

> Issue 313 > June 2017  
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# Mac FORMAT



## The best iPad ever!

> **REVIEWED** Why the new iPad is worth the upgrade



### Apple Watch 3: Our predictions

> What we want to see in the next Apple timepiece



### Apple Classics: Macs of the past

> How to transfer files to an ancient Mac SE

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MacBook Pro



**REVIEWED**

### BeatsX: Ready for the future!

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Future

### Which MacBook Pro is right for you?

> We go in-depth on the mobile king





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# iOpener

Game-changing tech from the world of Apple and beyond



MotherBox brings the convenience of wireless charging to iOS devices.

## MotherBox

### Proper wireless charging comes to iOS

Wireless charging is something us iPhone users have been missing out on for a long time. But even Android wireless chargers aren't great - the phone still needs to make physical contact with the charger. It's not a hugely practical solution. MotherBox is different. You plug a thin, credit card-shaped receiver into your iPhone and connect it to the MotherBox, and your device charges over the air. That means you can still use your iPhone while it's charging, freeing you from cables and contact chargers. There's also a battery-powered MotherBox Mini to use on the go.

> \$89 (about £70) > **INCLUDES** MotherBox charger, MotherBox receiver, USB cable

> **WEBSITE** [yanktechnologies.com](http://yanktechnologies.com) > **WORKS WITH** iPhone, iPad

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> This feels like the calm before the storm. We're all sat here on *MacFormat* waiting for Apple to release something big, something amazing, something... well, anything really. OK, we've just had a refresh of the iPad (see our review on page 90) which makes it the one to buy, if you're thinking of upgrading, and there has been news that the Mac Pro will be revamped next year (see Core News, page 10), but it's been months

since Apple updated its core line-up in any meaningful way. We all know a new iMac must be coming soon, and I'm sure there are plenty of you waiting for the new model to be released before you upgrade. It feels like the time is right, so let's be having you Apple, get on with it!

One thing you can do while you're waiting for a new Mac, though, is finally sort out your backups. We all tend to wait until there's been a serious problem before we get in the habit of doing regular backups, but you'll save yourself a lot of heartache if you just sort it out now, before something catastrophic happens to your data. Knowing you're backed up gives you peace of mind. Just follow the advice in our feature on page 32 and you can thank me later.

GRAHAM BARLOW  
**EDITOR-IN-CHIEF**  
 editor@macformat.com

## Meet the team



Jo Membery  
**Operations Editor**

> Updating her archaic Mac at home to a newer MacBook Pro has opened up a whole new world of Apple-based productivity for Jo this month.



Alex Blake  
**Commissioning Editor**

> Spending the month flat hunting has turned Alex into a master of property websites. His new abode must have decent Wi-Fi above all else.



Paul Blachford  
**Art Editor**

> Trekking all the way to Telford for his daughter's cheerleading competition, Paul is already a master of using Apple devices to plan trips. His current favourite iPhone app is UK Roads.



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# Mac FORMAT CONTENTS

> Issue 313  
> June 2017  
> macformat.com



8

## APPLE CORE >

- 8 RUMOUR & NEWS**  
> The core Apple news you need to know about
- 11 APPS & GAMES**  
> Our top picks of the month for Mac and iOS
- 12 APPLE FACTS**  
> Amazing stats from the world of Apple
- 14 MACFORMAT INVESTIGATES**  
> We look into Apple's dedication to minimalism
- 18 LETTERS**  
> Have your say on all things Apple-related
- 20 OPINION**  
> What's next for iOS app extensions?
- 22 SPLIT VIEW**  
> The team's views on the latest Apple tech

## APPLE HOME >

- 25 APPLE HOME**  
> Let there be light! Without flicking a switch
- 26 SMART HOME LIGHTING**  
> Smart lighting: bulbs, bridges and more
- 29 FIVE OF THE BEST**  
> Our pick of smart lighting systems

# Never lose a file again

32

An in-depth look at the many storage options for keeping your data safe and secure

# 5 tech companies that Apple should buy

82

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Turn to page 30 INCLUDES PRINT AND DIGITAL EDITIONS

## GENIUS TIPS >

- 69 GENIUS TIPS**  
> Howard Oakley solves Mac and iOS issues
- 70 MAC HARDWARE**  
> Don't let desktop kit get the better of you
- 72 MAC SOFTWARE**  
> Ease app-fuelled anxieties with our fixes
- 74 iOS SOFTWARE**  
> Swipe away your touchscreen troubles

## APPLE SKILLS >

- 48 RECORD AUDIO ON YOUR MAC**  
> Record FaceTime calls with Audio Hijack
- 51 SET UP NIGHT SHIFT**  
> Make your display a little easier on the eye
- 52 WHAT'S NEW IN iOS 10.3**  
> Discover new and improved features
- 54 PLAN YOUR HOME**  
> Rearrange your home layout with Concepts
- 56 SORT OUT YOUR CALENDAR**  
> Get on top of your schedule with Fantastical
- 58 KEEP YOUR LIFE ORGANISED**  
> Keep on top of daily tasks and social events

## SIERRA SKILLS >

- 62 SPEED UP A SLOW MAC**  
> Sort visual effects and hardware upgrades
- 64 USING iCloud KEYCHAIN**  
> Make your online life easier to manage
- 66 GET INFO ABOUT YOUR MAC**  
> Using About This Mac and System Information



90

## APPLE CHOICE >

- 89 APPLE CHOICE**  
> New kit and apps - we've got all the latest hardware and software reviews
- 104 STORE GUIDE**  
> Get help with picking your next piece of Apple kit and the best add-ons to go with it

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22

# Win!

An OmniFocus 2 Pro licence!



## REGULARS >

- 76 BACK ISSUES**  
> Head here if you've missed an issue
- 112 PHOTO STREAM**  
> Send us your Apple-related shots
- 113 NEXT MONTH**  
> What's coming in MF314 on 6 June

> macformat.com > @macformat

77

# LOVE YOUR MAC

> Louis resurrects an old Mac SE. Will it work?





What's inside

8-10

**RUMOUR & NEWS**

› Word on the grapevine about future Apple kit

11

**APPS & GAMES**

› Our top picks of the month for Mac and iOS

12

**APPLE FACTS**

› 1976: a look at Apple's launch year

14-17

**INVESTIGATES**

› Apple's dedication to minimalism

18-19

**LETTERS**

› Have your say on all things Apple

20

**OPINION**

› Matt Bolton on the next steps for iOS extensions

22

**SPLIT VIEW**

› Is there a future for the Mac Pro?



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# APPLE CORE



EDITED BY **GRAHAM BARLOW** ›

**APPLE RUMOUR**

## The next Apple Watch

With built-in 4G you can leave your iPhone behind

› We're all waiting on tenterhooks to find out what the third generation of the Apple Watch will look like, and what its big new feature will be. A recent report from an analyst at Susquehanna Financial Group has predicted that Apple will introduce cellular connectivity to the Apple Watch for the first time, a feature which has been rumoured for a while.

With a SIM card for LTE connectivity, the Apple Watch would be able to leave the iPhone behind completely, so you could make phone calls, and send text messages, all by interacting directly with the watch. Of course, this would mean you'd need an additional data contract with your mobile company, so things could get expensive quickly. A truly independent Apple Watch excites us though.

Jo says...



Being able to make calls and use the AirPods with an Apple Watch will ramp up its convenience factor



1

### LTE SIM CARD

> With 4G connectivity on the watch you'll be freed from having to use your iPhone for major functions, like phone calls and text messages.

2

### LOW POWER CHIPS

> The amount of power that cellular technology requires has always been the stumbling block, but new low power chips can provide connectivity on the watch.

3

### APPLE MUSIC

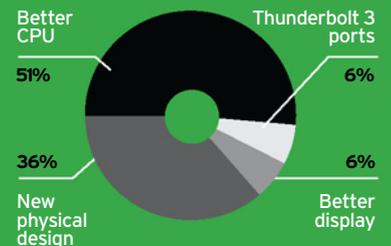
> With cellular connectivity comes the opportunity to stream tracks from Apple Music right to your Apple Watch, so you get your music on the go.

3

Mac  
FORMAT

## THE POLL

WE ASKED... What should Apple make a priority in the next iMac?



> Log on and see next issue's big question!  
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## RUMOUR MILL #

> Hot on the heels of the tech giant's latest moves...

1

### OLED SCREENS

> Apple has reportedly signed a deal with Samsung for 92 million OLED screens to use in its iPhone 8. The screens will be lighter and more flexible.

2

### NEW IMACS

> Phil Schiller of Apple has recently confirmed that new iMacs will arrive this year. No more details were announced, but we'd expect something more pro-level.

3

### MAC PRO

> Next year Apple will introduce a more upgradable Mac Pro based on a modular design. The current Mac Pro design could be history.

4

### APPLE AIRPODS COMPATIBLE

> The rumour states that Apple AirPods will become compatible with the new Apple Watch for phone calls and listening to music.



## CLASSIC APPLE FACTS

# \$1,100

### PRICE OF AN APPLE-BRANDED SAILBOARD

Back in 1986, Apple needed some new product ideas - so it launched its own line of branded windsurf sails. \$1,100 would let you ride the ocean waves in geek chic style, complete with huge Apple logo adorning the sail.

# 40MB

### BASE HARD DRIVE SIZE IN MACINTOSH IIVX

1992's Macintosh IIVx came with a 40MB hard drive, upgradeable up to 400MB. It was also the first ever PC to come with internal space for a CD-ROM drive.

# 25MHZ

### SPEED OF PROCESSOR IN THE eMATE 300

Everyone knows about the Apple Newton, but not everyone knows about the eMate 300. It was a low-cost laptop made by Apple that ran the Newton operating system. Costing \$799 at its March 1997 launch, it lasted less than a year before being shelved.

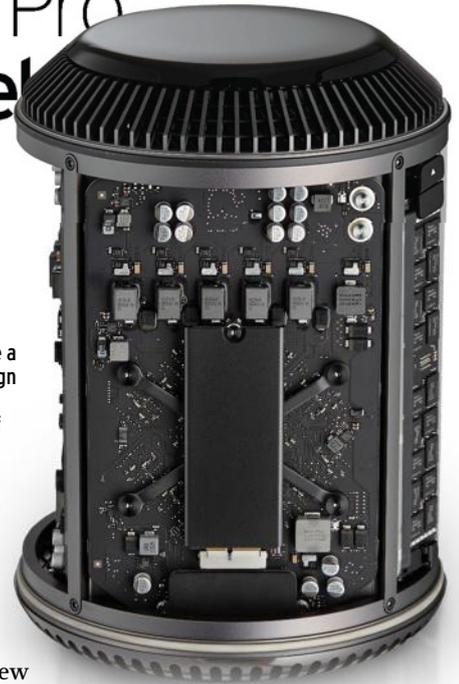
# Apple updates Mac Pro New modular model is also in the works

The Mac Pro, long assumed to be dead, is back with a bang

**A**pple hasn't updated the Mac Pro range since 2013, and technology has moved on a lot since then. With no word on the future of the high end Mac for years, many had assumed its time had come and gone. But in talks with tech journalists, Apple's Phil Schiller confirmed the Mac Pro was still an important product. "We are in the process of what we call 'completely rethinking the Mac Pro'" he explained, saying a new model would be out some time after 2017.

The current Mac Pro was thermally limited to the extent that it was difficult to upgrade, according to Apple. That will change with a new modular design; Apple wants to "do something that can be supported for a long time with customers with updates and upgrades throughout the years," said Schiller.

Expect to see a modular design with the next generation of the Mac Pro.



There will also be a new pro display to accompany the next Mac Pro.

In the meantime, Apple has upped the specs of the current Mac Pro (although the design remains the same for now), giving both models more powerful processors and better graphics cards.

# Apple to design own iPad and iPhone graphics chips

Announcement causes shares of current supplier, Imagination Technologies, to drop 70%

**T**his should serve as a warning for companies not to rely too heavily on Apple for orders. UK company Imagination Technologies currently provides the graphics chip (GPU) designs for Apple's mobile devices, but not for much longer.

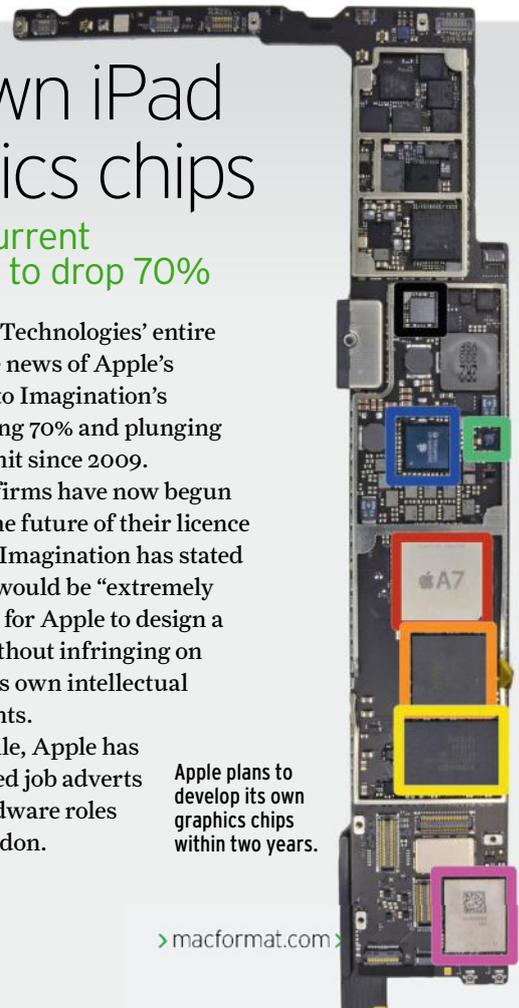
Apple told Imagination that it is planning to design its own GPUs within two years, leading to an end to future royalty payments. Apple's payments to Imagination totalled £60.7 million in the 2015-2016 financial year, expected to rise to £65 million for the year ending April 2017. That's about half of

Imagination Technologies' entire revenue. The news of Apple's decision led to Imagination's stock dropping 70% and plunging to levels not hit since 2009.

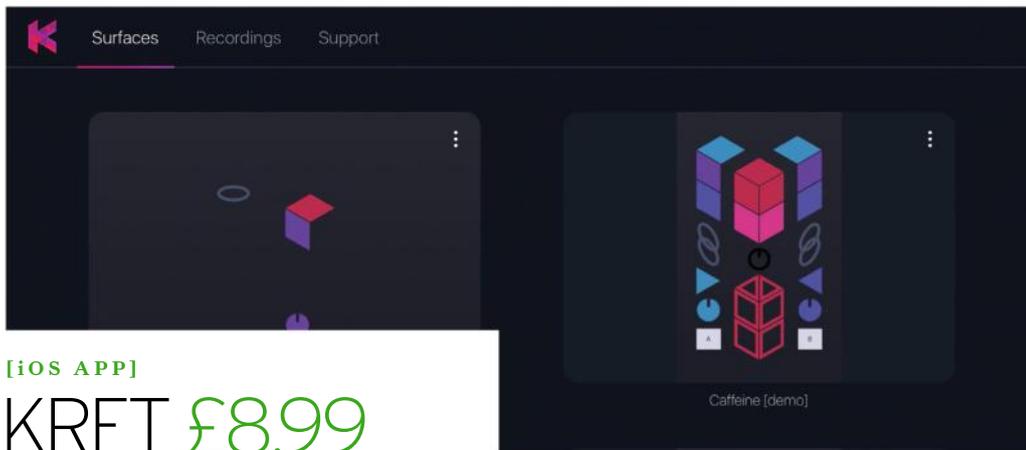
The two firms have now begun discussing the future of their licence agreement. Imagination has stated it believes it would be "extremely challenging" for Apple to design a new GPU without infringing on Imagination's own intellectual property rights.

Meanwhile, Apple has already posted job adverts for GPU hardware roles based in London.

Apple plans to develop its own graphics chips within two years.



**APP OF THE MONTH**



[iOS APP]

# KRFT £8.99

## Modular music-making masterpiece

 > Music-making apps can tend to be rather similar to each other, with a piano roll being the central commonality. KRFT does things a little differently.

That's because it works in a modular way. You can create your own interface, then use that to trigger sounds and events on the fly.

The idea is that it utilises both the impromptu interface and the nature of the

iPhone (relatively small, informal, on-the-go devices) to encourage experimentation and play when it comes to music-making.

So instead of writing a song in a linear way, you'll return to re-edit your work and come up with new ideas by exploring the unusual workflow. It's certainly a break from traditional music apps and, if you can get used to it, could be a great way to create new tunes on the go.

# APPLE TV

> Our top picks of what's worth watching and playing this month



[MOVIE]

## THE DISCOVERY NETFLIX

> When the afterlife is proven to exist, huge numbers of people kill themselves to get there. But the truth is much more complicated.



[PODCAST]

## PAGE 94 FREE

> Private Eye hits the airwaves in its ever-irreverent manner. Hilarious, cutting and deeply interesting, you will both laugh and cry at the state of the world.



[MAC GAME]

## THIMBLEWEED PARK £19.99

 > The creators of The Secret of Monkey Island and Maniac Mansion return with a spiritual successor. Switch between five characters in the bizarre eponymous town (population: 80 nutcases), while you help detectives Ray and Reyes solve a baffling murder.

**Why you need it:** Great for fans of Maniac Mansion.

**What's it best for:** A dose of nostalgic puzzler fun.



[MAC APP]

## WITCH 4 £13.99

 > Cycling through apps, and then app windows, can be a pain if you're working on a lot at once. Not so with Witch 4, which lets you set customise keyboard shortcuts to switch anything and everything, with an interface that's searchable and highly customisable too.

**Why you need it:** Get control of your window management.

**What's it best for:** Switching apps the easy way.



[iTUNES STORE]

## TRIPPLICATE BOB DYLAN £14.99

 > Dylan's latest effort is a 30-track tribute to his favourite musical standards. Made up entirely of covers from the 'Great American Songbook', the album is a return to form for the legendary singer after a few years in the wilderness. Great listening for Dylan fans.

**Why you need it:** The legend opening up about life.

**What's it best for:** Covering America's musical heritage.



[TV SHOW]

## WAR & PEACE NETFLIX

> The BBC's adaptation of the classic novel by Leo Tolstoy is a triumph of period drama, full of spellbinding wit, action, emotion and humour.

# 1976 Apple's first year IN NUMBERS

It's April 1976, and two guys operating from a garage in California launch what they hope to be a successful computer company...

1  
100

> Apple's first order came from a local computer shop, where Steve Jobs managed to convince the owner to order "something like 100" Apple I machines at \$500 each, according to Steve Wozniak.

2  
12

> Ronald Wayne co-founded Apple with the two Steves, but backed out 12 days later. His 10% stake would be worth \$75.5 billion today.



\$1,500

> Steve Jobs sold his VW van for \$1,500 to finance Apple in its earliest days, but had to help pay for repairs after the engine blew out two weeks after the sale.

4  
60

> In 1976, teletype machines could only output 10 characters a second. The Apple I was six times faster, outputting 60 characters a second.

5  
\$666.66

> The Apple I was originally priced at \$666.66 because Wozniak liked repeating digits, and to make a one-third markup on its \$500 wholesale price.

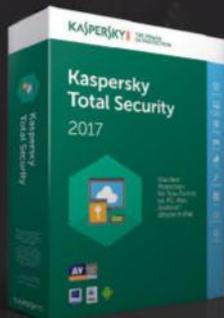
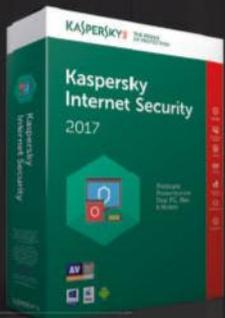
6  
200

> All of the original Apple I computers were hand-built by Steve Wozniak. He made about 200 in Steve Jobs' parents' garage.

## NEXT ISSUE

> The Apple Store in numbers. We drill in to the one-stop shop for Apple gear, Genius advice, and even training and workshops.

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# Mac FORMAT

## INVESTIGATES

# Pure and simple

Apple is world famous for its dedication to minimalism and simplicity - but has it gone too far? **WRITTEN BY ALEX BLAKE >**

**T**here are few things in life as divisive and polarising as an Apple product. While many people laud the latest iGadgets as revolutionary must-haves that will change your life for good, there is an equal number who condemn them as overpriced wallet-gougers made to milk the 'sheeple' dry.

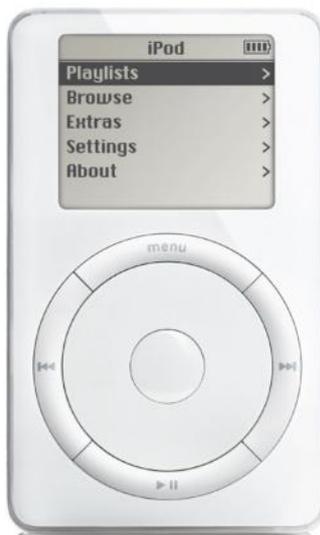
The focus of this consumer ire is often Apple's near-obsession with minimalism. Every product refresh seems to see iPhones, MacBooks and more getting thinner and lighter (so much so that the Air range, once the definition of laptop lightness, now looks almost obsolete), and if that means ports and standards have to be ditched, or certain tech has to be foregone - well, so be it, says Apple. Got a peripheral device that uses a legacy connection? There's an adaptor for that.

### Minimalist tendency

Understanding why Apple is so trigger happy when it comes to abandoning connectivity and utility in the name of sleek style goes deeper than mere appearances. It's at the core of the design philosophy of Jony Ive and, prior to his death, Steve Jobs as well.

Speaking to Walter Isaacson, Steve Jobs' official biographer, Ive put it this way: "Simplicity isn't just a visual style. It's not just minimalism or the absence of clutter. It involves digging through the depth of the complexity... You have to deeply understand

There are few things in life as divisive and polarising as an Apple product



The first iPod beautifully illustrated Apple's simple design in action.

the essence of a product in order to be able to get rid of the parts that are not essential." In other words, simplicity is not just a simple process of throwing away various features in a product, but informs what the product itself is and means. That's the level of dedication to simplicity among Apple's designers that we're talking about here.

For Isaacson himself, "The iPod, and later the iPhone and iPad, were triumphs of Jobs' original insight in the early 1980s that design simplicity was best accomplished by tightly wedding hardware and software." That meant that minimalism and simplicity were part of a larger quest to create something that the user could just pick up and intuitively use. That meant no tinkering with a Mac's insides or licensing the OS to third-party vendors. Everything had to just work out of the box.

With that in mind, it becomes clearer not only why Apple makes products that are locked (both literally, as in the unibody designs, and figuratively, as in the ecosystem), but also why it drops extraneous standards and ports. If a port is no longer part of the company's idea of design-based simplicity, then it has to go.

### Port authority

That's all well and good, but does this design principle lead Apple to go too far in its search for the perfect essence of minimalism?

A good place to start would be 2015's

For our latest subscription offer see page 30!





The 12-inch MacBook is minimalist in the extreme, with only one USB-C port for both data and charging.

MacBook. It was perhaps the clearest example yet of Apple's design philosophy in action. It was impossibly thin and light but, for some people at least, infuriatingly limited, coming as it did with only a single port for both peripherals and power (not including the headphone jack).

That was an issue for *Wired* writer Tim Moynihan, who wrote: "And while we're accustomed to hermetically sealed, port-barren devices in our pockets and on our coffee tables, a laptop with plenty of connectivity options is part of what makes minimalism possible elsewhere." The point

It was perhaps  
the clearest  
example of  
Apple's design  
philosophy

being that minimalism on a device that only comes with one port means you have to carry around a heap of adaptors instead, somewhat undermining the lofty objective that the device's minimalism was trying to achieve in the first place.

A similar issue was raised with the unveiling of the iPhone 7 sans headphone jack. Among all the outrage, the point was made that you couldn't connect the iPhone 7 to the latest MacBook Pro without an adaptor, despite the products being announced less than two months apart. In its desire to cull what it deemed to be unnecessary ports from all of its devices, so the narrative went, Apple ended up making the user experience worse for its most dedicated users; that is, those who bought into the ecosystem and purchased more than one product, expecting them to work seamlessly together.

By this understanding, Apple's penchant for minimalism has become a fetish and has indeed gone too far. But, we would argue, that's not the whole story.

## In ancient times...

When Phil Schiller got onto the stage at the iPhone 7 launch event to explain why Apple was dropping the headphone jack, he made one thing very clear: the port was outdated. It's "ancient", he said. It's "over 100 years old" and has "been with us a really long time". Its time, he insisted, had passed.

## Steve Jobs' design inspirations

**Steve Jobs was influenced by a wide variety of sources when it came to his design sensibilities of minimalism and simplicity.**

One notable inspiration was architect Joseph Eichler. "His houses were smart and cheap and good," according to Jobs. "They brought clean design and simple taste to lower-income people."

Following Eichler's lead and creating great design for the mass market "was the original vision for Apple," said Jobs. "That's what we

tried to do with the first Mac. That's what we did with the iPod."

Other influences included the typography classes he took at Reed College in Oregon. "If I had never dropped in on that single course in college, the Mac would have never had multiple typefaces or proportionally spaced fonts," Jobs mused to his biographer Walter Isaacson. "And since Windows just copied the Mac, it's likely that no personal computer would have them."

Rather than a range of ports, the new MacBook Pro only offers Thunderbolt.

Rumored for months, the iPhone 7 ditched the long-standing headphone jack.

But that wasn't the most important reason for dropping the jack, he argued. Instead, it was this: "When you have a vision of how the audio experience can be, you want to get there as fast you can and make it as great as it can be." Apple did indeed have a future vision, he explained, and that vision was deeply wedded to wireless audio.

In fact, Apple sees the future as being nearly *entirely* wireless. When you think about it, you see this vision playing out in a lot of other Apple products. Why drop the Ethernet port from MacBooks? Because you can connect over Wi-Fi instead. Why get rid of the DVD drive in iMacs? Because you can download and transfer files just as easily using the cloud.

## A pragmatic approach

The same is true for the headphone jack. Apple believes that, in a few years' time, everyone will be using wireless headphones, and that the jack will be viewed in the same way as FireWire and other legacy technology: as a relic of the past that we were wrong to cling on to. It is placing a bet on the future direction of the industry, and is confident enough to plough full steam ahead. And if that future happens to make Apple products a bit more minimalist, then that can only be a good thing in Apple's eyes.

Yes, this is partly influenced by Apple's

## Apple is placing a bet on the future direction of the industry



The iMac is amazingly thin, so internal space is at a premium.

love of simplicity. Why use a fiddly, tangle-prone cable when you can simply connect your headphones wirelessly instead? But it's just as much a decision borne out of pragmatism as it is out of inflexible, hard-nosed principles.

Here's another thing that Schiller said at the iPhone 7 launch: "Our smartphones are packed with technologies and we all want more. We want bigger, brighter displays. We want larger batteries, we want faster processors, we want stereo speakers, we want Taptic Engines, we want all of that and it's all fighting for space within that same enclosure. And maintaining an ancient single purpose analogue, big connector doesn't make sense because that space is at a premium."

Apple had to drop the headphone jack in order to make space for everything else it wanted to do with the iPhone 7. Think about how thin Apple's MacBooks are, and how svelte the all-in-one iMac is. To fit everything into such confined spaces requires incredible feats of engineering. To make beautiful Macs, Apple acts on both its design philosophy and its pragmatic need to save space. It's both an art and a science.

Losing useful ports on your iDevices is undoubtedly an inconvenience, at least in the short term before we've all adapted to the new way of doing things. But this isn't merely the result of an out-of-control minimalism bender

## Mighty mice? Apple's minimalist mistakes

**Strangely, Apple seems to have form in designing frustratingly minimalist mice.**

Sure, they almost always look beautiful, but at times Apple's most minimalist quirks find life in its mice designs.

Perhaps most recently, the Magic Mouse 2 came in for criticism over its charging design. While the mouse is a beautiful slab of glossy white excellence, the charging port for its internal battery is located on the bottom of the device - possibly as a way to hide any ports from view and make the mouse sleeker. But the result is that the mouse has to be positioned upside-down or on its side while charging, making it impossible to use.

Apple made another minimalist mouse faux pas with the Apple USB Mouse, commonly known as the 'Hockey Puck'. The design was incredibly simple: perfectly round,



The so-called 'Hockey Puck' mouse was a design disaster for Apple.

with just a single button. But that circular design made it difficult to orient and uncomfortable to use - so much so that it's often regarded as one of Apple's worst designs.

