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MAY 2018 • IDG

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**ULTIMATE
MAC**

BUYING GUIDE

**ALL THE NEWS FROM
APPLE'S MARCH EVENT**

iOS 11.3:

**EVERY NEW
FEATURE
REVEALED**

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Apple's March event

David Price reveals everything Apple announced



Apple recently held an education focused event at Lane Tech College Prep high school, Chicago, at which the firm introduced a new iPad, and made some education focused software announcements.

Tim Cook took to the stage to discuss Apple's focus on education, saying: "At Apple we care deeply about education because we love kids and we love teachers".

He said education has been a big part of who Apple is for 40 years. “We had a unique insight into how technology could inspire kids to unleash their creative genius. And we believed that technology could help teachers deliver a unique and personalized learning experience to all kids. We’ve never stopped believe this, and we’ve never stopped working on it.”

Cook added: “We know our products can help bring out the creative genius in every kid”.

In fact, “Macs and iPads are used throughout schools by students for everything from music to language arts and even advanced robotics”.

He discussed some of the education projects Apple has been involved with. Such as a 10-year study called ‘Apple Classrooms of Tomorrow’ of which he said: “engagement increased exponentially for students and teachers who had access to our products.”

There are also classes for students and teachers at the Apple retail stores, including the Everyone Can Code initiative with Swift Playgrounds that makes it easy to teach coding.

“Today we’re going to take those experiences even further and to start it off we’re going to talk about iPad,” said Cook as Apple’s vice president of worldwide iPod, iPhone, and iOS product marketing, Greg Joswiak, arrived on stage.

New iPad

Apple has introduced a new iPad – it’s got an A10 chip (The iPad Pro has an A10X chip) and a 10-

hour battery. It also has an 8Mp camera, 1080P HD video, up to 300Mb/s LTE, compass, GPS and weighs 469g.

It only has 32GB storage, though. We imagine Apple is justifying this small amount due to the fact that a lot of the content will be stored and accessed in iCloud. It's probably a good thing that the 5GB iCloud storage will be bumped to 200GB for schools and iPad management, then.

Prices start at £319 for the 32GB with Wi-Fi model and £449 for the 32GB with Wi-Fi + Cellular mode, although schools will get money off, thanks to Apple's education discount. You can order it at fave.co/2GyRup4. The 128GB version costs £409, or £539 for the Wi-Fi + Cellular model. We are waiting for confirmation of the UK education discount.



Apple Pencil

The new iPad works with the Apple Pencil, which you can use in Pages, Keynote, Numbers. Use Smart annotation or illustrate a report.

It's available for purchase separately for £89 at fave.co/2Gk8092. Again, schools can take advantage of a discounted price, though we are awaiting confirmation of the UK education price.

Digital Books

Apple is introducing an update to Pages on the iPad that will make it simple to create books.

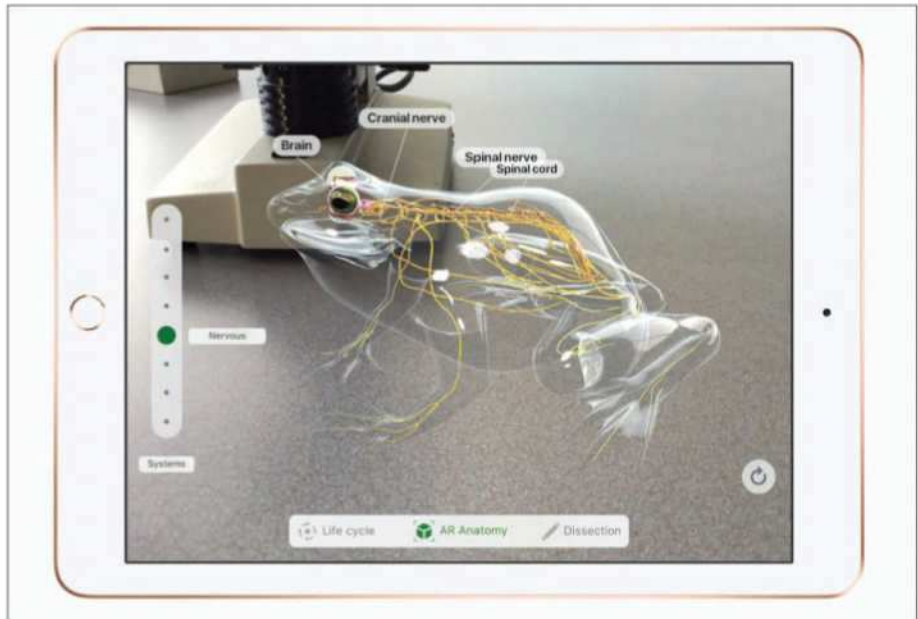
Videos can be added to Pages Books, and with the Apple Pencil teachers and students will be able to personalize your books with illustrations.

Other software updates

Pages: Digital book creation tools will be built right into Pages, more information above.

AR on the iPad: Thanks to AR we'll see apps such as one where students can dissect a virtual frog (see overleaf) with their Apple Pencil. "There's no doubt that AR is going to dramatically change the way this generation learns," said Apple's Greg Joswiak. There will also be an AR Kit module for Apple's App Development with Swift program.

Clips: Apple's app for making and sharing fun videos with text, special effects, and graphics, is getting new shapes and styles. It also has child-focused filters and posters.



GarageBand: Now gets a Kid sound pack with animal sounds.

Apple's Classroom app: This will now be available on both Mac and iPad. It was first rolled out in March 2016. It will arrive in May.

Schoolwork: New app that will let teachers create and send assignments

iOS 11.3 released

Notably absent from this release are Messages in iCloud and AirPlay 2, reveals [Jason Cross](#)



- OS 11.3 has been released. First previewed by Apple in January, the release has gone through six beta releases, over which many of the features have appeared and disappeared. It is available for iPhone, iPad, and HomePod, and is accompanied by updates for Apple's other devices: tvOS 11.3 for Apple TV and WatchOS 4.3 for Apple Watch.

Notably absent from this release is AirPlay 2, which will surely disappoint all the HomePod early adopters. Also missing is Messages in iCloud, first

promised for iOS 11 back at WWDC in June 2017. The feature was available in the latest beta, but has been removed from the final 11.3 release.

What's in iOS 11.3?

Battery and Performance (beta)

As promised, Apple has brought much-needed power management to the battery settings in iOS 11.3. Users can see their overall battery health, and your phone will recommend if it needs to be serviced. You will also be told if your battery is triggering a chip slowdown, and you can choose to turn that feature off. The switch will only be available for iPhone 6, 6 Plus, SE, 6s, 6s Plus, 7 and 7 Plus.

Head to Settings > Battery > Battery Health (Beta) and you will see the peak capacity (relative to a brand-new battery) and whether or not your phone is capable of sustaining peak performance. If your older iPhone is subject to slowing down because the battery can no longer deliver the necessary peak voltage for full performance, this is where you would see it. This is also where you would disable such throttling.

ARKit 1.5

Apple is also raising its AR game with ARKit 1.5, bringing “even more immersive AR experiences that better integrate with the world and giving them the tools to power a new generation of AR apps”. The new ARKit will be able to recognize and place virtual objects on vertical surfaces such as walls



and doors, as well as map non-square surfaces such as circular tables. The real-time video view on your screen gets a big boost in resolution, too.

Tim Cook has been a huge proponent of AR, and told the Financial Post that “AR is the most profound technology of the future. It amplifies human performance. It amplifies humans, not substitutes, and doesn’t isolate. I’m a huge believer in it.”

Animoji

iPhone X users will also get four new Animoji to play with: a lion, bear, dragon, and skull.

Safari 11.1

iOS 11.3 (and macOS 10.13.4) ship with Safari 11.1. The new version sports a number of new features, including:

Service Workers: Implement background scripts for offline web applications and faster web pages.

Payment Request: Provide a consistent user payment experience in Safari using a standards-based API.

Security Improvements: Improved protection against memory corruption and code execution attacks.

Web Inspector Updates: New designs for the Network Tab and the Styles sidebar in the Elements Tab.

Users can expect better password autofill (including in apps that use Web View), a better Reader mode, and improved protection against cross-site web tracking.

Business Chat (beta)

Apple has added a new feature to Messages called Business Chat that lets users communicate directly with businesses, including Discover, Hilton, Lowe's, and Wells Fargo. That way, you can schedule service appointments or make purchases without sharing contact information.

Health Records (beta)

iOS 11.3 features a new Health Records app that aims to streamline patients' medical data across healthcare providers. According to Apple, the

passcode-protected app will collect health data from various institutions and organize them into a single view, including notifications for lab results, medications, and conditions. A limited number of health providers support this feature right now (as it is in beta), but the list will grow over time.

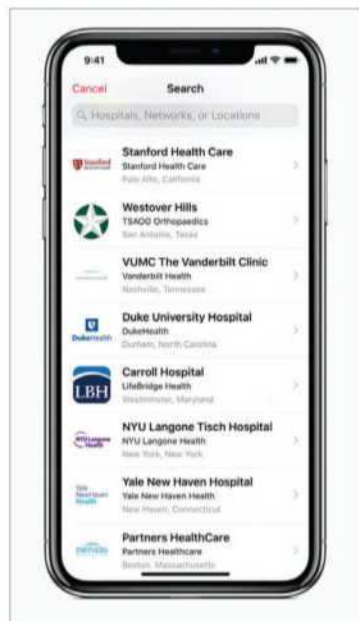
Videos in Music and News

Among the other additions in iOS 11.3 are music videos inside Apple Music and news video clips inside Apple News. Apple added thousands of music videos to Apple Music along with a bunch of curated playlists; you can find them in Apple Music by heading to the Browse tab, and then selecting Music Videos.

HomeKit and AML

Apple is highlighting HomeKit software authentication (a feature it first talked about last year), which removes a big barrier for smart home gadget makers. They used to have to include a special secure authentication chip in their products to support HomeKit, but no longer.

Apple will also support Advanced Mobile Location (AML). This is a feature used primarily across Europe that will automatically turn on



location services and text your location to emergency responders when you call emergency services. It has been supported on Android since 2016 and already has some high-profile success stories, so it's good to see Apple jumping on board.

Lots of little things

iOS 11.3 is full of small improvements, too. There's better power management for iPads that are constantly hooked up to a power supply (like those in kiosks), a few tweaks to the App Store, and improved Japanese and Chinese keyboards, just to name a few. And, of course, you'll find a lot of bug fixes in this release.

How to get it

You should receive a notification that iOS 11.3 is ready, but if you want to grab it early, open Settings and head to General and then Software Update.

Apple's Space Grey peripherals go on sale

Space grey comes to everyone, writes [Michael Simon](#)



Apple is now selling its space grey iMac Pro accessories as an option along with the standard silver colour. As you might have expected, they cost more than the ones Apple gives out with regular iMac purchases, but still less than the prices people are selling them for on eBay.

Magic Keyboard

Silver: £129 at fave.co/2GE1RYO

Space Grey: £149 at fave.co/2GE1RYO

Magic Mouse 2

Silver: £79 at fave.co/2GvrPOb

Space Grey: £99 at fave.co/2GvrPOb

Magic Trackpad 2

Silver: £129 at fave.co/2la2nuy

Space Grey: £149 at fave.co/2la2nuy



Apple introduced the new accessories along with the space grey iMac Pro in late December. For further details, see our Mac buying guide on [page 20](#). But now you can have a little piece of it for just a couple hundred pounds. The new space Grey Magic Trackpad, Magic Keyboard and Magic Mouse are available for shipping immediately as well as pick-up from Apple's retail stores.

Apple building TV studio

Shows won't debut before 2019 though. [Michael Simon](#) reports



Over the past year, Apple has been stockpiling talent and content for what seemed to be the imminent launch of a new video services packed with choice programming from Reese Witherspoon, Steven Spielberg, Kristen Wiig, and M. Night Shyamalan. But a new report suggests they might not be coming as soon as you think.

In an article on Apple's streaming video ambitions, *The New York Times* reports that Apple

is targeting “somewhere between March 2019 and the summer of that year to roll out its slate of new programming”. It’s unclear from the report whether multiple shows would be airing at once, or if episodes would be seen in a staggered release like Apple has previously done with *Carpool Karaoke* and *Planet of the Apps*.

