run the Bitdefender VPN app. You might as well because Bitdefender's VPN app doesn't offer any other features typically found in VPN apps,

such as a kill switch that quits certain apps if the connection is lost.

Other notable features include a browser plug-in that indicates which sites are safe, and which aren't. It also shows which trackers are in use but, weirdly, appears not to actually block them.

We also noted a switch hidden away within the app's preferences dialog, turned on by default, that lets Bitdefender pop-up notifications about 'special offers' from Bitdefender. People use an app like this to get rid of adware, yet it comes with its own built-in...? This left a nasty taste in our mouths.

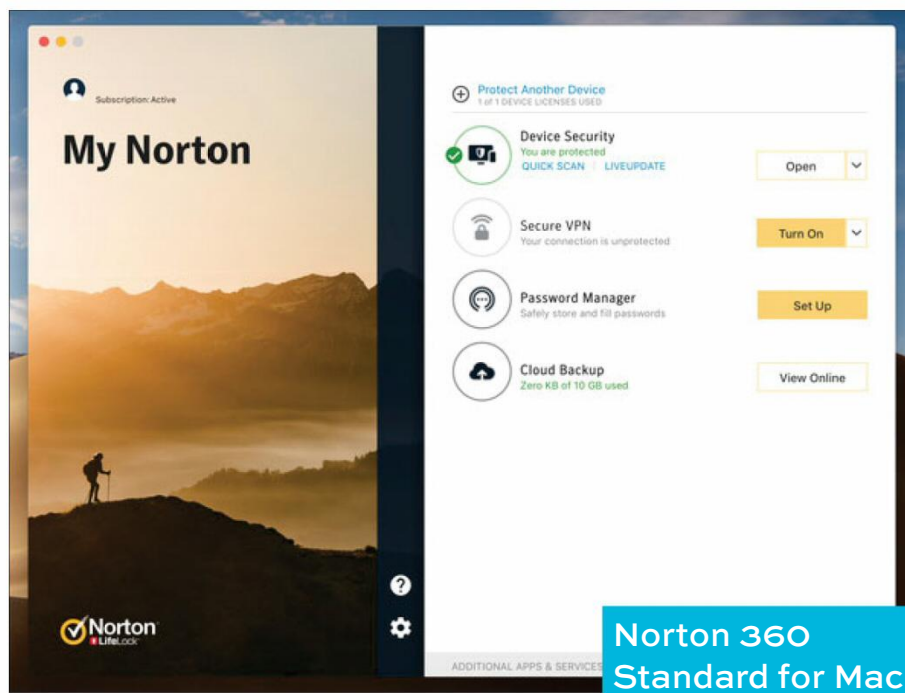
A neat feature is the Bitdefender Central web interface by which you can see at a glance which devices/computers are protected, and see the results of malware scans or warnings of infected files being cleaned. Alas, you can't initiate scans remotely, but there is a powerful parental control feature which is outside the scope of this review.

## Verdict

Despite a few small irritations, there's a whole lot to like about Bitdefender. It's hard to argue with that 100 percent clean-up rate and some truly useful features. However, we didn't rank it as our number one choice because of the adware component, which is simply unacceptable. We would've given it top placement in our group test otherwise.

## System requirements

- MacOS 10.10 or later
- 1001GB hard disk space



### 3. Norton 360 Standard for Mac

Price: **£24.99 (inc VAT)** from [fave.co/2A4La3J](https://fave.co/2A4La3J)

We've reviewed Norton Security Standard for Mac in the past, and while that product is still available, you can get Norton 360 Standard for the same price – for the first year, anyway. So, we decided to take a look at the what Symantec refers to as “New Norton 360” – a completely new release for 2019.

The difference between this and the plain old antivirus package is that the former includes quite a lot more than just antivirus – although, as we'll see, perhaps not quite as much as you might expect.

#### Price

The first year Norton 360 Standard costs £24.99 for one device (be it Mac or PC) for one year, but

from year two onwards you'll move to the standard subscription fee of £49.99.

## Malware detection

Following an easy installation, we ran our usual battery of unscientific tests that we hope indicate how well Norton 360 performs relative to other anti-malware apps. The first was to perform a full system scan on our test MacBook Pro, with its i7 2.8GHz processor, 16GB of RAM, and around 400GB of files.

The scan completed in just 35 minutes, which makes Norton 360 one of the fastest anti-malware scanners that we've seen. CPU usage throughout was around 50-80 percent of four of the CPU cores in our Mac, so we were paying a price for that speed and the fans became noisy.

A second full system scan later took the same amount of time to complete, and it looks like Norton 360 doesn't include the functionality to know which files haven't changed, and that therefore don't need scanning afresh – a trick other anti-malware apps use to speed-up subsequent scans.

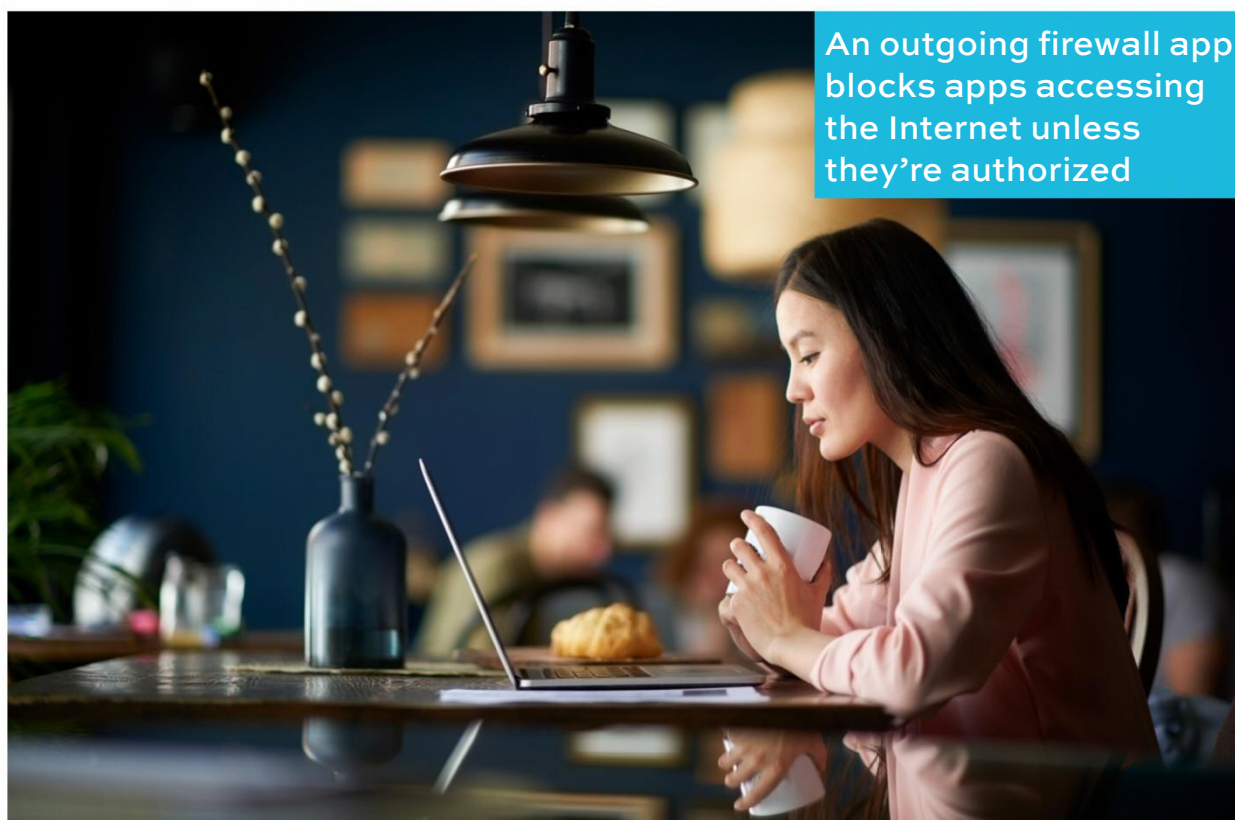
Next, we switched to our virtualized macOS installation to test how Norton 360 coped when we introduced 26 recent Mac malware samples onto the computer. The result was a 100 percent clean-up rate. Only a handful of the anti-malware apps we've looked at got a similar top score.

The malware was detected near-instantly, with a relatively informative pop-up notification appearing telling us where and when the malware appeared.



## Features

Included in the price is a VPN app, intended to protect your Internet communications when you're on untrusted Wi-Fi, such as that at a café or hotel. Although effective, this is also comparatively rudimentary, in that you can't choose the end-point. Users simply turn it on, or turn it off. However, it's appears to have unlimited data downloads, unlike with the VPN offerings bundled with other anti-malware apps we've seen that peg the user to 200- or 300MB. You also get an outgoing firewall app, that blocks apps accessing the Internet unless they're authorized. This is designed to block malware from 'phoning home' with your data, or to receive instructions.