And let's not forget the Mighty Mouse. It ended Apple's stubborn insistence on one-button mice by giving users four controls: left- and right-clicks, side squeeze buttons and a trackball. But while it looked beautiful, the side buttons were hard to click and the trackball quickly got dirty. To many, it was a case of form over function.

from Apple. There are plenty of practical considerations too. In fact, there's also a third reason on top of those two: timing.

### Predicting the future

Apple has never been shy to drag people, kicking and screaming, into what it says is the future. Remember when it ditched the floppy drive, despite its widespread use? That was painful, but it didn't matter to Steve Jobs, who insisted there was no need for the drive when you could just move files over the internet instead. Jobs saw which way the wind was blowing, and charged ahead in that direction.

Back then, technology was reaching a new paradigm where the internet was taking over many functions previously managed by physical media. The same is true when it comes to removing ports today. Right now, Apple feels that wireless technology is at a tipping point, and that now is the time to fully embrace it, at least in terms of wireless audio, on its mobile platform.

It's unfortunate that removing a port has, at the very least, caused minor irritation for every iPhone owner around the world. But it's likely that Apple felt it had to make the move sooner or later.

That's true for other Apple devices too. Look at the new MacBook Pro, where the only data ports are Thunderbolt 3. Apple has always been bullish on Thunderbolt (it helped

Apple is  
undoubtedly  
spurred on  
by its craving  
for simplicity



The iMac G3 was the first Apple computer to drop the floppy drive, causing widespread industry change.

create it, after all), and it's certainly incredibly powerful tech. Apple wants to 'force' it on the world and make it a success - that's what motivated Apple to drop every other port on the MacBook. These aren't cases of Apple's minimalistic tendencies going into overdrive and nothing else; rather, Apple feels that it is moving into the future.

In terms of everything else - well, it's a mix of those three things we mentioned earlier. Apple is undoubtedly spurred on by its craving for simplicity, and it's possible that at times this has got the better of it. But that's not its only concern; save-spacing practicalities and adopting new standards also play their part. Minimalism is important, but it's not the only thing prompting Apple to do away with ports and cables.

"Apple's message is clear: You don't need all those cables," says Moynihan.

It believes that "It's better to carry something that feels almost weightless, something elegant and slim and gold than have some pörtgåsbord weighing you down."

Apple thinks it knows best. And it knows that internet and wireless technology will trump ports and cables. That's the thing about closed ecosystems: you have to hope the manufacturer is right. And when it comes to predicting the future, Apple has a good track record.



# CONTACTS

Have your say on all things Apple!

Contact us

> Email your queries and your questions to [letters@macformat.com](mailto:letters@macformat.com)

## LETTER OF THE MONTH!



### Retina eye test

> I've found a flaw in Apple's Retina screens. It doesn't matter how crisp the detail on the screen is, it's only as sharp as the user's eyesight! Apple should force purchasers to undergo an eyesight examination prior to buying retina-screen products.

Okay, I'm jesting, but it's something potential buyers should consider, based upon

my own recent experience. I bought a new 27-inch iMac last June, and while I liked the screen, I couldn't understand what all the fuss was about. But last week, following an eye test, I was advised to have a pair of glasses for computer use as well as distance. Only when I put on these dedicated computer specs did I finally appreciate the technology. Wow!

So, Apple, if you want people to obtain the full benefit of your design and manufacturing efforts, perhaps you consider installing ophthalmology testing practices in your stores too!

BY SIMON WHALEY

**GRAHAM SAYS...** As somebody who has never had to wear glasses, I often wonder how good my eye sight actually is. I should really book myself in for an eye test as well. Who knows I might find that there's a whole new dimension to Apple's Retina Display that I could discover too!



As easy as Pi... A Raspberry Pi, that is, the famous single-board computer.

**GRAHAM SAYS...** Thanks for sharing your idea, Mike. I think this sounds like a job for Luis in his Love Your Mac section, so I've forwarded your email to him and I'm sure he'll cover it in an upcoming issue.

### BUY OR WAIT?

> I currently find myself in a dilemma regarding my next purchase of Apple kit, the crux of which is this: having owned numerous iPads, iPhones and MacBook Pros, I am now in the market for a desktop. After saving for a while, I have a budget of £3K to spend, so I can spec a current 27in iMac with additional RAM, flash drive and upgraded processor to suit my use (photograph/video editing and movie making in HD/UHD). However, I am loathe to invest in two-year-old technology when the next iteration of iMac could be just around the corner potentially boasting much better specs and likely to add years to future-proofing my purchase. A common concern amongst other users, I am sure!

Having followed recent developments in the Apple world, I noted that the Apple display has been discontinued, leading me to think that Apple may just offer a desktop minus a display. Some form of downgraded Mac Pro or upgraded Mac

## LETTER OF THE MONTH

### Win a Creative NUNO!

> The author of our Letter of the Month receives a prize. Email us to be in with a chance of winning the Creative NUNO, a portable, wireless speaker with high-performance speakers under its cloth covering. Find out more at: [uk.creative.com](http://uk.creative.com)



## ELEMENTARY VS RASPBERRY DEBIAN PIXEL

> Thank you for an excellent magazine. I read with interest the article by Nick Peers in the April (311) edition of *MacFormat*, on how to create and install the Elementary OS onto an old Mac to speed it up.

May I suggest another interesting project might be how to install Debian Pixel OS onto a Mac using a memory stick with persistence (to allow saving), which would then allow experimentation with a Raspberry Pi straight from your Mac? Here is a link to what I am talking about: [raspberrypi.org/magpi/debian-pixel-mac-pc/](http://raspberrypi.org/magpi/debian-pixel-mac-pc/)

This would open a whole new world of experimentation to Mac users, which I am sure a lot of your readers would appreciate. What do you think?

BY MIKE T

## CAN APPLE PROGRAM ANYMORE?

► My next Mac will be a PC. I cannot work with Apple kit anymore, it's simply too unreliable!

Every Mac I've owned since my beige G3 has died or become so problematic it becomes impossible to work. My latest Mac - a late 2015 MacBook Pro - has sprung the latest joy from Apple, the amazing disappearing disk space bug! I cleared out 50GB of space yesterday to now be constantly nagged by Finder that disk space has almost run out, now at 327.7MB it should be over 100GB!

Can anyone at Apple program anymore?

I for one am sick of the Emperor's new clothes! Apple = Ooooooh, shiny, look how pretty it is. But try using Photoshop with this flaming bug, it won't even launch, and I know it's a Finder bug as it still happens in Safe Boot!

Apple - you ignore the pro market at your peril! It was the likes of me that still bought your computers during the dark years. Mark my words: the consumer is much more fickle and dark days are coming your

way because your product only has the veneer of greatness these days.

Dare you to publish this guys, because I'm not the only pro saying this. A prepress pro recently told me that Windows 10 offers a 1000% more to a pro than a Mac ever will!

BY GLEN SAVILLE

**GRAHAM SAYS...** Apologies for rolling out the 'Keep calm and carry on' poster, but keep calm! Macs are still more reliable than Windows machines. There could be a very simple solution for your Apple woes. If your Mac is reporting the incorrect amount of free disk space when you click About this Mac from the  menu on your desktop, then you simply need to rebuild your Spotlight index. In System Preferences, click Spotlight, then choose the Privacy tab. Drag your hard drive from a Finder window into the list of locations that Spotlight is prevented from searching. From the same list of locations, click your hard disk and click Remove. Quit System Preferences and Spotlight will reindex the contents of the drive.

mini perhaps? As the iMac has been on my wish list for the last 12-18 months or so, and loving the design, I would hate to be faced with buying a desktop and separate display. The rumour forums don't really give any firm indication of likely specs, other than possible processor upgrades, and the fact that Tim Cook has affirmed that 'We have great desktops in our roadmap'.

Would newly developed processor/graphics specs be worth the wait and disappointment if Apple do away with a display-integrated iMac?

BY IAN GANDLEY

**ALEX SAYS...** Thanks for your email. You've written with good timing, as Apple has just announced that it's working on a new Mac Pro, and will be unveiling a new iMac later this year (no news on when the Mac Pro will come out, just that it won't be this year).

Apple hasn't said exactly when the new iMacs will be coming out, although I'd expect it to be later rather than sooner. Still, I would recommend waiting if you can. You are right to be cautious of investing in an older iMac when Apple is due to update the line soon; if you



The iMac is still the king of all-in-one Macs and we'd expect it to be so for a good while yet.

have £3,000 to spend, it's worth saving that for the new iMac rather than buying an older or inferior Mac to tide you over.

I wouldn't worry about having to buy a desktop without a display. The iMac brand is too large and successful to tempt Apple to radically alter it by removing the integrated display, so you'll still be able to get an all-in-one Mac when the update lands. If you did change your mind and want a desktop with a separate display, the Mac Pro has just had a slight spec bump and will, of course, be properly updated in the not-too-distant future. No clues yet on when exactly that will be, though. Hope that helps you to make your mind up.

## What do you think?

### WHICH COMPANIES DO YOU THINK APPLE SHOULD BUY?

► This issue we've been discussing which of the amazing technology companies out there Apple should snap up. Email us to let us know what you think about our choices - and if you think we've missed something that Apple should splash its cash on...

**Find the feature on p82!**





# MATT BOLTON...

LOOKS AT HOW APPLE NEEDS TO OPEN UP THE WORLD OF EXTENSIONS TO IMPROVE iOS APPS

**W**hen Apple buys a company, it's hard not to turn into an amateur seer. In theory, you can't read too much into its future by looking at the businesses it acquires, but sometimes the tea leaves indicate something more clearly than others, especially if the acquisitions are in areas that seem to be a slam dunk for Apple to be getting into. When it bought Siri, for example, the animal entrails pretty clearly spelled out 'built-in AI assistant'.

Apple's latest purchase is a similar story. Workflow is an app that many iOS power-users have come to love very dearly. It's a bit like Automator, in that you build up workflows of tasks for it perform in a particular order, pushing a piece of data between them, but it works across many of the most popular apps on iOS. One of the most common issues people have with using iOS as a full-on macOS replacement is the way apps are 'sandboxed' - all their own little fiefdoms, isolated from each

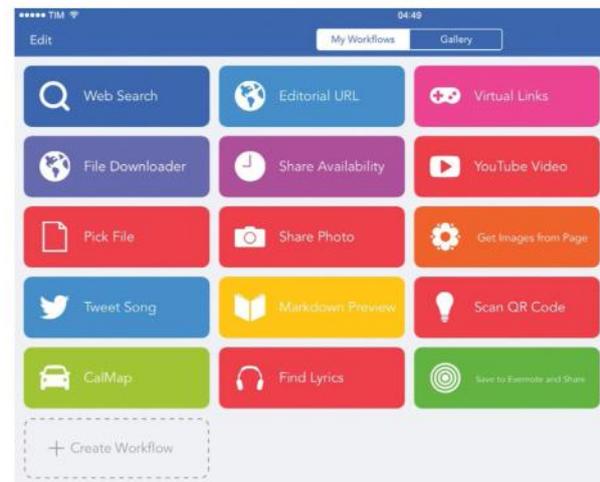
other for security reasons. The apps generally can't talk to each other, but the Workflow app enables them to provide their capabilities outside of the sandbox.

Apple buying Workflow surprised a lot of people, but I think it makes perfect sense when you look at its recent moves to power up iOS. It's all about extensions.

Instead of breaking the sandbox system so that apps can become more capable, Apple is providing ways for apps to make cameo appearances within each other, and lend their capabilities as needed.

You can now record instruments from other music apps within GarageBand. You can access payment apps in iMessage, or book a ride-sharing service in Maps. Apple is making it so that you're not relying on Cupertino to make your apps more powerful - it's putting in a system so apps can do that on its behalf. All it takes to improve the apps you already have is a new app with a great idea.

These apps within apps are quite flashy, but there's also a more subtle level on which extensions can operate. Apps can simply offer a task they can perform, such as translating text, which is available in other apps through the Action sheet (which you find in the Share menu). And when I say it's subtle, really I just mean 'irritatingly hidden'. Workflow helped to make these extensions more accessible and flexible for regular work, so it's a great sign that this is Apple's



Workflow allows you to build automatic processes on your iOS device. Apple's purchase of the software indicates significant improvements ahead for app extensions.

direction - but there's still much more to do.

If extensions are the future, they need to be freed from the Share menu, and made so that apps can reveal them more naturally. Maybe a text-based tool such as translating words could be available in the text-selection pop-up menu. Maybe 3D Touch could act more like a right-click, and offer some of these options based on the type of file or content you pressed.

Apple keeps iOS simple to make it as easy to use as possible, but once we reach a certain level of experience with it and want to do more demanding things, the inflexibility of its simplicity can actually limit us, making it harder to use than macOS. Extensions help to improve its functionality, but we need Apple to stop hiding them in the cellar.

## ABOUT MATT BOLTON

> Matt is the editor of Future's flagship technology magazine *T3* and has been charting changes at Apple since his student days. He's sceptical of tech industry hyperbole, but still gets warm and fuzzy on hearing "one more thing".



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# APPLE IN QUOTES

**KIM SCOTT**

[kimmalonescott.com](http://kimmalonescott.com)

“Somebody warned me, “Tim is extremely quiet. Don’t let it unnerve you.”

Former Apple University lecturer reveals Tim Cook’s interview style

**ZANE LOWE**

[apple.com](http://apple.com)

“We try to make as much noise and create as much context and tell stories for records and artists.”

Beats 1 host explains the role of the radio show within Apple Music

**JOHN GRUBER**

[daringfireball.net](http://daringfireball.net)

“If Apple truly eliminates the chin and forehead, they’ll leap ahead of Samsung.”

Removing top and bottom iPhone bezels should be a priority, says pundit

**PHILIP SCHILLER**

[apple.com](http://apple.com)

“Our driving ambition in every market is to be the best, and not the cheapest.”

Apple marketing chief on how Apple will approach the Indian market

**APPLE CORE** Split view

# SPLIT VIEW

> The *MacFormat* team debates the hot Apple issues of the day, using their iPhones of course!

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Turn to page 30

## “IS THERE A FUTURE FOR THE MAC PRO?”



Paul says...



Alex says...



We’d heard rumblings that Apple was working on a new Mac Pro, but it was still a surprise to hear how committed it is. I’m excited about the ‘modular design’ concept. 😊

I loved the look of the Mac Pro, so a small part of me is sad to see it go. But replacing a custom design with another? I hope it’s not completely proprietary and you can buy Apple approved upgrades from third-party manufacturers at sensible prices. 💰

We’ll have to see... but upgradability is going to be key. 🙌 Apple as much as admitted that that was a big issue with the original Pro.

I wonder if Apple will try to entice those considering a high-spec iMac 🖥️ by giving them a much more expandable option with an i7 processor instead of a Xeon. The current Mac Pro’s failure to capture that audience hurt sales, as it caters much more for the freelance creative pro market. 🎨

Well, Apple hasn’t given up on the pro market, and that can only be a good thing.

Let’s hope Apple comes up with more options than with the current Pro... I’m really excited to see what it’s going to do! 👁️

## Siri...ously?



“Tell me about Liam”  
tap to edit  
‘Liam and I were dicussing reincarnation the other day. I wonder what it would be like to come back as a waffle maker’

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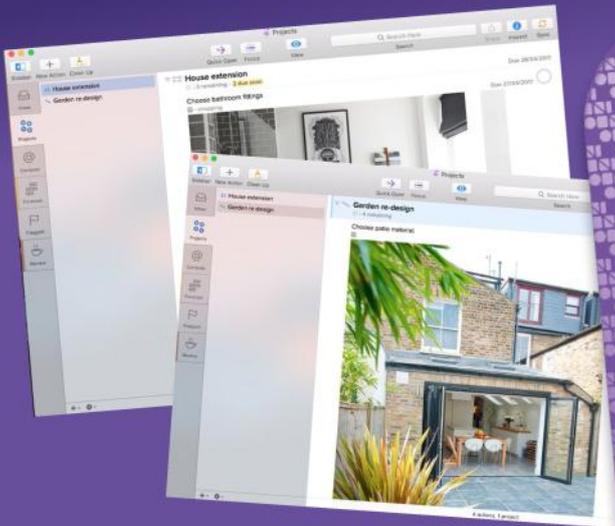
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## COMPETITION OmniFocus 2 Pro



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# Win!

## An OmniFocus 2 Pro licence!

Get things done and be more organised with the best productivity Mac app on the market. We've got 10 OmniFocus 2 Pro licences to give away

> Keeping everything under control and staying organised can be difficult for us digital denizens. With reminders, alerts and alarms constantly prompting us to do things, it can be a bit overwhelming.

That's where OmniFocus 2 Pro can help. We found it to be the best productivity app there is in MF311's group test, where we found it "a hugely impressive tool for managing everything from day-to-day tasks to large projects".

It works on the Getting Things Done concept, an in-depth, dedicated methodology to ramping up your

productivity. All your tasks are housed in an inbox, with a sidebar and tags to help you organise and prioritise.

Despite its powerful features, it's also incredibly simple to get going quickly, which is great if you suddenly think of a new task and want to plan it out fast. After all, there's no point using a productivity app if it's slow and unproductive to use! In the words of our group test reviewer, OmniFocus is "almost in a category of its own".

Powerful, quick and full of great surprises, it's the productivity app you've been waiting for.

### > THE QUESTION

We've got 10 OmniFocus 2 licences to give away. For your chance to win one, simply answer this question:

### What productivity concept drives OmniFocus 2 Pro?

- A) Generating Task Decisions
- B) Getting Things Done
- C) Getting Tasks Delegated

For more information about The Omni Group's OmniFocus app, and its full range of other products, go to [omnigroup.com](http://omnigroup.com).

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- > This competition closes on **5 June 2017**. Over 18, GB residents only.



What's inside

25-29

**SMART LIGHTING**

> How to set the mood - and save on your electricity bill!

28

**LED BULBS & ALTERNATIVES**

> Comparing bulb brightness, and the option of Alexa control

29

**FIVE OF THE BEST**

> Discover the best smart lights for your Apple home



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# APPLE HOME



EDITED BY **CLIFF JOSEPH** >

**LIVE SMARTER**

The smart home is here - live the Apple dream today!

## From Bluetooth bulbs to Wi-Fi disco lights, the latest smart lighting systems can add a real personal touch to your home



**Lighting was one of the first smart home products to take off in a big way - even if some sceptics did dismiss**

**them by asking 'how hard can it be to turn off a light bulb?'**

The answer to that is - well, just ask the parents of any teenager who wanders around the house leaving lights on in every room. So the first advantage of smart lighting is simply to save money by allowing the lights to turn themselves off automatically. There are other advantages too, including the ability to control all the lights in your home from your iPhone all at once, or slowly dim the lights in a child's bedroom at night.

It's also kind of fun to use Siri to control your lights without having to stir from the comfort of your sofa. So here's our guide to the smartest lighting systems that are now available for your home...



With the Elgato Avea app, you can choose from a number of different lighting moods.



## Explained

### LED

> An old incandescent bulb is basically a lump of hot, glowing wire that is either on or off. In contrast, LED bulbs use digital 'light-emitting diodes' that can display millions of different colours and different levels of brightness - all controlled by an app on your iPhone.

# Get started with **smart** Lighting

Let there be light! And 16 million colours! And remote control, so that we can save money too!

## Is smart lighting safe?

There have been a number of news stories recently about poor security on the smart devices that we use in our homes - with Osram's Lightify range being picked out for particular criticism. Osram quickly patched its Lightify app to tighten up security, but you should always make sure your apps are up to date with the latest security patches and bug fixes.

## Will the bulbs fit?

Many homes in the UK have light sockets that use a two-pin bayonet fitting, while the US and other countries use Edison screw sockets. Make sure you buy bulbs that have the correct fitting - although you can buy bayonet adaptors for screw bulbs if you need to, for about £5 each.



**Most smart lighting systems use LED bulbs that are longer lasting and a lot more power-efficient than traditional light bulbs, so it's worth switching to LED lighting simply in order to save money on your energy bills.**

However, most smart bulbs cost around £30 each, compared to about £5 for a not-so-smart bulb, so they need to earn their keep in other ways, too.

The cheapest LED bulbs just create ordinary white light, but many smart bulbs can change colour, allowing you to select different colour and brightness settings with an app on your iPhone. That's great for setting the mood for a dinner party or just dozing off at night. The simplest smart lights use Bluetooth to connect to your smartphone or tablet, and the most well known options here are the Veho Kasa and Elgato's Avea range. The Kasa is a straightforward range of smart bulbs costing about £30 each, although the company has added a new Light Strip to its range. This is a three-metre length of strip lighting that you can use indoors for a bit of mood lighting, priced at £50. If you want to go out into the garden then Elgato's Avea Flare is a better option. It's a bit pricey, at around £90, but the lamp provides eight-hour battery life and is water-resistant (IP65). You can also buy Avea bulbs for use around the house for £25 each.

The apps used with these bulbs will allow you to set timers on your iPhone or iPad, or to adjust colour and brightness for each bulb.

However, the Bluetooth connection only has limited range, so these lights are probably most useful in one specific location, such as a bedroom or garden. If you want more control over all the lights in your home then you need to choose a lighting system that can use Wi-Fi to connect to your home network.

## Hue goes there

The big heavyweight in the smart lighting market is Philips, with its Hue lighting system. The Hue range includes dozens of different bulbs, lamps, strip lighting, and more. Philips also got off to a good start by being one of the first companies to support Apple's HomeKit and Siri voice commands, making

## Automated living

Get your gadgets working for you

One interesting development here is that both Osram and Philips have announced motion sensors that will work with their lighting systems, perhaps allowing the sensor to turn your lights on when you walk through the door, or just get out of bed in the morning. This points the way forward for the Internet of Things (IoT) where all our devices will work together and automatically respond to our actions, from the moment we wake up in the morning until we turn the lights off at night.

## APPLE HOME Smart lighting

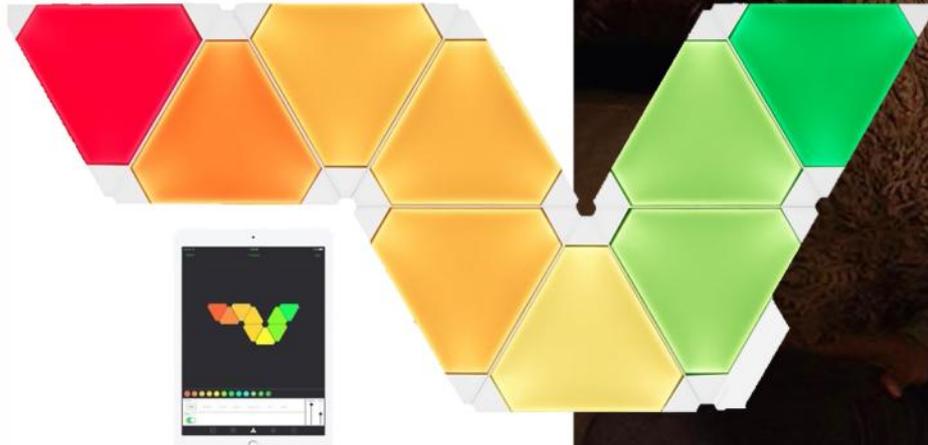


### How bright are LEDs?

Old-fashioned incandescent bulbs are rated according to their power requirement in watts (W), with 40-100W being common for household use. Modern LED bulbs are more efficient and only require a few watts of power, so their brightness is rated in 'lumens' instead. Philips' Hue bulbs only need 9.5W, but their 806 lumen brightness is roughly equivalent to 60W from an incandescent bulb.

### What About Alexa?

Alexa is Amazon's equivalent of Apple's Siri. Many smart lighting systems work with Alexa, and you can use voice commands to turn your lights on and off as you can with Siri. However, Apple's HomeKit goes further, allowing you to create 'automations' that link your lights to other HomeKit devices - such as your thermostat or a security camera.



The Nanoleaf Aurora is a bit over the top, and certainly not cheap, but we think the effect is striking.

the products a great choice for owners of iPhones and iPads.

Connecting a smart bulb to your home network does add cost and complexity, but it provides real benefits too. Your Wi-Fi network can cover your entire home, allowing you to link lights together in different locations, perhaps turning all your downstairs lights off when you go to bed at night. In order to connect to your Wi-Fi network, most lights will require a control device - Philips calls it the 'Bridge', while Osram opts for 'Gateway' - that connects to your broadband router and acts as the brains, controlling scheduling, brightness, colour and other settings.

## Your Wi-Fi network allows you to link lights in different locations, so you can, for example, turn all your downstairs lights off at once

The cheapest option here is to buy a starter kit that includes two or three bulbs along with the central controller. Philips sells a Hue starter kit with two plain white bulbs and a Bridge for about £60; a more advanced kit with three coloured bulbs and a Bridge comes in at around £150. Once you've got the Bridge you can buy additional bulbs for as little as £25 each, or opt for lamps such as the portable Hue Go (£70) or fancy fittings such as its Cher overhead lights (£195).

Osram's Lightify range doesn't have quite so many different types of lights

and bulbs, but you can get a starter kit that includes the Osram Gateway and one colour bulb for around £60, and then extend the kit with additional bulbs for £20-30 each. There are some interesting newcomers here too, most notably Nanoleaf, whose Aurora lighting system (£180) provides a series of multi-coloured panels that you can clip together to create your own

personal light show. If that seems a bit over the top then Nanoleaf also makes a number of more down-to-earth lights, including its Ivy Smarter Kit, which includes a control hub and two rather odd-looking bulbs, but is well priced at around £80. Nanoleaf's products support HomeKit too, so they're a real rival for Philips if your home is full of Apple kit. Even Ikea is getting in on the act, with its new Tradfri range of smart lights. These aren't available in the UK just yet but, with prices starting at just £15 for a basic white light, Ikea could open up the market for smart lighting to a larger audience than ever before.



## iFacts...

**28%**

The predicted rise in UK energy bills in 2017 - so every little helps.  
*The Guardian*

**£400**

The savings recorded for one UK couple that switched their home to LED bulbs.  
*The Telegraph*

**Up to 85%**

Smart LED bulbs are a lot more power-efficient than traditional bulbs - up to 85% in some cases.

**15,000 hours**

Even a cheap LED bulb will last for 10-20 years (based on three hours' use per day).

The Philips Hue lights offer 16 million colours - and work with HomeKit, Alexa and more.

## FIVE OF THE BEST

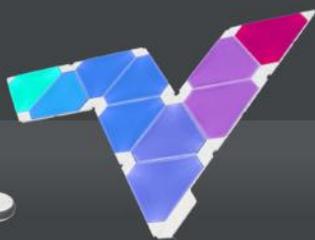
We recommend five of the smartest lighting systems for your home >



### Ikea Tradfri Floalt From £50

[ikea.com](http://ikea.com)

Ikea's new Tradfri range of smart lighting kits starts at £15 for a basic white bulb. Our favourites though are the Floalt panels, which you can mount on a wall for striking effect. The panels come in three different sizes, costing £50-100.



### Nanoleaf Aurora £180

[nanoleaf.me](http://nanoleaf.me)

Nanoleaf's Aurora disco lights are a bit over the top, but they're also terrific fun. The kit includes nine triangular panels that you can link together in different shapes; the Nanoleaf app lets you control the colour of each panel.



### Osram Lightify Starter Kit £60

[osram.co.uk](http://osram.co.uk)

Osram has finally brought this affordably priced starter kit to the UK. The kit includes one colour bulb and the Gateway controller, but additional bulbs only cost £20-30 each, and Osram makes strip lights and garden lights, too.



### Philips Hue White And Colour Starter Kit £150

[meethue.com](http://meethue.com)

Philips makes a number of starter kits, but this kit includes three bulbs - which boast 16 million different colours - along with the all-important control Bridge. And it supports HomeKit too, for Siri voice controls.



### Veho Kasa Light Strip £50

[veho-world.com](http://veho-world.com)

A cheaper alternative to the Nanoleaf Aurora is Veho's three-metre long Light Strip. Its Bluetooth connectivity has limited range, but it's an easy way to mount coloured lights on your walls, and the Veho app lets you create colour presets.

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# Never lose a file again



MacBook Pro

Start your backup plan today to keep your data safe. Nate Drake explores all the different storage options for keeping your files secure

**L**osing precious files is absolutely heart-wrenching. But it's also totally avoidable. There are now a variety of ways to back up your data and keep your all-important data safe and sound. High-capacity external hard drives are available inexpensively online and from most high street stores. Huge leaps in available bandwidth also allow people to store more and more data in 'the cloud', synchronising local copies of their information over the internet.