The report also details the size and ambition of Apple’s efforts. Apple is said to be building a 128,000-square-foot facility in Culver City, California, to house its entertainment division, and will be pumping out a dozen shows to start. Among the titles being produced are a sci-fi series by *Battlestar Galactica* alum Ronald D. Moore and a drama series by Academy Award-winning *La La Land* director Damien Chazelle.



Perhaps most anticipated among the crop of new shows is a reboot of Steven Spielberg's 1980s series *Amazing Stories*. The *Times* reports that that project is progressing slowly, however, because executive producer Brian Fuller left the show after creative difficulties and has yet to be replaced. Apple and Spielberg reportedly balked at Fuller's 'dark' direction for the show, which runs afoul of Apple's "bright, optimistic brand identity," the *Times* reports. The original show was a decidedly family-friendly effort built around tales off wonder rather than terror.

The *Times* also says that Apple's morning-show drama starting Witherspoon and Jennifer Aniston has yet to receive a script.

Apple has not yet announced how the shows will be distributed, but previous efforts have been bundled with Apple Music subscriptions. However, with a full slate of shows due to arrive next year, it's more likely that Apple will use its Apple TV box or TV app for the new service, likely behind a pay wall. By bundling a subscription with Apple Music, it would give Apple a valuable one-two punch to take on both Netflix and Spotify.

Find your perfect Mac

Wondering which Mac to buy? **Macworld staff** help you find the best machine for both your budget and your needs



If you're wondering which Mac to buy, you've come to the right place. In our Mac buying guide for 2018, you'll find everything you need to know about Apple's range of Macs, with expert buying advice to help you choose the model that's right for you.

Apple makes seven different types of Mac, and within each of those categories there are

subcategories and variations in the specifications and features, so things can get pretty complicated. That's where this complete guide comes in, helping you make the right decision.

MacBook Air

The Air is Apple's affordable line of laptops. Apple has two 13in models. It's ideal for the budget conscious and for anyone who is always on the move, doesn't want to be weighed down by a regular-sized laptop, and needs a computer that's more versatile than an iPad.

Specifications

The two MacBook Air models have the same 1.8GHz dual-core Core i5 (Broadwell) processor and 8GB of RAM. They both come with integrated Intel HD Graphics 6000 technology. Apple claims 12 hours of battery life for both wireless web and iTunes movie playback. The main difference between the two laptops is storage. The £949 model (available at fave.co/2t2PZtf) has 128GB of flash storage, while the £1,099 model (available at fave.co/2sOU67Z) has 256GB.

Connectivity

The MacBook Air has built-in Wi-Fi for connecting to a network. It also provides built-in Bluetooth for wirelessly connecting a mouse or other peripheral. If you want to connect to an ethernet network, you'll need a USB ethernet Adaptor (£29 from fave.co/2t35WQh).



Thunderbolt 2 is the Air's high-speed connector. The laptop also has a pair of USB 3.0 ports, which can work with devices that use USB 2.0. If you have a FireWire 800 drive, you'll need to buy a Thunderbolt-to-FireWire Adaptor (£29 from fave.co/2t32ULC).

Performance

The Air is capable of handling everyday tasks, such as sending and receiving email, browsing the web, and using office applications. You can even use it for editing short videos, or for working with JPEGs from your iPhone or point-and-shoot camera.

Macworld's buying advice: The MacBook Air is a great affordable laptop for anyone who does

general-purpose work and moves around a lot. Since it's at the lower end of Apple's laptop line-up in terms of price, you won't find the Retina display that's on the Retina MacBook Pro or the MacBook. Also, you can't easily upgrade the storage after purchase, so you should buy the model with the largest amount of storage you can afford. (After-market storage upgrades are available, but Apple does not provide support for such upgrades.)

One thing to note is that a recent Bloomberg report claims Apple is planning to release a low-cost MacBook that could replace the Air. If you're in no rush, we recommend that you wait until WWDC in June to see what pans out.

MacBook

The MacBook is Apple's entry in the ultra-portable laptop market. It's lighter and smaller than the 13in Air, making it perfect for users who prioritize mobility over everything else, including features and performance.

Specifications

It comes in only one size: a 12in model available in rose gold, space grey, gold or silver.

There are two versions of the MacBook. The £1,249 model (available from fave.co/2sZW1Lc) has a 1.2GHz dual-core Intel Core m3 (Kaby Lake) processor and 256GB of flash storage. The £1,549 model (available from fave.co/2tJhLs4) has a 1.3GHz dual-core Intel Core i5 (Kaby Lake) processor and 512GB of flash storage. Both

models include 8GB of memory and an integrated Intel HD Graphics 615 processor.

It has a Retina display, which means it has an ultra-high resolution screen that's capable of showing crisper images than on the Air, which has a standard display. The MacBook has a native resolution of 2304x1440 and offers scaled resolutions of 1024x640, 1280x800, and 1440x900.

Connectivity

The MacBook has Wi-Fi for connecting to a network and Bluetooth for your devices. There's only one USB-C port for connecting storage devices, printers, external displays, power adaptors, or anything else. If you have older USB peripherals, you'll need to get a USB-C to USB Adaptor (£19 at fave.co/2pMnmgu) that will allow you to connect USB 3 and USB 2 devices to the MacBook. If you want to connect to ethernet, you'll need the USB-C to USB Adaptor and the USB ethernet Adaptor (£29 at fave.co/2t33Hw6). If you want to connect an HDMI display and USB devices, you'll have to get the USB-C Digital AV Multiport Adaptor (£49 at fave.co/2t32gOg). Finally, to connect to a VGA display, you'll need the USB-C VGA Multiport Adaptor (£49 at fave.co/2t3hnr6).

Performance

The processors in the MacBook are made to be efficient and cool. They're not top-performing processors, though in our tests we found that



the MacBook outpaces the Air. Compared to previous generations, the current version provides a much needed performance boost. That said, it can handle everything your typical user does on a daily basis. It can even handle some high-end, professional production tasks. It just won't be the fastest to the finish line.

Macworld's buying advice

The MacBook is for anyone who's constantly on the go and seldom needs to connect devices – be prepared to carry around a load of adaptors. As we mentioned earlier, a recent Bloomberg report claims Apple is planning to release a low-cost MacBook. If you're in no rush, we recommend that you wait until WWDC in June to see what pans out. We'll have all the news from the event.

MacBook Pro

The MacBook Pro has a high-density display with so many pixels that images and text look especially smooth and clean. At normal viewing distances, you can't discern individual pixels. It's aimed at the user who wants a portable computer that has enough power for more demanding tasks.

Specifications

The MacBook Pro is available in screen sizes of 13- and 15 inches.

There are four 13in models:

- £1,249 model (from fave.co/2t3gPS7): 2.3GHz dual-core Intel Core i5 (Kaby Lake) processor,



8GB of memory, 128GB of flash storage, Intel Iris Graphics 640 integrated graphics, and no Touch Bar.

- £1,449 model (from fave.co/2t3eUNg): 2.3GHz dual-core Intel Core i5 (Kaby Lake) processor, 8GB of memory, 246GB of flash storage, Intel Iris Graphics 640 integrated graphics, and no Touch Bar.
- £1,749 model (from fave.co/2sPiYwE): 3.1GHz dual-core Intel Core i5 (Kaby Lake) processor, 8GB of memory, 256GB of flash storage, Intel Iris Graphics 650 integrated graphics, and the Touch Bar.
- £1,949 model (from fave.co/2sOTLIQ): 3.1GHz dual-core Intel Core i5 (Kaby Lake) processor, 8GB of memory, 512GB of flash storage, Intel Iris Graphics 650 integrated graphics, and the Touch Bar.

Apple has two 15in MacBook Pros:

- £2,349 model (from fave.co/2tJybAw): 2.8GHz quad-core Intel Core i7 (Kaby Lake) processor, 16GB of memory, 256GB of flash storage, Intel HD Graphics 630 integrated graphics, 2GB Radeon Pro 555 discrete graphics, and the Touch Bar.
- £2,699 model (from fave.co/2tJWXjO): 2.9GHz quad-core Core i7 processor, 16GB of memory, 512GB flash storage, Intel HD Graphics 630 integrated graphics, 4GB Radeon Pro 560 discrete graphics, and the Touch Bar.

The 13in Retina display has a native resolution of 2560x1600, and OS X offers a scaled resolution up to 1680x1050. The 15in Retina display has a native resolution of 2880x1800, and OS X's highest scaled resolution on those laptops is 1920x1200. These high-scale resolutions can accommodate the workspace of a larger-screen standard Mac laptop on a 13in Retina model if you can tolerate the smaller icons, text, and other graphics on the screen. You can set the Retina screen to use resolutions higher than the scaled settings OS X offers, including the native resolution, if you use a third-party app such as QuickRes.

The MacBook Pro does not have a SuperDrive, so if you need one, you'll have to buy an external USB optical drive (£79 at fave.co/2IxEDAU).

The Touch Bar

This sits above the keyboard, and is a narrow touchscreen (see opposite image). The button and controls change depending on the software you are using. It's not available on the £1,249 and £1,449 13in MacBook Pros, which have traditional function keys instead.

Connectivity

The MacBook Pro has Wi-Fi and Bluetooth, though when it comes to wired connectivity it has only Thunderbolt 3 ports, which are compatible with USB-C. The £1,249 and £1,449 13in models have two ports, while every other MacBook has four.



If you have a Thunderbolt 3 device, you can plug it in directly. The same goes for any USB-C device, though if you have wired devices that aren't USB-C or Thunderbolt 3, you'll need an adaptor.

How fast is it? Unsurprisingly, these are the fastest laptops Apple has ever released. They are significantly faster than the MacBook Air. The MacBook cuts down the difference, thanks to its Kaby Lake processor, but if it's processing power you seek we recommend the Pro.

Macworld's buying advice

For the most demanding mobile Mac user – someone whose work requires a lot of processing

power – the MacBook Pro is perfect. If you're looking at a 13in model, the £1,749 Retina model hits a sweet spot for price and performance. The money that separates the two 15in versions is a hefty chunk of change; the £2,699 MacBook Pro is the top-of-the-line Mac laptop, offering the strongest performance. If your work mostly involves Internet access and other productivity tasks, however, you should go for an Air.

iMac

Apple has three versions of iMac. We'll look at the standard model first, followed by the iMac with Retina display, then the comparatively new iMac Pro. The iMac is Apple's iconic all-in-one computer. Made of aluminium, it has a built-in display and



looks stylish as it sits on a desk. It also offers top-notch performance.

It's great for both novices and demanding users, and can handle general-purpose and heavy-duty tasks equally well. It's ideal for someone who needs to buy a complete computer setup (keyboard, mouse or trackpad, and display) and wants to maximize workspace efficiency.

Specifications

One standard iMac model is currently available with a 21.5in 1920x1080-resolution screen. It has a 1TB hard drive. (Apple doesn't make a 27in iMac with a standard display – more on that later).

The entry-level iMac (£1,049 at fave.co/2sPpkfr) has a 2.3GHz dual-core Intel Core i5 processor and Intel Iris Plus Graphics 640 integrated graphics. The hard drive in the 21.5in iMac models is a 5,400rpm model.

You can't upgrade the 21.5in iMac yourself after you buy it, so it's worth paying an extra £180 at the outset for a memory upgrade to 16GB as you'll need to bring the iMac in to an Apple store if you want to add more RAM later. The 21.5in iMac also offers a Fusion Drive or a flash storage upgrade. It comes with Apple's Magic Keyboard and Magic Mouse 2. If you order online from the Apple Store, however, you can switch the keyboard to a version with a numeric keypad.

The iMac doesn't have an optical drive, so you'll need to buy an external drive (£79 at fave.co/2lxEDAU) if you want to read or burn CDs.

Connectivity

All iMacs have four USB 3.0 ports, two Thunderbolt 3 ports, a gigabit ethernet socket, and an SDXC card slot. If you want to connect a FireWire device, you'll need to use a Thunderbolt-to-FireWire Adaptor (£29 from fave.co/2t32ULC). USB 2.0 devices can connect to the iMac's USB 3.0 ports. Wi-Fi and Bluetooth are built in.

Performance

The iMacs are among Apple's fastest computers – unsurprisingly the £1,049 model is Apple's slowest option. Also, if the iMac has a hard drive, it's a performance bottleneck, so if you can upgrade to a Fusion Drive or flash storage, you'll gain a significant performance boost. The entry-level model has an attractive price, but you make huge sacrifices in performance.