The firewall went far beyond similar offerings, such as including location awareness that can change the rules depending on whether you're on a trusted and untrusted network (for example, at home), and also automatic blocking of known malware servers and types of malware connections. It's a powerful tool.

Norton Clean does exactly what you'd expect, which is to attempt to create space on your disk by cleaning away duplicate and junk files (such as old temporary data). This is extremely easy to use.

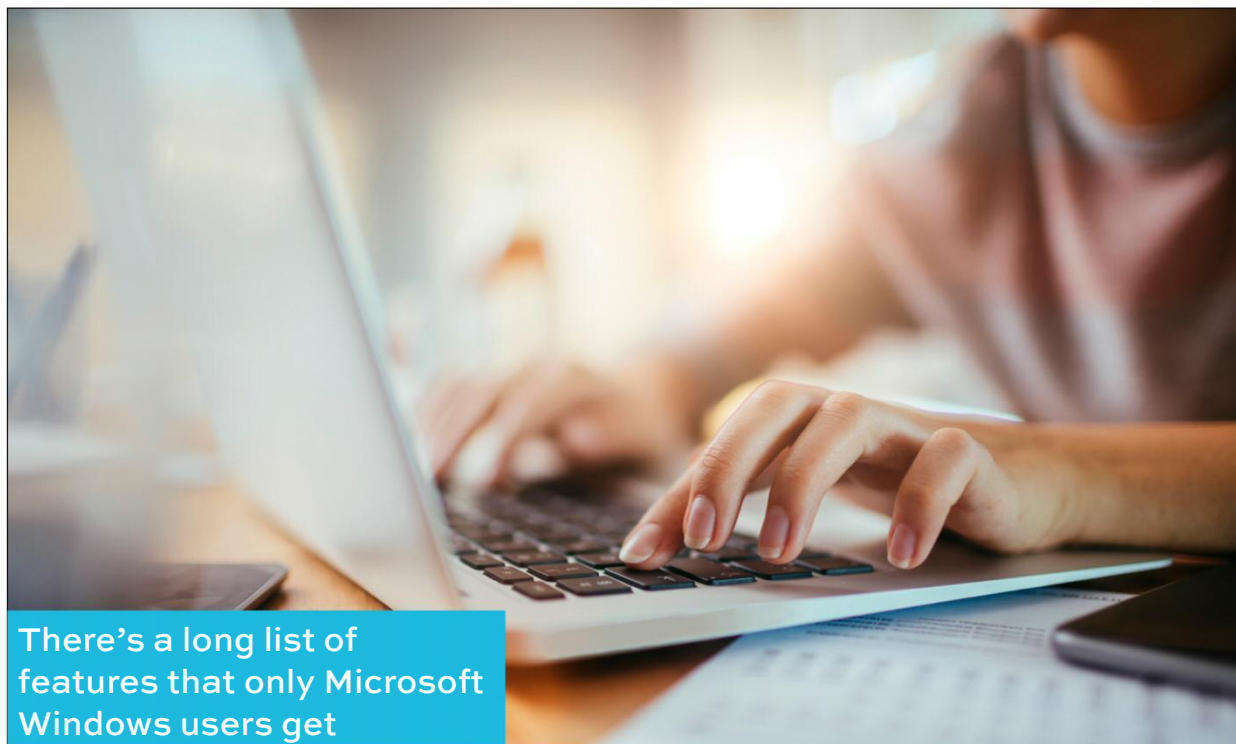
Additionally, there are a handful of useful browser plug-ins – a cloud-based password manager, and Norton Safe Search and Safe Web, both of which aim to protect the user while browsing should they stray onto any unsafe sites.

Notably, the firewall and Norton Clean tools are somewhat hidden. By default, Norton 360 on the Mac shows an attractive user interface by which you can do most things. However, you must click the settings button to switch to the older Norton Security app in order to access the firewall and Norton Clean tools. It's a little messy but it works, so long as you remember what to do.

### **What you don't get**

Notably missing is any kind of active anti-ransomware protection – although Norton 360 will, of course, detect and eradicate any known ransomware malware that gets onto the system.

The kind of protection we're talking about is found in some anti-malware apps and blocks



There's a long list of features that only Microsoft Windows users get

writing to certain of the user's home directories. Only authorized apps such as Microsoft Word or Apple's Photos app are allowed to use the folders. This blocks any ransomware that somehow gets through and infects the system.

There's also a long list of features that only Microsoft Windows users get as part of the yearly subscription. Mac users don't get the webcam protection, for example. Nor do Mac users get the parental control features.

And while your Norton 360 subscription gets you either 2- or 10GB of cloud backup space, there's no Mac software to make use of it (unless you're running a very, very old version of macOS).

This is where we would insert a frowning emoji, if we didn't eschew such things in our reviews.

## Verdict

We started out liking what we saw with Norton 360 Standard, but the missing Windows-only features and somewhat aggressive pricing following the first year's offer sadly wiped the smile from our faces. It's still a reasonably good deal, but we have to deduct points for any product that treats Mac users like second-class citizens.

We hope the Mac version catches up to the Windows version soon. Once that happens Norton 360 Standard will be a very attractive proposition.

## 4. Sophos Home Premium for Mac

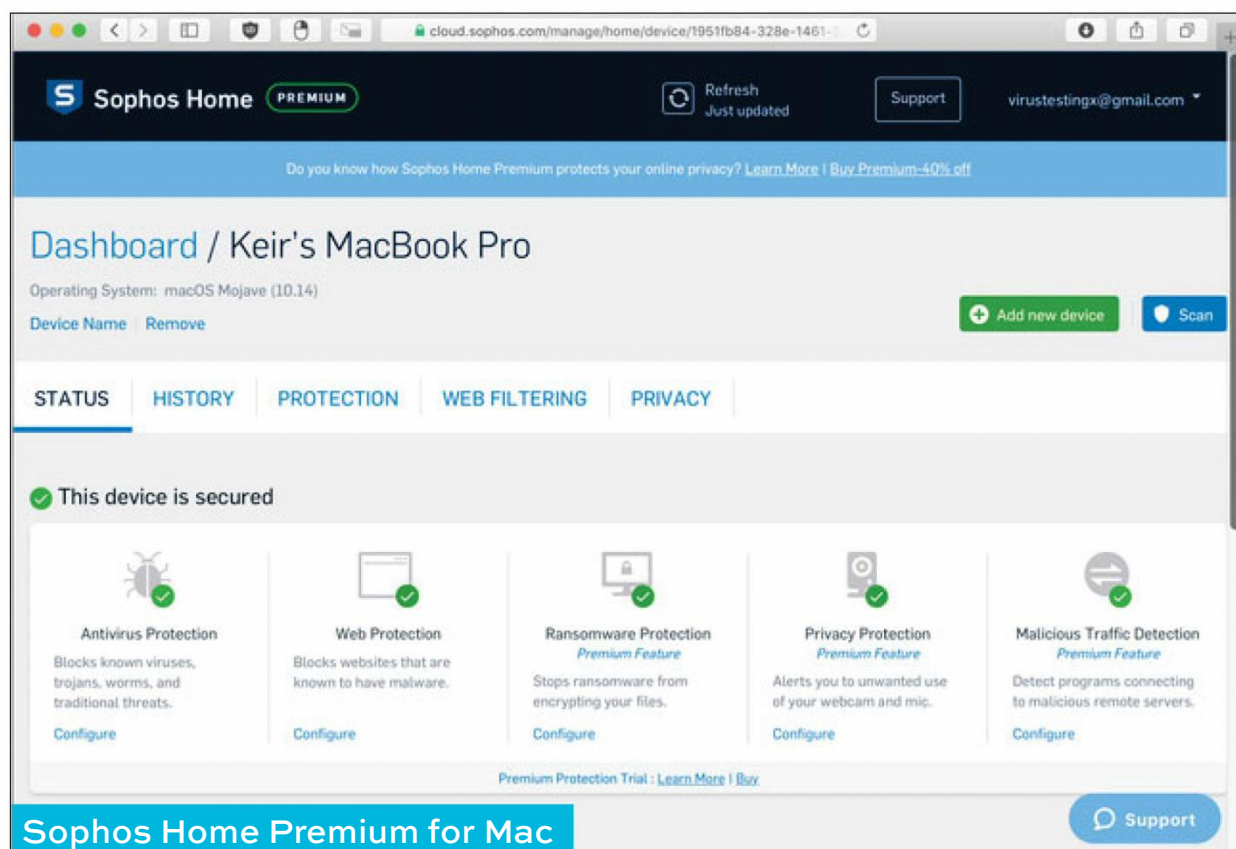
Price: **£30 (inc VAT)** from [fave.co/31n1CIs](https://fave.co/31n1CIs)

Sophos Home Premium offers protection for up to ten devices with one subscription. It's among our top picks in our guide, so is well worth considering.