Apple in particular have gone to great lengths to make it easy for users to keep their data safe. The built-in backup utility, Time Machine, can easily copy data regularly to external drives. And iCloud Drive now allows you to store files such as Documents and Photos online too.

Nevertheless, it usually takes a cataclysmic data loss, for people to start implementing a regular backup plan, by which time it's often extremely difficult to recover lost data. Take a moment to consider

the files already on your machine and how you would be impacted, and what you would do, if the data on it was lost.

In this guide, we explore a number of ways to back up your most precious information. Some can be done inexpensively while some are more costly. Each has their own advantages and disadvantages. We encourage you to read through these carefully and decide which is right for you. Above all, remember that you can never have too many backups!

# iCloud Drive

Store your most important data using iCloud

**W**hen a device is signed in to iCloud using your Apple ID, certain data, such as calendars and contacts, is kept in sync between the device and Apple's servers. This keeps the data consistent across all your devices. With the advent of iCloud Drive, you can store files online in a similar way. Your iCloud account comes with 5GB of free storage, which you can increase by paying a small monthly subscription (see 'iCloud Storage' opposite).

Once iCloud Drive is enabled, any files stored there are uploaded to Apple's

servers. In addition, you can manage your storage so that any files saved to your Desktop and Documents folders are also stored in iCloud. Certain iCloud-enabled apps, such as Pages and Numbers, will also automatically save documents to iCloud Drive unless you specifically tell them to save to your Mac's local storage. And you can use iCloud Photo Library to store the contents of the Photos app online.

If you want to use iCloud Drive, first head to System Preferences > iCloud and sign in with your Apple ID. Check to make sure iCloud Drive is ticked.

Follow the steps in the walkthrough below to optimise your storage.

One of the biggest misconceptions about enabling iCloud Drive is that it will automatically back up all of your data. This is most probably because iOS devices such as iPhones and iPads do indeed back up everything to iCloud if you enable that feature. If you want to be sure a file is saved to iCloud either use a supported app or move your data into the iCloud Drive folder in Finder.

## iCloud Photo Library

The Photos app's iCloud Photo Library feature is a way to store your pictures and videos online. Anything added to the library on your Mac (and other devices on which you enable the feature) is uploaded to the online repository in full quality. You can enable this feature in either Photos' or iCloud's prefs, and it provides two options for the quality of the versions kept on your Mac.

The first keeps them at full quality too, but inevitably this takes up more space. With Optimise Mac Storage



Some apps automatically save files to iCloud Drive. You can also move files there manually.

## HOW TO Make greater use of iCloud >



### 1 Docs and data

Go to System Preferences > iCloud and ensure iCloud Drive is ticked, then click Options. Click the checkbox next to Desktop & Documents Folders. Your existing folders are moved to iCloud Drive. Now when you save files to those locations, they're uploaded automatically.



### 2 Photos

Go to System Preferences > iCloud and ensure Photos is ticked, then click Options next to it. Make sure iCloud Photo Library is ticked. You can check the upload progress of existing pictures by opening Photos and picking Photos > Preferences, then clicking the iCloud tab.



### 3 Music

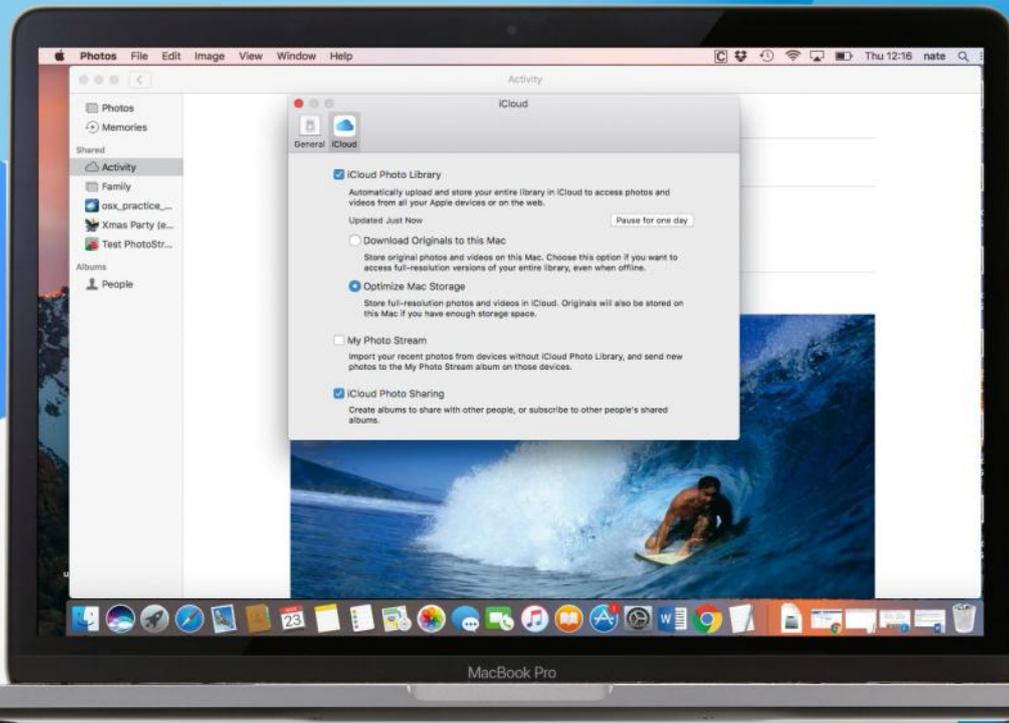
iCloud Music Library requires a sub to iTunes Match or Apple Music. In iTunes' Account menu, sign in using your Apple ID, then go to iTunes > Preferences > General and check iCloud Music Library is ticked. While it's syncing, the button left of the search bar shows its progress.

## BACKUP OPTIONS



### iCloud storage

Manage your available iCloud space



Click on the iCloud tab in Photos' preferences to check if your pictures are synced to iCloud Photo Library.

selected, if your Mac starts to run low on storage, Photos will reduce the quality of local copies so they are merely optimised for viewing on that device's screen. This saves on local storage, but also means you need to be connected to the internet to retrieve and edit the original files.

iCloud Photo Library is not enabled by default - follow the steps in the guide on the opposite page to start using it.

iCloud Photo Sharing in Photos' preferences enables you to share pics from your library with other people. This doesn't use additional iCloud storage.

Certain Mac apps will automatically save files to iCloud Drive if you are signed in to iCloud. These include the iWork suite - Pages, Keynote and Numbers. By default, when you create a new iWork document, it's saved to iCloud. This enables you to work on documents on any device that's connected to your iCloud account.

Not all apps incorporate this feature. To check which ones do, use the Manage feature mentioned in 'iCloud Storage' to the right. If an app isn't listed, you can save a file from any app to iCloud Drive anyway by changing its save location.

**Certain Mac apps, such as Pages, will automatically save to iCloud Drive**

You can also copy or move files to iCloud Drive from any folder, which makes them available on all your connected devices.

### iCloud Music Library

If you have an iTunes Match or Apple Music subscription, you can store all your music online and access it on other devices without syncing them with your Mac. This includes music that you didn't purchase from the iTunes Store, such as songs imported from a CD.

The online library can store up to 100,000 such tracks. If a track is available from the iTunes Store, Apple links your online library to that copy rather than uploads yours. Songs that are uploaded are in AAC format, compressed to 256Kbps. iCloud Music Library doesn't count towards your iCloud storage limit.

Using iCloud Music Library isn't a backup solution in itself, as not all tracks will necessarily upload; for instance, you can't store songs over 200MB in size in iCloud. Make sure to back up your Mac using something like Time Machine (see page 36) before enabling it.

As its name suggests, iCloud Music Library is not designed to store other kinds of media, such as videos. Films and TV shows bought from the iTunes Store can be downloaded again at any time if you've deleted them for space. You could put such files in an iCloud Drive folder, but being large they could take a while to upload. Consider a different backup method, such as to an external drive.

Every iCloud account comes with 5GB of storage for free. You can check the amount of space you have available by opening System Preferences and choosing iCloud. Your available space is displayed at the bottom of the window.

If you need more detailed information, click the Manage button at the bottom right. This will list individual apps which store data in iCloud, as well as backups of iOS devices and other documents and data. For iCloud-enabled apps, such as Pages, you can click the app's name in the left-hand pane and then on the Delete Documents and Data button to remove information specific to that app.

If you need more space, click Change Storage Plan at the top right. This will display your current storage plan and show the price of other plans, which go up to 2TB for £13.99 per month. Select a plan and click Next to change your subscription.



Click on any app in the iCloud Storage section to see how much space its data is taking up.



# Time Machine

Back up your files quickly and easily

## **T**ime Machine is the built-in backup utility of macOS.

When paired with an external drive, it automatically backs up every file on your Mac. Its backups are incremental, meaning that only files changed since Time Machine was last run are saved. This avoids unnecessary duplication of data on the external drive but also means your very first backup may take several hours as every file needs to be copied.

Space permitting, backups are run hourly, and these are then amalgamated into a daily backup which is stored for a month. Daily backups are then collected into weekly backups for the previous month. This is all done automatically for you, and backups are easy to navigate.

To get started, you'll need to have a dedicated drive to store your backups. The most inexpensive solution is buy an external USB hard drive. Make sure that the capacity of the external drive is at least equal to the Mac's own hard drive,

to be certain there's enough space. You can check this by clicking on the Apple at the top left of your screen, then About this Mac > Storage.

If you choose to use an external drive, there's no need to buy one specifically formatted for a Mac. The first time you connect it, macOS will ask if you wish to use it as a backup disk for Time Machine. If you agree to this, it will automatically be formatted. This will mean that any data already on the drive will be lost, which is why it's best to buy a new one.

Backups can only take place when the drive is physically connected to the Mac. If you are concerned this will be too inconvenient or you won't remember, you can choose to invest in an Apple Time Capsule, which connects to your router and acts as a Wi-Fi 'base station'. In other words, it generates its own wireless network, to which your Mac can connect. You can then use AirPort Utility (see below) to set up the Time Capsule.

The device has an internal hard drive (currently either 2TB or 3TB in size) to store your backups. Once this is set up, all backups are performed wirelessly in the background as you use your Mac, meaning you no longer have to worry about connecting cables. This is especially useful if you have more than one Mac, as they can all be backed up to the same Time Capsule. (The latest generation of AirPort Extreme, when you connect a USB drive to it, officially includes this capability as well.)

## A question of space

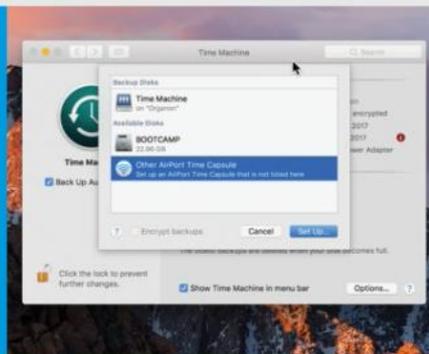
Time Machine is undoubtedly the simplest way to make sure all your Mac files are backed up. Despite storing files incrementally, eventually your backup drive will begin to run out of space.

## *AirPort Utility* Set up a Time Capsule

> If you decide to use an AirPort Time Capsule or AirPort Extreme to back up, setting it up is slightly different to using a directly-attached drive.

You'll need to use a network cable to connect your Time Capsule's WAN port (it resembles a circle of dots) to your router. You can now launch AirPort Utility, which is found in /Applications/Utilities. Your Time Capsule should appear in that app's window; simply click on it, then on Continue to run the setup process.

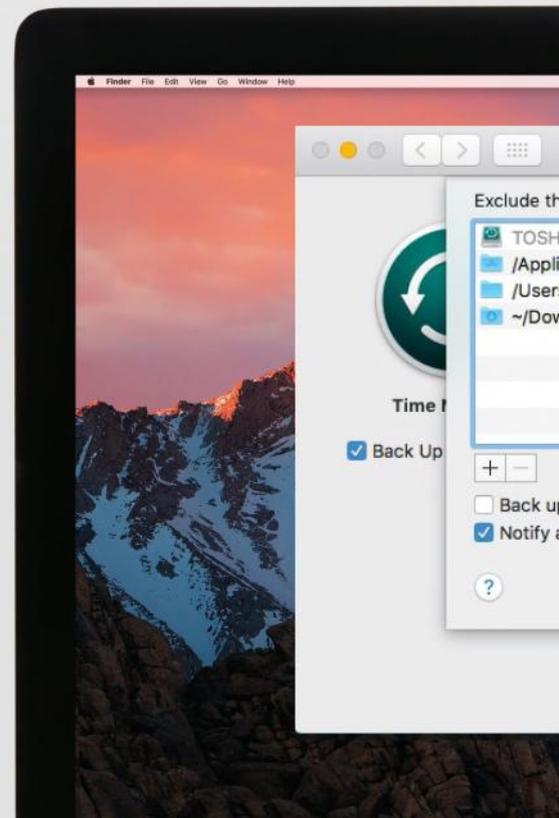
Your first step is to create a Wi-Fi network, or to connect the device to your existing one. Your Mac will need



A little-advertised feature of the latest model of AirPort Extreme is Time Machine support for a drive connected over USB.

to be connected to the same network as the Time Capsule in order for Time Machine to back up to it.

Once this is all done, go to System Preferences > Time Machine and click Select Disk. You'll be able to select your Time Capsule as the destination for your Mac's backups.



Time Machine handles this for you by deleting older backups in favour of newer ones, but you may still occasionally see an alert telling you there's not enough space for new backups.

The easiest solution to this is simply to connect a new hard drive and use this as a backup disk instead, preserving your old data. Alternatively, you can choose to exclude specific folders from your backups. Your Downloads folder, for instance, contains files that can often be redownloaded.

### Local snapshots

If you own a portable Mac, such as a MacBook Pro, Time Machine will save some backups to your Mac's own storage if it can't connect to their usual destination. This feature is enabled automatically when you set up Time Machine, and can only be disabled by switching off Time Machine altogether.

Your Mac deletes local snapshots if your drive has less than 20% free space.

## Time Machine is the simplest way to make sure your files are backed up

Otherwise it keeps one local snapshot every 24 hours and another weekly one, as space allows.

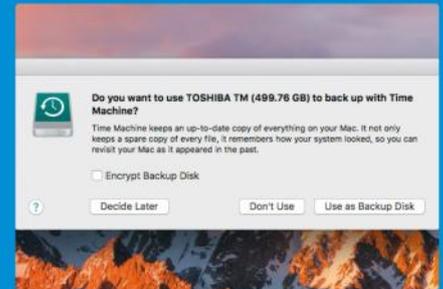
To view local snapshots make sure 'Show Time Machine in Menu Bar' is ticked in System Preferences > Time Machine, then click on the small Time Machine icon at the top of your screen, then Enter Time Machine. This allows you to look through your backups. Scroll through the timeline on the right-hand side. Any that are marked in bright red can be restored either from a local snapshot or from the backup drive itself right away, but dimmed red ones require you to connect the drive that contains those backups. Follow the steps at [support.apple.com/kb/PH25540](http://support.apple.com/kb/PH25540) to restore specific files.

### Time travellers

Time Machine supports backing up to multiple disks. Simply go to System Preferences > Time Machine and select a new disk. If you are already using a backup drive, you'll be given the option to keep using both disks.

This is especially useful if you move your Mac between home and work as you can store disks at different locations. Backups are still incremental in that any changes made since the last backup to a specific disk will be saved to it. If you enter Time Machine, you'll see the history for all your backup disks.

## Time Machine with an external hard drive



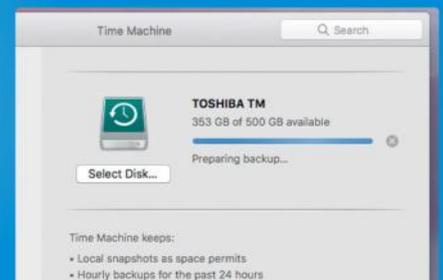
### 1 Connect a drive

Ensure your external drive's capacity is at least equal to your Mac's internal drive, and that any data on it is backed up elsewhere. When first connected to your Mac, Time Machine asks if it should use the drive. Click Use as Backup Disk.



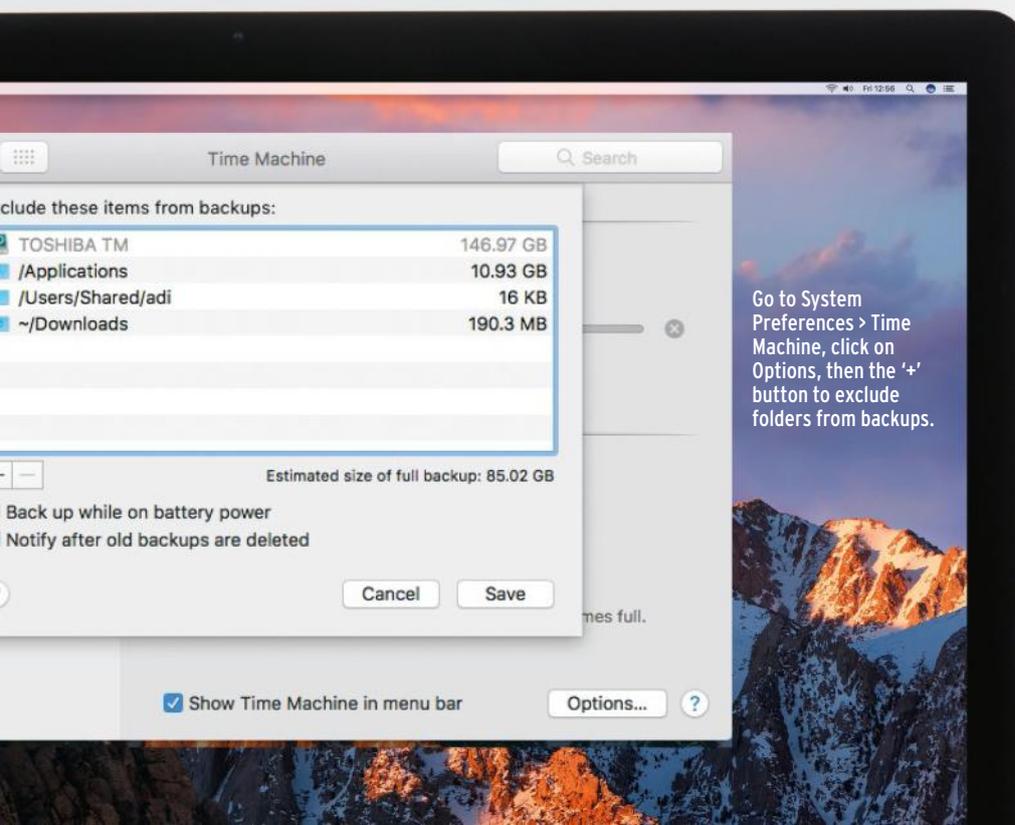
### 2 Show Time Machine

Time Machine's preferences will open and the drive will be selected. You will see a countdown to the next backup. Turn on 'Show Time Machine in Menu Bar' for an easier way to check backups are running, and to review them.



### 3 Your first backup

On its first run, Time Machine takes some time to collate everything it needs. This is because it makes a copy of every file that's on your Mac. Leave the drive connected; you can use your Mac as normal, but don't shut down or restart it.



Go to System Preferences > Time Machine, click on Options, then the '+' button to exclude folders from backups.

# Backup alternatives

Explore popular alternatives to Time Machine

**T**ime Machine is such a useful and easy to use backup tool, it's hard to imagine why you'd ever need another application. However, it can be rather inflexible. What if, for instance, you want to run backups only once a week? Time Machine also cannot make an exact copy of the Recovery partition on your drive, which you will need to restore your Mac in case of a serious error.

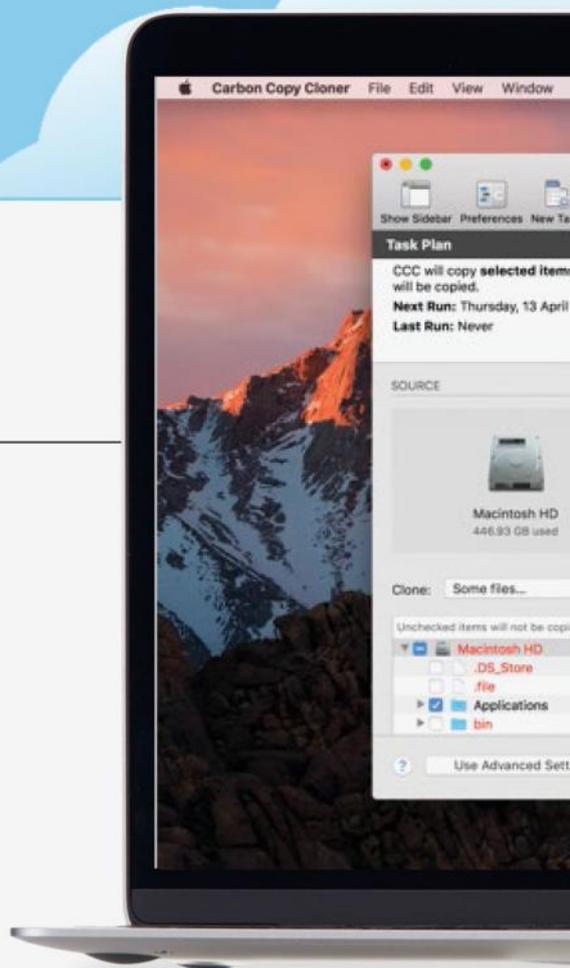
In this section, we explore popular alternatives to Time Machine which provide greater flexibility in keeping your data safe. Carbon Copy Cloner (bombich.com) is a good choice for individuals who

want to copy files on a single computer to a backup drive. If you have multiple computers and need a more powerful solution, we also look at Retrospect (retrospect.com), the server component of which runs on one Mac and backs up other Macs over the local network to its storage or the cloud. This is especially useful for small businesses.

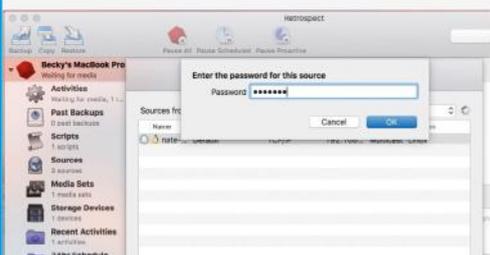
## CCC Solutions

Carbon Copy Cloner (CCC) is a powerful backup tool and is simple to use. It's basic layout involves choosing a source volume to back up, a destination volume such as an external hard drive, and then scheduling a backup.

Unlike Time Machine, CCC can create a clone of your system that you can use to start up your Mac. It also offers more flexibility about when you run backups. By default, CCC also saves a disk image of the Recovery partition, which you can restore if necessary to fix startup issues with the Mac. Another handy feature is that you can choose only to back up certain files or folders.



Time Machine does allow you to exclude folders from its backups, but the process can be very laborious if you only want to back up one or two folders. CCC can also copy files to drives which aren't formatted specifically for Macs, though for best results you should use Disk Utility, located in /Applications/Utilities, to erase backup drives to the Mac OS Extended (Journaled) format.

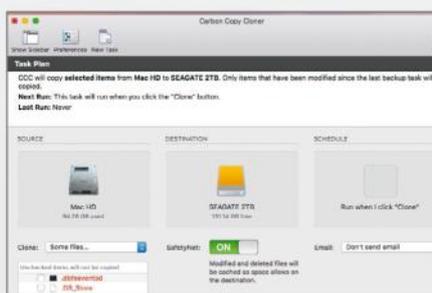


Click File > New > New Retrospect Item, then choose the Clients tab to add users to your backup server.

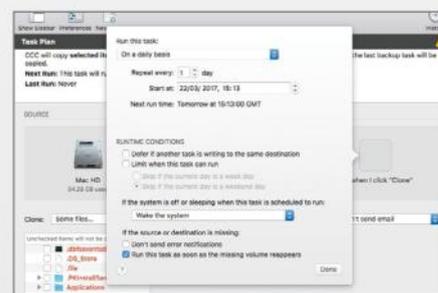
## HOW TO Run Carbon Copy Cloner >



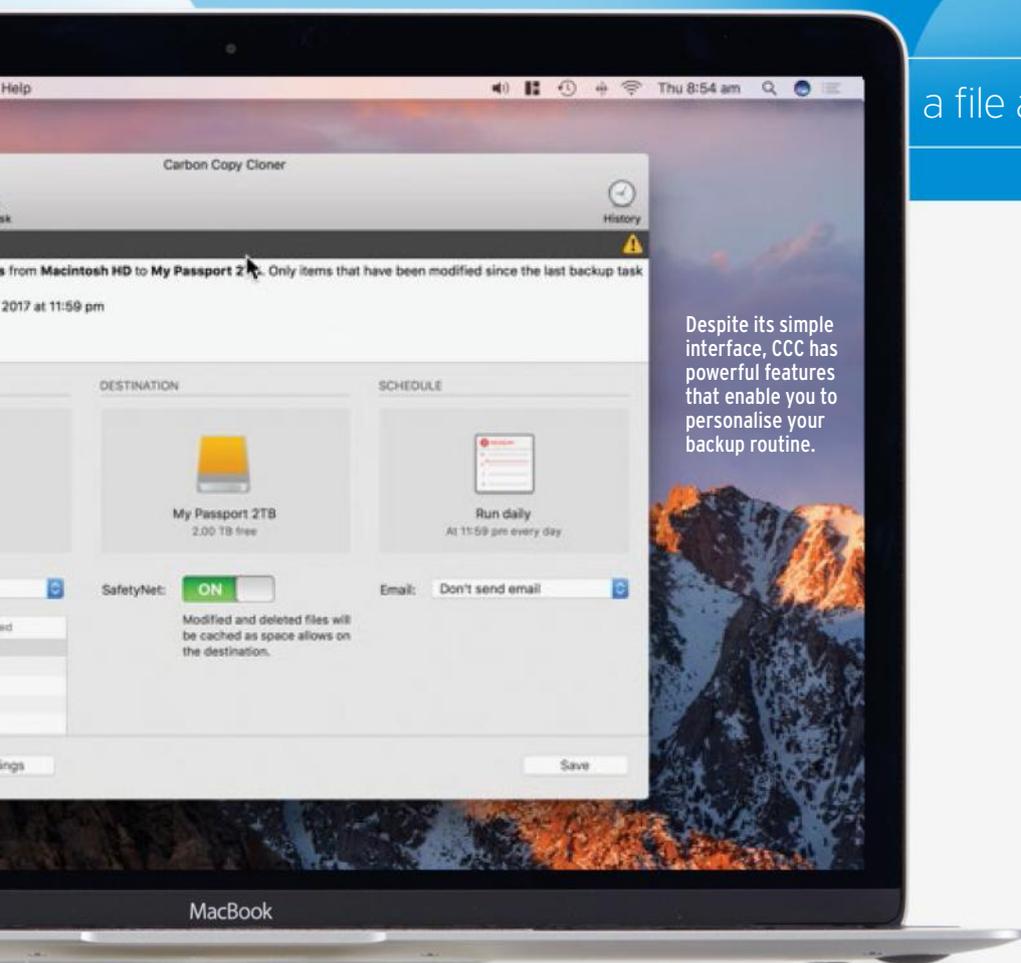
**1** Download a trial  
Download Carbon Copy Cloner 4 from [bombich.com/download](http://bombich.com/download) and drag the unzipped app from Downloads to the Applications folder, then open it. Confirm that you want to launch it by clicking Open and then Agree. Click Trial.



**2** Select the drive  
Click the square under Source to pick a drive to back up. Set Clone to Some Files if you want to be selective; clear unwanted items' checkboxes. Red items also won't be backed up. Under Destination, set where to store backups.



**3** Clone options  
By default, backups run only when you click Clone. To change this, click the square under Schedule and set timings in the pop-up. When ready, click Clone. A message will confirm a successful backup. Click History to check on several.



Despite its simple interface, CCC has powerful features that enable you to personalise your backup routine.