Macworld's buying advice: For new Mac owners, the £1,049 iMac is a good alternative to the Mac mini, providing a nice performance increase. If performance is your top priority, we recommend you consider a Fusion Drive upgrade. On a 21.5in iMac, the 8GB of RAM should be fine, but buying the RAM upgrade at the point of purchase could help you avoid some hassle in the future.

iMac with Retina display

The iMac with Retina display is like Apple's standard iMac, but with an ultra high-resolution display. It's designed for professionals who work

with high-resolution videos, photos, or images. Or it's for the demanding user who wants the best image quality for everyday use.

Specifications

Apple has two 21.5in iMac with Retina 4K display – both have a 4096x2304 resolution screen. The £1,249 model (from fave.co/2sPn6wE) has a 3GHz quad-core Intel Core i5 processor, 8GB of RAM, a 1TB 5,400rpm hard drive, and 2GB Radeon Pro 555 graphics. The £1,449 model (from fave.co/2t3csqa) has a 3.4GHz quad-core Intel Core i5 processor, 8GB of RAM, a 1TB Fusion Drive, and 4GB Radeon Pro 560 graphics.

The 27in 4K iMacs come with a 5120x2880 pixel Retina display.

Apple has three models for you to choose from. The

£1,749 version (from

fave.co/2t3ejvb)

has a 3.4GHz quad-core Intel Core i5 processor,

a 1TB Fusion

Drive, and 4GB

Radeon Pro

570 graphics.

The £1,949

edition

(from [fave.](https://fave.co/2t3raxh)

[co/2t3raxh](https://fave.co/2t3raxh)) has a

3.5GHz quad-core



Intel Core i5 processor, a 1TB Fusion Drive and 4GB Radeon Pro 575 graphics. The £2,249 option (from fave.co/2sP565x) has a 3.8GHz quad-core Intel Core i5 processor, a 2TB Fusion Drive, and 8GB Radeon Pro 580 graphics.

One thing to note is that users can easily upgrade the RAM on the 27in iMac themselves. The machine has four RAM slots, accessible through the back. Apple installs the standard 8GB as a pair of 4GB memory modules, so you can add more RAM after you buy the system. Or if you prefer, you can upgrade the RAM at the point of purchase to 16GB (£180) or 32GB (£540).

Connectivity

Wi-Fi and Bluetooth are built-in. All Retina iMacs have four USB 3.0 ports, two Thunderbolt 3 sockets, a gigabit ethernet port, and an SDXC card slot. If you want to connect a FireWire device, you'll need to use a Thunderbolt-to-FireWire Adaptor (£29 from fave.co/2t32ULC). USB 2.0 devices can connect to the iMac's USB 3.0 ports.

Performance

Retina iMacs are among Apple's fastest computers when it comes to single-core performance, though when we look at multi-core speed, the Mac Pros with more than four cores are faster machines. You can improve the multi-core performance by opting for the 4.2GHz Core i7 upgrade in the £1,949 and £2,249 in the 27in models, or the 3.6GHz Core i7 upgrade in the 21.5in model.

Macworld's buying advice

The allure of the Retina display is strong; you'll love the way it looks, though you may not love the price. If you are hesitant about the cost, it won't take long to get over it, once you've used the Retina iMac for a week or two.

iMac Pro

The iMac Pro is an all-in-one computer that contains workstation-class components for handling heavy-duty, complex computations. It's designed for people who with the most demanding tasks. It's targeted at creative professionals, scientists, and software developers.



Specifications

The iMac Pro uses workstation-class Intel Xeon W processors. These are available with 8, 10, 14, or 18 cores. It comes with 32GB of 2,666MHz DDR4 ECC memory, but you can configure it to 64- or 128GB. The RAM is not user upgradeable, though; if you want to add more RAM later, you need to bring the iMac Pro to a service provider.

The storage device is a 1TB SSD, with options for 2- or 4TB. The graphics card is a Radeon Pro Vega 56 graphics processor with 8GB of HBM2 memory, with upgrades available.

Prices starts at £4,899 from fave.co/2Bhr9Zz for the 8-core model with 32GB of RAM, a 1TB SSD, and 8GB Radeon Pro Vega 56 graphics.

The Pro comes in an aluminium space grey case. It also has matching space grey Magic Keyboard with a numeric keypad and Magic Mouse 2.

Connectivity

Wi-Fi and Bluetooth are included for wireless connectivity.

The back of the iMac Pro has four USB 3 ports, four Thunderbolt 3 ports, a 10-gigabit ethernet jack, and an SDXC card slot.

Performance

The machine is a multi-processing



beast, designed to work with pro-level apps that demand multiple processing cores. Apple has issued different configurations of the iMac Pro to select users, including mechanical and aerospace engineer Craig A. Hunter, director and photographer Vincent Laforet, and YouTubers Marques Brownlee and Jonathan Morrison, and all of them say the speed is very impressive.

In our review of the iMac Pro, we confirmed that the new Mac is at its best with software that can take advantage of processors with multiple cores. And the graphics performance is spectacular, thanks to the Radeon Pro Vega.

If you use software that's geared for single-core performance (which includes many general consumer apps), you won't see a marked increase. In fact, we found that the iMac Pro is similar in single-core performance to a 2014 Core i7 5K iMac. You're better off with a new 5K iMac in this case.

Macworld's buying advice

This is the fastest available Mac in Apple's lineup, if you use multi-core software. There doesn't seem to be a new Mac Pro coming in the near future, despite what Apple has said about it. So if you'd rather wait for a new Mac Pro, you might be waiting for quiet a while.

Mac Pro

The Mac Pro is Apple's workstation and is designed for professionals who need a powerful and flexible machine. It's perfect for anyone who works with

applications that use as many processing cores as possible – video-editing applications, image-editing software, 3D applications, and the like.

Specifications

There are two standard-configuration models. The £2,999 Mac Pro (from fave.co/2t3dKRO) has a 3.5GHz 6-core Xeon E5 processor, 16GB of memory, and dual AMD FirePro D500 graphics processors with 3GB of video memory each. The £3,899 version (from fave.co/2pKGETq) provides a 3GHz 8-core Xeon E5 processor, 16GB of memory, and dual AMD FirePro D700 graphics processors



with 6GB of video memory each. Both models include 256GB of flash storage.

The Mac Pro offers buyers some appealing build-to-order options. You can, for example, add up to 64GB of memory, upgrade to 512GB or 1TB of flash storage, upgrade the graphics, or upgrade the processor (to a 12-core CPU).

Connectivity

Unlike the previous Mac Pro, this version has no internal options for connecting PCI expansion cards or internal storage drives. Instead, it relies on its six external Thunderbolt 2 ports for add-ons. If you have an old Mac Pro tower and PCI cards and/or drives that you want to use, you'll need to buy a Thunderbolt expansion chassis for the cards and external cases for the drives.

Wi-Fi and Bluetooth come built in on the new Mac Pro. The machine has four USB 3 ports, dual gigabit ethernet jacks, and HDMI. Audio professionals should note that the Mac Pro has a combined optical digital audio input and analogue\ output minijack. The computer doesn't have FireWire connections.

Performance

Apple says that the Mac Pro is a “video editing powerhouse” capable of handling 4K video editing, that 3D applications will see “ultrafast rendering”, and on and on. And our tests reflect that. If you use Final Cut Pro X, you'll see huge performance gains. If you use applications that can take advantage of

as many processing cores as are available, then the Mac Pro really shines. However, if you're more of a 'prosumer' than a professional – someone who is an expert Mac user, but doesn't use high-end apps – then you're not going to see a big jump in performance. You'll be better off with an iMac, especially if you use the iLife apps a lot. iLife actually performs better with the processors in the iMac than those in the Mac Pro.

Macworld's buying advice

In 2017, Apple offered some much-needed insight into the Mac Pro. Originally released in 2013, the Mac Pro hasn't received a serious upgrade since then. The current models were originally offered as build-to-order options for those released about four years ago, so the current computer still has old technology.

Apple has admitted that the Mac Pro's design severely limits what the company can do with the machine in terms of upgrades, and that, as Apple VP Phil Schiller put it, they are "completely rethinking" the Mac Pro.

The next Mac Pro will be better able to support the latest CPU and GPU technologies, according to Apple. But you'll have to wait for the new, redesigned Mac Pro to make its appearance. When that will be we can't say. In the meantime, should you buy the Mac Pro that's currently available? If you are doing professional work and require extreme multiprocessing capability, and you're using a old pre-2013 Mac Pro or an older iMac, you'll

definitely see a performance boost. If, however, you already have the 2013 Mac Pro, there's no reason to buy what Apple is selling now, unless you are making a significant jump in the number of processing cores (say, from a four-core to a 12-core CPU). Try to hold out until later this year.

Mac mini

The Mac mini is Apple's entry-level desktop Mac. It's slower than the firm's other desktop computers – the iMac and the Mac Pro – but it remains fast enough for general-purpose use. It's targeted at first-time Mac users and if you're switching from a PC, you can use your PC's keyboard and mouse with the mini. It's also ideal as a secondary Mac in your home, and it can integrate into your home entertainment centre.



Specifications

What makes the Mac mini stand out is its small size. It doesn't take up a lot of desk space.

Apple sells three Mac mini models. The £479 (from fave.co/2sPo4Jl) edition has a 1.4GHz dual-core Core i5 CPU, a 5,400rpm 500GB hard drive, 4GB of memory and an integrated Intel HD Graphics 5000 GPU. The £679 version (from fave.co/2t2JO3w) includes a 2.6GHz dual-core Core i5 processor, a 5,400rpm 1TB hard drive 8GB of memory, and Intel Iris Graphics. The £949 (from fave.co/2t3k6AQ) model has a 2.8GHz dual-core Core i5 processor, a 1TB Fusion Drive, 8GB of memory, and Intel Iris Graphics.

The Mac mini does not include a display, keyboard, or mouse, so you'll have to provide your own – or you can customize your order to include these devices as extra-cost options.

Since it lacks an optical drive, you'll need to buy an external USB optical drive if you want to read or burn CDs and DVDs.

Connectivity

Like Apple's other Macs, the mini has Wi-Fi and Bluetooth. It also has four USB 3.0 sockets, two Thunderbolt 2 ports, and an SDXC card slot. It also has a gigabit ethernet port, in case you want to connect to a wired network.

To connect a display, you can use the HDMI port or a Thunderbolt 2 port. You may have to buy an adaptor if your display doesn't have either HDMI or Mini DisplayPort (which connects to the



Mac mini's Thunderbolt port). If you own a display with VGA and/or DVI output, you'll need either the Mini DisplayPort-to-VGA Adaptor (£29 from fave.co/2sP2jcg) or the Mini DisplayPort-to-DVI Adaptor (£29 from fave.co/2GhQoun).

Performance

The Mac mini won't set any speed records – it's among the slowest Macs in Apple's line-up. But don't judge its performance too harshly. For general use (writing, email, surfing the Internet, social media) and for editing short videos, the Mac mini does just fine.

Macworld's buying advice

For new Mac users switching from a PC, the mini is an excellent machine, if you don't mind not having the latest processors. It's a great choice for shoppers on a budget, or for someone who wants a second computer in the home. It handles everyday tasks well. If, however, you want to use a Mac as a production machine for video editing or some other task that requires substantial processing power, consider an iMac.

Best NAS drive

A NAS drive that provides shared storage are ideal for homes that own multiple devices. [Cliff Joseph](#) looks at your options



One of the great unsung features of the macOS is Time Machine, the software that sits inside your System Preferences panel and quietly performs an automatic backup of the entire contents of your Mac's hard disk every hour, on the hour.

If you accidentally delete a file you can just go back and check out all the previous versions of that

file that you backed up in the past. And if your Mac starts behaving oddly and you think you might have been infected by some sort of virus or malware then you can just reboot your Mac and use Time Machine to restore the entire macOS to an earlier, untarnished state.

But, of course, in order to use Time Machine you do need to have an external hard drive connected to your Mac that can store all your old backup files. Hard drives are pretty cheap these days, but as we all start to own more and more desktop computers, laptops and mobile devices, it starts to become both expensive and rather impractical to buy a separate backup drive for every single device in our home or office.

The answer to this problem is a NAS drive.