## Price

At the time of writing, a year's subscription to Sophos Home Premium is £30, after which it'll go up to £50 per year unless you opt for a two year license from the get-go at £60. This is good value for what you get, and lets you protect up to 10 Macs and PCs. You can sign up here.

But the best news is that if you merely want anti-malware protection – including real-time protection – then Sophos Home Free is all you need. You get the same cloud-based remote management for up to three Macs or PCs as with the paid-for product. You just don't get some of



the other tools, like ransomware protection. To our knowledge, Sophos is the only firm offering a free anti-malware app for macOS that includes always-on protection. Other free anti-malware apps merely let you scan your system on-demand.

## Installation

The first thing to strike us about Sophos Home Premium upon installation is that, while it places the usual icon at the right of the menu bar, you will never see a program window. The most you'll see is a pop-out window showing notifications about when scans have completed, and a handful of options for program functions such as starting a scan.

So, how do you configure Sophos Home Premium, or view the results of things like malware scans? This is done via the cloud. Users login at [my.sophos.com](https://my.sophos.com) using any web browser and control the app from there.

In fact, this login can be done on any computer, meaning that you can install Sophos Home Premium on a Mac and control its malware protection on pretty much any other computer or device (and see the results of virus scans or alerts etc). This is a useful feature for parents who want to ensure their kids' computers are always protected.

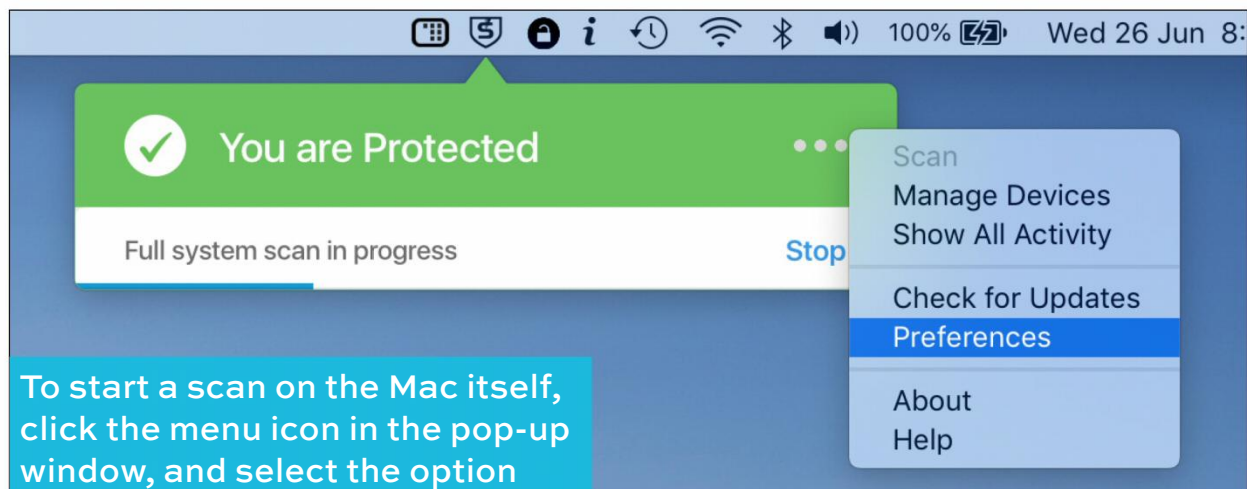
However, it is possible to start a scan on the Mac itself – just click the menu icon in the pop-up window, and select the option. Here you can also make Sophos Home Premium check for updates.

### **Malware scan results**

As soon as installation has finished a fast malware scan kicks off automatically. This is a terrific idea and, really, all anti-malware apps should do it. The scan took around five minutes to complete on our test Mac.

To run a full system scan it's necessary to click Scan on the drop-down menu (on the computer rather than the web interface), and then check the relevant box alongside the Scan button. Alternatively, you can start the scan from the browser interface, because this appears to always run a full scan.

The scan took a little over six hours to complete, meaning it took the longest for any anti-malware



app we've reviewed. In other words, your Mac will need to be left overnight in most cases – and on a system with terabytes of files even that might not be enough. Waiting this long if you're worried your system has a malware infection simply isn't acceptable, and is something Sophos needs to improve. Even worse, subsequent full scans were equally slow, so it appears Sophos Home Premium doesn't include the technology to know which files haven't been changed since the last scan. This is deployed by some other anti-malware scanners and means an initial full scan lasting several hours can be reduced massively for subsequent scans.

However, CPU usage throughout the scan was very light indeed throughout, troubling only between 10-30 percent of four of the eight virtual CPU cores on our i7 2.8GHz Mac.

## Unleashing malware

Next, it was time to unleash the 26 recent Mac malware samples onto our test bed virtualized Mac

in an unscientific test to find out how well Sophos Home Premium's always-on protection works.

The results were good, but one malware sample was apparently ignored once it arrived on the test bed – DarthMiner. Even attempting to run this and therefore infect the Mac didn't seem to awaken Sophos Home Premium, and it wasn't picked up in a subsequent on-demand scan either.

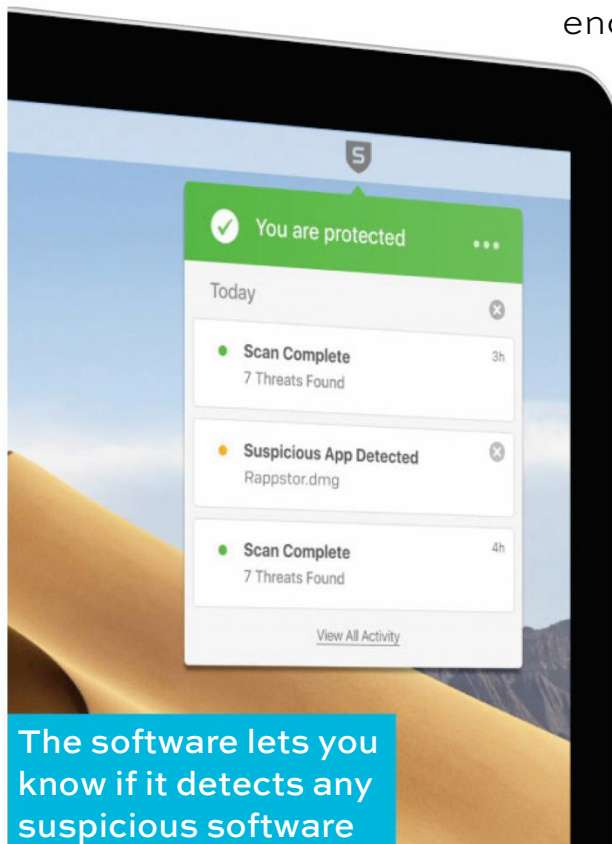
Curiously, the VirusTotal database reports that Sophos Home Premium claims to detect this malware. Our best guess is that this blind siding of Sophos Home Premium for Mac was a peculiarity with our particular sample of this malware, although we note that other malware apps we've tested caught it without issue.

For the other malware samples that were detected, some were cleaned automatically, while others caused Sophos Home Premium to pop-up a warning with a button offering to clean-up the malware. Of course, most people will instantly click this, but we're unsure why Sophos Home Premium didn't just clean-up or quarantine malware automatically like most of the other malware apps.

### **Other security features**

Other features that come with Sophos Home Premium include CryptoGuard, which aims to protect against ransomware. Unlike other anti-malware apps' ransomware protection, which typically aim to stop unauthorized apps changing files in the user's personal folders, CryptoGuard constantly monitors the system for the kind of





encryption processes used by ransomware.

Once the encryption is halted and the ransomware removed, it then rolls files back – something that means CryptoGuard requires 3GB of disk space all to itself, presumably to archive files in case of disaster.

Potentially Unwanted Application (PUA) protection can help users avoid somewhat legitimate but questionable apps

such as fake system cleaners or near-useless antivirus apps, while malicious traffic detection watches for apps attempting to connect to known malware command servers.

These are some truly innovative methods of protection that go far beyond the simple detection-and-removal of other anti-malware apps.

Sophos Home Premium had a few oddities we spotted in our testing. For example, the menu bar icon would sometimes disappear, making us think the app had crashed. But it hadn't and the icon would then appear again. We've noticed this for several years now. Why can't Sophos get around to fixing it? However, these are minor gripes.

## Verdict

While the long full scan times are simply unacceptable, there's a lot to recommend Sophos Home Premium to make up for it. It's definitely worth a look – and considering you can start with the free version and upgrade to the paid version later, what have you to lose?