## HOW TO Set up a Retrospect server >



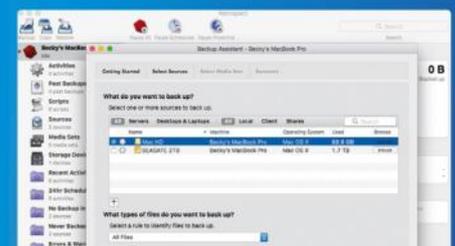
### 1 Install Retrospect

Go to [retrospect.com/products/mac](https://retrospect.com/products/mac). Click Try and fill in your details to receive a trial licence code. Choose 'I want to Install Retrospect on Mac' and say you have one server, then click Download. Open the disk image this downloads and drag Retrospect from it to /Applications.



### 2 Backup Assistant

In Retrospect, choose Install Server Locally. Click Continue then Agree, and then Install. Enter your password, then Close. Now enter the licence code you received. Click Not Now to dismiss the registration message, -then Backup at the top left to start the Backup Assistant.



### 3 Set a backup routine

Select your source drive. Click Browse next to a drive name to select which folders to back up. Click the '+' to add a Media Set (the backup medium). Click Choose to set where it's saved, such as a folder on an external drive. Click Continue for a summary, then Start Now.

There's a 30-day trial of CCC, after which it's £33.25 for the full version.

## The mighty Retrospect

While a Time Capsule can be used to back up several devices at once, it requires that all devices are connected to the same network, and it's relatively difficult to expand its available storage.

Retrospect is a powerful tool which can run as a backup server on one Mac. Both the server itself and any connected 'client' devices can then be backed up to another medium, such as an external hard drive. You can get a 45-day trial of the software from [retrospect.com](https://retrospect.com), and there are various paid versions that differ depending on how many clients and servers you need. Follow the steps in the tutorial below to set up a basic server and back up files locally.

To connect other computers to the server, go to Retrospect > Preferences, then choose the Console tab. From there you can export the client installer for Windows, Mac, or Linux devices to a USB flash drive, for instance.

Retrospect's website offers specific instructions for installing the client on a number of computers, along with scheduling backups over the network. When the client software is installed,

each user chooses a password to protect their backups. Ask each person to enter their password at the server, so their device can be backed up. If your server and clients are connected to the same local network, client computers should appear automatically but you may have to enter the IP address and password for the client Retrospect program manually.

Although CCC and Retrospect are popular and useful alternative backup tools, there are many more available. SuperDuper is a tried and tested backup tool. You can get a free version from [shirt-pocket.com/SuperDuper](https://shirt-pocket.com/SuperDuper) and use its basic backup features indefinitely, or pay £24.63 for more advanced features, such as scheduling and sandboxing. Like CCC, SuperDuper supports creating exact clones that you can use to start up your Mac, but it can also perform simpler backups of files and folders. As with Time Machine and CCC, its backups are cumulative, so only new data from one to the next is stored, saving on space.

Remember, you can employ multiple backups - any of the aforementioned software can be used to make a copy of a Time Machine drive, for instance. Time Machine will also run happily alongside these options. We recommend using a dedicated drive for each one, though.

# Cloud storage

Store your vital files in the cloud

**W**hile we've established the many benefits of iCloud Drive, it may not be quite right for you. Here, we explore alternative cloud storage services, such as Dropbox.

Cloud storage options like Dropbox usually create a folder that you access in Finder, where you can store any content you like. Any files you place in the folder are synced to the provider's servers. Any content outside the folder, such as your Pictures folder, will not be synced. For some cloud services, there is a

workaround that enables you to sync other folders, though (see the box about MacDropAny on the opposite page).

If you choose to store your files in the cloud, remember that your files will exist both in the folder on your computer and online on the storage provider's servers. This means that if you have 3GB of family photos in your Dropbox folder, for example, they will still take up 3GB of space on your hard drive. If you want to save space by storing data only online, consider using iCloud Drive instead.

Although there are other cloud

storage providers out there, we have chosen Dropbox for the tutorial below as it has a good reputation.

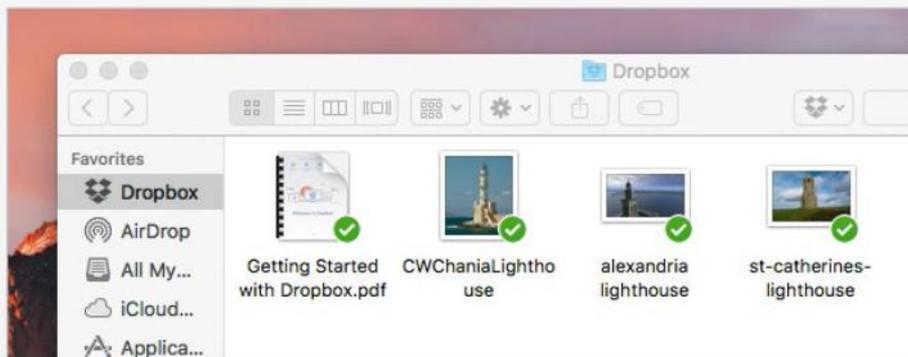
## Tiers of a cloud

Most storage providers offer a free tier of usage. Dropbox offers 2GB by default, but you can increase this by up to 16GB through referrals and linking your social media accounts. If you have a Google Account you can also make use of Google Drive's 15GB free allowance. This probably won't be enough to store all your documents and data, so you may need to pay for more capacity.

Although there are other cloud storage providers out there, we have chosen Dropbox for the walkthrough below as it has a good reputation.

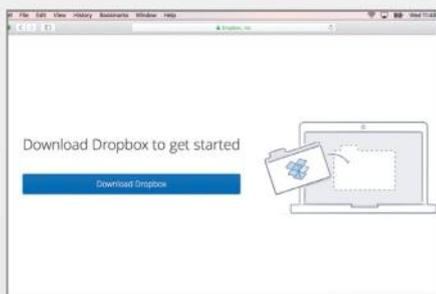
Dropbox is also ideal for working with larger files such as videos, as it can upload only changes made to a file rather than try to sync it from scratch.

If you do choose Dropbox, each user of your Mac should register their own Dropbox account to avoid duplicates of files being synced to multiple accounts



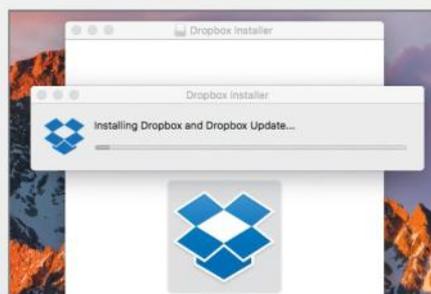
Any files or folders placed in your Dropbox folder will show a green tick when synced with Dropbox.

## Getting started with Dropbox >



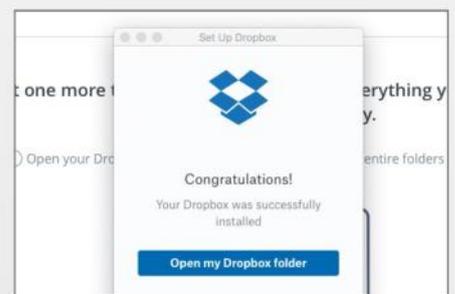
### 1 Sign up

Go to [dropbox.com](https://dropbox.com). Use the fields to enter your full name, email address and choose a strong password. Agree to the terms and conditions, click on Sign Up for Free, then on Download Dropbox. The Dropbox installer will start to download.



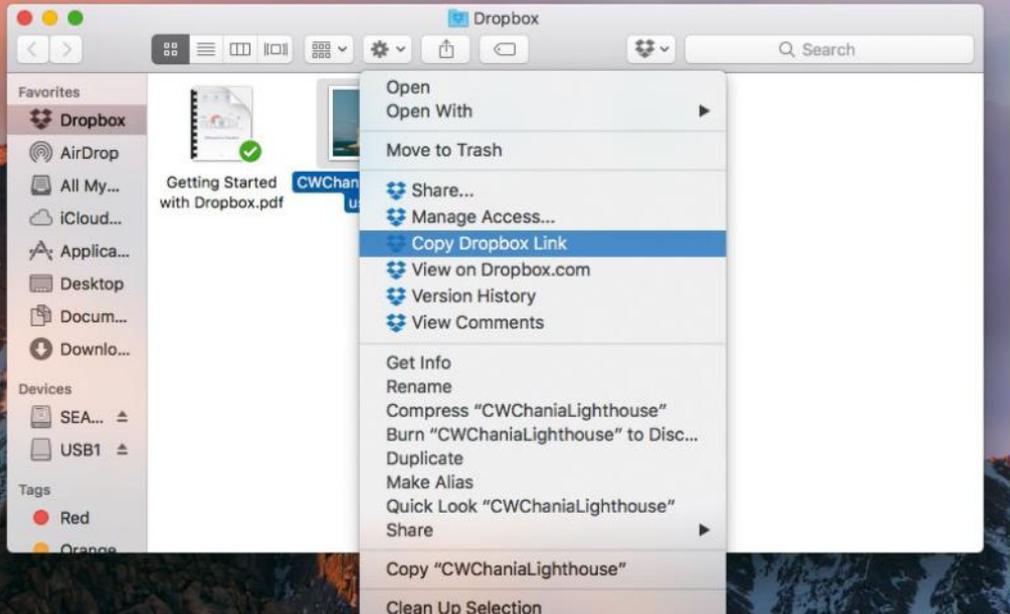
### 2 Welcome

Double-click on the disk image to open it, then on the Dropbox icon. You will be asked if you're sure you want to proceed. Click Open. Once complete, you'll see a welcome message. Click Next, then Next again. Finally, click Finish.



### 3 Access

A pop-up will appear asking you to give Dropbox access to accessibility features. Click Give Access to Dropbox. Finder will now open and show your Dropbox folder. Read through the PDF that's in there for further information.



Hold **⌘** and click on any file in your Dropbox folder to view the sharing options that are available.

on your Mac and wasting space. See our 'Getting started' guide opposite.

## Sharing is caring

Once you have set up Dropbox on your Mac, you can start placing files inside its folder. A green tick will appear next to each file or folder as it is successfully uploaded to the cloud. Once this is done, you can **⌘**-click on any file or folder to share a link to the copy on Dropbox. You can send this link to other people to download a file/access a folder, even if they don't have a Dropbox account.

You can also choose to share a file or folder by pointing your web browser at [dropbox.com](https://dropbox.com) and signing in there. This enables you to customise the way you share files and folders, such as setting read-only access. You will need a Dropbox Pro subscription for more advanced features such as passwords and automatic link expiration.

Although using cloud storage is extremely convenient, your online data

could be at risk of being seized by hackers. You can massively decrease the chance of hackers taking control of your Dropbox account by enabling two-step verification. This simply means that the first time you use a device to access your Dropbox account, you'll need to provide a six-digit code sent to a known device as well as your password. Visit [bit.ly/2ov6E5r](https://bit.ly/2ov6E5r) for more info.

## A word on security

If you are concerned about your data being subpoenaed or subjected to a warrantless search, you can encrypt it before placing it in the cloud. One of the easiest ways to do this is to use Disk Utility which is provided free with macOS, to create an encrypted disk image in which to store files. Without the correct password, no one else will be able to access the data in the image. See [support.apple.com/kb/PH22247](https://support.apple.com/kb/PH22247) for steps to achieve this. Make sure the image is no larger than your cloud storage account allows. For instance, Dropbox allows you 2GB for free, so the image needs to be no bigger than the storage you are willing to pay for.

If you feel your data shouldn't be held by any large corporation in the first place, turn to the next page to explore other backup methods, such as setting up your own server to sync files securely.

**Each user of the computer should have their own account**



## MacDropAny

Sync any folder with the cloud for free

By default, cloud services such as Dropbox will only sync files you put in their dedicated folder on your Mac. Some folders, such as your Desktop or Pictures, cannot be moved there. You can get around this issue with MacDropAny, a tool which creates a 'symbolic link' between these kinds of folders. Visit [zibity.com/macdrop-any.html](https://zibity.com/macdrop-any.html) and click Download MacDropAny to get started.

Move the downloaded app to your Mac's Applications folder, then open it. In MacDropAny's window, choose the folder you want to sync, such as your Pictures folder; click Choose a Folder, navigate to and select the one to sync, then click on Choose Folder.

Next, click on the menu next to 'Choose a cloud storage service to sync with' and choose your provider. Click Sync at the bottom right to continue. You should now see a 'Success!' message. Click the Quit MacDropAny button to close it. Any files you place in the folder you just selected will now be uploaded automatically to your cloud storage.



MacDropAny enables you to sync folders with cloud storage without wholly relocating them.

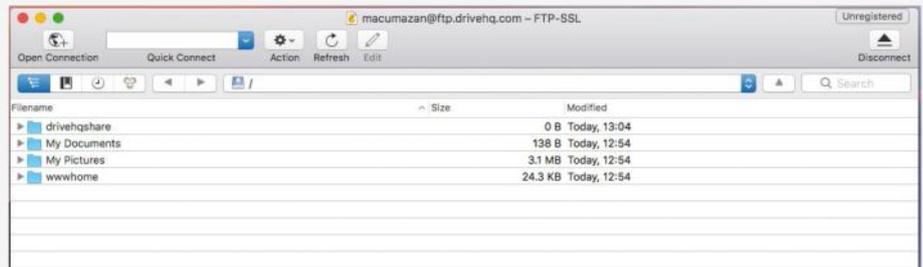
# More online backups

Explore other ways to store your data safely online

**W**hile dedicated cloud storage services such as Dropbox and iCloud Drive can be useful, they can be expensive for larger amounts of data, and it can sometimes be difficult to back up only certain kinds of files or folders. You may also have some privacy concerns about trusting your data to large corporations.

If any of these are true for you, this section focuses on other ways of backing up your data online, such as FTP/SSH, to a server or using specialised software such as Resilio Sync and NextCloud.

If you have a dedicated server, these options can offer much greater speed and security than subscription-based cloud services. If you do feel comfortable trusting your data is safe and simply want to save money, Amazon Web Services allows you to upload and transfer data from as little as two pence per GB if you set up your own server. There's also a dedicated cloud storage service (Amazon S3) if you want a ready-made solution.



If you have to manage multiple folders, it's advisable to use an FTP client like Cyberduck.

## Fun with FTP

The FTP protocol is an extremely simple way to upload files for later retrieval. Online services such as DriveHQ offer free tiers of storage and registration is very simple. Once you receive your FTP login details, you can set up a dedicated shortcut in Finder, so that you can copy, paste and edit files to the server as you would in any folder on your Mac. Any files sent to that shortcut will be uploaded to the remote directory on the FTP server.

To get started, simply open Finder and choose Go > Connect to Server, then enter your FTP account details.

For security reasons, find a provider which supports secure FTP, such as SFTP or FTPS. The type supported will depend on your FTP Provider.

If you are trying to upload multiple files and/or folders, Finder may seem hard to use. Consider installing an FTP

**The FTP protocol is a simple way to upload files for later retrieval**

## Sync files with Rsync >

### 1 Accept the fingerprint

Open Terminal, which you'll find in /Applications/Utilities. To connect to your SSH server by entering: `ssh yourusername@yourserver.com`, substituting your user and server name. If this is your first time connecting, you'll need to type `yes` to accept the key fingerprint. Enter your password and press `↵`. Create a directory to store your backups: type `mkdir backup` and press `↵`.

### 2 Command line

In Terminal's menu bar, click Shell > New Window. You'll now copy any files or folders over an SSH connection to the remote server. Run the command `rsync`



-e "ssh" -rca --delete-after <local-folder> yourusername@yourserver.com:backup to do this, substituting your user and server names and the path to a folder on your Mac into the appropriate spots. For example: `rsync -e "ssh" -rca --delete-after ~/Documents/macformat@ca3.shell.xshellz.com:backup`. When prompted, re-enter your password.

### 3 Launch and back up

Enter `nano backup.sh` and paste in the `rsync` command you just ran. Press `ctrl+X` to exit, followed by `Y` and `↵`. Enter `sudo chmod ug+x backup.sh` to make the file you just created executable; `ctrl-click` the file in Finder and choose Open With > Other > Utilities > Terminal. You can now back up with a double-click.

client such as Cyberduck ([cyberduck.io](http://cyberduck.io)) to connect to your server. An advantage of doing things this way is that if a connection is interrupted, a dedicated client can resume from where it left off.

## Secure SSH

If you have access to a server, you can also use SSH (Secure Shell) to connect and upload files. More modern servers use state-of-the-art encryption, so you can be sure your data is uploaded safely. (FTP has a variety of protocols, not all of which are safe to use.)

If you decide to go down the SSH route, you will need to use macOS's Terminal app to connect to your remote server and upload files. The good news is that the commands are very easy to memorise. If you're working with large files or folders, you can use the command-line utility 'rsync' to upload over SSH. This will make sure that instead of being uploaded from scratch, only changes to files will be saved to your server. See 'Sync with Rsync' opposite to connect via SSH and sync your files this way.

## Sync files via BitTorrent

If setting up a remote server doesn't appeal to you, you can still sync files between your various devices using Resilio Sync ([resilio.com](http://resilio.com)). This handy tool, which is free for personal use, uses the BitTorrent protocol to make sure that you have the same version of a file or

The NextCloud Box can be used with a Raspberry Pi to automatically sync files from devices on your local network.



folder on every device you own. There are even mobile versions of the app.

BitTorrent is extremely efficient compared to traditional methods for transferring data and, as information is transferred from device to device rather than via the cloud, it can be much faster.

Your data can be synced over your home network as easily as it can over the internet, so you can use a home server. With the paid-for Pro version of Resilio Sync, you can set permissions for individual files too.

See 'How to use Resilio' to the right for help with getting started.

## Your own Cloud

If you have a spare computer in your home or office to use as a server, consider setting up your own cloud storage service using free software, such as NextCloud ([nextcloud.com](http://nextcloud.com)). NextCloud offers similar functionality to Dropbox in that you can connect to a server and sync your files automatically - the main difference is that you remain in control of your files. The software itself is free and open source, so you don't have to worry as much about security bugs. Your storage capacity is limited only by the size of the drive already in your server.

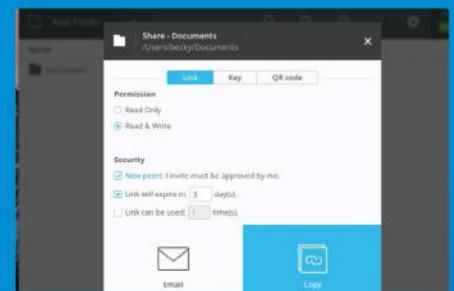
Setting up your own cloud storage service can be tricky. NextCloud has tried to help by selling the NextCloud Box ([nextcloud.com/box](http://nextcloud.com/box)), which can be combined with a Raspberry Pi 2 to create a preconfigured NextCloud server. By default, it will only work on your home network, but you can configure your router to allow access from outside if you prefer.

## HOW TO Use Resilio >



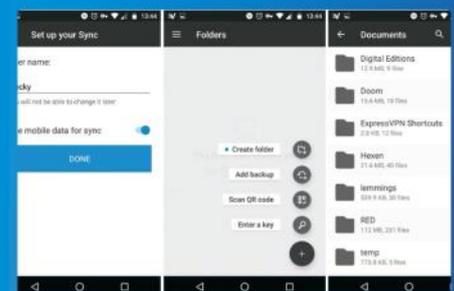
### 1 Download and launch

Go to [resilio.com/platforms/desktop](http://resilio.com/platforms/desktop) and click Free Download. The disk image should mount automatically; drag the app to the Applications folder, then double-click to open it. You'll need to choose a username. Note: you can't change this.



### 2 Share the link

In Resilio Sync's window, click Add Folder, select the folder that you want to sync to the cloud, and then click Open. Now share this folder to allow it to be synced. You can choose to share a link, key or QR code.



### 3 Code or key

To begin syncing, install the desktop or mobile app on a different device. In the desktop app, click the arrow next to Add Folder, then click 'Enter a Key or Link' to link to the folder. On a mobile device, you can scan a QR code or enter a key.

# RAID drives

Combine drives to keep your data safe

**R**AID (Redundant Arrays of Independent Disks) offers a way to keep your data safe through combining multiple drives. Although RAID isn't intended to be a backup solution in itself, keeping multiple copies of your data across various hard drives means that your information is safe if any one drive fails.

In this section, we'll explore the various types of RAID setup, as well as how to use macOS's Disk Utility to set up a RAID array of your own using regular external drives.

## RAID levels

RAID can be set up in several ways, known as RAID levels. When it comes to making sure your data is safe, the best kind is mirrored (known as RAID 1). At its very simplest, this involves two disks which mirror the contents of one another exactly, as data is written. This is a little different to backup facilities such as Time Machine, which perform

scheduled backups at certain times of day. A RAID setup has an advantage over cloud-based storage services as it can mirror your drive exactly without requiring an internet connection.

The simplest way to get started is to buy an external RAID drive, such as those available on the online Apple Store. Custom-built RAID devices often come with a specialist RAID controller chip, which will generally offer the very best performance, as a separate computer is essentially

running the RAID itself, freeing up resources on your Mac. This can be expensive, however, and is usually unnecessary for a home or small business. The alternative is to set up and use a software-based RAID array that's managed by macOS. (See the walkthrough below.)

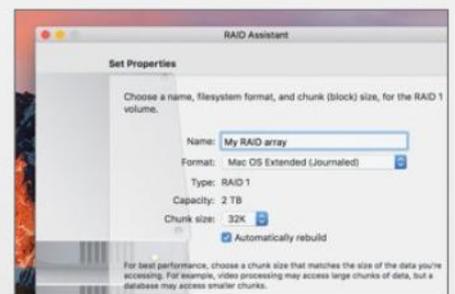
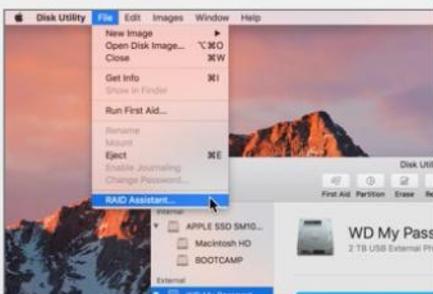
In order to get started, you'll need two or more hard drives to connect to your Mac. In a mirrored setup, data is copied exactly, bit for bit, so your RAID array's capacity will only be as large as the smallest disk in it. Check the data access speeds for all disks carefully too, as the read/write speeds of your array will also be determined by its slowest disk.

There's no hard limit on the number



A RAID setup is composed of multiple disks, but you'll see it as a single one in Finder.

## Set up a software RAID >



**1** External drive setup  
Connect two or more external drives to your Mac. There's no need to format them but make sure any data already on the drives is backed up. Open Disk Utility (it's in /Applications/Utilities), and then choose File > RAID Assistant.

**2** Select storage  
Select Mirrored, then click Next. Select devices to include in the array; the disks will be listed along with partitions on them. With more than two present, one can be a spare. Others (RAID slices) automatically mirror one another.

**3** Name and size  
Name the array, and set its format to Mac OS Extended (Journaled). The array's capacity will be the same as its smallest disk. Keep Automatically Rebuild checked, and a 32K chunk size unless you work with very large files. Click Create.

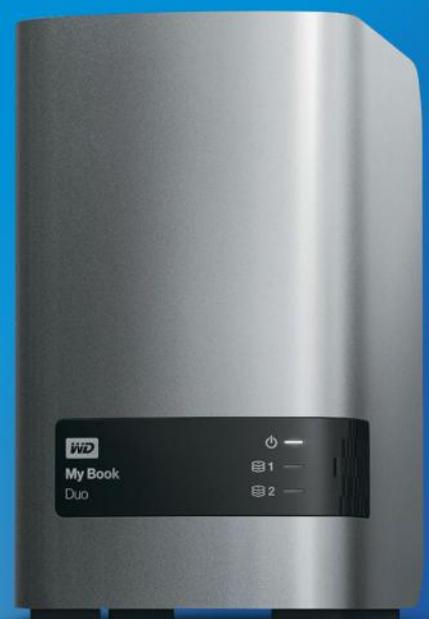
## Choosing a RAID device

Features to consider when choosing a drive

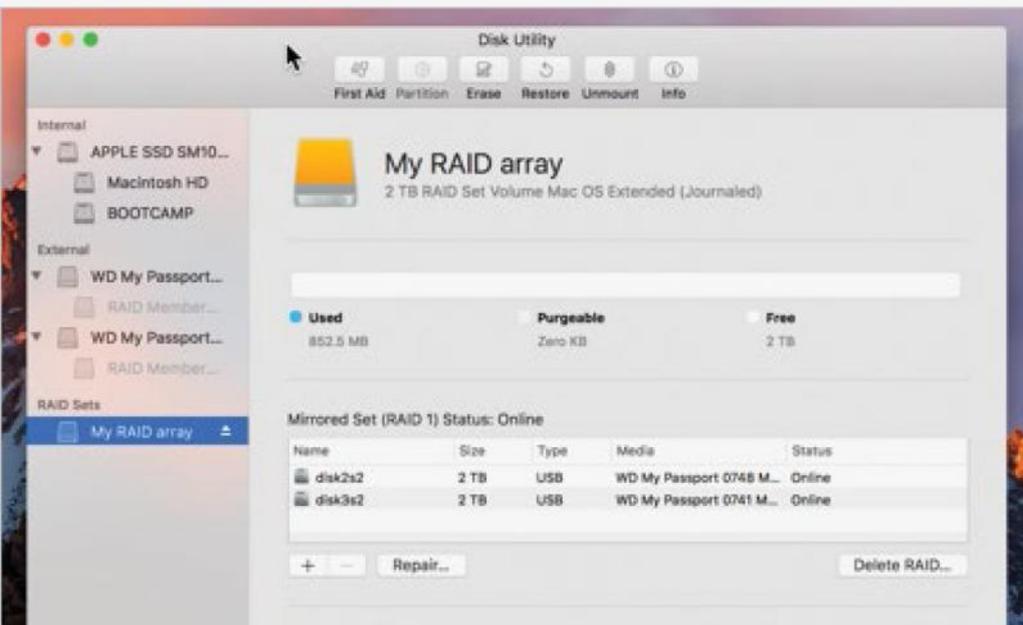
When choosing RAID storage, ideally find a drive which supports connecting via Thunderbolt as this will make for much faster data access speeds. Most modern RAID drives support both RAID 0 (striping) and RAID 1 (mirroring), but check carefully with the manufacturer to be sure the device supports the latter to keep your data safe.

RAID devices usually pack multiple disks into one enclosure, as is the case with the WD 4TB My Book Thunderbolt Duo. Check the product specs to see how many physical disks are inside.

If you don't want to trust your data to a single array, you can create a virtual RAID drive using the hardware RAID device and another external drive. Simply follow the steps in 'Set up your software RAID'. Bear in mind that this will reduce the overall performance of your array but can be useful for making an off-site backup of your data.



For superior performance, make sure your RAID device supports Thunderbolt connections and mirroring (RAID 1).



You can review your software-based RAID setup and check the health of its constituent parts in Disk Utility.

or type of disks you can use but try to avoid using several from the same manufacturer in case they both have the same design flaw. Some RAID devices will only accept replacement disks from their manufacturer. Check with the manufacturer to find out which specific models of disk are supported.

If you choose to use Disk Utility to create a mirrored RAID array of two disks, each one is a RAID slice; content is written exactly the same, in real time, to both disks. If you set up a mirrored array that contains more than two disks, you can choose to set up one or more of the extras as a RAID spare.

A RAID spare exists as a kind of backup drive. Content isn't automatically written to the spare when you use your array, but if one of the RAID slices fails, the array's data is written to one of the spares to take over from the failed slice.

When setting up your RAID array, you'll be asked to set its chunk size. In a RAID setup, data is broken down into

**In a mirrored setup, data is copied exactly, bit for bit**

pieces and written across two or more disks. The chunk size allows you to set the size of those pieces.

Generally speaking, if you're not using your Mac for working with very large files, such as for video editing, it's safe to choose the default chunk size in Disk Utility, which is 32K.

### Seeing RAID

Once your RAID setup is complete, you'll notice that Disk Utility and Finder will see the array as one drive. This means, for instance, that you can configure Time Machine to use it for backups.

You can also run the RAID Assistant as many times as you wish, so feel free to add more drives to your setup and/or replace them as time goes on. Most modern solid-state drives will display a warning as they near their end of life, if you open Disk Utility and use the First Aid feature.

Remember that although you are storing data across multiple drives, they will most likely all be in the same place. This leaves them vulnerable to damage or theft. Try keep at least one off-site backup of your data. You might create this by using software such as Carbon Copy Cloner to copy the contents of your RAID array to a separate external hard disk, and you can then store this somewhere else that's secure.