Advantages

Rather than connecting your hard drive to a USB or Thunderbolt port on a single Mac, a NAS drive (NAS standing for network-attached storage) can be connected to an Ethernet port on the network router in your home or office network, and the storage space on the drive can then be shared by everyone that has access to your network.

Early NAS drives were expensive and complicated, and were mostly used by large organizations that needed a central backup device that could be used by multiple employees. But most homes these days now have their own Wi-Fi networks, which are shared by several people who often own multiple devices. This means that

a shared NAS drive now makes sense for many home users as well.

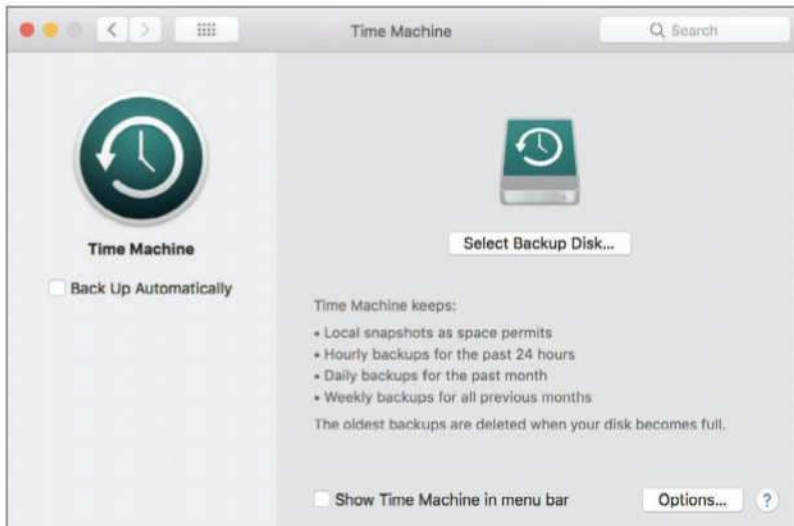
NAS drive features to look for

Time Machine support

Most NAS drives are ‘Mac-compatible’ – but not all of them are what we might call ‘Mac-friendly’. For instance, not all NAS drives will allow you to use Time Machine to make backups over the network, so support for Time Machine is a key feature that you should check on when thinking about buying a NAS drive for use with one or more Macs.

User accounts and sharing

Another important feature is the ability to create individual user accounts, so that each person in your home or office can have their own private area



on the NAS drive for storing their personal files. And, at the same time, it's also handy to create 'shares', which are like public folders that can be shared by everyone – perhaps for storing music or photos for the whole family.

Most NAS drives will let you do this, but you may need a bit of network know-how to figure out how each drive handles this process (and some drives, such as Apple's own Time Capsule, just ignore this side of things altogether and simply focus on the basic task of handling Time Machine backups).

Mobile device support

And, of course, you'll also want to check that your new NAS drive provides an iOS app for your iPhone or iPad. Most of us now tend to use iCloud for backing up photos, videos and other files from our iOS devices, but it can give you extra peace of mind to know that you've got a spare backup on your NAS drive in case anything goes wrong.

A good NAS drive will also let you share your photos and videos with other people by streaming them to mobile devices over your network, or possibly even provide a remote access option that allows you to retrieve files over the Internet when you're away from home (a feature that manufacturers often refer to as a 'personal cloud').

File streaming

Many people also use their NAS drive as a kind of central media server for their home, perhaps streaming music and videos to a games console

that is connected to their TV in the front room. Mac users should check to see if a NAS drive can stream files to an Apple TV, or act as an ‘iTunes server’, storing your iTunes music library on the NAS drive so that it can stream music to every Mac or iOS device on the network.

Deciding on storage

That’s something you’ll need to decide for yourself, but it’s worth mentioning that some NAS drives are more flexible on this point than others.

Some of the less expensive NAS drives are sold with a built-in hard drive – generally at least 2TB – but the hard drive is fixed and can’t be replaced once it’s full (although the NAS drive may have a USB port that lets you connect a conventional USB hard drive in order to add some extra storage). This is the simplest option, favoured by most home users and small businesses, as it means you can just unpack the NAS drive and connect it to your router to get started.

The unpopulated option

However, many NAS drives are sold ‘unpopulated’ – without any internal hard drives already installed – and simply provide two or more empty drive bays into which you insert your own choice of hard drives. This option is more expensive, but it allows you to customize the NAS by buying your own hard in order to provide as much storage as you need. And, if you run out of storage space, you can just take out the old drives and insert new, larger drives in

the future. This type of NAS drive generally also offers a number of 'RAID' options – this stands for 'redundant array of independent disks' – which use multiple hard drives to provide additional performance and data protection.

1. WD My Cloud Home

Price: £144.99 (2TB), £189.99 (4TB) from

fave.co/2pN9xxY

You're spoiled for choice when it comes to Western Digital's My Cloud range, with several models available for home users and small businesses, as well as a number of Expert and Pro models for larger organizations.

The original single-drive My Cloud is getting a bit old now, but it's still around and starts at just £125 (fave.co/2pNP2kT) with 2TB of storage. However, you're probably better off getting the newer My Cloud Home model shown here, which is a little more expensive, but is faster and provides a few additional features, such as support for the Plex Media Server software (although that's probably not a must-have feature for Mac users).

The single-drive version of the My Cloud Home that we review here costs £145 with 2TB of storage, going up to £290 with 8TB, which should be more than



enough for most homes, as well as small offices and self-employed users. The slimline white-and-silver unit is neatly designed, and only measures 2in wide, so it'll sit easily on your desk, or on a shelf close to your router without taking up too much space.

There's also a larger dual-drive model, called the My Cloud Home Duo, which houses two matching drives and costs up to £600 with a pair of 8TB drives (for 16TB total). That provides RAID 1 mirroring for extra data protection, but if you want more sophisticated RAID features, as well as the ability to install and remove drives yourself, then you'll need to step up to the My Cloud Expert (£144 from fave.co/2lcDq1x) or My Cloud Pro (£341 from fave.co/2pO5ZMc) models.

WD always does a good job with Mac support, and the My Cloud Home is no exception, with apps that handle a range of tasks quickly and easily. The iOS app can perform automatic backups of your photos and videos, while the Mac app lets you use Time Machine for your backups (and there are Mac and Windows versions of the apps available, too).

There are some nice touches too, such as the ability to right-click a folder on your Mac and automatically sync the contents of that folder onto the My Cloud Home. That will be handy for people who want an extra backup of their current work files or projects in addition to the basic Time Machine backup. You can also right-click any file that is stored on the My Cloud Home and send a download link in order to quickly share that file with friends or colleagues.



And, if you also use an online backup service, such as Dropbox, then you can sync the contents of your Dropbox account onto the My Cloud Home too. You can even back up photos and albums from Facebook on to the drive for safekeeping if you want to.

There are a couple of rough edges, though. You can't simply double-click the drive's icon on the Mac desktop in order to open the drive and then drag-and-drop to copy folders or files onto the drive. For some reason you have to open the app's pull-down menu and view the contents of the drive through the app instead. You can't create individual user accounts on the Mac either, so you're forced to use the iOS app on an iPhone or iPad if you want

to invite someone else to create their own personal folders on the My Cloud Home drive.

Most Mac users will have an iPhone or iPad, of course, but we'd like to see the Mac app updated to allow you full freedom to control the My Cloud Home with your Mac as well.

2. Drobo 5N2

Price: £430 from fave.co/2pKCmeH

A five-bay drive such as the 5N2 might be unnecessary for home users, but Drobo has a well-deserved reputation amongst professional and creative users who need a versatile and reliable NAS drive.

The 5N2 is more expensive than most of its rivals – and the company doesn't currently make any less-expensive two-bay models – costing around £430 when bought 'unpopulated', so you still have to budget for your hard drives on top (although some online stores also sell packages that include the 5N2 with drives already installed). But while the nondescript black box isn't much to look at, the 5N2 will earn its keep in your office as it is absolutely packed with features designed to keep your data safe.

Drobo claims to offer “the benefits of RAID without the complexity”, and the company does a really good job of helping newcomers to get started and showing you how to use the 5N2.

Even before you turn it on or install a single hard drive into the 5N2 you're instructed to go to

the Start page on the Drobo website. This shows how you can simply slot the drives into the 5N2 and then connect it to your router – and the 5N2 even has two Gigabit Ethernet ports, which can be ‘bonded’ together to provide higher performance for devices such as the iMac Pro, with its 10GB Ethernet interface.

After the initial setup, you’re prompted to download Drobo’s Dashboard app for Macs and Windows PCs. This installs a pull-down menu into the main menu bar at the top of your Mac’s screen, providing instant access to the drive’s main features.

However, you probably won’t need to use Dashboard very often, as many of the drive’s features work automatically. Once the drives have been installed there’s a series of lights on the front panel that indicate the status and health of each drive, along with a row of blue lights that act as a capacity gauge to let you know when you’re running out of storage.

The 5N2 also allows you to ‘hot-swap’ drives, removing and replacing faulty drives, or simply adding some extra storage without having



to restart the unit. It even has a small built-in battery that can protect the 5N2 from power failures, keeping it running long enough to complete the current task and then shut down without losing any data. And, rather than offering conventional RAID modes the 5N2 uses Drobo's own BeyondRaid software to automatically protect your data (which comes in handy if, like me, you can never remember the difference between RAID 0 and RAID 1).

In fact, most people will probably only use Dashboard to set up user accounts for other people who also need to use the 5N2 for network storage, or to set up Time Machine backups for your Macs – which you can do at the same time as setting up the 'share' for each user. If you want to explore further, then Dashboard also allows you to install additional apps, such as the Plex media server, or Drobo Access, which provides remote access over the Internet. There are iOS and Android versions of Drobo Access available too, so that you can view and edit files stored on the 5N2 with your mobile devices, along with a DroboPix app that allows you to back up your photos and videos.

It's probably too expensive for most home users, but the admirable ease of use provided by the Drobo 5N2 makes it an ideal choice for small businesses and creative users who may not have used a NAS drive before. And, with fail-safe features such as its internal battery, the 5N2 can offer rock-solid reliability for protecting your most important data.



3. Seagate Personal Cloud

Price: £150 from fave.co/2l7mTvR

Seagate used to make a two-bay version of the Personal Cloud that came with two drives already installed, and also allowed you to open the case and replace or upgrade the drives yourself. That model seems to have been discontinued, but this remaining fixed-capacity, single-drive model is still a good option for home users who need an affordable network storage device for backing up photos, videos and other files.

The single-drive model is available with 3TB, 4TB or 5TB of storage, costing around £150, £175 and £210 respectively. You can't replace the drive yourself – and it doesn't offer the RAID options that were available with the two-bay model – but that should still be enough storage for most families, or even self-employed people who need a network drive for their work files. And, while the hardware design is fairly conventional, the Personal Cloud stands out thanks to a number of apps that are absolutely packed with useful features.

For basic backup and file access, there's a mobile backup app that is available for iOS and Android devices, along with a second app called Seagate Media that allows you to stream photos, videos or music from the Personal Cloud to your mobile devices. You also have the option of setting up a Seagate Access account that allows you to stream files remotely over the Internet when you're away from home (but watch out for those mobile data charges when you're travelling). You can also use the Media app to connect to other cloud services, such as Dropbox, and if you get caught on the road without the required apps or devices then you can log into your Seagate Access account via a web browser on any computer or device that has Internet access.

Macs and PCs have their own app for backups, called Dashboard. This works with Time Machine for automatic backups, but also provides additional options that might be handy for office users, such as the ability to schedule backups for specific times – perhaps at the end of the day after you've finished work.

There's a 'continuous backup' option, which watches for changes to any files while you're working and automatically makes backups on the



spot whenever you edit or delete any files on your Mac. You can also plug a memory stick or hard drive into the USB port on the back of the Personal Cloud and back up files from those external devices, too.

As well as Macs, PCs, and mobile devices, the Personal Cloud is compatible with an impressively wide range of other devices too. You can stream video to an Apple TV, or rival media players such as Google Chromecast and Roku. It's compatible with a number of smart TVs from LG and Samsung, and supports the DLNA networking system used by games consoles such as the Xbox and PlayStation.

Only minor complaint is that all these features are spread across a variety of apps that might be a little confusing when you're first getting started, and Seagate's online manual has an annoying habit of simply listing features without always making it clear where you can find them or how to use them. That slightly untidy approach means that it might take a little while to get the Personal Cloud set up just the way you want it, and more experienced users might prefer a NAS drive with accessible drive bays that provide greater upgrade potential.