## 5. ESET Cyber Security 2019

Price: **£29.99 (inc VAT)** from [fave.co/31n4pBq](https://fave.co/31n4pBq)

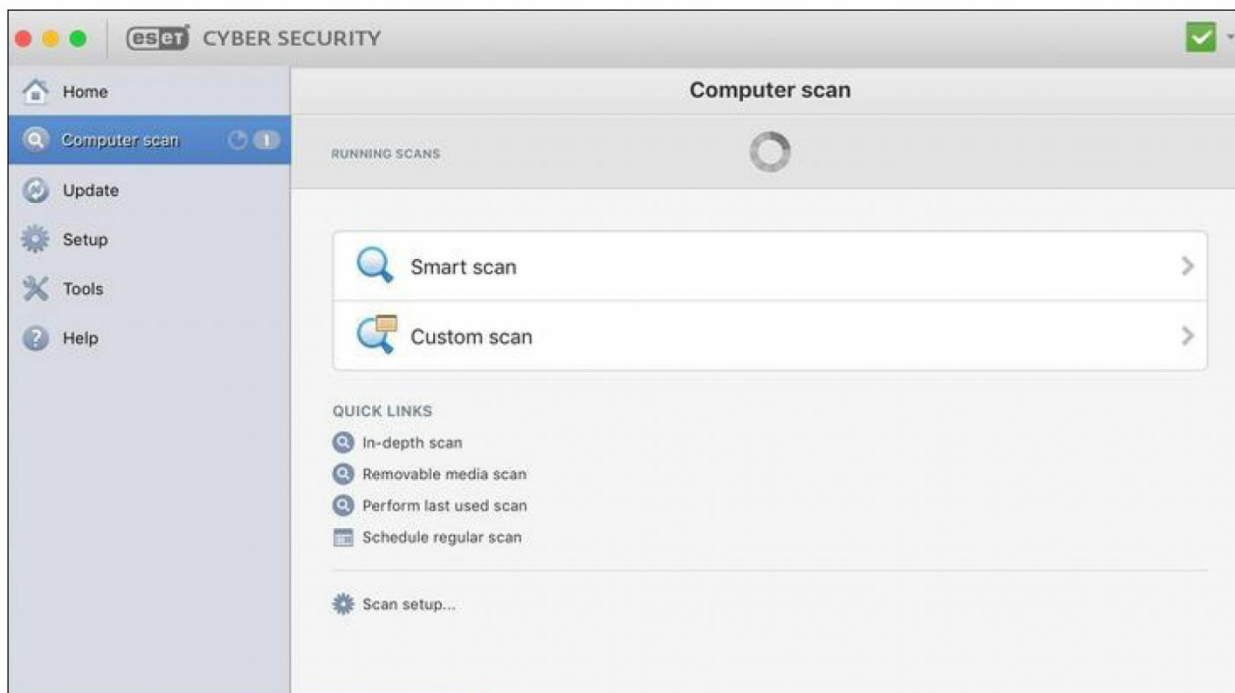
ESET is one of the oldest antivirus companies around, with the Slovakian company's first antivirus software hitting the market in the late 1980s. In fact, for several years in the early part of this century ESET was one of Slovakia's biggest companies. Here, we take a look at its latest antivirus offering in our ESET Cyber Security 2019 review.

## Price

With an asking price of £29.99 per year, ESET Cyber Security is among the most competitively priced offerings we've looked at, although that's only for one Mac. Other anti-malware apps let you defend several computers for the subscription fee.

## Installation

Installing ESET Cyber Security involved answering a few questions. First, we were asked if we wanted to join the ESET LiveGrid feedback system. This lets ESET improve detection for everybody by having your computer send it dodgy files that might



ESET Cyber Security 2019

be malware. There could be privacy implications here, of course, hence the option of joining.

Next, we were asked whether we wanted ESET Cyber Security to detect PUAs – potential unwanted applications. These are apps that are considered by some to break various rules. Perhaps they're too heavy with their advertising, or perhaps they're essentially poor-quality apps that are driven more by marketing than by their usefulness.

Alas, while these questions are welcome, the rest of the installation was a let-down. There's no guidance other than a handful of steps described in a brief dialog box and an online support page for installing the necessary kernel module that's required for always-on scanning. Step-by-step guides are needed.

## Malware scan results

Upon running for the first time ESET Cyber Security instantly updated its definitions, which is something that should be mandatory for all anti-malware apps, but sadly isn't. We turned on the Removable Media Blocking feature here too.

The full system scan took one hour and 45 minutes to complete. The scan showed about a fifth of the progress bar was filled straight off, which felt a little deceptive. CPU usage was light during the scan, at around a quarter of one of the CPU cores, and maybe 10 percent of three other cores. Sometimes this rose slightly but not enough to trouble the system, so users will not be made aware a scan is running.

It seemed ESET is aware of how long scans take because an option in the app's preferences dialog box is to shutdown computer after scan.

A second full scan took as long as the first, so there's probably no clever caching system that lets some antivirus apps know which files haven't changed, and that therefore don't need to be scanned afresh.

Unleashing the 26 malware samples onto our computer showed that ESET Cyber Security caught nearly all of them, with the exception of Adwind. VirusTotal reports that ESET should catch this malware, which might indicate a peculiarity with our malware sample – although we note that most other anti-malware apps caught it just fine.

The alert notifications that appeared were informative, telling us where the malware was

and what had been done with it (typically deleting the file). However, they disappear after just a few seconds, rather than waiting for the user to click a Close or Okay button. Users might miss them.

### Other features

Some interesting technologies are used to provide protection beyond just files. For example, ESET Cyber Security scans emails by automatically intercepting incoming and outgoing messages in the background, which should mean it'll work with all mail clients without any need to set anything up. It's bit like having a security guard between the email server and your Mac, who checks everything before letting it through.

Similarly, the software sits between the web browser on your Mac and the Internet. Again, this means all web browsers are protected and don't

ESET Cyber Security sits between the web browser on your Mac and the Internet



need to be specially configured via a plug-in or extension. We tested this by trying to download some malware samples and, sure enough, we were blocked – the page showed as unavailable. It showed a notification that the download had been dangerous.

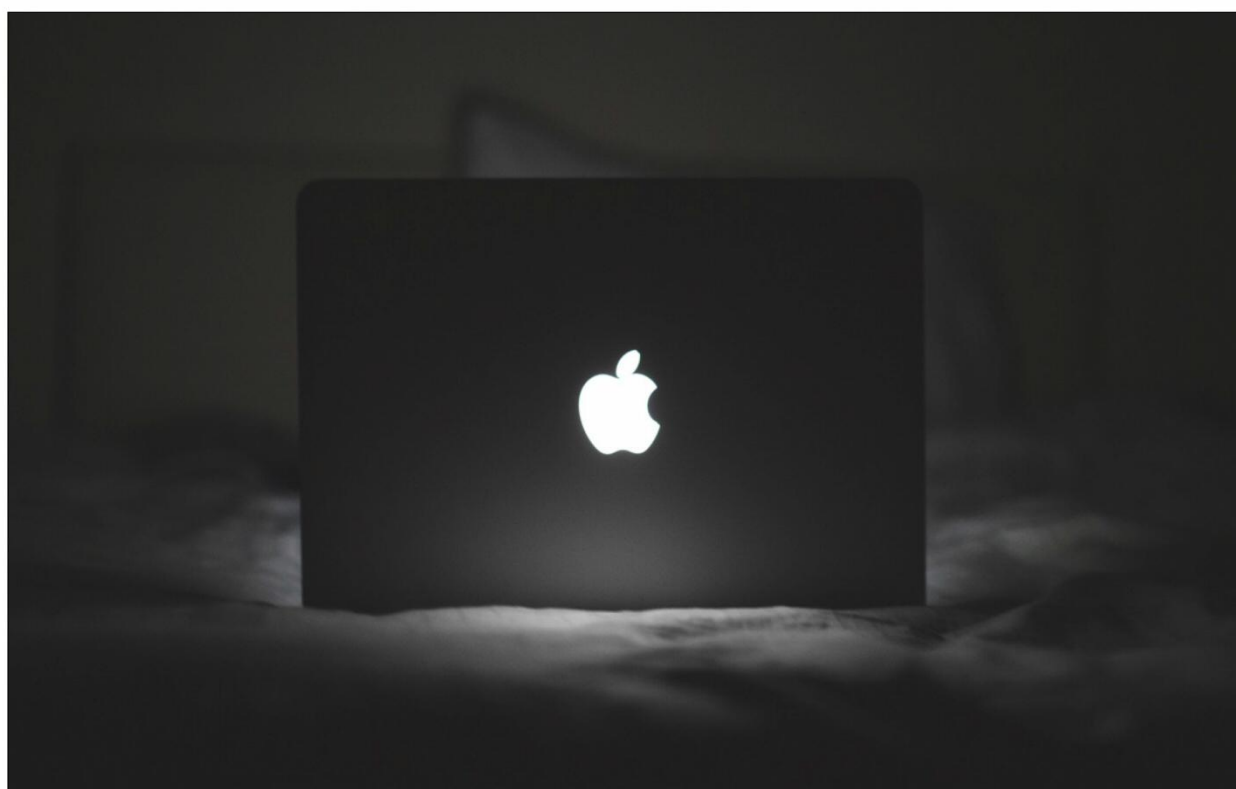
The configuration panel for ESET Cyber Security is among its best features, and you can configure just about every aspect of how the app works. For example, you can control exactly when the real-time protection scans the files – when you open them, when you attempt to execute them, and when you create new files. All three are switched on by default, but this is just one example of the fine-grained control you get. This might help avoid problems with certain Mac system configurations, or problematic files.