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What's inside

48-50

### RECORD YOUR FACETIME CALLS

> Record calls from your Mac with Audio Hijack

51

### SET UP NIGHT SHIFT

> Make your Mac display easier on the eye

52-53

### iOS 10.3 IS HERE!

> Discover the new features in iOS

54-55

### PLAN HOME LAYOUTS

> Redesign your home using Concepts

56-57

### ORGANISE YOUR CALENDAR

> Use Fantastical 2 to get on top of your schedule

58-59

### KEEP DAILY TASKS IN CHECK

> Sort out your tasks with the help of Wunderlist

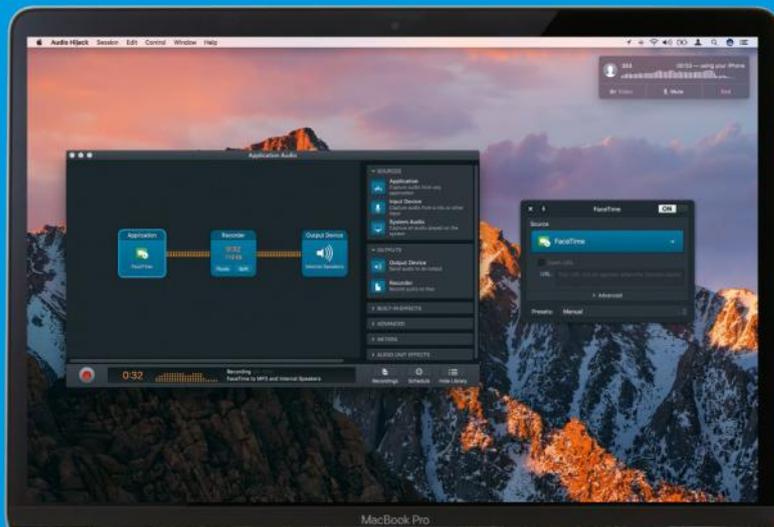
# APPLE SKILLS

EDITED BY **JO MEMBERY** >



**NEW IDEAS**

Your in-depth guide to getting more from your Apple kit



**RECORD FACETIME CALLS**  
p48

## > Understand iOS gestures

> A *tap* is a brief contact of (usually) one finger on your device's screen.

> To *drag* is to move a finger across the screen to scroll or pan around content.

> *Swipe* means move one or more fingers across an item or the screen, then let go.

> A *flick* is like swiping, but it's quicker, and is often used to scroll content more quickly.

> *Pinch* means move two fingers together or apart, usually to zoom in or out.

> *Touch and hold* means lightly rest your finger on an item and wait for a reaction.

## > Master Mac keyboard shortcuts

> When you see a shortcut like **⌘+⇧+C**, hold all but the last key, then press that one.

> **⌘** is the Command key, which is also labelled *cmd*.

> **⇧** means the Option key, labelled *alt* or *opt*.

> **ctrl** means the Control key, labelled *ctrl*, and shown as **^** in shortcuts in the menu bar.

> **⇧** is the Shift key, which is typically just labelled *shift*.

> **⌫** means the Delete key, which deletes to the left of the

insertion point. Press **⌘+⇧+⌫** to delete to the right.

> **⇧+⌵** is the Tab key, which shifts the focus between *some* controls in windows and web forms. Turn on Full Keyboard Access in System Preferences to jump between *all* controls.

# Record your FaceTime calls

Record interviews, voicemails and other calls with Audio Hijack

**IT WILL TAKE**

> 30 minutes

**YOU WILL LEARN**

> How to record audio on your Mac

**YOU'LL NEED**

> OS X 10.9 or later, Audio Hijack



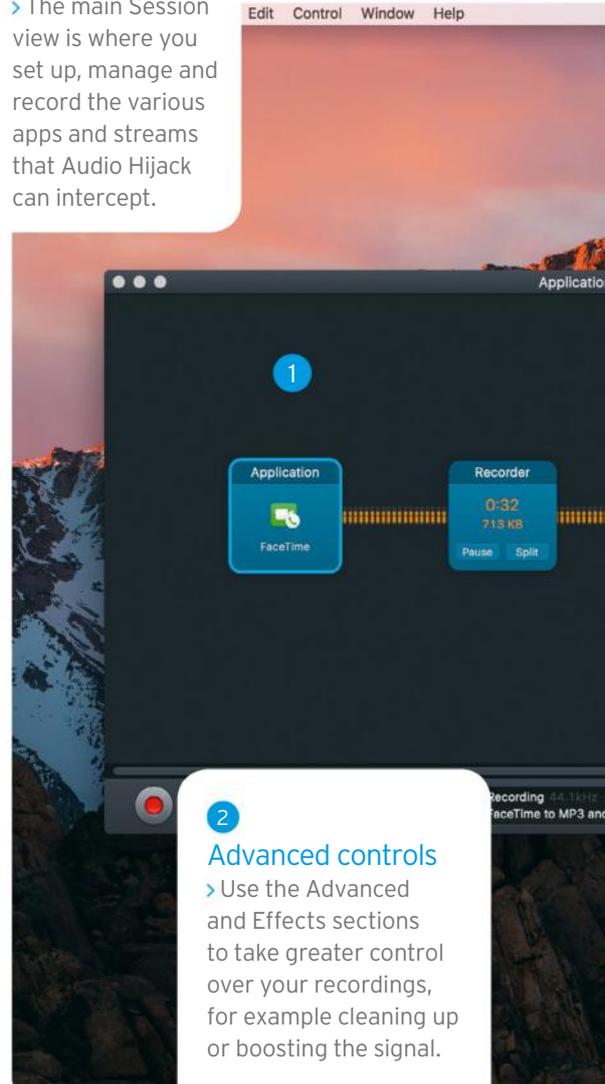
Thanks to the clever CoreAudio system that Mac OS X uses to manage the handling and routing of sound inside your Mac,

applications like the excellent Audio Hijack from Rogue Amoeba are able to intercept and record almost any kind of sound. Think of it as introducing a recording device between the source of the sound - an application - and the destination, which is your Mac's speakers or your headphones.

Because it's done digitally there is no loss of quality. Plus, you can encode audio as it is recorded, so even long recordings won't use up much space. The most obvious use is to record interviews via FaceTime on your Mac, either from your phone or as video or FaceTime audio calls. You can use it with Skype too - just remember that you need to inform the person you are recording before you start! **Hollin Jones**

**1 Session view**

> The main Session view is where you set up, manage and record the various apps and streams that Audio Hijack can intercept.



**2 Advanced controls**

> Use the Advanced and Effects sections to take greater control over your recordings, for example cleaning up or boosting the signal.

## HOW TO Set up a session with Audio Hijack >



**1 Open Audio Hijack**

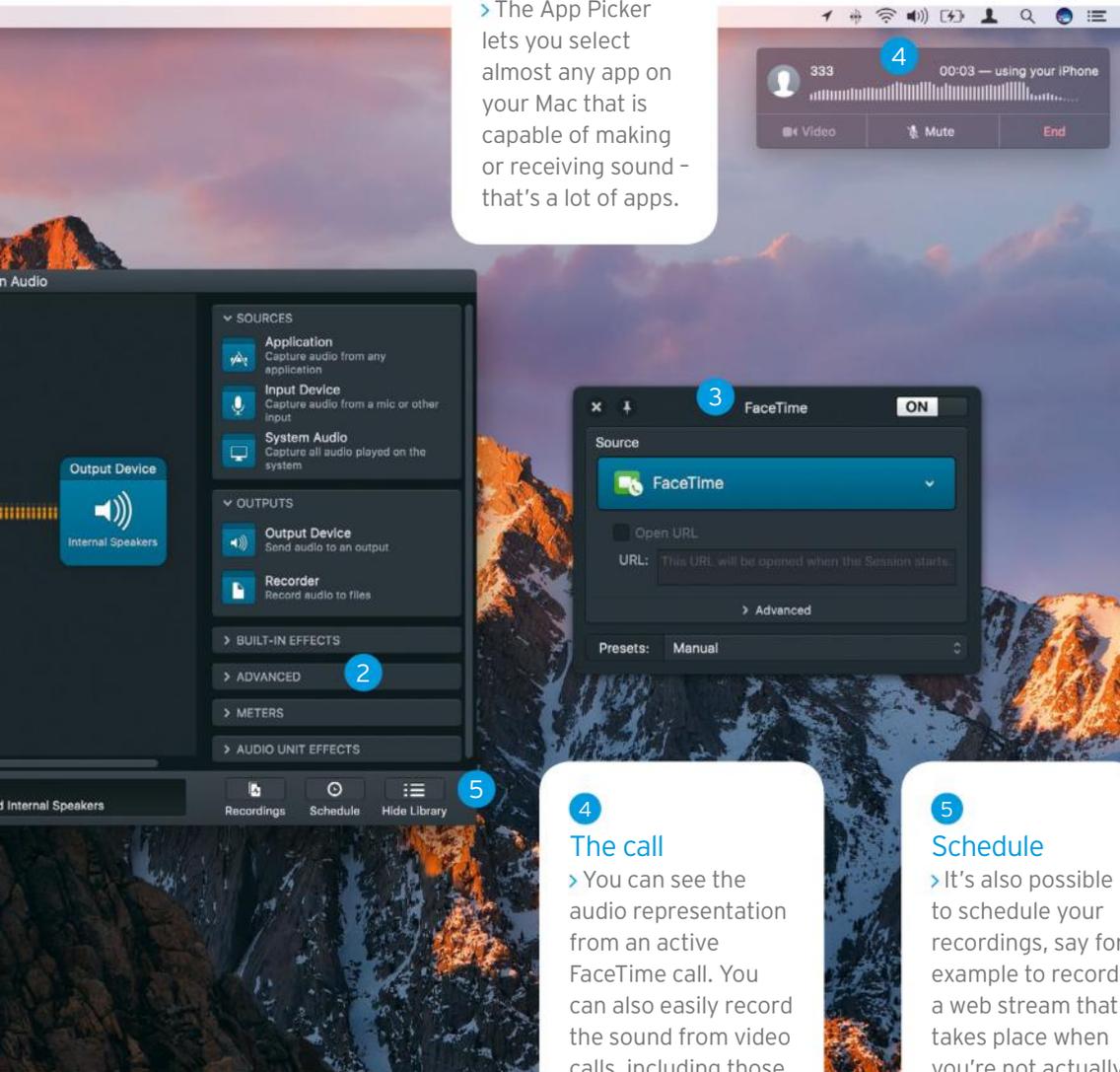
After downloading the trial version and perhaps purchasing to unlock it, open the app. You are presented with its main window; from here you can click on the New Session button to begin. You'll need FaceTime (or Skype) already set up.

**2 Start a session**

The Template Chooser window makes it easy to get started by selecting the kind of source you want to record. In this case it's FaceTime, so choose the Application Audio option. You can always change the source later, as we will see.

### 3 Source selection

► The App Picker lets you select almost any app on your Mac that is capable of making or receiving sound – that’s a lot of apps.



### 4 The call

► You can see the audio representation from an active FaceTime call. You can also easily record the sound from video calls, including those made over Skype.

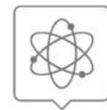
### 5 Schedule

► It’s also possible to schedule your recordings, say for example to record a web stream that takes place when you’re not actually at your computer.



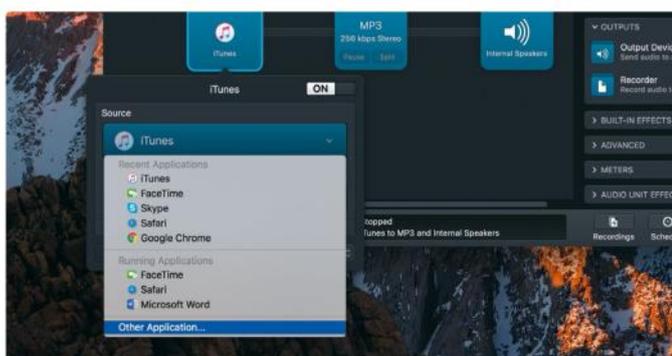
### Jargon buster

► The app has more advanced settings; you can add all kinds of effects, change volume, repair distorted audio and more, using the tools panel on the right of any session window.



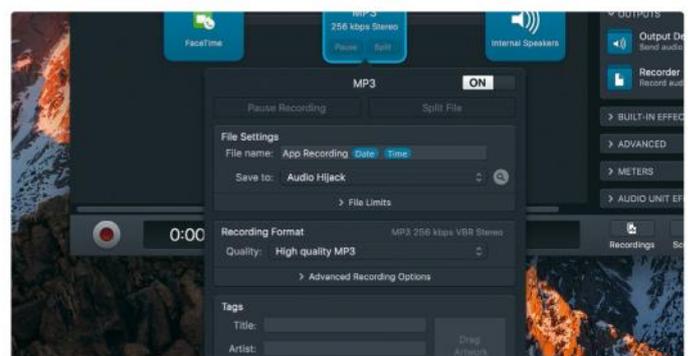
### Genius tip!

► You don’t need to change the Output Device from Internal Speakers if you are using headphones. Simply connect your headphones and Audio Hijack will send the output to them instead of the speakers.



### 3 Select FaceTime

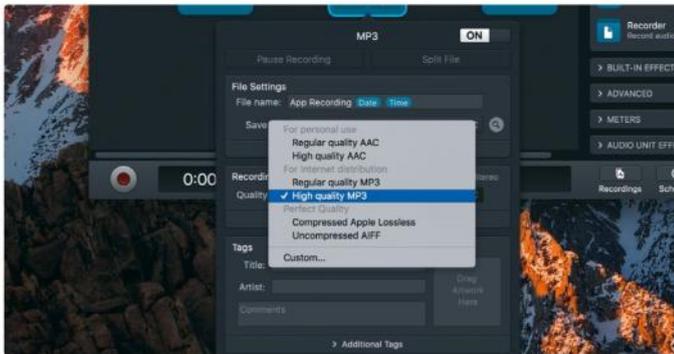
Your session opens but it’s probably defaulted to using iTunes as the source. To change this, click the iTunes icon which will open the application list. Select Other Application, which will open the Applications folder. Select the FaceTime app.



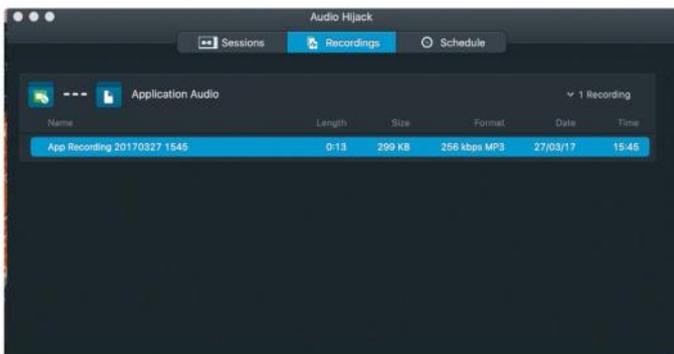
### 4 Set record options

FaceTime should appear as the audio source. The central module is the recorder, so click on this to open your record options. The default setting is a decent quality MP3 recording which is fine for things like interviews, though you can change it.

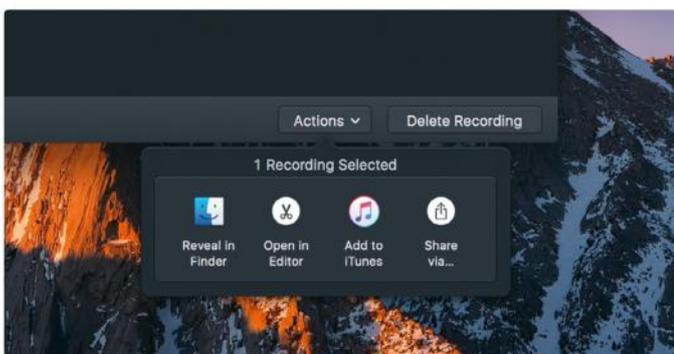
## HOW TO Set up a session with Audio Hijack >



**5 Make quality settings**  
Click on the Quality menu and you will see a selection of quality options. You could choose AAC format if you prefer it to MP3, or higher quality Lossless, or AIFF if, for any reason, you need to record in very high quality.



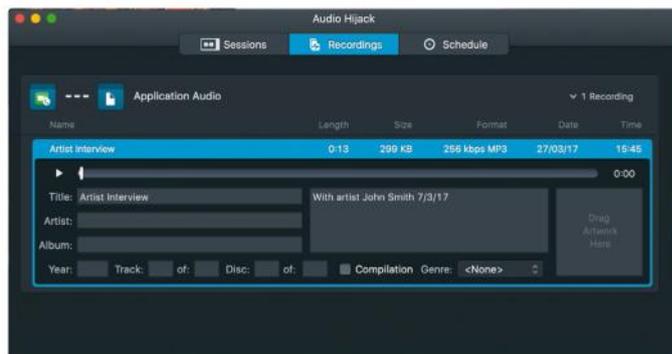
**7 End recording**  
When you want to stop recording, press the Record button again. This does not terminate your call, it just stops capturing it. You can stay on the call as long as you like. When you're done, press the Recordings button to see your pool of recordings.



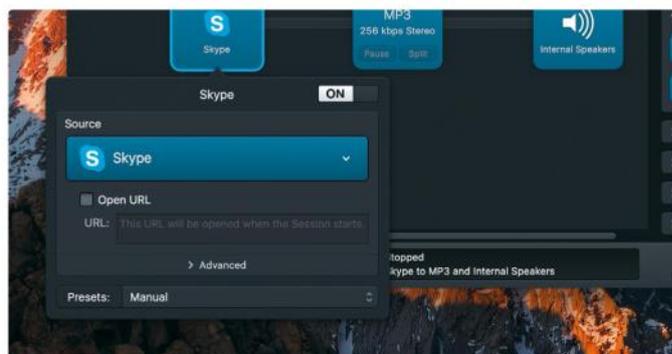
**9 Export your recording**  
If you click on the Actions tab, you can opt to show the file in Finder, open it in an audio editor, add it to your iTunes library or share it using the OS X share options. Very handy if you need to send a recording via email or iMessage.



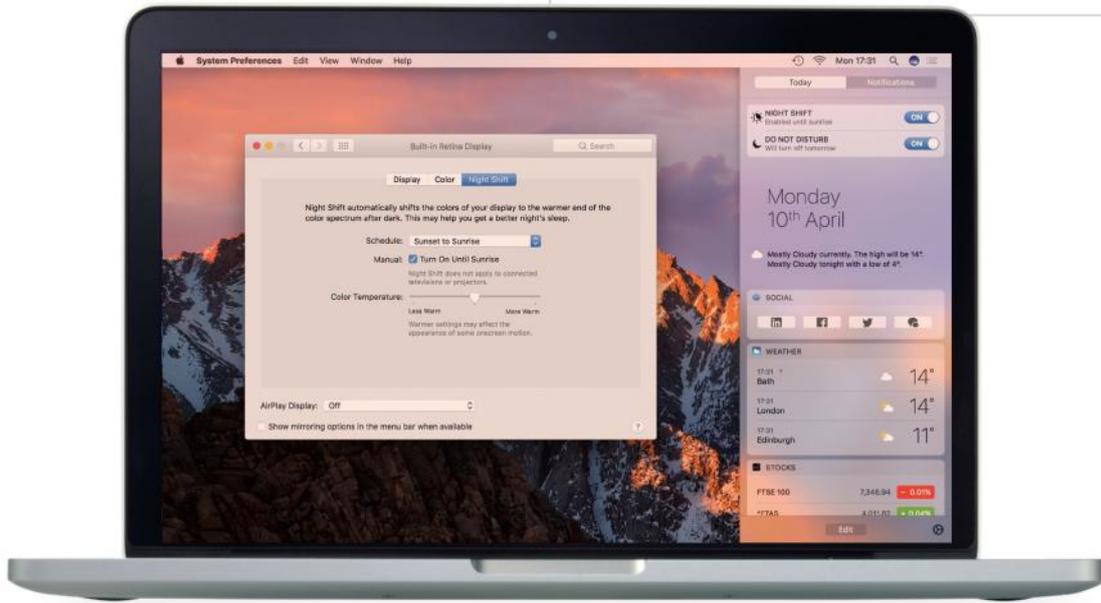
**6 Open FaceTime and record**  
You can wait to be called or you can open FaceTime first, to make your own call. At whatever point you want to start recording, press the Record button in Audio Hijack. It will wait for a signal before it starts recording.



**8 Add metadata and play back**  
Select your recording and click on it to open its metadata. Here you can add a title and some notes, plus other information to help you keep track of recordings. The playback bar at the top lets you scroll around the recording as you play back.



**10 Try it with Skype**  
Some of your contacts may be using Skype rather than FaceTime but the process for recording is very similar. When choosing a source app for your session, simply choose Skype instead of FaceTime and follow the rest of these steps again.



# Set up Night Shift

Make your Mac's display less harsh so it's easier on the eye

## IT WILL TAKE

> 10 minutes

## YOU WILL LEARN

> How to use Night Shift, and about an alternative if it doesn't work with your setup

## YOU'LL NEED

> macOS Sierra 10.12.4



Late at night, your Mac's display may feel like it's straining your eyes even when the brightness is lowered. Apple has added Night Shift to the Mac to help with this.

You may be familiar with this feature from iOS: it tells your device to shift its colour output toward the red end of the spectrum, reducing the uncomfortable blues that are thought to disrupt sleep patterns. Night Shift can be turned on at any time of the day, yet for convenience you can set it for certain hours.

However, Apple lists Night Shift as working on the built-in displays of a limited range of hardware: all models of the 12-inch MacBook, MacBook Air and Pro models from mid-2012 or later, Mac mini and iMac models from late 2012 onwards, the black Mac Pro, its LED Cinema and Thunderbolt displays, and LG's UltraFine 4K and 5K displays. It works on our 4K Dell display, but Apple doesn't support it.

If your Mac is too old or the feature is unavailable on your third-party display then try Flux - see step 3. **Alan Stonebridge**

## HOW TO Use Night Shift on your Mac



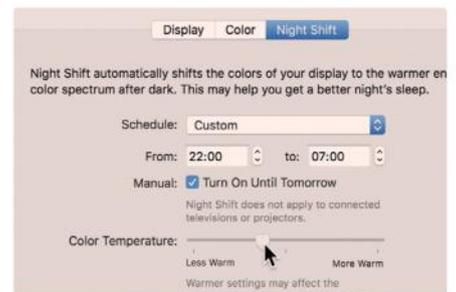
### 1 Turn it on

Night Shift can be switched on or off by flicking its switch at the top of Notification Centre. Sadly, unlike Do Not Disturb, so far Apple has not added either a traditional keyboard shortcut or a Touch Bar control to toggle Night Shift.



### 2 Set a schedule

If colour accuracy isn't crucial, Night Shift can switch on automatically. In System Preferences > Display > Night Shift, you can set it up so it's on between specific hours, or from sunset to sunrise, which adjusts through the year.



### 3 Make adjustments

Night Shift will look strange at first; if the effect still feels a little off odd after a few days, adjust the Color Temperature slider. Whether or not your Mac supports Night Shift, try Flux (Free, [justgetflux.com](http://justgetflux.com)) for greater customisation options.



# Learn what's new in iOS 10.3

Discover new and improved features for your iPhone or iPad

## IT WILL TAKE

> 15 minutes

## YOU WILL LEARN

> How to use key features of the latest iOS system update

## YOU'LL NEED

> iOS 10.3



**The latest system update for your iPhone and iPad might sound like it's a minor one, but you'll find useful tweaks in it that enhance how you use your iOS device.**

One very welcome change is you can now simply delete unwanted event invitations and report them as junk to Apple.

Siri integrates better with ride booking services by enabling you to schedule a pickup for a specific time, rather than immediately. And if you have a payment app that supports

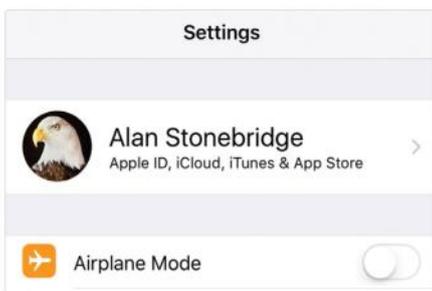
Siri, you can now use your voice to check the status of bills and pay them.

Movie rentals have become more flexible, with the ability to initiate them from your Mac, iOS device, or Apple TV, and switch to another device to watch them.

The Home app now enables you to trigger scenes from switches and buttons, and shows accessories' battery level and charging status.

While these changes are handy, we think you'll use those described in the following walkthrough more often. **Alan Stonebridge**

## HOW TO Manage your Apple ID and related services >



### 1 Your Apple ID

Settings for your Apple ID and services that use it - iCloud, the iTunes Store, and the App Store - have been consolidated in a bunch of pages that are reached by tapping your name at the top level of Settings.



### 2 Personal details

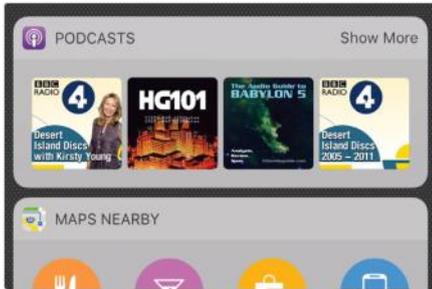
The first three items enable you to change your contact details on file with Apple, the password and other security settings for your Apple ID, and your payment method details for use by Family Sharing ([apple.co/2o42grz](http://apple.co/2o42grz)).



### 3 iCloud and more

Next are your device's iCloud, iTunes/App Store, and Family Sharing settings, then devices using your Apple ID; tap a device to check its serial number or tracking status, or to remove Apple Pay authorisation from the device.

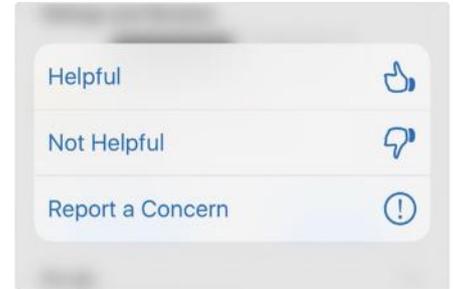
## HOW TO Better control Apple's media and store apps >



**1** The new Podcasts widget  
Swipe right on the first Home screen, scroll all the way down and tap edit, then add the Podcasts widget. The widget shows podcasts with unplayed episodes; tap the artwork of one to catch up with the oldest of those episodes.

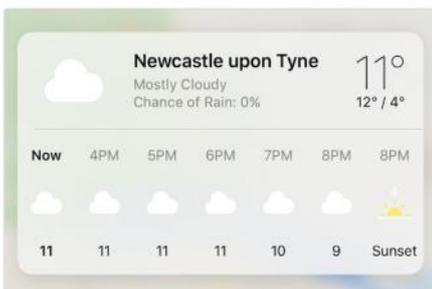


**2** Share podcast episodes  
A small but nice convenience is that episodes shared using iMessage no longer display a link that'll take you out of the Messages app; instead, you can initiate playback right from your chat, rather than jumping out to Podcasts.



**3** React to app reviews  
In the App Store, apply a long press or 3D Touch to someone's review to rate its helpfulness or, importantly, draw Apple's attention to questionable behaviour. This doesn't work for iTunes Store, iBooks Store or podcast reviews.

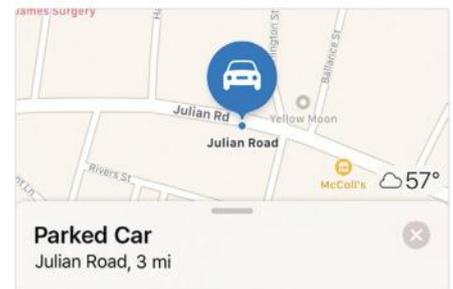
## HOW TO Use new location-based features >



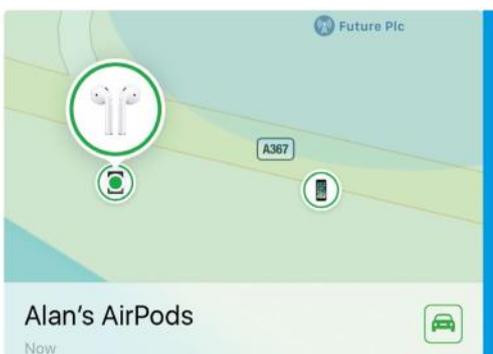
**1** Weather in Maps  
iOS 10 already showed the current weather and temperature for the area you're viewing in Maps (if zoomed in far enough). In 10.3, on a device with 3D Touch, press lightly on it to get an hourly forecast without leaving Maps.