But if you're looking for a versatile NAS drive that offers plenty of storage at a competitive price, the Personal Cloud is hard to beat.

4. Netgear ReadyNAS RN212

Price: £240 from fave.co/2plodP3

Netgear's ReadyNAS 212 has been around for a while, and it's showing its age a little, but its

combination of strong data protection and good Mac support ensure that it will appeal to both home and small business users alike.

The hardware design is a little old-fashioned, consisting of a simple black box with two drive bays for adding storage. The RN212 when bought on its own without drives, but Amazon and some other dealers sell packages that include drives as well, so you should shop around to see what's on offer.

Along with the drives that you choose to install, the ReadyNAS provides some useful features for adding extra storage and enhancing performance.

There are no less than three USB 3.0 ports for connecting USB storage devices – one on the front and two on the back – and even an eSATA interface for high-performance storage systems. The ReadyNAS also includes two Gigabit Ethernet ports, which can be used together to connect to the superfast 10GB Ethernet on the iMac Pro.

Installing the internal drives is a little fiddly, though. The trays that hold the two drives pop out of the front of the unit easily enough when you press down on a small latch, but the next step is a little



confusing as it involves slotting the hard disk drives into a flimsy plastic bracket that then has to be lined up in just the right position before you can push the trays back into the enclosure. It took us a couple of attempts to get it right but, thankfully, once that's done Netgear's ReadyCloud software takes over and setting up the drive on your network proves to be very straightforward.

Once you've connected the ReadyNAS to mains power and then to your router, you simply launch your web browser and go to the web page for Netgear's ReadyCloud service. This web page automatically detects the ReadyNAS on your network, and can also check for any problems if the drive isn't working properly.

There are two options for getting started, with simple 'offline' installation allowing you to quickly connect the ReadyNAS to your network and start backing up your files - including using the drive for Time Machine backups on your Macs. The other option is to create a ReadyCloud account, which provides remote access over the Internet as well, so that you can connect to the ReadyNAS and retrieve files even when you're away from home.

You also use your web browser to manage the ReadyNAS, but we were pleased to see that the various settings are well organized and easy to use. All the key features are organized under simple headings, such as Shares for creating individual user accounts, or Cloud for setting up remote access or syncing with other cloud services such as Dropbox or Microsoft Azure for business users.

There's good support for Mac technologies too, with options for 'shared' Time Machine backups, which store the backups for multiple Macs in one folder on the ReadyNAS, or 'private' backups for individual users that are all kept separate. You can even specify the amount of storage space that is allocated to individual Time Machine backups so that no one person can hog all the storage for themselves.

The ReadyNAS can act as an iTunes server for storing a central iTunes library, and also supports the Plex media server and DLNA for streaming to devices such as games consoles. It can handle a spot of video transcoding, too; this is limited to 1080p (HD) video, reflecting the age of the RN212, but that should still be fine for most people. And, of course, there's a ReadyCloud app for iOS devices too, which allows you to back up photos and videos from your iPhone or iPad, as well as streaming files that are stored on the drive.

5. Synology DiskStation DS218

Price: £246 from [fave.co/2plqrxX](https://www.fave.co/2plqrxX)

Synology is best known for its high-end network and storage systems for business users, but it does have a 'value' range for home users and small businesses. The £246 two-bay DiskStation DS218 is the successor to the DS216 that has impressed us in the past.

The DS218 makes a good first impression. It's sold 'unpopulated', which means it is up to you to

buy and install the drives you want, but Synology makes it easy to get started. There are no nuts, bolts or screws to worry about, as the empty drive bays include two trays that pop out with the press of a button. We were able to insert our drives into the trays with no trouble at all, and get started in a matter of minutes.

There's one Gigabit Ethernet port on the back for connecting the DS218 to your router, and three USB ports – one on the front, and two on the back – that can be used to plug in a memory stick, camera or external hard drive so you can transfer files on to the DS218. The USB port on the front even has a 'Copy' button just beneath, which can be used to automatically back up any files on your storage devices on to the DS218. The only oddity here is that the front port is USB 2.0, while the two ports on the back use the faster USB 3.0.

Once you've inserted the hard drives and connected the DS218 to your router, you can simply type **find.synology.com** into your web browser and this will take you to Synology's online Web Assistant. The Assistant magically detects the DS218 on your network, and installs Synology's DiskStation Manager (DSM) software for you.



But this is where things start to get a bit more complicated. The DS218 is certainly packed with useful features – it can be used for Time Machine backups, and there are RAID 0 and RAID 1 options for enhancing performance and security, along with Synology’s own ‘hybrid’ RAID format that allows you to combine disks of different sizes within the DS218. There’s also a QuickConnect option that allows you to connect to the DS218 over the Internet when you’re away from home.

The DS218 works well as a media server too, with a powerful 1.4GHz quad-core processor that allows it to convert (transcode) video files into various formats suitable for a wide range of different devices – it can even handle 4K video for streaming to an Apple TV or other media player. There’s an iTunes Server option that lets you store a central iTunes library on the DS218, and it can stream music to AirPlay speakers, too.

The only problem here is that the web browser interface used by the DSM software to control all these features on the Mac is pretty complicated.

Different sets of features, such as those for working with music or video are handled by a collection of ‘packages’, which are like mini-apps that you need to install from within the DSM browser interface. There’s a lot of technical jargon thrown around, and new users may well feel overwhelmed at this point.

The mobile side of things is complicated too – with around a dozen different apps available for your iOS devices. These do provide useful features,

such as the ability to back up photos from your iPhone on the move, and there are even apps for the Apple TV and Apple Watch. However, getting to grips with so many different apps and features will be a daunting task for most people.

Synology does provide extensive help files and tutorials on its website, and hobbyists who like to delve into the fine details of NAS drives and media servers will really appreciate the depth and scope of the DS218. However, it's a serious case of overkill for home and small-business users who are simply looking for a straightforward NAS for their Time Machine backups.

6. Apple Time Capsule

Price: £299 from fave.co/2pN11kd

Apple's Time Capsule is actually a bit of a weird device. It comes with a typical Apple price tag that makes it quite a bit more expensive than most of its NAS rivals, costing £299 for a model with 2TB



of storage or £399 with 3TB. However, the Time Capsule also differs from a conventional NAS drive in a number of ways, and it might well be the ideal plug-and-play backup solution for some Mac users, while being over-priced and too inflexible for others. And, if you're lucky, you can sometimes find refurbished Time Capsule models for sale on the Apple Store with discounts of up to 30 percent.

The Apple-esque design is typically distinctive. Rather than the boring 'black box' design adopted by most NAS drives, the Time Capsule consists of a gleaming white tower that stands almost 7in high. It's virtually identical to Apple's AirPort Extreme Wi-Fi router – and that's because the Time Capsule actually houses both an internal hard drive for storage, and a built-in AirPort router that also provides 802.11ac networking. If you're still using an older 802.11n router then the Time Capsule can help to justify its high price by giving you a faster, more reliable Wi-Fi network (although you'll still need to hang on to your existing router, as the Time Capsule will need to connect to that in order to get Internet access).

Setting up the Time Capsule is also very simple and straightforward for Mac users, as Apple's AirPort software is built into the macOS on all Macs and can automatically detect the Time Capsule and guide you through the installation process. Some NAS drives can be really confusing for first-time users, so the simplicity of the Time Capsule is its main strength for home users or small businesses that don't have their own IT staff.

And, of course, the Time Capsule works with Time Machine as well, allowing you to easily back up multiple Macs over the network using either Wi-Fi or wired Ethernet connections.

Tucked around the back of the Time Capsule there are no less than four Ethernet ports – one for connecting to your existing router, and three for wired connections, which will be useful for offices or home workers who prefer to use a wired network. There's also a USB 2.0 port, which allows you to add extra storage or a printer that can be shared on the network. People using Windows PCs can connect to a hard drive or printer connected to the Time Capsule network, but the Windows version of the AirPort software hasn't been updated for a while so the Time Capsule is really best suited for homes or small businesses that are primarily Mac-based. And, with just a single, non-replaceable hard drive, you can't upgrade the internal storage at all, or configure the Time Capsule as a RAID drive.

And, surprisingly, the iOS side of things is quite limited too. There is an AirPort app for iOS devices, but this is really just intended to help you install the Time Capsule and set up your new Wi-Fi network. However, you can't quickly back



up photos, videos or other files from an iPhone or iPad – not even with the new Files app that was introduced with iOS 11.

Apple's plan – and, of course, Auntie Apple always knows best – is that you use iCloud for backing up and sharing files from your iOS devices. But while iCloud works pretty well these days, there might also be times when you want to quickly upload some new holiday snaps, videos or other files into a shared folder on your NAS drive so that everyone can take a look.

Fortunately, it is possible to use third-party apps that will allow an iPhone or iPad to use the Time Capsule for backup storage, such as the popular FileBrowser, which costs £5.99 (fave.co/2lctksW) for the standard edition or £10.99 for FileBrowser Business Edition (fave.co/2GjNISA).



Logic Pro X 10.4

RATING: ★★★★★

£199 inc VAT from fave.co/2lfQJOV

For a number of years now Apple's Logic Pro X music production software has been one of the quiet jewels in the company's crown. Yes, the iPhone, iPad and Mac will be used by more people, but when it comes to quality, value for money and the continual addition of new features, Logic takes some beating.

At the start of 2018, the team at Cupertino announced another update to the software, and with it comes some serious new tools and features.

Over the following pages we take a look at what's on offer in Logic Pro X 10.4.

Features

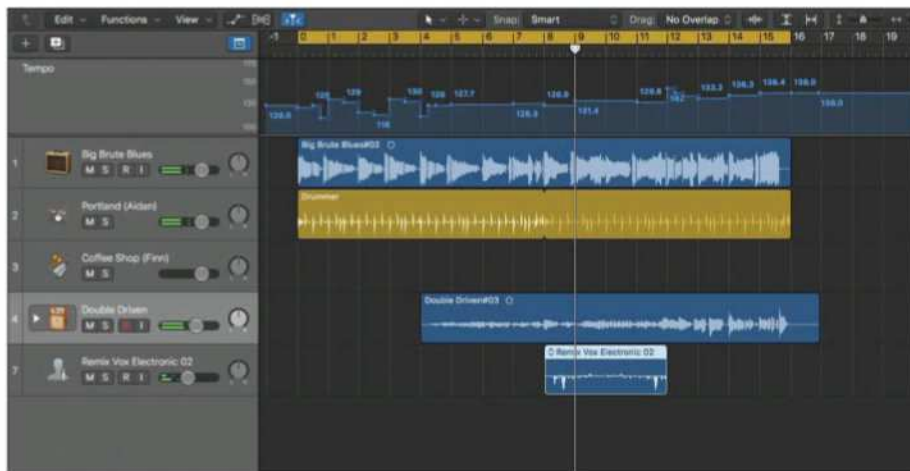
Apple has stated that Logic Pro X has more than 2,000 bug fixes and new features nestling in its code. While these figures can often seem like hyperbole – is it 1,999 bug fixes plus a new reverb? – in the case of Logic Pro X 10.4 nothing could be further from the truth.

New capabilities and plug-ins such as Smart Tempo, ChromaVerb, Step FX and Phat FX all make this an update that any other company would (not unreasonably) claim as a full version upgrade rather than a point release. The fact that Logic owners get these new innovations for free is, frankly, ridiculous, and Apple should be applauded for its continued support of the platform. There's plenty to get your teeth into, starting with undoubtedly the star of the show – Smart Tempo.

Smart Tempo

Logic Pro X users will already be very familiar with Flex Time, the feature that can sort out the wandering tempos of live performances by subtly pulling them back on to the beat.

While this is a blessing for producers wanting to keep everything sounding tight, it can mean tracks feel too precise at times, sacrificing the looser feel that harks back to the days of Led Zeppelin when the only click track used was a pounding drummer in the next room.



With Smart Tempo, Logic essentially turns Flex Time on its head, adjusting the tempo to fit around the audio instead. With the feature engaged you can record a live instrument, not concerning yourself overly with setting the right tempo.