## Verdict

The virus clean-up and detection rate is very good, although the scanning speed is sadly on the slow side, and the lack of add-on features, such as ransomware protection, is a little disappointing. However, there's ultimately an elegant simplicity to ESET Cyber Security that we like and we therefore can't help but recommend you at least include it on your shortlist.

# How Apple consistently reinvents its core business

Apple's business rarely stands still. Here's a look at how it has evolved over the years. **Jason Snell** reports



**A**pple's Q3 2019 financial results caused a bit of a hubbub because iPhone revenue was – for the first time in seven years – less than half of Apple's overall revenue. The cause is a slowdown in iPhone sales combined with dramatic growth in two other areas: wearables and services.

But this is hardly the first time Apple has experienced a major change in the shape of its

business. In fact, Apple is a company that's rarely stood still in terms of its evolution.

To prove the point, let's step through 20 years of Apple's business, five years at a time.

### 1999: The Mac comeback

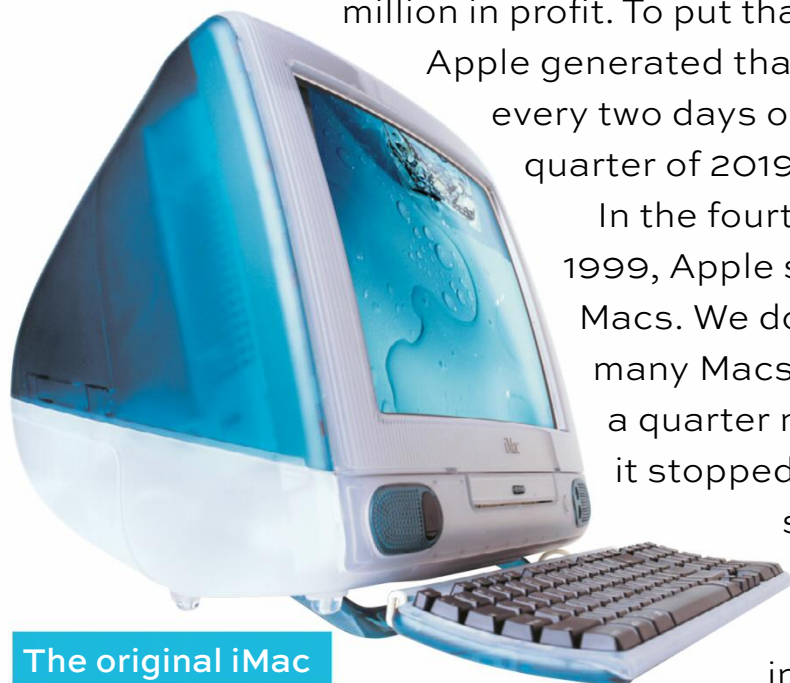
Steve Jobs came back to Apple in 1997 and we all know what happened next. But that transformation took a while. Look at a sample quarter from 20 years ago – the fourth fiscal quarter of 1999 – and you'll see a very different company than the Apple of today.

First off, there was only really one Apple product back then: the Mac. 80 percent of Apple's revenue came from the Mac, with 20 percent coming from other products, mostly Mac accessories and software. In the fourth quarter of 1999, Apple's total revenue was \$1.34 billion, generating \$111

million in profit. To put that in perspective, Apple generated that much revenue every two days or so in the third quarter of 2019.

In the fourth quarter of 1999, Apple sold 772,000 Macs. We don't know how many Macs Apple sells in a quarter now, because it stopped releasing unit sales figures

last year, but it's probably in the ballpark of



The original iMac



four million. Keep this in mind when you consider that the Mac is now only roughly 10 percent of Apple's overall business: back when the Mac was 80 percent of Apple's business, Apple was selling less than a fifth as many Macs per quarter as it is in 2019.

### **2004: Rise of the iPod**

2004 was an inflection point for Apple. After the introduction of the iPod in late 2001, sales built slowly until late 2004, when they shot up like a rocket. The fourth financial quarter of 2004 is actually the moment before the iPod rocket exploded. It is, in fact, the last quarter in which the Mac was the majority of Apple's business. (That's right – the Mac has been a minority component of Apple's overall revenue for 15 years.)

The revenue mix in late 2004 was 52 percent Mac, 23 percent iPod, and 25 percent other products. In the fourth quarter of 2002, Apple sold 836,000 Macs, more than it was selling five years earlier. But it also sold two million iPods, a number that would double in the next year.

Apple was growing overall, too. The growth in iPod sales meant that Apple generated \$2.35 billion in revenue – but only \$106 million in profit. Apple's explosion in profit growth was to lag behind its explosion in revenue growth, at least a little bit.

### **2009: The iPhone takes off**

In 2009, the Mac was doing better than five years earlier, and by a lot – Apple sold 2.6 million Macs

in the fourth quarter of 2009, three times the number it sold during that quarter five years earlier. And yet, for all the Mac's success it had shrunk to only 29 percent of Apple's overall revenue.

This was an era driven by exploding iPhone growth and still-strong iPod sales. Apple sold 6.9 million iPhones during the period, and a staggering 11 million iPods. Overall, the iPhone represented 38 percent of Apple's business, and the iPod 13 percent.

Apple's business was also much larger overall. The fourth quarter of 2009 generated \$11.5 billion in revenue, more than four times the quarter five years earlier. And as for profit? The profit had started to flow in torrents. In the fourth quarter of 2009, Apple generated \$2.2 billion in profit. The money was finally rolling in.

## **2014: iPods fade, iPads replace**

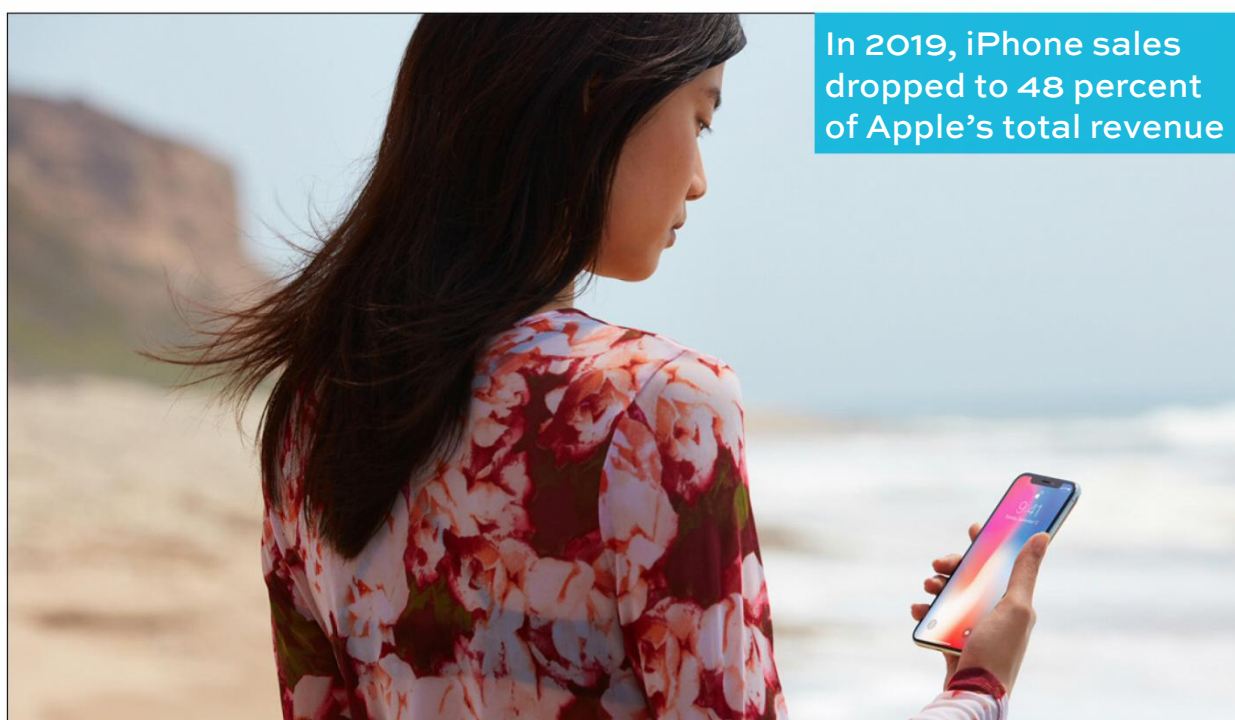
By 2014, Apple more closely resembles the company we see today. The iPhone dominates revenue, with 53 percent of the overall total. The iPod has faded away – its sales are so small (2.9 million) that Apple has hidden their revenue inside the 'other products' category, which itself only makes up 5 percent of the total pie. Replacing it as a revenue engine is the iPad, which contributes 16 percent to the total. The Mac, now selling a staggering 4.4 million units (170 percent more than five years earlier), contributes 15 percent to the total. Apple's business exploded between 2004 and 2009, but it's nothing compared to the inflation

between 2009 and 2014. During the third quarter of 2014, Apple generated \$37.4 billion in revenue – three times what it did five years earlier – and \$7.7 billion in profit.