**2** Get a full forecast  
To look further ahead in the forecast, press more firmly on the icon to go to the Weather app, which asks whether it should remember the place. You can reject the suggestion if the place isn't somewhere you go often.



**3** Find your car  
Leaving your car causes your iPhone to detach from its Bluetooth or CarPlay system. Maps marks your car's location if Settings > Maps > Show Parked Location is on. In 10.3, look up your car's location by searching for 'Parked car' in Maps.



## Find My AirPods

Audible alerts for locating misplaced earbuds >

It's easy to misplace your AirPods, so it's good news that the Find My iPhone app can now help you track them down. The headphones need to be in range of your iPhone, have power, and ideally not be tucked somewhere that the sound they'll play will be hard to hear. AirPods don't connect directly to the internet; they require a connection to your iPhone to receive an instruction to play a sound, limiting this feature's effectiveness - for example, with our AirPods in their closed case (which is itself easy to misplace), they had no such connection.

# Plan your home in Concepts

Become a design whizz with the help of this precise drawing app

## IT WILL TAKE

> 1 hour

## YOU WILL LEARN

> How to create a precise room layout with Concept's tools

## YOU'LL NEED

> iPhone/iPad running iOS 9 or later, Concepts app, stylus (optional)

Concepts provides a variety of drawing tools, with guides to work on



**If you're looking for a design app that bridges the divide between rough sketches and pinpoint-accurate plans, Concepts could**

**be for you.** It provides a variety of drawing tools from freehand brushes to predefined shapes, and offers a choice of grids and guides to work on, coupled with precise measurement tools, multiple layers and the ability to share your finished work.

Concepts is free to use, but there are several in-app upgrades. The Pro upgrade (£7.99) isn't required for this project, but you might want to shell out for one or two of the design packs - they're £1.99 each (or £4.99 for three), and we've made use of two in this project: Blueprint | Structure and Blueprint | Furniture. They simply add some predefined shapes that work well for building design and adding furniture.

## Redesign your home

The step-by-step guide reveals how to use Concepts as part of a simple home redesign

project. Before following it, download and open Concepts, then tap the + button to set up your first project. A blank drawing called 'Untitled' will be created. We need to configure the document for our project, so tap the Settings button in the bottom left-hand corner and work your way through the various options on offer.

Key settings include the grid type (we recommend 10/100), which should be set to Always Show. Set the Scale to 1:40mm, then choose 'Metric (mm, cm, m)' under Units. Switch on all Snap options, then scroll down to the Interface section to experiment with how the interface is laid out (left-handers can move the sidebar to the right of the screen, under Preferred Hand, for example).

Once done, tap the X button to return to the main menu, and follow the step-by-step guide. Things can be a little tricky at times - we recommend consulting the manual (you can view it within the app or online at [concepts.tophatch.com/manual](http://concepts.tophatch.com/manual)) to familiarise yourself with Concepts' key tools. **Nick Peers**

## EXPLAINED... The Concepts interface >

1

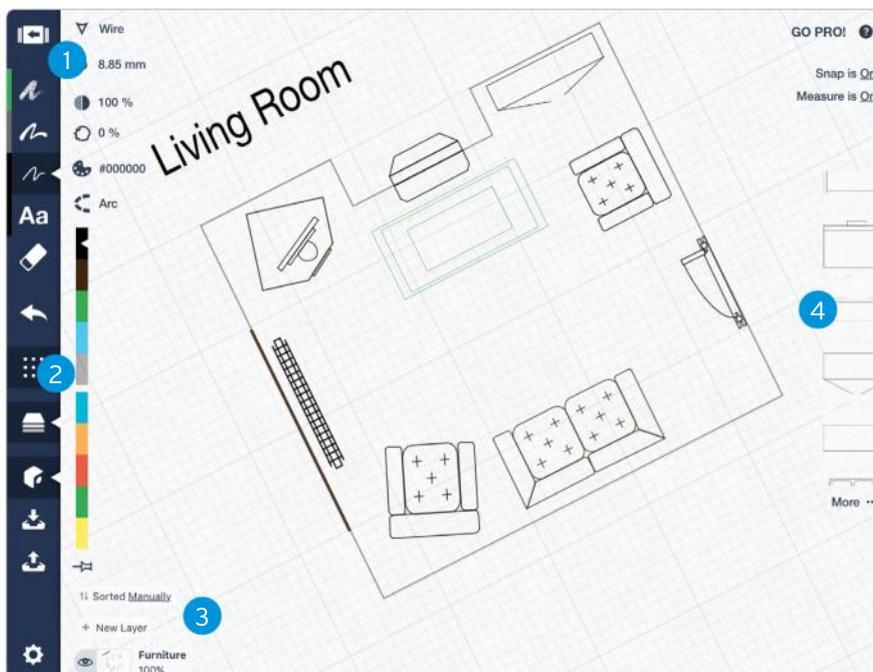
### Tools

> Switch visible tools by tapping one followed by tapping its name in the pop-up menu to reveal more choices.

2

### Precision Mode

> This mode provides access to precise measurements. Tap this button to flick between this mode and Freehand Mode.



3

### Layers

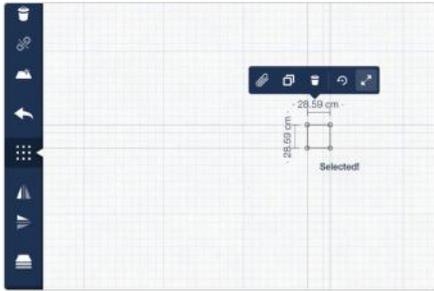
> The free version of Concepts allows you to split your drawing over five separate layers.

4

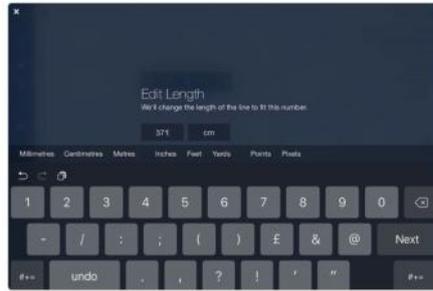
### Objects

> Not a natural artist? Access a range of predefined shapes via the Objects button.

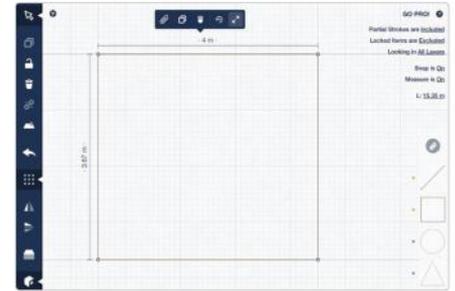
## HOW TO Sketch out a new room layout >



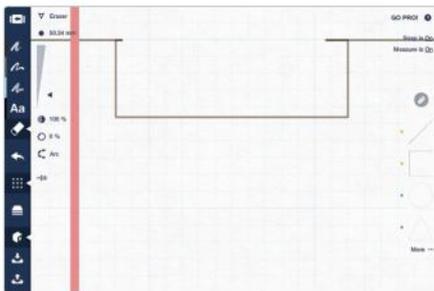
**1 Switch to Precision Mode**  
Tap the Precision Mode button as shown in the annotation and verify Measure and Snap are both On. Now tap the Objects button to reveal some basic shapes - the first two (line and box) are free. Tap the Square.



**2 Set room dimensions**  
If your room is a standard square or rectangular room, this is all you need. You can tap and drag to resize or move this manually, or tap and hold on one of the dimensions shown on-screen to enter an exact measurement.



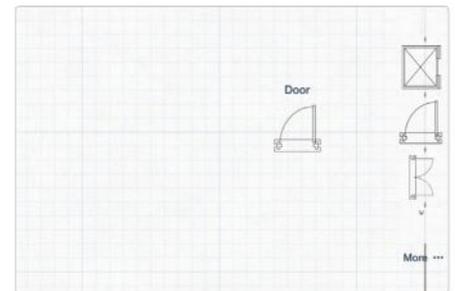
**3 Editing tools**  
When the rectangle is selected, you'll see the sidebar change to provide context-sensitive editing tools. To reframe your shape in the middle of the screen, use a two-fingered tap and drag to reframe the canvas.



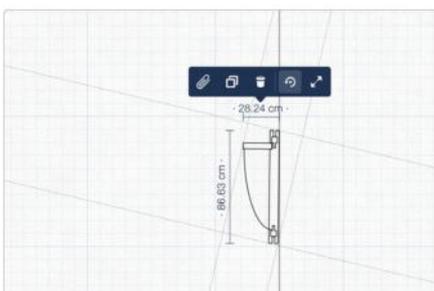
**4 Change room shape**  
If the room is an odd shape - for example, it contains alcoves - use the line and rectangular shapes to create the extra elements (or box in certain areas). Pinch and zoom into the image, then erase unwanted lines.



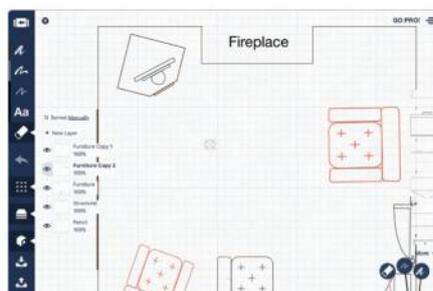
**5 Add new layer**  
Protect your basic room shape by tapping the Layer button and choosing New Layer to create a separate layer on which you'll add your room's objects. Bring the Objects pane into view if necessary, then tap More...



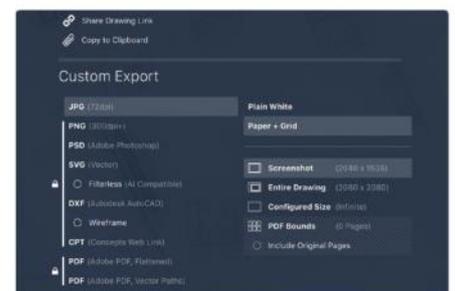
**6 Add structural elements**  
Select Blueprint | Structure - tap Sample to access the three basic window shapes, or purchase the full pack for more. Scroll down through the available objects, then tap and drag your first object into position.



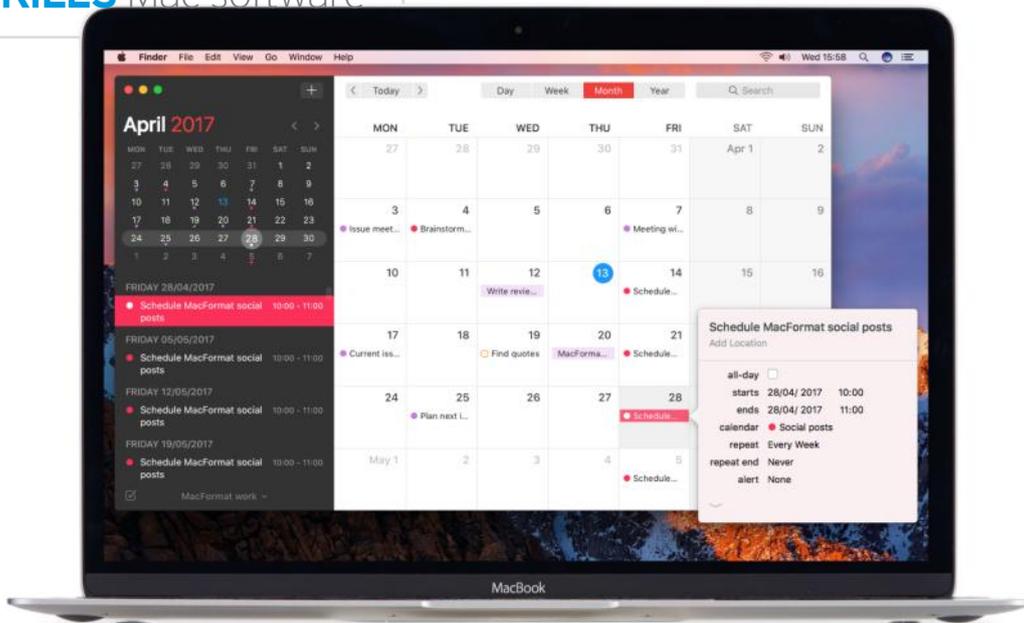
**7 Edit objects**  
The sidebar will change to display editing tools - tap the links button first to group the object's components together. Manipulate the object into position by rotating (a two-fingered pivot gesture), resizing and moving it.



**8 Flesh out your room**  
Keep adding more objects using the same technique. Consider putting permanent fixtures (doors, windows and so on) on a separate layer to moveable elements, such as chairs, tables and storage units.



**9 Export finished piece**  
Share your drawing by tapping the Export button - only the JPEG option is available in the free version, but you can export a screenshot, or select the drawing option to share it via email, social media or another app.



# Get organised the easy way

Fantastical 2 offers plenty of quick tricks to sort out your calendar

## IT WILL TAKE

> 10 minutes

## YOU WILL LEARN

> How to organise your time with Fantastical

## YOU'LL NEED

> OS X 10.11 or later;  
iPad/iPhone with iOS 10 or later,  
Fantastical 2



**The longer we use digital calendars, the more cruft that accumulates.** Work events, personal reminders, Facebook birthdays, holidays - before long, your calendar is covered in more dots than a Dalmatian.

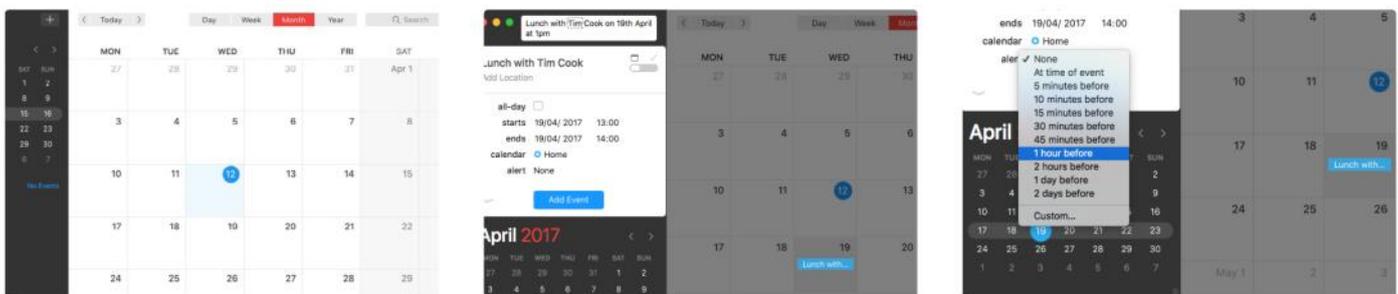
Apple's own Calendars app lacks natural language support, doesn't integrate your Reminders list, and doesn't feel particularly streamlined. There is an alternative, though, and it's a good one: Fantastical (£48.99).

It combines the work of Apple's Calendar,

Reminders and Contacts into one easy-to-access place. There's a Today view widget on iOS (iPhone app £4.99; iPad app £9.99), and a menu bar shortcut for Mac, so managing your calendar is easier than ever.

Fantastical also supports natural language input. Type in an event or reminder description as you would naturally speak and Fantastical automatically pulls the time, date, people involved and more as you type. You'll spend less time messing with your calendar and more time getting stuff done. **Alex Blake**

## HOW TO Use Fantastical's natural language entry >



### 1 Add a new event

Fantastical works with natural language entry, which means you can just describe an event as you would normally say it and the app will recognise it. To start, select a date for your event and click the + button.

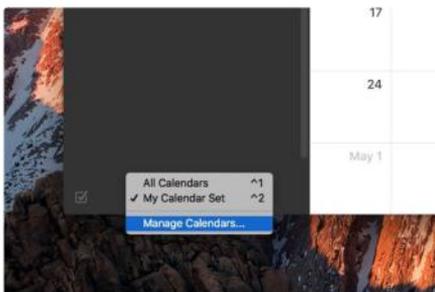
### 2 Describe the event

Here, we've typed out our event description and Fantastical has recognised the date and time. The dotted line around the name indicates that you can tag people from your contacts; doing so will send them an invitation.

### 3 Add a reminder

Set the switch next to the event title to the tick mark and it becomes a reminder. You can also create a reminder by typing 'reminder', 'todo', 'task' or 'v' (⌘+V). Adding exclamation marks to a reminder will determine its importance.

## HOW TO Use different calendar sets >



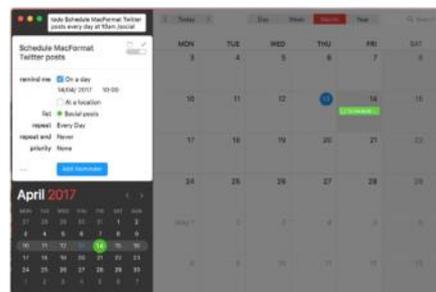
### 1 Create a set

Fantastical lets you create different calendar 'sets' for different purposes. Here, we'll add a Work set and keep our personal events separate. Click the name of your calendar at the bottom of Fantastical, then click Manage Calendars.



### 2 Activate automatically

Click the + to add a new set, give it a name and select which calendars it should include. Tick 'Automatically activate at location' and enter your work address to have Fantastical switch to this calendar when you arrive at work.



### 3 Specify a list

Adding a / at the start or end of an event specifies which calendar it should be added to. We've added '/social' to add a daily event to our 'social posts' list. Adding 'todo' told Fantastical this was a reminder, not simply a calendar event.

## HOW TO Quickly add events with the Today view in iOS >



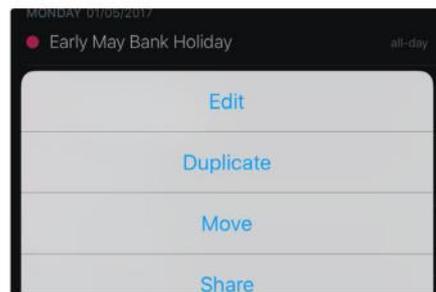
### 1 Expand the widget

Using Fantastical's Today widget lets you quickly add or edit events. Tap Show More to expand the widget and display the full calendar, then tap and hold on any date to open the app, where you can add an event.



### 2 Fill in the details

Give your new event a name using the same natural language as before. You can add a location and duration. You can also add the usual extra detail from this screen - you can invite people, set a reminder alert, and so on.



### 3 Add the event

Tap Add to add the event to your calendar. You can move, edit or duplicate the event from Fantastical's list view by tapping and holding on it, or by swiping left and choosing the relevant option. You can also share the event from here.



## Fantastical's Mac menu bar widget

Quickly access a miniature view of your calendar >

The Mac version of Fantastical features a menu bar widget, allowing you to quickly pull up the calendar on your Mac. It can be detached from the menu bar and moved wherever you need it, and can also be set to sit on top of all other windows. That's useful if you're working on a document and need to constantly reference the calendar as you type. The widget has all the same features and shortcuts as the full fat version of the app, in a more streamlined view than the standard layout. It's our preferred way of working with Fantastical.

1

**Lists**

Any to-do lists you've created are shown here. Click the + button at the bottom to add more.

2

**Folders**

Folders help categorise your lists, for instance by location. Right-click a list to create a folder.

3

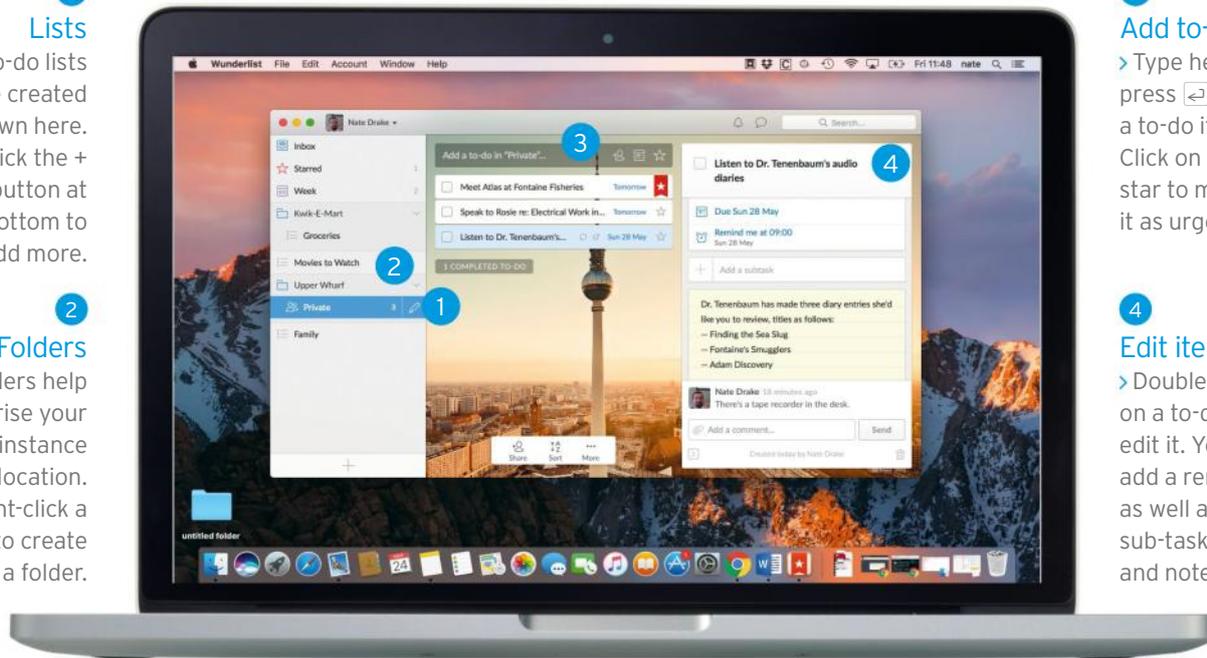
**Add to-do**

Type here and press  to add a to-do item. Click on the star to mark it as urgent.

4

**Edit items**

Double-click on a to-do to edit it. You can add a reminder as well as sub-tasks and notes.



# Keep daily tasks in check

Get your life organised with the handy Wunderlist to-do app

**IT WILL TAKE**

> 10 minutes

**YOU WILL LEARN**

> How to set up Wunderlist, create to-do lists, set reminders

**YOU'LL NEED**

> OS X 10.10 or later, Wunderlist



**Wunderlist is the ultimate to-do app for keeping your life in order.**

Instead of offering one mundane list or calendar to store everything, you can create categorised lists, such as one for your office and one for your groceries, allowing you to manage various task types from one place.

The app is available free of charge for your Mac and there's also an app (the standard app is free, but you have the option to subscribe to access more features) for your mobile devices, allowing all your tasks to stay in sync. The built-in Wunderlist helper also lets

you set reminders which will display even when the program isn't running.

Adding items to your to-do list is incredibly simple – just type something in and press . Check the tick box next to each task on your to-do list and it will be marked as done. You can display completed to-do items at any time with a single click.

**Further options**

Double-click on any task to see further options. For instance, you can set a reminder or add sub-tasks. Click the star icon to mark a task as urgent. The Notes and Comments section is also useful for adding any extra information you might need to refer to.

The Share option at the bottom of the screen can be used to create a collaborative to-do list. Simply enter your recipient's email address to add them to your list. Use the Sort button to change how tasks are displayed – for instance, in the order they were created.

For old school users, the More button can be used to print hard copies of any to-do list or, handily, you can email a list in text format to non-Wunderlist users.



Entries can be marked with a star or as completed tasks.

**Nate Drake**

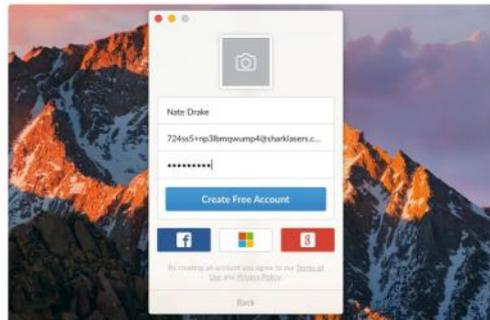
The built-in Wunderlist helper also lets you set reminders

# HOW TO Get started with Wunderlist >



## 1 Install WunderList

Open the Mac App Store and search for Wunderlist: To-Do List & Tasks. Click Get, then Install App. Enter your Apple ID password to install, then click Open to launch Wunderlist on your Mac.



## 2 Register account

If you have a Facebook or Google account, click the icons to register Wunderlist through these. Otherwise, click Create Free Account, enter your details and click Create Free Account once again.



## Jargon buster

**> List** A list of things to do - for example, Groceries for your next shop.  
**Reminder** A notification you can schedule for items on your to-do list.  
**Folder** A way to categorise your lists.



## 3 Enable Wunderlist Helper

This step is optional but recommended. Wunderlist can display notifications even when shut down through its Wunderlist Helper. Choose Enable Wunderlist Helper to activate the feature and receive notifications.



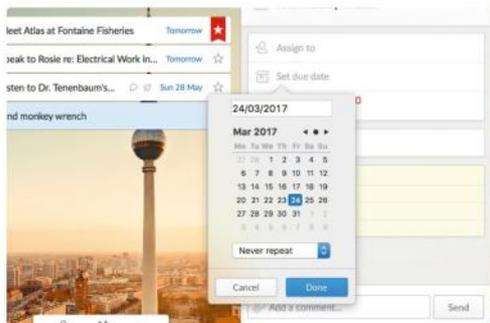
## 4 Choose your Lists

To make things simple, Wunderlist lets you choose from several default to-do lists, with categories such as Groceries. Click the white circle next to any of these to activate, then choose Get Started.



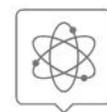
## 5 Create a to-do

To create a to-do item, simply type some text in and press **↵**. Each time you type and press **↵** a new to-do will be created. You can click the star icon next to any to-do item to mark it as urgent.



## 6 Schedule Reminders

When creating a to-do, you can click on the calendar icon to open a window to set a date and/or reminder. Simply double-click on existing to-dos to edit reminders, set sub-tasks and make notes.



## Genius tip!

**> Sort lists into folders** by right-clicking and choosing Create Folder. For instance, you could have separate Home and Office folders.



*Connect and share with your friends!*

2017  
EDITION

# SOCIAL MEDIA MADE SIMPLE

The ultimate guide to getting started with  
Facebook, Instagram, Twitter and more

**FREE**  
Digital version  
with this  
book!



**148**  
pages of  
easy-to-follow  
advice



Available at all good newsagents or visit  
[www.myfavouritemagazines.co.uk](http://www.myfavouritemagazines.co.uk)



## What's inside

### 62-63 SPEED UP YOUR MAC

> Disable unnecessary visual effects. Plus how to check hardware and upgrade memory

### 64-65 SIGN IN WITH iCLOUD KEYCHAIN

> Make your online life easier to manage

### 66-67 GET INFO ABOUT YOUR MAC

> Use About This Mac and System Information



## Genius Tip!

### > Search in Photos

The Photos app now uses artificial intelligence technology to locate images. Simply type a key detail into the search bar (top right), such as 'beach' or 'garden' and it will come up with relevant images.

It can even look for facial expressions - for example, you can enter a search for 'smiles'.

# SIERRA SKILLS

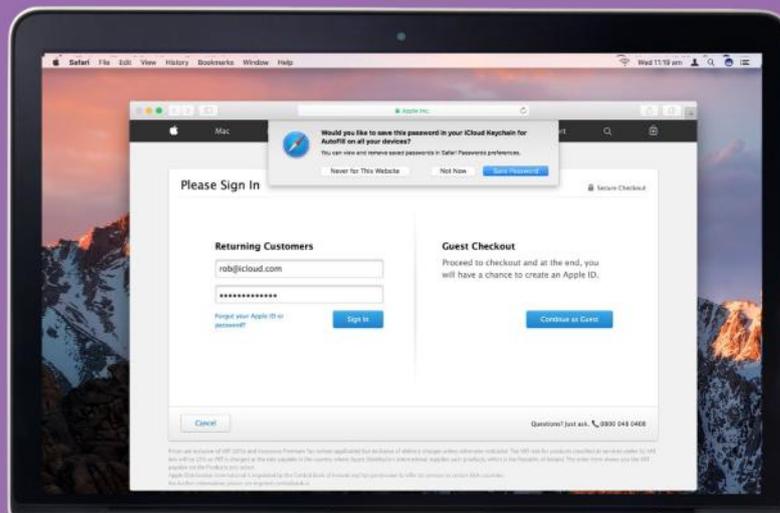
EDITED BY **GRAHAM BARLOW** >



## NEW SECTION

Your dedicated guide to getting more from macOS Sierra

## SIGN IN WITH iCLOUD KEYCHAIN p64



## > macOS Sierra requirements

> macOS Sierra works on Macs dating back to 2010, and MacBook and iMac to 2009.