As you play, Logic monitors and analyses your timing, placing various tempo change markers into the track information. When the riff or chord sequence is down, it then uses the markers to adjust other tracks so that they fit with the feel and timing of your recording.

This means that the drummer will sit in with you, making small corrections to match your playing, as will any other loop or audio that you add to the project. Now, it must be said that if your playing is all over the place then the results won't be great, but for reasonably tight performances it can return that live feel that most of us crave.

The tempo markers are attached to the recording, so if you move it to another part of the project the changes will move too. They are also replaced when you copy and paste the region.

Double-tracking an instrument is simple with Smart Tempo, as the variance in timing is minimised, and it also means that any time-based loop will now work with your project, as the tempo is adjusted to fit.

Another option is to apply the project tempo to the audio instead. This means that you can record a complicated riff at 120bpm, then speed it up to 180bpm just by changing the tempo. Naturally, this tempo would also apply to all other recordings, drummers and loops.

In our testing the tempo analysis would work, but we couldn't always get the drummer or loops to sync, even though the settings and methods we used were identical. Complicated rhythms proved the most unreliable, although we did get them in time with some fiddling.

For the latter there is the Tempo File editor, which quickly enables you to adjust the markers, and correct any confusion that may have occurred in the analysis. Teething problems aside, Smart Tempo is an excellent addition to Logic, which will simplify the lives of songwriters or those remixing live bands and wanting to add post production loops. It's not a catchall, though. At the moment the feature only works with single audio tracks, and not recording takes or with track alternatives, but it's a great start.



ChromaVerb

Undoubtedly the most aesthetically pleasing new feature is ChromaVerb. This is an algorithmic room reverb, offering 14 different environments that range anywhere from a standard Concert Hall to the enigmatically named Strange Room, which has a hint of ring modulation about it. The main draw is the graphical representation of the sound and decay. These look like particles that are thrown up and then fade away into the ambient dust clouds behind them. Apple says this emulates “the principle of a circular structure in which the sound is gradually absorbed, much like in a real room”.

ChromaVerse

There’s also a cool ‘Freeze’ setting that suspends the current effect in a slow fade, perfect for

accentuating certain moments in a composition. Whether you buy into the language or not, ChromaVerb is a powerful reverb tool that looks beautiful, and the visual cues of dissipating sonic nebulas add an interesting and surprisingly useful dynamic.

Vintage EQ collection

Three new EQ consoles, all based on classic models from the 50s, 60s and 70s, also make their debuts in Logic Pro X 10.4. These are emulations of Neve and Pultec EQs, and see the welcome addition of vintage models into the palette.

One of the advantages offered by these models is that whereas the original hardware had various stepped settings, the digital versions allow you the option to also sweep through the intervening



frequencies, creating new sonic possibilities. Each also features a drive control in the Output section and the ability to turn off the EQ stages. This means you can use the natural characteristics of each unit to colour the sound without needing to engage the EQ itself.

Step FX

Step FX combines distortion, modulation, reverb and delay effects with three step modulators, all of which can result in some serious sonic mangling. By selectively engaging each step modulator you can alter the pan, gate and filter frequency, or engage all of the units for some fascinating polyrhythmic anarchy. It's our favourite new feature, and something that rewards continued experimentation with mesmerizing results.





Phat FX

The clue is definitely in the name with this effect, as the results you can get from it when applied to guitars, bass or drums are indeed phat! This multi-effects module allows you to chain distortion, modulation, compressors, envelope filters, LFOs and enhancers on to tracks, all controllable in real time via a virtual X/Y pad controller.

You can move the positioning of each effect in the chain by simply rearranging the order of the names at the bottom of the window, or opt for one of the many preset sounds included in the menu.

Within minutes of turning on Phat FX we found ourselves smiling broadly and enjoying the creative playground that will be a regular feature in all our mixes from now on.

Other additions

Alongside the considerable new features listed above Logic also comes with a host of other additions.

These includes a vintage mellotron module, upgrades to Space Designer, Alchemy and Direction Mixer, new drummers, studio quality brass and string samples, plus new controls for articulation handling.

Of course, new features mean new challenges for hardware, and as such you'll need to be using a Mac that can at the very least run Sierra if you want to take advantage of the additions. ChromaVerb also uses Metal, so it requires a decent GPU to show off its elegant charms.

Macworld's buying advice

Thanks to its excellent performance and tool set, Logic Pro X already justified the £199.99 price tag. With the 10.4 upgrade existing users will see that it was money well spent, and frankly be amazed at the wealth of new features that Apple continues to bestow upon them.

Smart Tempo has the potential to be a game changer for live recordings, and Phat FX, Step FX and ChromaVerb not only offer high-quality aural enhancement to projects, but also bring a much-needed sense of fun and exploration.

Anyone considering making the step up to Logic should rest in the knowledge that right now it's one of the best bargains you can buy from Apple, or anyone else for that matter. **Martyn Casserly**

System requirements

- macOS 10.12 or later
- 4GB of RAM
- OpenCL-capable graphics card or Intel HD Graphics 3000 or later
- 256MB of VRAM
- Logic Pro X requires 6GB of disk space for a minimum installation or up to 63GB of disk space for the full Sound Library installation
- To use Logic Remote, you need an iPhone 6s, iPad Pro, iPad (5th generation), iPad Air 2, iPad mini 4, or later with iOS 11.

Apple's March event: winners and losers

Jason Snell reveals who and what gained from the event



Apple's media event was unique, from the venue to the laser focus on a single topic to the lack of a live video stream. But like all Apple media events, some parties walked away strengthened – and others were left looking sad by the side of the road.

The winners

The iPad

Apple hasn't always shown the kind of love for the iPad that it has done for its much more successful

cousin the iPhone, but this event was the iPad's event to shine, and that's an important day in any product's life. The iPad has gained momentum since Apple split the product line in two, and both the £319 iPad and the pricey iPad Pro models have seemingly sold well.

Apple's cheapest and most popular model didn't just win by being the centre of attention, though. It also picked up a sixth-generation update that included a faster processor and, perhaps most importantly, support for the Apple Pencil. With that, the iPad became a platform for a collection of sketching and note-taking apps that will make it that much more versatile, whether you're a student or not.

Teachers and students

Apple's hour-long event, and the hands-on sessions at Lane Tech College Prep High School, were love letters from Apple to teachers and students. Among the product announcements, teachers got a collection of new tools to better administer their classes, and students get to benefit from advanced augmented reality features as well as the Apple Pencil.

Chicago. Since Macworld Expo left New York City in 2003, Apple has held only one major media event outside of the San Francisco Bay Area: the 2012 unveiling of iBooks Author in an education-themed event in New York City. That all changed when Apple invited hundreds of members of the media and VIPs to Lane Tech. In addition to showing



off the city's impressive public magnet school, Apple's event spun off additional events, including an all-star session at the brand-new Apple Store in Chicago's Loop, as well as a Tim Cook sit-down with Recode's Kara Swisher and MSNBC's Chris Hayes

Apple Pencil

Once the domain of the iPad Pro, the £89 Apple Pencil is now open to owners of the low-cost sixth-generation iPad. This should dramatically expand the user base of the Pencil, which is good news not just for it, but to the app developers who have written Apple Pencil-enhanced software. By being available on the sixth-generation iPad as well as both iPad Pro models, the Apple Pencil continues its march toward the mainstream.



The losers

Apple Media Event viewers

Who knows why, but after a long streak of live-streaming every single Apple media event, this event wasn't streamed live. (Instead, an archived video will be posted after the fact.) Suddenly we were all live blogging like it was 2009, with word-for-word recaps instead of a little more restrained analysis. It was a fun throwback, don't get me wrong, but I think I prefer the world where people who want to see the Apple event live can do so – and journalists in attendance can dial back the blow-by-blow depictions and instead insert a little more context and analysis.

Schools with tight budgets

Google-powered Chromebooks are taking over the education market, thanks to Google's excellent educational administration tools and the dirt-cheap prices of Chromebook laptops. Anyone hoping Apple would swoop in with an even lower priced iPad went home unhappy: The sixth-generation iPad costs the same as the fifth-generation model, and now Apple's trying to sell schools Apple Pencils, too.

From Apple's perspective, the entire day was about telling why Apple's stuff is worth the extra money, as well as playing catch-up with some administrative tools and cloud storage quotas that lag well behind what Google offers to schools. It's a work in progress, to be sure.

The iPad Pro

When it was first released, the iPad Pro was differentiated from the iPad by its support for the Apple Pencil and the Smart Connector and Smart Keyboard. In its second generation, the iPad Pro has been given other boosts – a bigger screen on the 10.5in model, powerful processors, a wider colour gamut—that further differentiate it from the plain old iPad.

But one of the ways the iPad Pro was different – if you wanted to use an Apple Pencil you had to buy one – is now gone. That will probably win over at least some people – the ones who really just want to use the Apple Pencil – over to the much cheaper iPad.

It's important to note, though, that we're comparing 2018's iPad to 2017's iPad Pro. Presumably, new iPad Pro models are on the horizon, possibly with smaller bezels, Face ID, faster processors, and who knows what else. It's almost certain that the gap will widen again, but for now it's a little bit closer.

The Mac

There was a time when Apple's entire education strategy was the Mac. That time was 1984 through 2010. But these days, the iPad is most definitely Apple's story in education.

I noticed two mentions of the Mac in Apple's presentation, and they were telling. The first was when Apple put up a slide of software running on a Mac... only to wipe to a slide showing that now it ran on iOS too. The second was the announcement that the iOS app Apple Classroom would be brought to the Mac, which was nice, but that's an app for



teachers. The context was clear: Mac support might be nice for teachers (because they're older?), but isn't as necessary for students.

Apple still professes its love of the Mac, and in certain areas in education it's still powerful. In one of the demonstration classrooms at the school, above the many iPads showing off Swift Playgrounds and ARKit and other features, was a mezzanine full of iMacs, more than a dozen of them all in a row, presumably being used with Final Cut or Logic or other high-powered media applications. The area was darkened and roped off. The Mac still exists and still has some relevance, but at this event it was barely more than a footnote.

What is a MicroLED display?

Jason Snell explains why you should be excited by it



Recent rumours suggest that Apple has been researching a new display type known as MicroLED for several years, and is quite far along. We could start seeing Apple-produced MicroLED displays in Apple Watch within the next two years, with phones and maybe even tablets.

Be cautiously optimistic about this new display technology. MicroLEDs have the potential to be

superior to OLED in many ways, and could be the dominant display technology in new products in a decade. Here's why MicroLED is worth getting excited about.

Thinner than OLED

One of the big advantages of OLED displays over traditional LCDs is that they're thinner, and MicroLED should be thinner still.

Traditional LCD screens, like those on every iPhone (except the iPhone X) and iPad, are comprised of several layers. The little red, green, and blue sub-pixels don't actually emit light. Rather, there are red, green, and blue filters in front of a white backlight, with a liquid crystal layer between them. Add in polarizers and glass substrates and you've got a relatively thick display sandwich.

OLED displays use organic compounds that emit red, green, or blue light when a current is passed through them. So, the little sub-pixels emit their own light, and no backlight is needed. You also don't need the liquid crystal layer, and only one polarizing layer. Hence, the display is a lot thinner.

MicroLEDs are similar to OLEDs, but they use a gallium nitride inorganic material, similar to what is found in traditional coloured LEDs. In fact, they're a lot like regular coloured LEDs, only massively shrunk down. Because the little sub-pixels are emissive (they create their own light like OLEDs), they don't need a backlight or liquid crystal layer. But they also don't need a polarizer at all, and only

a thin glass layer on top. They can be even thinner than OLED, and much thinner than regular LCDs.

More efficient

The super small LEDs in MicroLED displays are more efficient at turning electricity into photons. Basically, they produce more ‘brightness per watt’ than either traditional LCD or OLED displays. It’s still a new product that hasn’t been fully commercialized yet, but some estimates say that MicroLED should use about half the energy as OLED to produce an equivalent brightness. Other estimates say the energy savings will be much greater.

That’s good news for any device, because the display is one of the biggest battery drainers today. But it’s especially welcome in tiny devices like Apple Watch, where there’s no room for a bigger battery. With MicroLED, an Apple watch could be slimmer without sacrificing its all-day battery life.