## 2019: The rise of the rest

That brings us to the most recent quarter, in which Apple generated \$53.8 billion of revenue and \$10 billion in profit. While it's true that iPhone sales are slumping, Apple's general profit and revenue trajectory continues upward, albeit in fits and starts. The iPhone dropping to 48 percent of Apple's total revenue is, in part, because of the rapid growth of the Wearables (formerly Other) category, as well as the ongoing growth of the Services line.

Meanwhile, let's not sleep on the Mac and the iPad. The 11 percent and nine percent of revenue



they generate may seem small, but that overall Apple revenue has exploded. Together, they contributed more than \$10 billion in revenue.

Watching Apple's business change incrementally, quarter to quarter, sometimes makes it hard to see the bigger pictures. Its product lines rise and fall, but up to this point, the company's overall trajectory this century has been pretty dramatically upward. One key reason for that is a regular addition of new products and services that can fuel growth and compensate for products that have stopped growing or, in the case of the iPod, have faded out entirely.

Apple has come a long way from those quarters early in the 2000s when it couldn't even show a profit. By my back-of-the-envelope calculations, Apple has generated \$450 billion in profit since 2000, \$429 billion of that in the last ten years, and \$277 billion of it in the past five years.

# The 10 best Apple Watch complications

With a good complication, you don't always have to open an app to check appointments. [Leif Johnson](#) reports



**D**on't be scared by the word 'complication'. The ones you find on the Apple Watch can make your life much simpler, as they're basically bite-sized versions of the full apps you normally open through the home screen grid.

You can have anywhere from one to eight complications on the tiny screen depending on the watch face (or watch), which makes it easy for

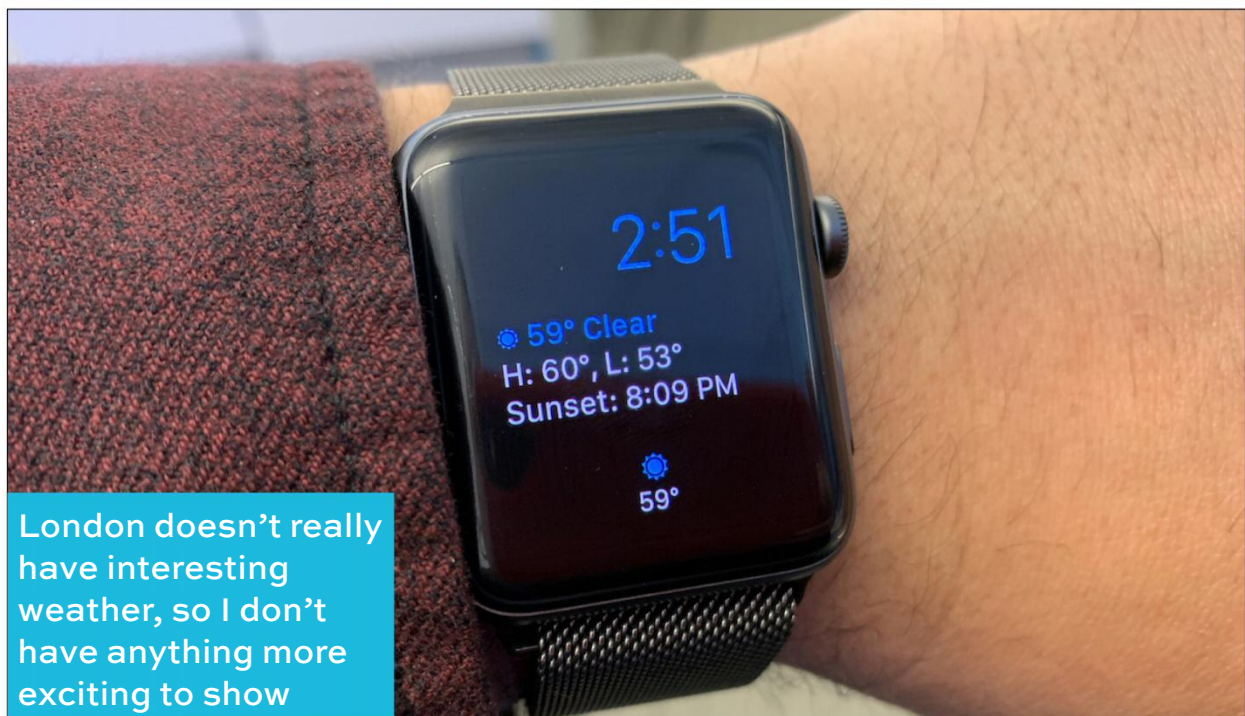
you to figure out what the weather's like outside, when your next appointment is, or even translate a question into another language. A good Apple Watch app doesn't necessarily have a good complication, although there's a lot of overlap).

A good complication relays enough information that you won't even need to open the app. If you do, it'll get right to business without requiring any other steps. These are the complications that have the best chance of making your Apple Watch experience less, well, complicated.

### 1. **Dark Sky**

Price: **£3.99 (inc VAT)** from [fave.co/31cOEPO](https://fave.co/31cOEPO)

Apple's native Weather app kind of sucks, so you should use a good third-party alternative like



Dark Sky. It's beautiful, it's eerily precise about predictions, and it's got a fantastic Apple Watch compilation. In its large form, it tells you the current temperature, today's highs and lows, and when the sun will set.

In its smaller form, it shows you an icon for the weather and the current temperature. And you get all this with a single purchase. Carrot Weather (£4.99 at [fave.co/2UOuyXI](https://fave.co/2UOuyXI)) does a good job, too (especially if you like some humour), but you'll have to pay extra for the Apple Watch complication.

## 2. iTranslate

Price: **£4.99 (inc VAT)** from [fave.co/2HZ1OGm](https://fave.co/2HZ1OGm)

Travelling to abroad? Having the wonderful iTranslate on your wrist feels a bit like having



Longer phrases won't fit in the preview, so you'll still have to open

one of the universal translators from *Star Trek*. It recommends a language based on your location as well as useful simple phrases that show up on the large complication, but you can also press it and ask for specific translations.

After that, the new phrase will stay visible for a bit. In the smaller version, it merely gives you quick access to the app, but it will at least tell you which language it's set to. There's a large array of languages to choose from, too, ranging from French to Afrikaans.

### 3. BatteryPhone

Price: **Free** from [fave.co/2A5fYRX](https://fave.co/2A5fYRX)

You'll find several good apps for checking your iPhone's battery like on your Apple Watch, but my



I really wish 'battery' wasn't lowercase. Fortunately, I usually use the smaller version