> You need to be running Mac OS X 10.7 or later.

> You need 8.8GB of available storage.

> Back up your Mac before upgrading; go to support.  
[apple.com/en-gb/HT201250](http://apple.com/en-gb/HT201250)

for advice on using Time Machine.

> Go to the Mac App Store and download the free macOS Sierra upgrade.

## > The benefits of running macOS Sierra

> macOS Sierra introduces Siri to the Mac.

> You can use Apple Pay on your Mac with macOS Sierra.

> Picture-in-picture - extract a video from a website and watch it from your desktop.

> By default, Desktop and Documents folders are uploaded to iCloud Drive.

> macOS offers the smartest continuity features to date.

> You can now start/pick up an iPhone call from your Mac.

> You can also send and receive SMS text messages from your desktop.

> Handoff works with a number of built-in apps, allowing you to start work on one device and finish off on another.

For a full list of features, go to [apple.com/macOS/sierra](http://apple.com/macOS/sierra)

# Disable visual effects

Speed up your Mac by switching off Sierra's advanced graphics features

**IT WILL TAKE**

>10 minutes

**YOU WILL LEARN**

> How to adjust system-hogging visual settings

**YOU'LL NEED**

> macOS Sierra



**If your Mac is running slowly, the advanced visual effects of macOS Sierra may be to blame.**

As with the previous OS X El Capitan, macOS Sierra uses a transparency effect on windows, menus and the Dock by default, where you see a rough translucent shape of objects behind an open window or menu as you browse the desktop. It looks nice, but there's no real need for it. If you have used Apple Macs for a while, you might even prefer a look and feel which is more opaque.

Follow the steps in the tutorial to reduce transparency. Ticking the box will take effect immediately without requiring a restart. If you don't see any change, you may be using an older machine that didn't support the transparency feature in the first place.

If you're finding that Mission Control and/or the Notification Centre is performing poorly, you can also tick the Reduce Motion feature. Usually when launching Mission Control the windows boomerang onto your screen. You can change this, so that when launching Mission Control, any open windows simply fade in. Follow step 2 - 'Reduce Window Motion' - in the tutorial below to do this. The changes you make here will also take effect

immediately so return to the desktop to see if there's been any improvement.

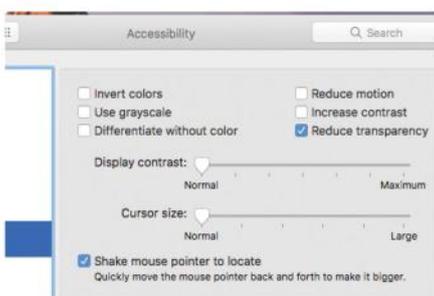
## Deal with the dock

The Dock also contains a number of advanced graphics effects which you can disable to speed up macOS. The 'magnification' effect, whereby icons increase in size when you hover your mouse over them, for instance, isn't necessary. If you find it difficult to see the icons after disabling magnification, you can increase the dock size permanently.

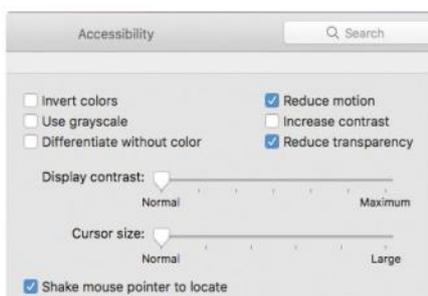
The default 'genie effect' used for minimising windows, also consumes precious resources. You can modify this from the Dock settings so that they minimise in a simpler way. Also, by default, when opening programs from the dock, the icons animate to show you the program is launching which also consumes system resources. Follow the steps in the tutorial to disable this feature too.

In future, if you need to know if an app has been launched, simply look for the small black dot underneath the app icon. This signifies that the app has been opened. This is also useful when your system is performing slowly as you can check that no unnecessary applications are open. **Nate Drake**

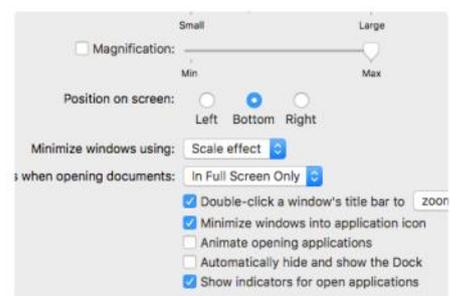
## HOW TO Make things clear and simple >



**1 Reduce transparency**  
Open System Preferences and choose Accessibility. Then, choose Display at the top of the side pane. Click the checkbox marked Reduce Transparency. This saves your graphics card from having to show translucent effects.



**2 Reduce motion**  
In the same window, click the checkbox for Reduce Motion. This relates to the animation effects governing how windows appear; ticking this minimises the effects, so that the windows simply pop up, which is much faster.



**3 Configure the Dock**  
Open System Preferences and click Dock. Uncheck Magnification. Change 'Minimize windows using' to Scale Effect. Uncheck Animate Opening Applications. Then tick the checkbox for 'Minimize windows into application icon'.

# Ultimate upgrades

For the ultimate Mac boost, look to hardware and memory upgrades

## IT WILL TAKE

> 1 hour

## YOU WILL LEARN

> How to investigate hardware issues and upgrade memory

## YOU'LL NEED

> macOS Sierra



**If system performance is particularly slow, you may have to consider reinstalling macOS. However, if you're still experiencing problems after a fresh install, you may need to investigate hardware issues or upgrade the memory.**

Visit [locate.apple.com](http://locate.apple.com) to view details of Apple Retail Stores and Authorised Service Providers who can run an in-depth hardware diagnostic. If your device is out of warranty, service providers may charge to examine the device. Check your warranty as you may be entitled to a free repair under consumer law ([apple.com/legal/warranty](http://apple.com/legal/warranty)).

If no hardware fault is found with your Mac it may be that you need more memory. You can check the amount of memory installed on your machine by going to **About this Mac**. If you want to upgrade your memory, you also need to know how much your machine can handle.

Follow the steps in the tutorial below to identify your Mac model. From the Memory tab, note down the values besides maximum memory and memory slots.

The maximum memory value lists both the officially recommended amount of memory

that can go into your Mac, as well as the amount it will support in practice. Note that even if your device is still under warranty, the warranty could be void if you've exceeded the recommended maximum amount.

## Uniform memory

The memory slots value simply tells you how many memory module slots are inside the Mac. This is important as you should try to upgrade in a uniform way; for instance if you have two 2GB modules in your Mac, you need to replace them with two 4GB modules.

If you are very tech savvy, you can order the required modules and upgrade your Mac yourself. Click on 'How to remove or install memory' to view instructions on the Apple Support site. Alternatively, try contacting an Authorised Service Provider for an upgrade quote. Make sure you have the About this Mac window open when you call so you have the information to hand, as they will need to know the make and model of your Mac.

If your device is over five years old, consider purchasing a new machine. If you can afford it, choose a Mac with at least 8GB of memory and a graphics card with at least 2GB of graphics memory. **Nate Drake**

## HOW TO Find out about your Mac's memory >



### 1 About this Mac

Go to **About this Mac**. Make a note of your model of Mac - for example, MacBook Pro (13-inch mid 2012). Write down the amount and type of memory already installed. Click on the Memory tab to view your memory slots.



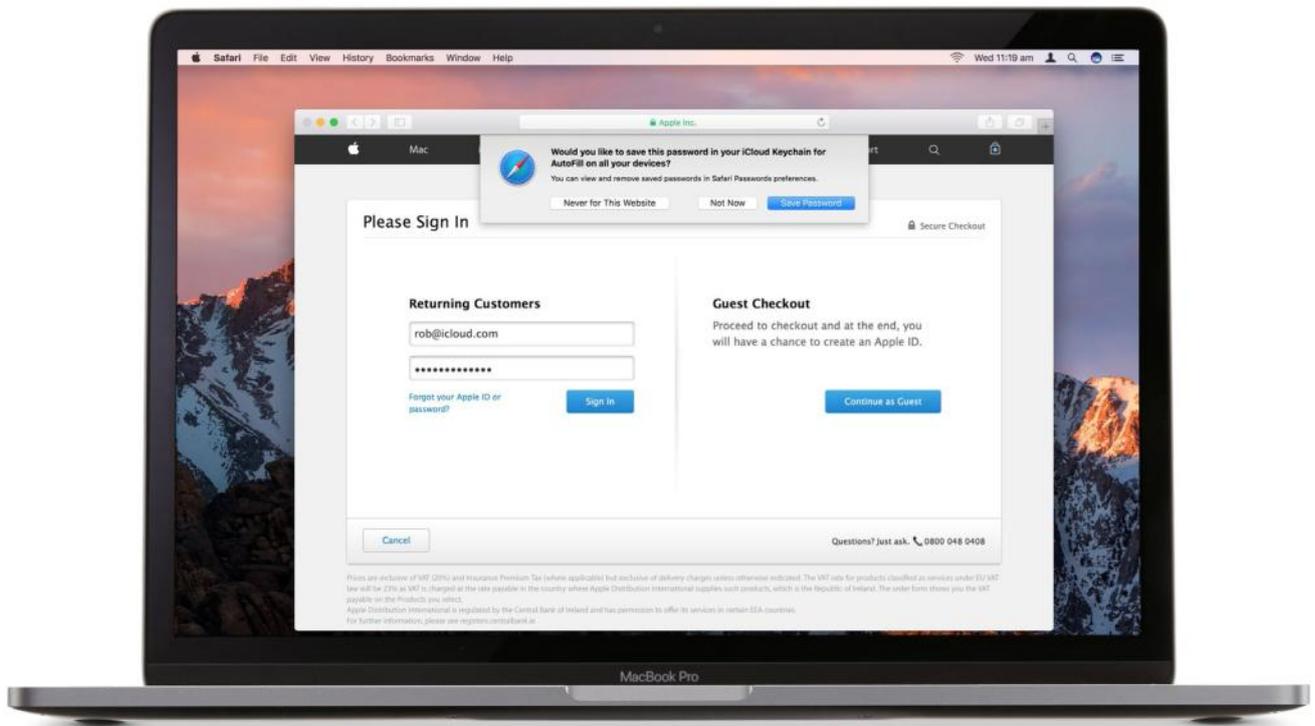
### 2 Install MacTracker

Search for 'Mac Tracker' on the Mac App Store. Once the software installs, click Open. The left-hand pane lists types of Apple devices such as MacBook Pro. The main viewing pane shows specific models.



### 3 Locate your specs

Double-click on the listing for your Mac. From the window that appears, choose the Memory and Graphics tab to view the maximum memory. You'll need this to decide how many memory modules to buy, as well as their capacity.



# Sign in with iCloud Keychain

Make your online life easier to manage across all of your Apple devices

## IT WILL TAKE

> 20 minutes

## YOU WILL LEARN

> How to set up iCloud Keychain

## YOU'LL NEED

> macOS Sierra, iOS 10



**Passwords, bank card numbers, email account settings... modern life requires us to memorise more information than ever before.** No

wonder so many of us pick a single password and use it across everything!

While that might make life easier, it doesn't make it secure. Fortunately, iCloud Keychain can help. Built into macOS and iOS, it syncs account credentials between each of your Apple devices, so you can set obscure passwords that are unique to every website

you use, with Safari filling in the details for you. iCloud Keychain can store your bank card, email account and Wi-Fi network info too. Turning it on automatically moves details already saved to your Mac or iOS device to iCloud, and new additions or amendments are added to your online keychain over time.

Once you've set up iCloud Keychain, you can largely forget about it, provided you keep three essential elements secure: your password, trusted devices, and the Recovery Key for your iCloud account. **Rob Mead Green**

## HOW TO Set up iCloud Keychain >



### Genius tip!

> Losing any two of the three essential parts of the system (password, trusted devices, Recovery Key) at once will lock you out of your account! If you have trouble remembering your password and Recovery Key, consider storing them somewhere safe!



### 1 Turn on iCloud Keychain

When you first installed macOS Sierra it will have asked if you wanted to set up iCloud Keychain for your account. If you said no, go to System Preferences > iCloud and select Keychain. Enter your Apple ID's password to begin the setup process.

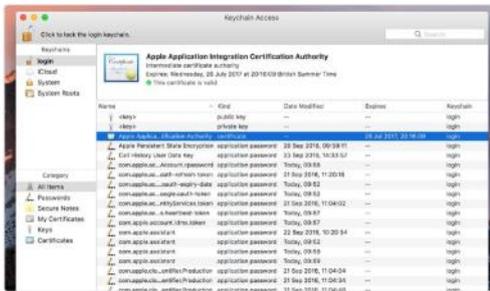


### 2 Add a security code

You'll be asked to set a security code, used to allow other devices to access the info in your iCloud Keychain. Entering this code incorrectly too many times will wipe your keychain from Apple's servers and you'll have to start all over again, so be wary of that!

**CONTINUED...** Set up iCloud Keychain >**Genius tip!**

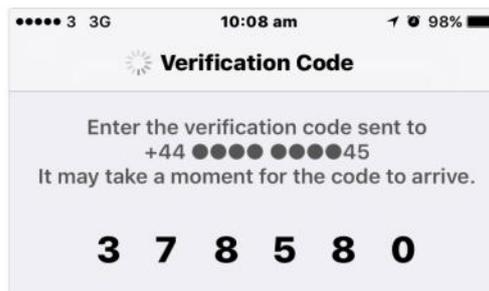
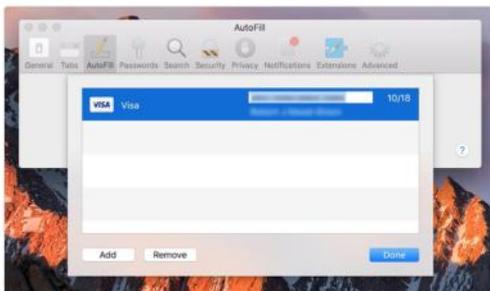
> To clear your keychain data from iCloud, go to System Preferences' iCloud pane, click Options next to Keychain, then clear the box next to 'Allow approving with security code'. Finally, on each of your devices, turn off iCloud Keychain.

**3** Where is your data?

Your existing data (site accounts, Wi-Fi networks, internet accounts) will be uploaded to iCloud and, from there, to any devices which use the same iCloud account. You can manage data in the Keychain Access app, or under Passwords in Safari's preferences.

**4** Keep Keychain local

If you have opted not to set a security code, data you add to your keychain is stored on your device, but isn't updated on your other devices. Beware that this will prevent Apple from helping you recover the keychain's contents if you ever lose them.

**5** Add bank card details

Safari offers to save your credit and debit card numbers when you enter them into online forms. They're then stored, securely, in your iCloud Keychain, too. To add others, open Safari's preferences, click AutoFill, then Edit beside Credit Cards, and then Add.

**6** Set up Keychain on iOS

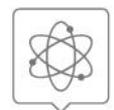
On your iPad, iPhone or iPod touch, go to Settings > iCloud > Keychain and tap the switch to turn it on. Enter your Apple ID password, then opt to authorise from another device (your authorised Mac, for example), or tap Approve with your security code.

**7** Permit the new device

If you opted to authorise an iOS or macOS device from another one, notifications will pop up on those you've authorised. Click or tap on the notification, then select Continue. Enter your Apple ID's password to grant the device access to your iCloud keychain.

**8** Maintain security code

If you opted to use a security code, confirm the phone number Apple has on its records, then watch for a text message containing a six-digit code. Enter this code into the dialog on the iOS device to complete the process. iCloud Keychain is now ready for you!

**Genius tip!**

> To change your security code, go to System Prefs > iCloud and select Options. In the Keychain Options, select Change Security Code. To create a longer security code, select Advanced, then choose either 'Use a complex security code' or 'Get a random security code'. If you don't want a code, select 'Don't create security code'.

# Get info about your Mac

Use About This Mac and System Information to find out about your Mac

**IT WILL TAKE**

> 30 minutes

**YOU WILL LEARN**

> How to find out more about your Mac

**YOU'LL NEED**

> macOS Sierra



**Macs are so simple that it's easy to forget the technology sitting under the hood. And Apple likes it this way.** Instead

of worrying about what version of Bluetooth you have, or what firmware revision the graphics card is using, you can simply enjoy the benefits of macOS Sierra and just get on with things.

But there are some people who are in awe of Apple and macOS technology and are keen to know what power is under the hood. Apple

System Information enables you to drill down into every aspect of your Mac's hardware

has two superb services in Sierra that provide exactly the sort of information 'power users' are after: About This Mac and an app called System Information.

**Get to the details**

System Information enables you to drill down into every aspect of the hardware inside of your computer. With System Information you get a detailed report on the exact type, version and firmware revision of every piece of hardware that makes up your Mac. Both About This Mac and System Information can become invaluable tools when it comes to identifying problems.

Here we'll look at the info available in About This Mac and how to access the more detailed data in System Information, as well as a few tips and tricks for features you may not have noticed. **Rob Mead Green**

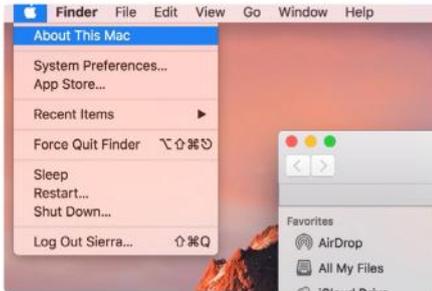
## EXPLAINED... About This Mac and System Information >

- 1 **About This Mac**  
> The About This Mac window displays basic hardware info. Click on a specific tab for more details.
- 2 **System Report**  
> Click on System Report to open System Information (in Utilities) for a much wider range of detailed information.



- 3 **System Information**  
> The System Information window is split into two. The sidebar is used to select areas of hardware, networking and software.
- 4 **Extra info**  
> Click on items in the sidebar to see extra info. You can save, print and even get your Mac to speak out some information.

# HOW TO Use About This Mac and System Information >



## 1 About This Mac

Go to **Apple > About This Mac**. The About This Mac window pops up, displaying the Overview tab. The Overview tab displays the version of macOS and basic info on the processor, memory, and graphics card, along with your serial number.

## 2 Viewing more tabs

The About This Mac window offers up four other tabs to choose from: Displays, Storage, Support and Service. Clicking these tabs enables you to view more detailed information about each aspect of your hardware.

## 3 Quick links

Each area of the About window has links to related items. In the Displays tab is a Display Preferences button, while the Storage tab gives you access to the Optimise Storage feature, which helps free up space on its internal drive.



## 4 Using the Support links

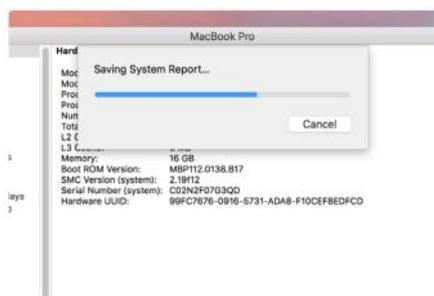
Go to **Support > macOS Resources** and **Mac Resources**. The links take you to the Help window, a PDF manual and the macOS Support website. Under Mac Resources you'll find links to specs, as well as hardware support.

## 5 Check your Service

Check the status of your Mac's warranty in Service. Click **Check my Service and Support Coverage Status** and **Allow** to the Serial Number alert. If Apple has your registration info, it will know if your Mac is still under warranty.

## 6 System Information

The System Information app offers more detailed information about your Mac, and devices which are attached to it. Go to **Overview > System Report** to open the System Information app (or double-click the app in the Utilities folder).



## 7 Show more info

Use the sidebar to select different aspects of your hardware and software. It's worth checking the Menu bar that appears at the top of the screen. Access even more information by choosing **File > Show More information**.

## 8 Save info

You can save a system report about your Mac. The info is saved as an SPX file that can be opened by the System Information app. Create an SPX file by choosing **File > Save**. Choose a location and save to it.

## Speak & print

If you want to write down the serial number, you can get Sierra to speak it out. Click **File > Speak Serial Number** and make a note of it. You can also print out the information.

# THE ULTIMATE macOS Sierra HANDBOOK

148  
PACKED PAGES

The *No.1* guide to making the most of your Mac



# 624

## Sierra secrets

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## What's inside

69

### MAC SOFTWARE

› How to find reliable info about Mac storage

70-71

### MAC HARDWARE

› Solving Wi-Fi woes and connection conundrums

72-73

### MAC SOFTWARE

› Sagacious solutions to software snags

74

### iOS SOFTWARE

› Swipe away your touchscreen troubles and love iOS once again



## Contact us

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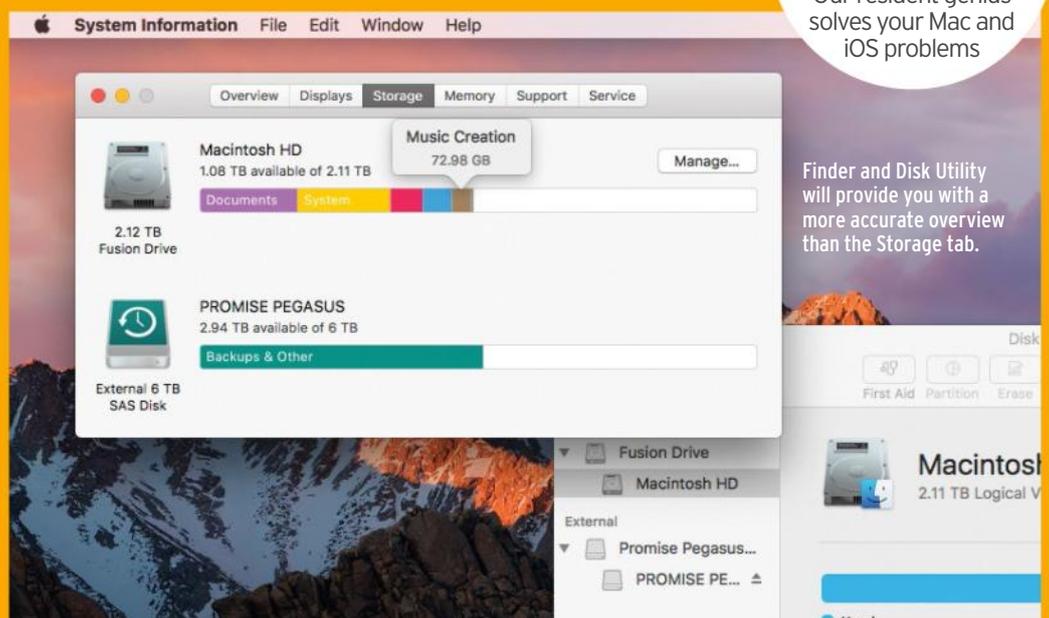
# GENIUS TIPS



## EXPERT ADVICE

Our resident genius solves your Mac and iOS problems

EDITED BY **HOWARD OAKLEY** >



Finder and Disk Utility will provide you with a more accurate overview than the Storage tab.

## Should you trust the Storage bar?



My Mac mini has an internal 256GB SSD, so my large Photos and iTunes libraries are on external 4TB and 8TB drives. The Storage tab in About This Mac reports over 100GB of photos on my internal drive, but Disk Utility and Finder show a total of only 5GB is in use. Which is right, and why?

by DAVE HARPER



Trust Finder and Disk Utility over anything in that Storage tab. The former calculate the total space actually used by all the files on a drive, regardless of what's in them.

Although they've occasionally had glitches, those figures are pretty robust,

and have been since OS X 10.0 in 2001.

The Storage tab in About This Mac is the upstart, and has been revised for Sierra's new Optimised Storage feature. Somewhere in that process, the method it uses to work out how much of your startup disk is used by different types of files has become less reliable.

On some Macs, that coloured bar never completes, and shows 'Calculating...' months after upgrading to Sierra. A few users have reported problems similar to yours, which may result from incorrectly trying to include large linked libraries, such as your Photos library.

Hopefully, Apple will get round to fixing these bugs soon. In the meantime, you should ignore those conflicting figures listed in the Storage tab.



# Mac hardware >

Thinking outside the aluminium box to find solutions to your toughest Mac problems

## Networking quick-fire questions >

### How reliable is the new Touch Bar?

> Apple hasn't revealed how many MacBook Pros it has sold, but there are now lots of them with Touch Bars in daily use. Reports of hardware problems are remarkably uncommon; as they don't have any moving parts, they should age well too. Software issues are more common, but improved by the macOS Sierra 10.12.3 update.

### How to run diagnostics with a wireless keyboard?

> Connect Apple's rechargeable wireless keyboard to a USB port using its charging lead, which turns it into a USB keyboard. If you have any other wireless keyboard, you'll need to get a cheap USB keyboard for this purpose. Keep it handy in case you need to enter Recovery mode.

## Unexplained shutdowns

**Q** Although my Mac mini seems to have been running sweetly with El Capitan, a couple of times recently it has shut down of its own accord, but the shutdowns haven't coincided with any interruption to the mains power supply.

**Why could that be?**  
by DAVID WARD

**A** These are almost certainly the result of kernel panics, in which the heart of OS X has become so badly damaged that its only option is to force your mini to shut down. As you're still running El Capitan, you can check whether a recent shutdown is the result of a kernel panic, by browsing its logs in Console.

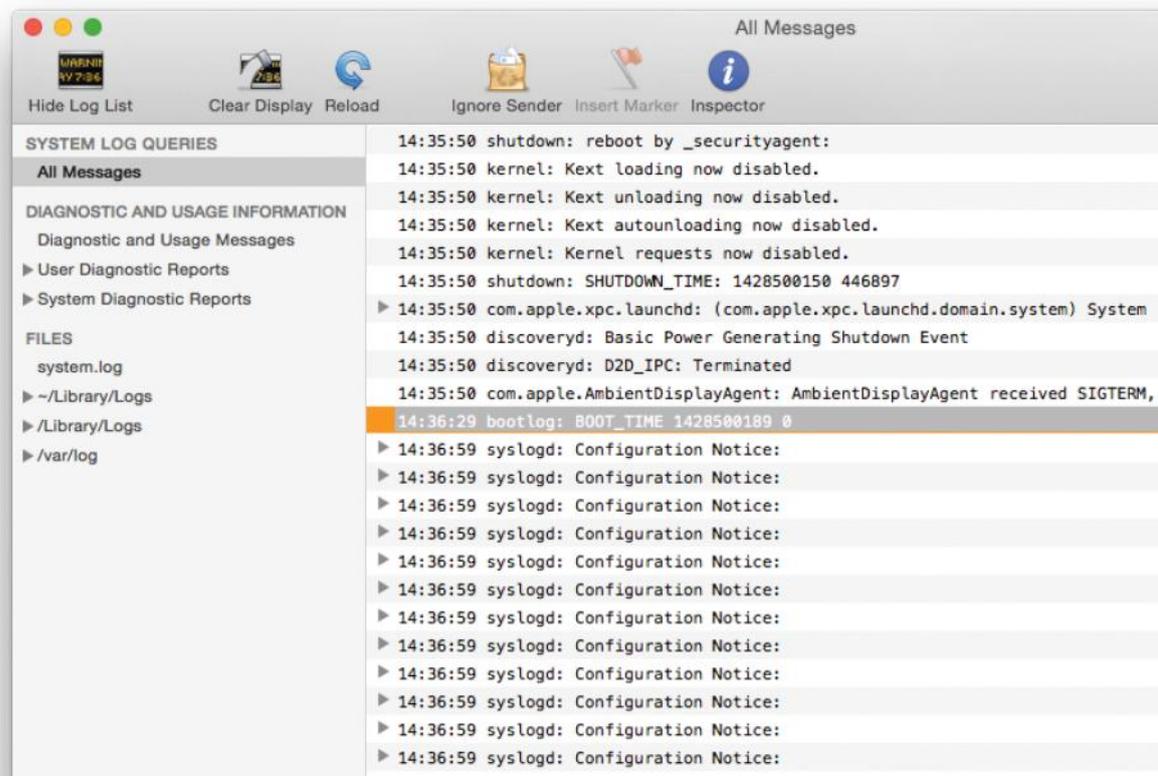
Search its All Messages view to find `BOOT_TIME` in the first instance, which shows the last time it started up after shutting down like that. From there, show all log entries again

and scroll backward in time to locate its last entries before starting up, and forward in time to look for 'Previous shutdown cause'. The latter should give a code which you can interpret from [eclecticlight.co/2017/02/28/mac-shutdown-and-sleep-cause-codes](http://eclecticlight.co/2017/02/28/mac-shutdown-and-sleep-cause-codes).