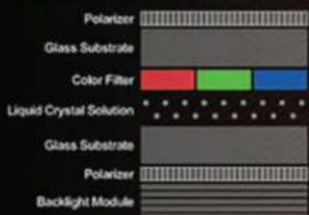
Higher resolution

LCDs and OLED displays don’t differ all that much in their maximum resolution. The Sony Z5 Premium crammed a full 4K resolution into a 5.5in display – a stunning 806 pixels per inch.

Though not in a product yet, Google and LG have developed an OLED display for VR that measures 4.3 inches and boasts 18 megapixels. That’s a whopping 1443 pixels per inch.

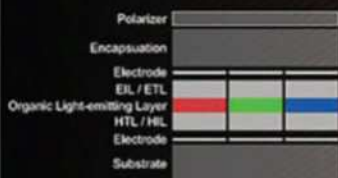
There have been no commercial MicroLED products released, but the individual red, green,

TFT-LCD, OLED, and Micro LED differ



TFT LCD

Setup of electric circuit at the liquid crystal layer of TFT LCD would trigger transfer of molecules, which, coupled with color filters and backlight source, endows each pixel three original colors red, blue, and green, whose mixture creates light in various colors.



OLED

Triggered by electric current, OLED can emit light in various colors by mixing red, blue, and green light from its organic thin film, which is more vivid than common LCD screens.



Micro LED

Micro LED features miniature LED arrays, with each Micro LED functioning as a pixel and can be driven to emit light. With modules becoming smaller, brighter, image quality, and response speed improve.

A cross-section of LCD, OLED, and MicroLED display layouts

and blue LEDs can be, well, microscopic. We're talking about less than 100 microns. It has the potential for many times the resolution of either traditional LCD or OLED. We're talking 'full 4K display on an Apple Watch' resolution, or several thousand pixels per inch. The first MicroLED displays are almost certainly not going to be that high-res, but the technology is capable of that resolution, and more.

You may have heard of OLED screens displaying ‘burn in’. Basically, when the display shows the same image in the same place for a very long time, it starts to leave a ‘ghost’ of itself so you always see it there. It happens on all sorts of screens; the LCD on your car dashboard may have faded interface elements that just don’t go away.

The LEDs in MicroLED displays are far less susceptible to this than the organic compounds in OLEDs, or the liquid crystal layer in traditional LCDs. Burn-in shouldn’t be a concern for most MicroLED products.

Super-fast switching times, perfect for VR

One of the big advantages of OLED over LCD is the technology’s very fast switching times (the time it



VR displays pulse on and off very rapidly for ‘low persistence’ to reduce blurring. OLEDs are great for this, and MicroLEDs will be even better

takes for each pixel to fully change colour). Slow switching times can result in blurring and smearing when objects quickly cross the display.

The best LCDs can fully switch colours in a few milliseconds (thousands of a second). OLED displays have switching speeds measured in microseconds (millionths of a second). That's why they're used in VR headsets, feature high refresh rates and 'pulse' the pixels one for just a brief fraction of each frame. LCDs just don't switch fast enough for a good VR experience.

MicroLEDs have switching speeds that sound more like microchips than displays – they are measured in the nanoseconds (billionths of a second). The super high resolutions in tiny sizes, combined with ultra-fast switching speeds, make MicroLEDs perfect for VR and AR headsets.

Superior colour, contrast, and brightness

MicroLEDs should be capable of producing brighter displays with near-infinite contrast ratios (because black pixels are entirely off), making them fantastic for HDR. The much higher maximum brightness will make MicroLED displays much easier to read in direct sunlight, too. MicroLEDs are said to be capable of a broader range of colour, which means wider colour gamuts, and they can be more precisely controlled for better colour accuracy.

The downside: high cost

If there's a downside to MicroLED, it's cost. The LEDs are manufactured almost like silicon chips,

and then transferred onto a backplane full of tiny gates to control the electrodes that connect to the LEDs. It's like transferring parts of a computer chip onto another computer chip. This is done over and over again in batches, and errors are possible at every step.

Until production really scales up, MicroLEDs are going to be expensive; some estimates say three to four times as expensive as OLEDs. Eventually, if a lot of large-scale MicroLED factories come online and the manufacturing process becomes more reliable, the cost should drop quite a lot, eventually reaching parity with OLEDs and potentially even as low as high-quality LCDs.

When is MicroLED coming?

According to Bloomberg's report, Apple has been working on this technology in a secret lab since it purchased MicroLED research firm LuxView back in 2014. For years, Apple has been working on a process to create consumer-grade MicroLEDs in a 62,000-square-foot manufacturing facility. Apple can apparently produce all parts of the display, including the backplanes, TFTs, and screen drivers.

The research facility, Bloomberg claims, can turn out "a handful" of fully operational MicroLEDs at a time of the size needed for an Apple Watch, though they are not actually integrated into Apple Watches.

It appears that it is Apple's intention to develop a process to efficiently produce consumer-ready MicroLEDs, starting in the Apple Watch size, and then contract actual production out to a third



party with much bigger facilities. The Bloomberg report makes it sound like an Apple Watch with a MicroLED display is probably not coming this year, but may very well land in 2019 or 2020.

If the technology were to appear in an iPhone, it would likely be two or three years after its Apple Watch debut.

Latest Mac games

Andrew Hayward looks at this month's best new releases



Spring is here, but if you're not convinced, then you might be in need of more indoor indulgences. How about a new Mac game? Over the following pages we've highlighted 10 of the most enticing debuts. Civilization VI's new Rise and Fall expansion might be just the strategic obsession some players need for the foreseeable future, but if you're not into Civ, then maybe Chuchel, Where the Water Tastes Like Wine, or Out of the Park Baseball 19 will satisfy your demands.



1. Civilization VI: Rise and Fall

Price: £24.99 from Steam (fave.co/2GuJJ4t)

Yes, it's an expansion pack, but given the quality and prominence of the game it's expanding, it's still one of the highest-profile releases. Civilization VI: Rise and Fall builds upon the excellent turn-based strategy sequel, adding sizeable new mechanics and fresh reasons to fire it up even if you've poured heaps of hours into the main game.

Rise and Fall's biggest contributions include 'great ages' for your civilization, as your decisions can lead your people into a Golden Age or Dark Age and create new challenges and opportunities as a result. There's also a new Governor system, as well as a Loyalty system that can inspire or enrage your people along the way.



2. Chuchel

Price: £7.99 from Steam (fave.co/2Eg5QoY)

Amanita Design makes charming point-and-click adventure games, from *Machinarium* to *Botanicula* and the *Samorost* series, and *Chuchel* is just the latest example of their one-of-a-kind aesthetic. Like the others, it's cartoonish and hand-drawn and features some odd little creatures, but this one looks like the outright silliest of the bunch. The 'hairy hero' Chuchel and rival Kekel are battling it out for a special cherry, and you'll fight for the delicious treat across numerous visual puzzles, which vary widely in tone and approach. As an added bonus, the Steam description promises you'll "build an inexplicable passion for cherries", which seems like a plus.



3. Where The Water Tastes like Wine

Price: £14.99 from Steam (fave.co/2EeMHnu)

You've probably never seen a game quite like *Where the Water Tastes Like Wine*, a Great Depression-era experience about wandering the country and soaking in the tales of your fellow travellers. You'll explore a world map of the US as an enlarged skeleton, and the encounters you make help shape the stories and interactions that follow. It's a narrative-centric game with a twist: you'll accumulate stories from the people you meet, and then you can retell and share those stories to influence other interactions. And those stories change and evolve over time, and help you move ahead in your journey.



4. Out Of The Baseball Park 19

Price: £30.99 from Steam (fave.co/2GtjUBF)

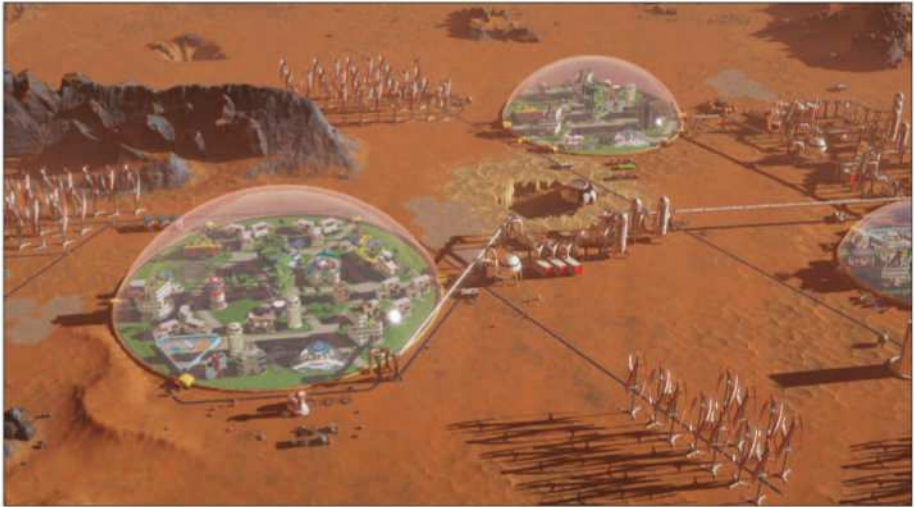
If you're a baseball die-hard who loves looking over stat sheets and being an armchair management, then Out of the Park Baseball 19 is the game for you. OOTP has been around for nearly two decades now, with each annual edition sticking to the stats-based, menu-driven approach while further enhancing the simulation experience. This year's version revamps the 3D experience of watching games unfold, although as ever, you won't directly control players. It also has a refreshed interface, a new scouting system, and the ability to pit any two historical teams against each other. And it's officially licensed by Major League Baseball, too, so all of the big-league teams and stadiums are here.



5. Northgard

Price: £23.79 from Steam (fave.co/2EfAjDQ)

Looking for a rich real-time strategy game to sink your teeth into? Well, Northgard looks to be one of the better ones in recent memory on Mac. This game has emerged from a year of Early Access on Steam with a full version yielding positive reviews. Northgard finds your Viking crew landing on the mysterious, titular land, where you'll establish a new settlement, task your allies to various roles to ensure growth and stability, and manage resources as challenges and threats emerge. A single-player campaign weaves a tale of intrigue and revenge as you play as a son of a murdered king, or you can play online against rival clans.



6. Surviving Mars

Price: £34.99 from Steam ([fave.co/2GxsK12](https://www.fave.co/2GxsK12))

Haemimont Games is best known for its Tropico simulation games, but *Surviving Mars* swaps the sunny island nation out for the red planet: It's a city simulation on a place that isn't exactly built for human life. But that's the challenge here – you're working on the first Mars colony, and you'll have to plan, prepare, and execute things perfectly to bring it to life. It's hard, as you might imagine. Some of the challenge comes with the territory, yet some of it seems arbitrary, partly owing to a lack of polish in the current build. But the struggle is worth suffering through if you dig the premise, and *Surviving Mars* can feel plenty rewarding if you endure the occasional hurdles.



7. Shooty Skies

Price: Free from Steam (fave.co/2pZ3h6y)

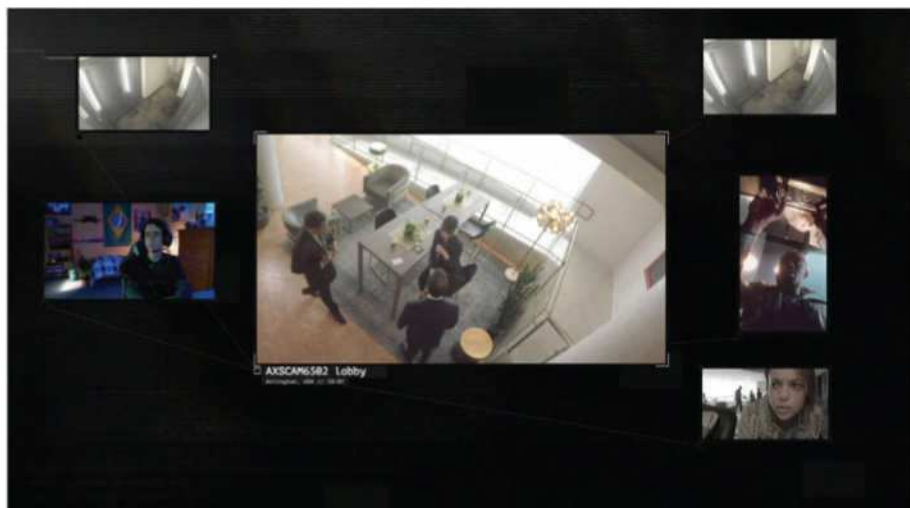
Mindless free-to-play games usually stick to the iPhone or iPad, but Shooty Skies can now be played on your Mac as well. And yes, the arcade-style aerial shooter is still free to play and enjoy. As on mobile, Shooty Skies is a super-streamlined take on vertical ‘bullet hell’ space shooters, as loads of cartoonish threats appear in view and fill the screen with bullets or hazards. You’ll dodge and weave to evade destruction, blast your foes, and pick up power-ups to help you survive longer and longer. Shooty Skies hails from the crew behind the wonderful Crossy Road, and it delivers the same kind of addictive, pick-up-and-play sensation; likewise, it’s a very friendly freemium game.