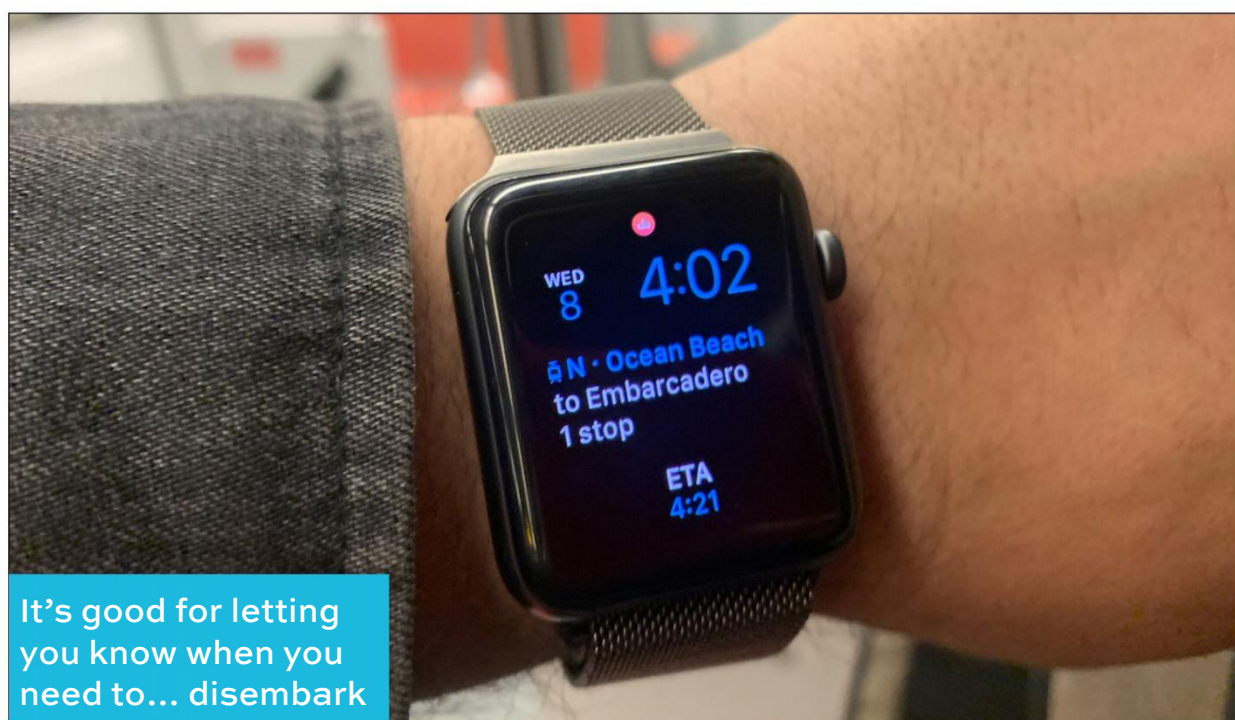
favourite is BatteryPhone. It tells you the status of your iPhone's battery, yes, but it also tells you how much battery life your Apple Watch has left – and it does this for both the large and small versions of the complication. To my knowledge, no other battery life app on the App Store does this.

In addition, it'll notify you when your iPhone is fully charged (and vice versa on the iPhone with the Apple Watch). The catch is that the interface is ugly and that – thanks to limitations from Apple – you can't get updates more than every 30 minutes.

#### 4. Citymapper Transit Navigation

Price: **Free** from [fave.co/2UIrY5e](https://fave.co/2UIrY5e)

Citymapper Transit Navigation is an invaluable navigation app if you rely on public transportation



in a major city, and its Apple Watch complication is almost as essential for getting you where you need to go. The smaller complication lets you know when you'll arrive at your destination, while the larger one lets you know the next step you'll need to take on your journey (such as a transfer for a different train).

Citymapper works great for car trips, too, but its Apple Watch support keeps you from constantly dragging out your phone when you're heading somewhere on foot.

## 5. Just Press record

Price: **£4.99 (inc VAT)** from [fave.co/2A81d0C](https://fave.co/2A81d0C)

At the moment watchOS doesn't have a dedicated Voice Memos app – although one is reportedly on the way – so Just Press Record is easily one of your



It's a great way to 'jot down' article ideas that come to me on my commute

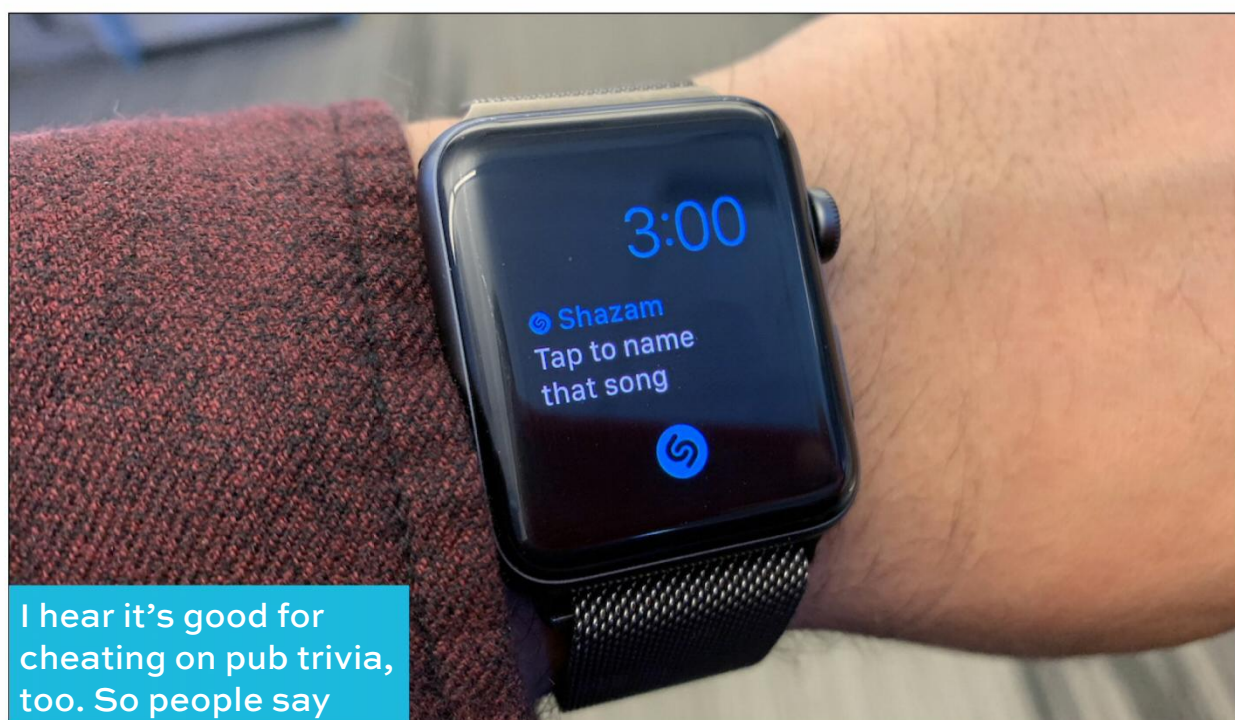
best alternatives. The complication in particular makes it more useful than it is on the iPhone.

You can use it for quick reminders or notes – particularly if you’re worried iOS’s dictation won’t accurately capture it with a traditional note taking app – and I personally use it to ‘jot down’ story ideas that hit me while I’m on my train commute. Once you’re done, just press the big red button to stop. You can access the recorded snippets from either your Apple Watch or your iPhone (where you’ll also find a transcription).

## 6. Shazam

Price: **Free** from [fave.co/2A7ap5G](https://fave.co/2A7ap5G)

Shazam tells you which song you’re listening to when it’s able to hear a few seconds of audio, and

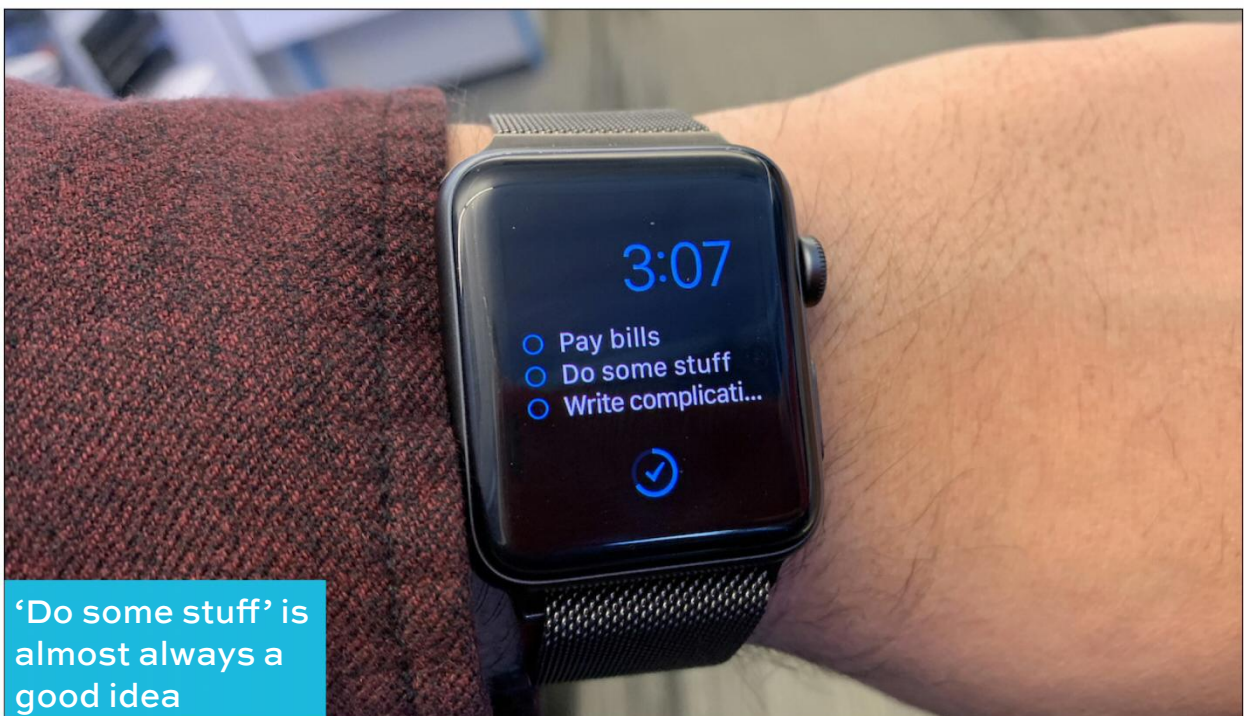


its complication lets you turn it on within seconds. Good thing, too, as I hate it when a song ends by the time I find my Shazam app on my iPhone or Apple Watch. With this complication, it's always in reach (although it's only available in the small 'corner' format with the logo).