8. The Curse of Monkey Island

Price: £5.19 from Steam (fave.co/2GuLdM5)

LucasArts' point-and-click classic *The Curse of Monkey Island* is hardly new, but this is the first time you can buy the sequel through a digital download, making it widely available for a much larger group of adventure fans. *The Curse of Monkey Island* is the third entry in the comedic series, which stars pirate Guybrush Threepwood in all of his zany calamities. *Curse* keeps the puzzle-solving charm of the original classics while delivering more film-like cartoon style and voice acting.



9. #WarGames

Price: £2.09 from Steam (fave.co/2EdrqdW)

Sam Barlow's *Her Story* is one of the most acclaimed and inventive indie games of the past few years, as it tasks you with trying to solve a murder mystery by watching filmed police interview footage. Now, Barlow's *#WarGames* attempts to take that interactive film-like premise into much different territory with a tale of young hackers trying to unravel a conspiracy. At first, the teens are in it for laughs, but when the parent of one member is accused of deserting the US military, they'll use their hacking skills to prove otherwise. The result is a roughly two-hour experience in which you'll watch several video streams at once and make occasional decisions.



10. My Lovely Daughter

Price: £11.39 from Steam (fave.co/2EfxhR)

Well, this is grim: My Lovely Daughter might seem like an odd title for a game about alchemy, but then you find out that it's actually a game about using alchemy to bring your deceased child back to life. You'll do that by creating homunculi through your experiments and then raising them to instil a sense of humanity in the odd creatures. And then you'll harvest their souls. Yes, you'll kill the poor things, even though they call you 'daddy' and write letters to you about their daily activities. Is it worth suffering through those horrifying acts to save your real daughter, assuming that's even possible? You might find out in this game, assuming you have the stomach for it.

How to: Block websites on a Mac

David Price explains how to keep your children safe



There are lots of reasons why you might wish to block certain websites on a Mac. Probably the two most common ones are stopping kids from looking at porn on the family computer (but still being able to look things up for homework), and stopping employees from wasting time on Facebook or similar when they should be using work sites.

One method is to install monitoring software on the Mac(s) whose access you want to limit.

Possibilities include Norton Family (£29.99 at fave.co/2Gsrigs) and Net Nanny (from \$9 (£6.40) at fave.co/2h64GpO). Another is to spend some time setting up Parental Controls on the machine they're going to be using.

But if you only want to set up a few restrictions on a single Mac, it's probably easier to just tinker with the settings – and we explain how to do this over the following pages. Note that this applies restrictions to a separate non-admin user account; the main admin account will still be able to access all the sites it wants to.

We'll assume here that you haven't already set up a separate user account for your children or whoever isn't supposed to be looking at the sites, but if you have – and that account simply needs to have web-access restrictions placed on it – then we'll explain which steps to skip. This method cannot apply restrictions to administrator accounts.

One final word. You'll spot a few Safari icons in the following dialogue boxes, but don't be fooled: the restrictions will apply to any and every web browser on your Mac. You don't need to set up separate restrictions for Firefox, Chrome and so on.

Open Parental Controls

Open System Preferences – from the dock, or via the apple icon at the top-left corner of the screen – then select Parental Controls. It's got a bright yellow icon.

If you can't see it (and in some versions of Mac OS X the icon will be different), remember that



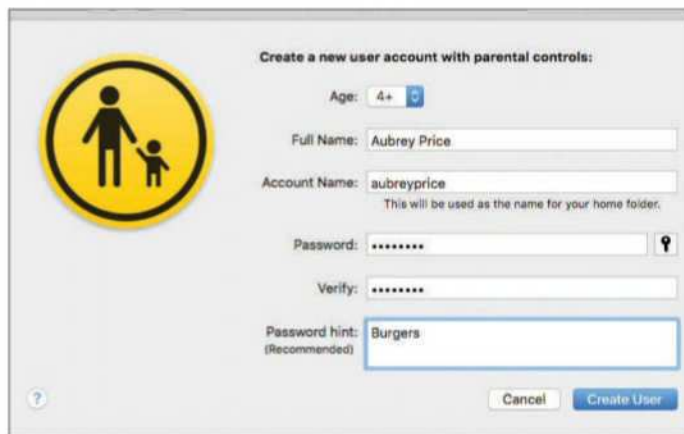
you can find preferences sub-categories using the search field at the top right.

Create a new user account

Since we haven't yet set up our child-friendly, non-administrator user account, the Parental Controls screen doesn't have much to offer. Select 'Create a new user account with parental controls' and click Continue. (If you've already set up a separate non-admin account, you'll be seeing rather different options. Skip ahead to the step entitled 'Web parental controls'.)

User account details

Creating a new user account is simple. Fill in the five fields, selecting a name (the account name will fill in automatically based on this, but you can



edit the choice), password and password hint. Hit Continue.

Web parental controls

Now that we've got a separate user account to apply them to, we can see the full range of parental controls options. You can restrict the apps the user can open, the contacts they can chat to and the times they can use the Mac, but we're focusing on restricted websites.

Make sure the correct account is selected in the left-hand pane; we have only one non-administrator account at present, so that's not an issue here. Select Web (or Content, in older versions of macOS and Mac OS X) in the top bar.

Limit adult websites automatically

You've got three options: allow the user account to visit any websites; stop the account from visiting

adult websites (based on Apple’s own list – but you can add or remove sites from the restricted list); or restrict the account to a whitelist of approved sites.

Let’s start with the second option. Select ‘Try to limit access to adult websites automatically’ (note the word “try” – Apple doesn’t claim it knows every adult website in the world, so cannot guarantee your child won’t stumble across something dodgy if you use this option) and then click Customize.

Customize the blacklist

On this page we can modify Apple’s blacklist, either preventing access to a site that Apple isn’t aware of (or doesn’t classify as adult), or allowing something that’s been wrongly zapped. Click the ‘+’ symbol beneath either box and enter the URL of the site to be allowed or blocked. Click OK.

Set up a whitelist of accepted sites

For greater safety, it’s better to go for the whitelist approach – that way you have complete control over the sites your child can visit.

Select the third option – ‘Allow access to only these websites’ – and then start sorting out the list. Apple starts you off with 10 kid-friendly sites. Press the ‘+’ symbol to add more or organise permitted bookmarks in folders, or highlight one of the sites and press the ‘-’ button to take it away.

Lock changes

When you’re finished, click on the padlock icon at the bottom left. This locks the settings in place,

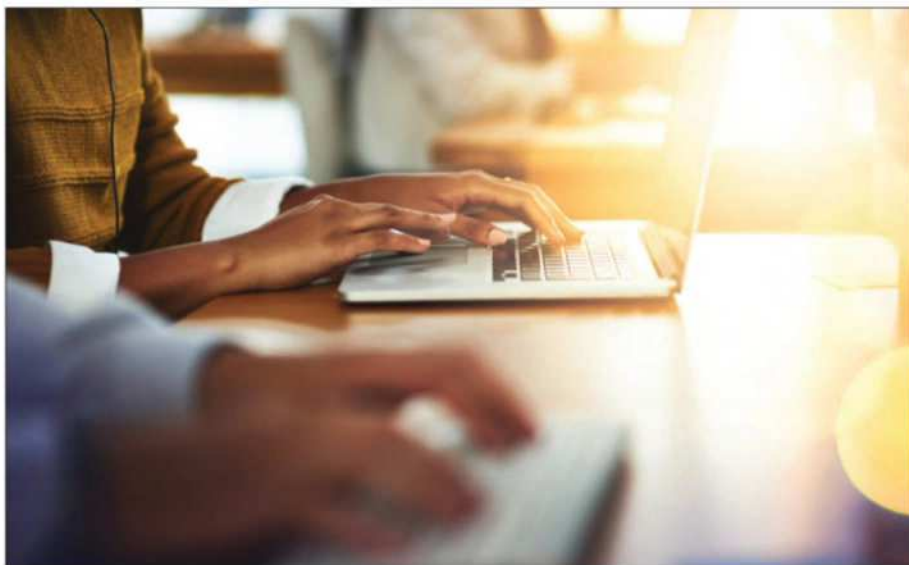
and will require an admin password in order to change them.

How to unblock websites

Unblocking sites for the account is easy. If you're working from a whitelist (as in step headlined 'Set up a whitelist of accepted sites'), you can add sites to the whitelist as you decide your child is ready for them. Or you can just lift all the site restrictions in one go by selecting the first option in the Web tab: 'Allow unrestricted access to websites'.

How to: Share a Mac's Internet connection

Karen Khan reveals how to share your Mac's web connection



There are times when the Wi-Fi network just can't give you the connection to the Internet you need. Perhaps you are at work and the Wi-Fi just can't cope with all the iPads and iPhones accessing it so it slows your browsing to a crawl (or your boss decides to change the password for the same reason).

Maybe you are in a hotel and can't connect all your devices to the room's Wi-Fi at once. Or

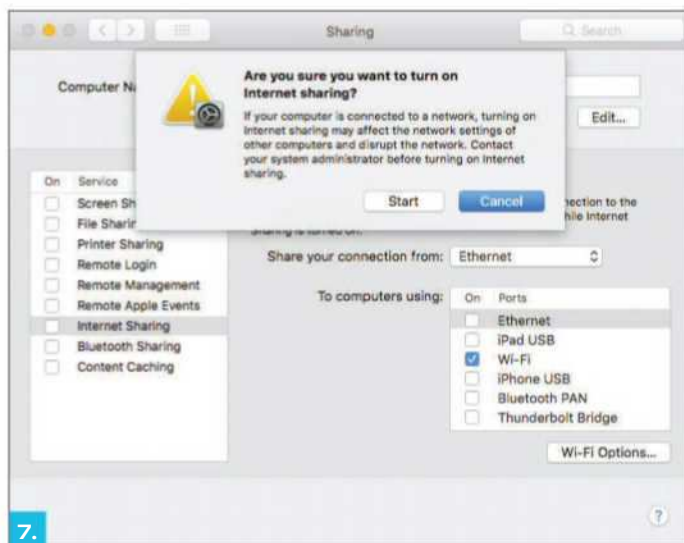
possibly you want to allow someone onto your Wi-Fi but you don't want to give away the password.

Or perhaps it's the end of the month and you are running out of data on your mobile network plan. You don't have to stop surfing. It's easy to create a hotspot from your Mac and share your connection with other devices via Wi-Fi, we'll show you how.

How to share Wi-Fi from a Mac to an iPhone

What you need: An Ethernet connection to a Mac.

1. Open System Preferences and select Sharing. If you don't see the below screen, click on the icon showing 12 dots.
2. Click on Internet Sharing.
3. Beside 'Share your connection from:' choose Ethernet.
4. Below that, beside 'To computers using:' choose Wi-Fi.
5. Next click Wi-Fi Options, this will give you the option to choose a password so that strangers can't jump on your Wi-Fi (it should be least eight characters). Next to Security choose WPA2 Personal and then enter your Password and verify it. (WPA2 is the 802.11i standard for encryption.)
6. Now click on the box beside Internet Sharing.
7. Confirm that you want to turn on Internet sharing by clicking Start.
8. You have now created a Wi-Fi hotspot using your Mac. Note that where you would normally see that you had a Wi-Fi signal, now you see an icon



with an arrow indicating that you are sharing your connection.

9. Now on your iPhone or iPad go to Settings > Wi-Fi and select the network you just created.
10. Enter the password you set and you are good to go.
11. To add a second Mac to your Wi-Fi hotspot click on the Wi-Fi icon at the top of the screen and select the name of the Wi-Fi hotspot you wish to join.
12. Now enter the password for that Wi-Fi network.