## 7. Things 3

Price: **£9.99 (inc VAT)** from [fave.co/31dRYIq](https://fave.co/31dRYIq)

Things 3 is the best to-do-list app across the iPhone, iPad, and Mac, and that quality generally extends to its helpful complication. The large version is the most useful, as it'll tell you the next tasks you need to finish on your 'Today' list, and then you can tap on it to open the watch app and mark the task as complete.

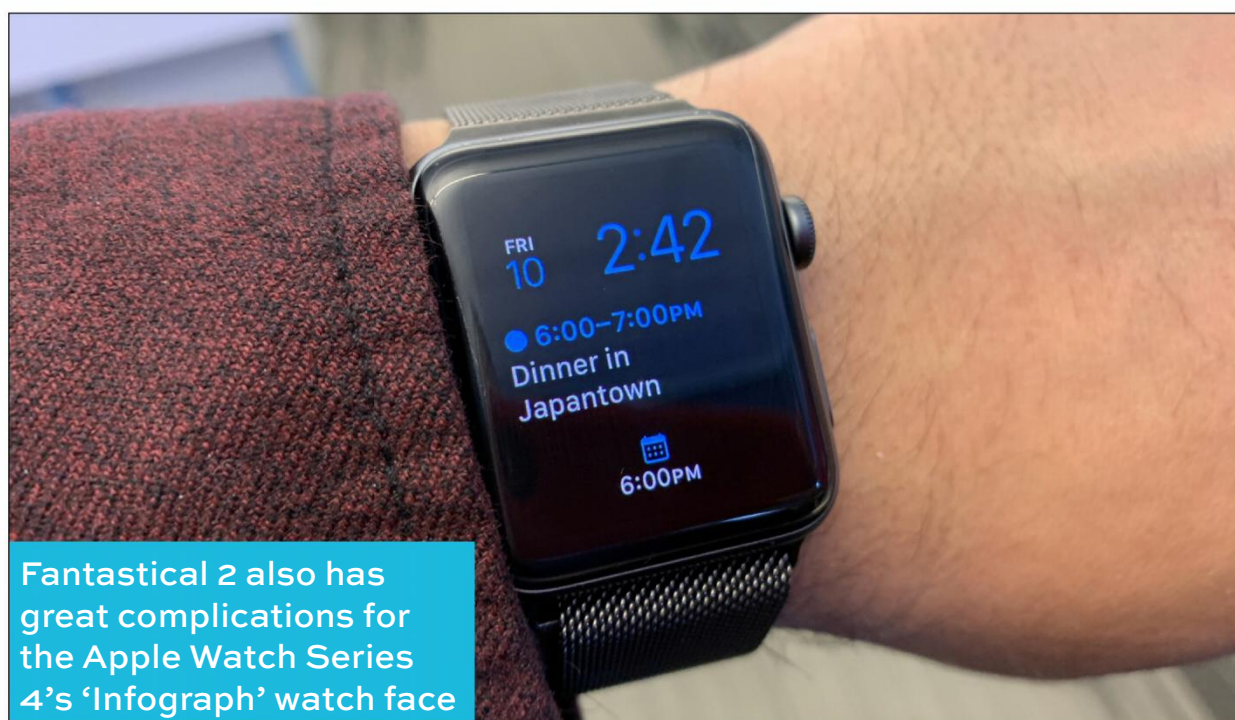


The smaller complication is more abstract, as it merely has Things' checkmark logo and an 'activity ring' showing how close you are to completing the day's tasks. That's nice, but I'd be happier if Things replaced the logo with the actual number of tasks remaining.

## 8. Fantastical 2

Price: **£2.99 (inc VAT)** from [fave.co/2HWtkUS](https://fave.co/2HWtkUS)

Fantastical 2 is a, well, fantastic calendar app, and frankly you should be using it. On the face of things, though, its complication isn't all that different from the one for Apple's own Calendar app, although it's notable for letting you know how much longer an event you're attending is going to last (provided you entered that information).

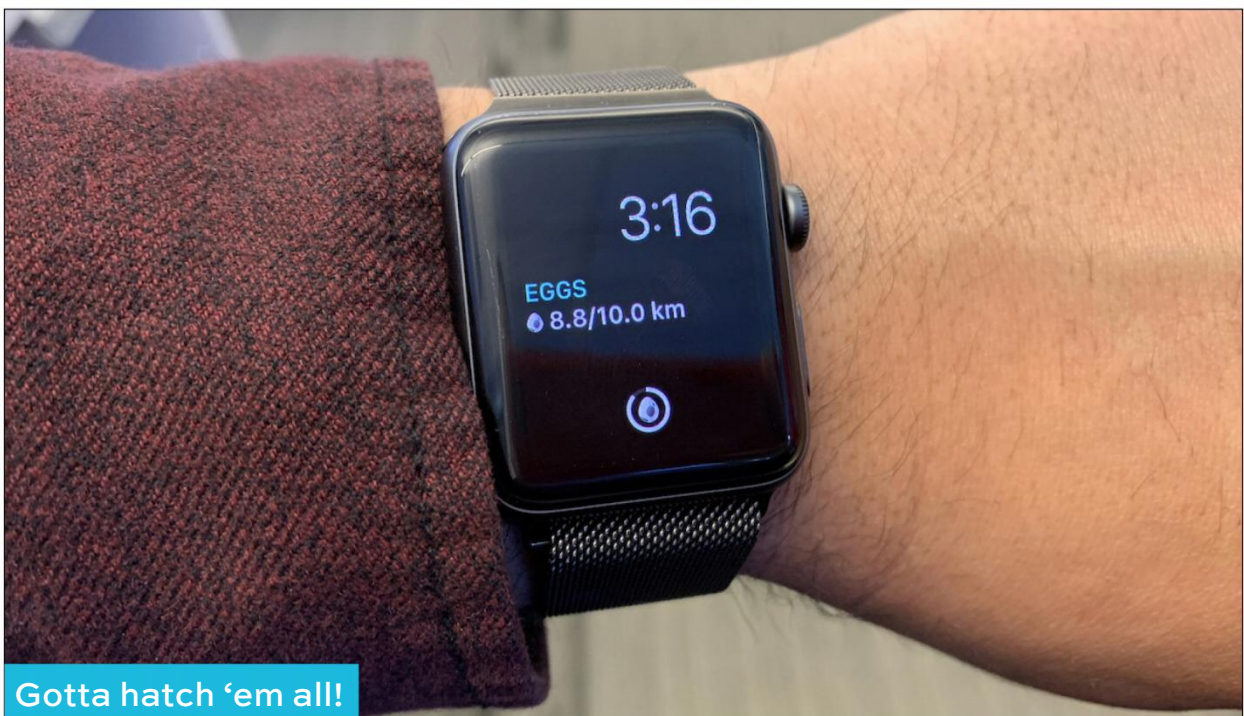


On the smaller complication, it uses an ‘activity ring’ to give you a rough visual idea of how long you have until an event ends as well. It’s not the most original complication, perhaps, but it’s certainly one of the most useful.

## 9. Pokémon Go

Price: **Free** from [fave.co/2lOrwKJ](https://fave.co/2lOrwKJ)

Pokémon Go’s complication reminds us that Niantic’s popular augmented reality game doubles as a decent exercise app. In both the large and small versions, the complication shows how much farther you need to walk before your next Pokémon egg hatches. The bigger version gives you specifics, while the short version shows an Activity app-style ring that slowly completes the closer you get to



your goal. Glancing down at it sometimes inspires me to ‘go’ the extra mile (or at least the long way) when I’m heading somewhere.

## 10. Spotify

Price: **Free** from [fave.co/2A3Oj3O](https://fave.co/2A3Oj3O)

I’m reluctant to put Spotify’s newish complication because there’s not much to it. The smallest one only shows the logo and acts as a springboard to the app, while the larger one just says, ‘Tap to play music’. Unlike its counterpart for Apple Music, it won’t even tell you which song is playing. But if you’re heavily invested in Spotify, this may be all you need. The shortcut quickly opens the app, giving you immediate access to your playlists and the typical playback controls.