Next, run Apple's hardware Diagnostics to ensure there isn't a hardware problem lurking, such as faulty memory. Then start up in Recovery mode, open Disk Utility, and run First Aid on your startup disk to ensure it's OK. Those are detailed in [eclecticlight.co/2017/03/22/running-hardware-diagnostics-or-aht](http://eclecticlight.co/2017/03/22/running-hardware-diagnostics-or-aht) and [eclecticlight.co/2016/08/25/recovery-mode-and-its-tools](http://eclecticlight.co/2016/08/25/recovery-mode-and-its-tools).

If those are good, suspect a rogue app, or the possibility it's the longstanding tendency to instability in El Capitan. This is a very good reason for upgrading now to Sierra, which on most Macs is considerably less prone to such kernel panics.

In the log, the entry `BOOT_TIME` marks the startup after any shutdown or restart, and helps to locate the cause.





Upgrading the total memory and replacing the disk on an old MacBook are expensive options; you'd probably be better getting a newer model.

## Ageing MacBook

**Q** I have an old white MacBook from 2010 which is very slow, and only works when connected to mains power. How can I speed it up and restore battery life?

by KARA HAGGAR

**A** Two simple steps are to replace its battery with a new one specifically for that model, and perform thorough housekeeping on its hard disk to free up space. Check its battery by running Apple

Hardware Test, detailed at [support.apple.com/en-gb/HT201257](http://support.apple.com/en-gb/HT201257). If the error code is PPT005, the battery is dangerous: shut it down and don't use it until the battery's replaced. PPT006 and 007 codes indicate the battery's safe, but non-functioning.

A battery replacement will only give the MacBook a normal battery life again. You could spend more upgrading its disk and memory, but it would be much better to replace the whole MacBook with a newer model if you can.

### Is a new iMac vulnerable to a Sonic Screwdriver?

> No. That 2013 attack attributed by Wikileaks to the CIA only affected older models, and required physical access to them with a specially-made Thunderbolt cable. No doubt spooks now have other means, and Apple works to counter them.

### Which Macs have best support for 5K displays?

> Thunderbolt 3 support in the new MacBook Pro is needed for the LG UltraFine 5K display, and the 15-inch model can drive two. iMac 5K and Mac Pro models support Dell and HP 5K --displays using two DisplayPort cables. Details are at [support.apple.com/en-us/HT206587](http://support.apple.com/en-us/HT206587).

## Display or Wi-Fi problems?

**Q** I've had the odd display glitch on my iMac recently, so I ran Apple Diagnostics. I was surprised when it reported a code CNW007, which I'm told is a Wi-Fi problem. As I don't have its Wi-Fi turned on, should I be worried?

by GINA DAVIS

**A** Two Wi-Fi fault codes reported by Diagnostics don't necessarily mean that there's a problem: CNW007 and 008 indicate that the Diagnostics routines could not connect to a wireless network.

The most obvious potential cause, and the cheapest for you, is that your iMac wasn't in range of a wireless network when the test was

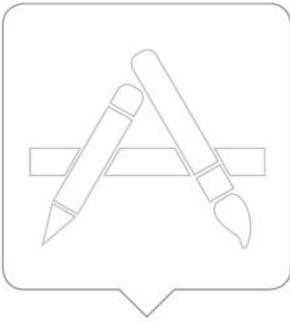


**Problem with Wi-Fi? Check that your Mac's in range of the wireless network before attempting a Diagnostics test.**

run. Apple recommends ensuring that there's a good Wi-Fi connection available, say from a reasonably close Wi-Fi modem-router or base station, then repeating the Diagnostics tests.

If they still return the same code, then that makes it likely that there's a fault in your iMac's Wi-Fi hardware. Whether you choose to do anything about that is another matter; although that fault could potentially spread to other systems, your iMac might well

continue to work normally in all other respects for years. Unfortunately, none of this rules out a graphics card or display problem. Keep an eye on that, and consider taking your iMac into a Genius Bar to ask them to run Apple's full hardware test suite.



# Mac software >

Shine a spotlight on sagacious solutions to your most maddening Mac maladies

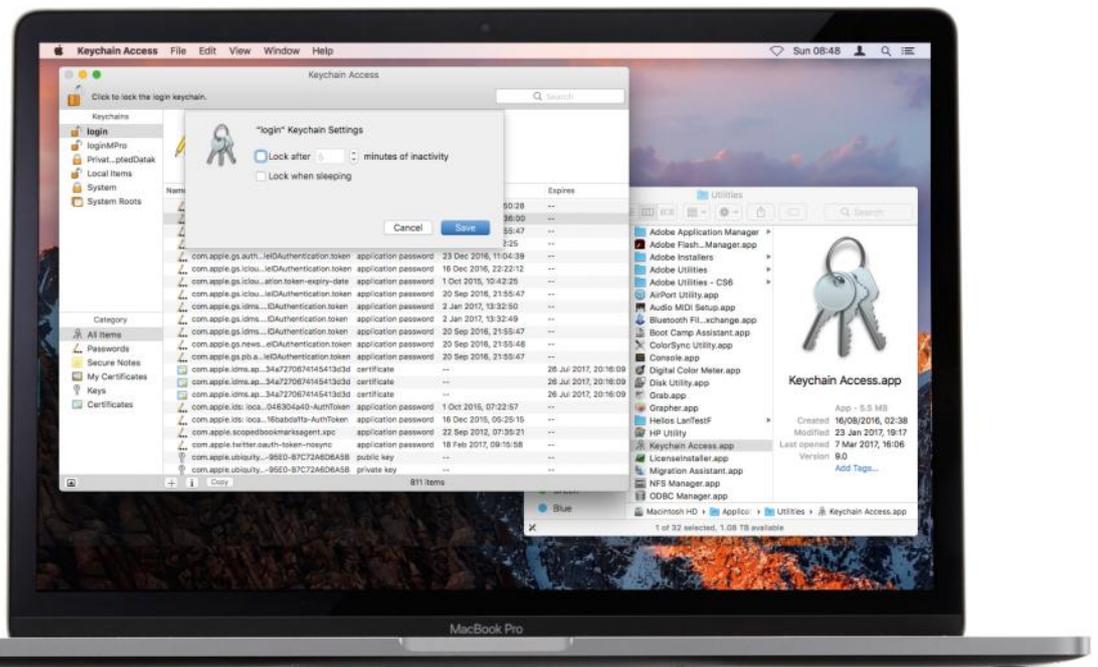
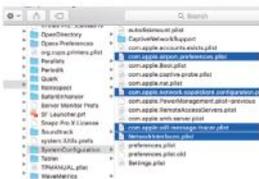
## Software quick-fire questions >

### How do I fix Facetime broken by the 10.12.3 update?

> Download and install the 10.12.3 or later Combo update from [support.apple.com/kb/DL1905](http://support.apple.com/kb/DL1905). If that doesn't help, try a Safe startup with the  $\square$  key held, and refer to [support.apple.com/en-gb/HT204168](http://support.apple.com/en-gb/HT204168). If the problem persists, contact Apple support as it may well be in your iCloud account.

### Why did my Mac lose Wi-Fi after a macOS update?

> Try moving all Airport, Wi-Fi, and network settings files (with the extension .plist) from /Library/Preferences/SystemConfiguration to another folder in your Documents folder. Restart and set networking up again. Otherwise try a Safe startup, or a Combo update, as above.



Use Keychain Access to fix problems with repeated prompts to log into your keychain.

## Keychain problems in Sierra

**Q** Following a security scare, I changed all the passwords on my Mac and online accounts. This has upset my Mac though, and it keeps asking me to enter my login password, when it didn't before. It's running Sierra, and uses a local keychain. How can I fix this?

by MIKE GRIFFIN

**A** Keychain problems are common in Sierra, and often provoked by changing your password, which can disturb its previous settings. At worst, the keychain password may get out of sync with your normal login password; if that were the case, you'd have to keep entering your old password to unlock your keychain.

Open Keychain Access in your /Applications/Utilities folder. It defaults to

showing your login keychain, which should be called 'login'. If its name has been changed, or you see another user keychain, that can be a cause. In that situation, you may need to copy items from that extra keychain and paste them into the one named 'login'. If the login keychain is there and looks correct, containing current passwords and more, make sure it's unlocked. With it selected at the upper left of the window, use the Change Settings command in the Edit menu to ensure that your keychain doesn't lock after a period of inactivity, or when your Mac sleeps; those options will result in prompts to enter your password to unlock it. Check again that your login keychain is unlocked, and quit the app. Unfortunately, there's no easy way to repair a keychain now; that had to be removed from OS X 10.11.2 because it was a security vulnerability.

# Retiming scheduled events



It's important to keep apps up to date, but every afternoon, the QuarkXPress updater pops up and interrupts my work. How can I stop it without missing out on those updates?

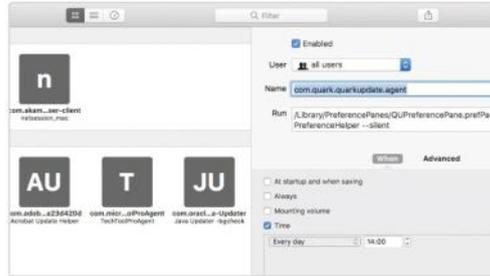
by WIN SPEARE



Many of these updaters and other periodic tasks are installed as Launch Agents, in either your ~/Library/LaunchAgents or /Library/LaunchAgents folders. In the case of QuarkXPress, it's a property list file named com.quark.quarkupdate.agent.plist.

These property lists specify which tool should be run, how often, and when. If they run an updater or other tool at a time which is inconvenient to you, change that. You could do that with a good text editor - these files must be kept in plain text to work - but you might feel you're getting into deep water.

Alternatively, use Lingon X from



Lingon X provides ready access to Launch Agent settings, which you can use to retime update checks.

peterborgapps.com/lingon, which provides a friendly interface. Go carefully - this is not the place for experiments, but it's simple and safe, for example, to change the time that this updater runs to when you're on your lunch break or, if your Mac stays on all the time, to when you're not using it.

You can also use Lingon to schedule your own Launch Agents. Once you've saved changes, restart your Mac to apply them.

## How do I make an Installer package for Sierra?

> Making the package using the free Packages from s.sudre.free.fr/Software/Packages/about.html is straightforward. However, all packages must now be signed with a special Developer ID Installer certificate from Apple, which requires developer registration, or Sierra rejects them.



## How can I tell when Apple pushes a security update?

> You can only tell when your Mac installs the update. Open About This Mac, click on System Report, select Installations in Software, and click twice on the Install Date column. Scroll down to see updates over time.

## How can I make it easier to see the mouse pointer?

> Open the Accessibility pane, and select Display. Tick the box labelled Shake Mouse Pointer to Locate. Then, you can wiggle your mouse to make the pointer larger.



# Checking up on Time Machine



I have Time Machine backups turned on in Sierra, but they don't seem to occur particularly regularly. How can I tell if they're encountering errors or other problems?

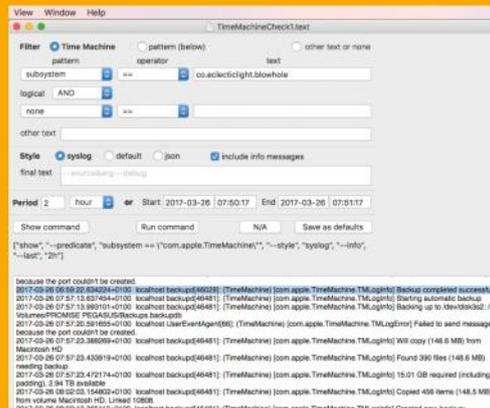
by IAN DAVIDSON



Time Machine backups normally occur about every hour, but the exact time that they run is determined by Grand Central Dispatch (GCD); this aims to minimise their impact on your use of your Mac, and optimise its power consumption.

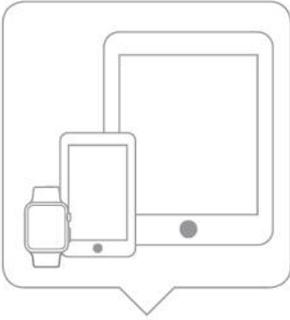
As a result, they may occur at any time within about five or 10 minutes, each hour.

If GCD develops a problem, backups can become much more irregular, skipping several hours, and running more frequently at other times. Currently, some Macs which are left running without putting the system to sleep can develop these issues after about 14 days: Apple is aware of this. If you let your system sleep, or shut it down periodically, you are unlikely to experience that. If backing up results in an error, Time Machine should



Use a utility like Consolation to check backups, and browse past events in macOS Sierra's new log system.

notify you of that. In El Capitan and earlier, it was easy to browse the logs to check for error messages like that, but Sierra's new log system and its impotent Console app make this very hard. You will be better off using my free utility Consolation, from eclecticlight.co/downloads. This has a Help Book which shows you exactly how to inspect the last few backups, confirm when they took place, and that they occurred without error.



# iOS software >

Swipe away your touchscreen troubles and rekindle your love of Apple's mobile devices

## iOS software quick-fire questions >

### Can I get an external flash for my iPhone 6?

> The best solutions have been external LED panels to provide continuous light rather than flash. Tric has just started shipping its new wireless Xenon flash trigger, which syncs with external flash units such as speedlights; its fastest sync speed is 1/30, though, with an iPhone 6, and 1/45 with 6s and 7.

### What's the best macro lens for an iPhone 7?

> Moment and olloclip offer top-quality options, but note the differences in their mounting systems. Neither can match the performance of a good compact camera with a macro-capable lens, and those are inferior to a DSLR with dedicated macro lens.



## Charging in safety

**Q** I heard recently that someone was electrocuted when charging and using their iPhone in the bath.

Should I stop charging mine when I use it whilst sat on the loo?

by ANONYMOUS

**A** You should never take a mains-powered charger, or any other electrical item that's connected to mains power, into a bathroom or any area where it could be splashed by or immersed in water. The danger to you isn't from the low-voltage iPhone or iPad side of the charger, but from the section from the mains socket to the transformer/charger itself.

Mains voltages often kill on contact, and are even more likely to be lethal if your skin

## Never take a mains-powered charger into an area where it could be splashed with water

is damp or wet, as water makes your skin more conductive to electricity, and allows more current to flow.

Domestic electrical safety codes only allow shavers to be powered from special sockets mounted high and more than three metres away from any splash risk. iOS device chargers aren't intended to work safely in wet conditions, and will pose a risk of fatal electric shock if they get wet.

You should be able to get further specific advice on electrical safety in and around the home from a competent electrician. The Royal Society for the Prevention of Accidents (RoSPA) also provides good safety advice,



Never use an adaptor to plug your iOS device charger into a bathroom shaver socket, particularly if the transformer unit dangles.

on its website and through regional groups.

You should additionally consider the issue of hygiene. Of course you wash your hands properly afterwards, but do you clean your iPhone too? Would you be happy touching someone else's iPhone knowing that they'd just been using it in the loo?

PHONES WEARABLES AUDIO TVS CARS HOME

# T3

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- > Find your way with Maps in iOS 10

### ISSUE 311 APRIL 2017

- > New Apple gear for 2017!
- > Do more with Apple's built-in apps
- > Smart sensors to secure your home
- > Turn an iPad into a Touch Bar for Mac

### ISSUE 310 MARCH 2017

- > Become a Mac Genius
- > Multi-monitor setups made easy
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What's inside

78-79

**OLD TO NEW**

> Bridging the generation gap between Macs

80

**TRANSFER FILES WITH MACLINKPLUS**

> Link, connect; start transferring files



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# LOVE YOUR MAC



EDITED BY **LUIS VILLAZON** >

## REUSE OLD KIT

Inspiring ideas for revamping your old Apple devices

## Primitive networking

**R**emember back in issue 307 (December 2016), when I was so excited about buying a 1987 Mac SE on eBay? Of all the Macs I own, that machine is still my favourite, and it's always the one I show off first to guests (and then look forward to the gasps of "It's how old?"). But my original justification for buying it, was to be able to play Lode Runner on contemporary hardware, and in this regard the Mac SE has been a disappointment.

The floppy diskette of classic games that I bought online is corrupted and Lode Runner, ironically,

will neither load, nor run. I could just buy another copy of the diskette but somehow this feels like cheating.

Lode Runner was originally a free game and you can still download it for free from various abandonware sites. But just getting this Mac online would be an enormous task - it was built six years before the internet was invented! And I can't just download files to a modern Mac and copy them with a USB floppy drive, because the Mac SE uses an obsolete drive modulation scheme. I need another way to transfer files across the ages...



## CLASSIC APPLE KIT FROM 2002!

> The Xserve G4 was Apple's first attempt at selling hardware designed from the start as a dedicated server, rather than just rebranding existing



desktops. In 2002, three years before YouTube got started, the original Xserve could handle up to 480GB of hot swappable storage, controlled by either single or dual 1GHz G4 processors. Rack mounted, on top of a RAID array of drives, it looks about the same size as a boxy desktop PC. But the CPU unit by itself is bewitchingly wide and thin. You can still find them on eBay for under £100.

MacLinkPlus quick-fire questions >

Can MacLinkPlus transfer files without using a DOS emulator?

> It does have a Mac-to-Mac mode, but you need to be able to run the MacLinkPlus software on both Macs.

This is a good way to bridge the gap between a 90s-era Mac running System 7, 8 or 9, and a Classic Mac. But modern Macs can't run Classic apps any more so you'll need to run an emulator for that anyway.

What's the maximum cable length?

> There isn't really a theoretical limit. You can even use this technique over old analog modems to send files internationally. (But please don't!)

What if my Mac doesn't have a modem port?

> You can also use MacLinkPlus over the printer port, which has the same connector. On the Set Communications tab, click Port and choose Printer from the drop-down list.

# Acceptable in the 80s >

Bridge six generations of hardware with a cable

**F**inding a solution for transferring files to (and I suppose, theoretically, from) the Mac

**SE is important for more than just Lode Runner.** At the moment, the floppy disk drive is this computer's only connection to the outside world and it is just too temperamental to rely on. Eventually, I might set up a working AppleTalk network that lets me connect this Mac to my broadband router. But even then what sites am I going to connect to? Even the Lynx, text-only, web browser requires Mac OS System 7 - I'm running System 6. I'm not about to start Telnetting into a remote server running a Unix version of Lynx, just so I can FTP the files from there back to my Mac.

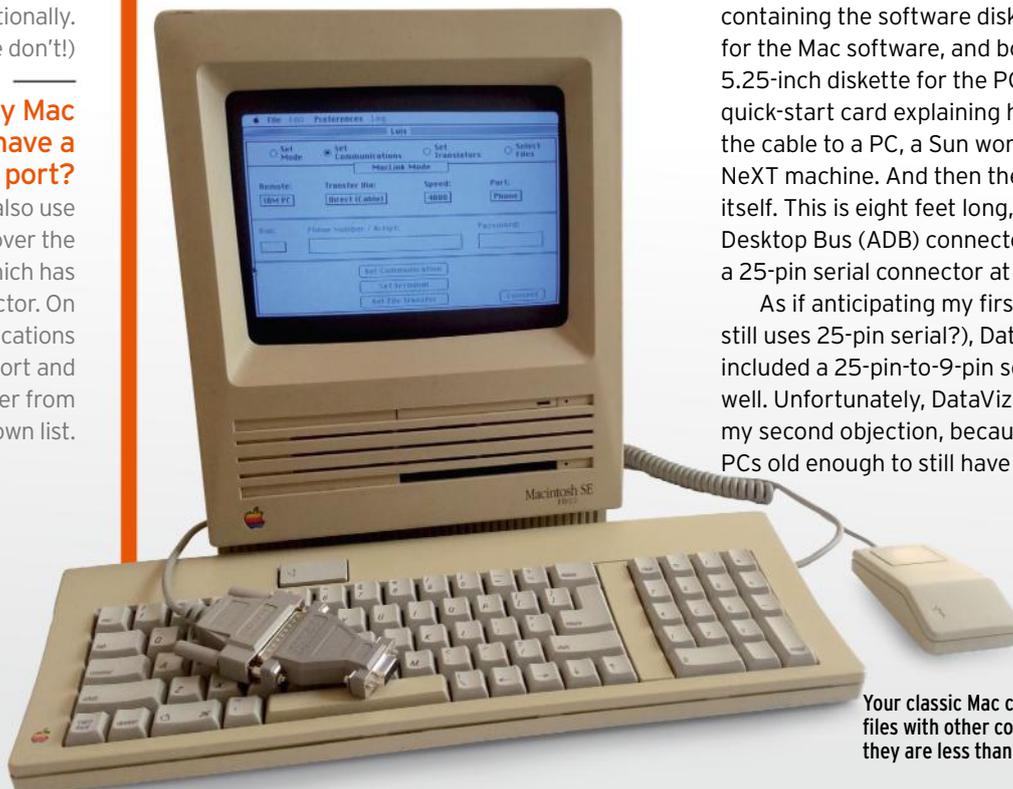
But I do remember that in the 1980s,

we used to have a program called LapLink to transfer files between PCs over a serial cable. Is there something like this for the Mac? After a trawl through the dustier corners of eBay, it turns out the answer is 'sort of'. For £8, I manage to snag a boxed copy of MacLinkPlus, by DataViz, together with the original cable. This was designed to allow data files to be transferred between Macs and PCs. The pictures on the eBay listing include a shot of the first page of the hefty, spiral-bound manual and this shows a copyright date of 1986 so there's a good chance it will work on my SE.

Original floppies

The package arrives in great condition. The manual has the original plastic pouches containing the software diskettes (3.5-inch for the Mac software, and both 3.5-inch and 5.25-inch diskette for the PC). There's a quick-start card explaining how to connect the cable to a PC, a Sun workstation or a NeXT machine. And then there's the cable itself. This is eight feet long, with an Apple Desktop Bus (ADB) connector at one end and a 25-pin serial connector at the other.

As if anticipating my first objection (who still uses 25-pin serial?), DataViz helpfully included a 25-pin-to-9-pin serial adaptor as well. Unfortunately, DataViz didn't anticipate my second objection, because I don't own any PCs old enough to still have a serial port of



Your classic Mac can once again exchange files with other computers. As long as they are less than eight feet away.

any sort. And I own a lot of junk. Off to Amazon then, for a USB-to-serial adaptor (£8.59) to complete the last link in the chain.

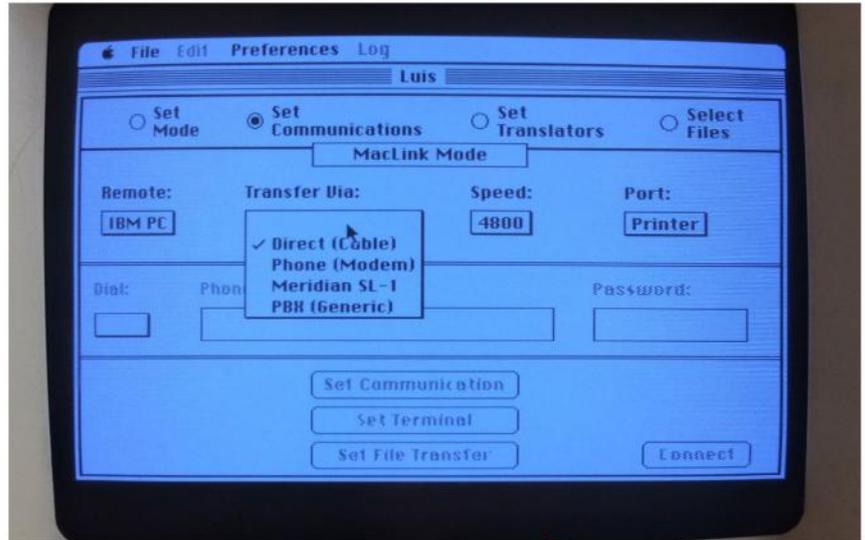
Next, the software. I hold my breath and pray to the gods of unreliable floppy drives as the Mac diskette copies across to the SE's hard disk. They smile down on me. Then I install the PC software on an old Windows laptop and light a candle to the gods of application compatibility, as I run the executable. This time I am sent a plague of boils. This is my oldest PC and it runs Windows 7, 64-bit; I don't have any PCs running a 32-bit OS anymore. This is a problem because MacLinkPlus was written for the old DOS operating system, which is actually 16-bit. Microsoft dropped support for 16-bit apps across all their 64-bit operating systems, right back to Windows 7.

To get around this, I'll need yet another intermediary between me and the Mac, this

I don't own any PCs old enough to still have a serial port. And I own a lot of junk

time in the form of a virtual DOS emulator. I start with vDOS, which is a very friendly, simple, and free app. But it doesn't include serial port emulation, except for printers. DOSBox (dosbox.com) needs a bit more rolling up of the sleeves to set up, but it does at least recognise the adaptor cable. Even better, there is an OS X version. So now I can factor out the PC from this equation altogether!

This software won a 1989 Editor's Choice Award and it's still surprisingly useful 28 years later.



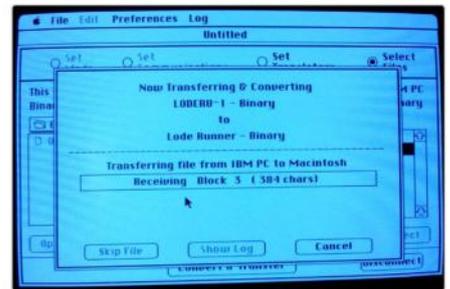
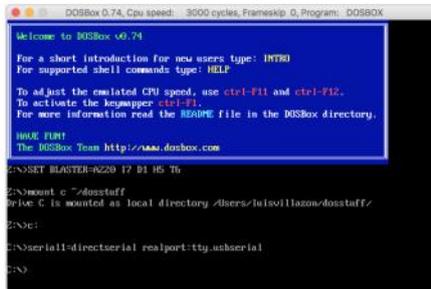
### Any serial port in a storm

Back to the hardware, and the next challenge: to persuade OS X to recognise the USB serial port adaptor. Since El Capitan, OS X has a feature called System Integrity Protection that blocks third party drivers from modifying the kernel. The drivers that ship with the serial port adaptor fall foul of this and so I waste half an hour rebooting into Recovery Mode and using Terminal to disable csrutil, which ought to fix it, but doesn't. Eventually, I find another set of drivers for the same chipset as the one in my adaptor ([bit.ly/silabs\\_driver\\_zip](http://bit.ly/silabs_driver_zip)). These have been ratified by Apple, so they will install correctly

With MacLinkPlus, you can transfer from Mac to Mac, but you can also transfer to your printer.



## HOW TO Transfer files with MacLinkPlus >



### 1 Set up the Mac

Plug the MacLinkPlus cable into the Mac's modem port. Copy files from the 3.5-inch floppy and run the app. Select Set Communication and experiment with the transfer speed to find a value that works on your cable. If you change from the default 9600 baud, change the speed at the other end to match.

### 2 Set up the PC end

When using DOSBox to emulate the 16-bit environment, use the mount command to set your home folder as Drive C. Configure the virtual serial port to point to the USB adaptor. The terminal command for this is `serial1=directserial realport:tty.usbserial1`. Now enter MLPC.EXE and press O to connect.

### 3 Transfer

At the Mac, click Set Translators and choose the file type. MacLinkPlus can convert between various document types for '80s-era apps, but you'll probably want Text or Binary. On Select Files, click Connect to create the link and you'll be able to browse the files at the remote end. Click Convert & Transfer when ready.



Unfortunately, transferring LodeRunner, is not the same as being able to actually open it!

in Sierra. I can verify this by typing `ls /dev/tty.usbserial1` in Terminal. It doesn't say 'No such file or directory', so the port is now recognised.

### Testing, testing

Time to test my connection! I run MacLinkPlus on both the Mac SE and in DOSBox on my Mac mini (see the 'How To...' above). At the default communication speed of 9600 baud (about 75kbps) the connection hangs after 10 or 20 seconds - probably due to electrical noise from all the different adaptor plugs chained together, but dropping to 4800 baud seems

stable. There's also an annoying quirk where closing the connection from the DOS end of the link first will cause the Mac SE to lock up for about 30 seconds, whereas closing it from the other end requires me to reboot my Mac mini entirely. But after I have ironed out these kinks, I manage to successfully transfer some sample text files. And there is much rejoicing.

### The final hurdle

But of course, it was never going to be that simple. MacLinkPlus automatically converts data files from most of the common formats, but application files are left as binary files. I can download a disk image of Lode Runner from [macintoshrepository.org](http://macintoshrepository.org), but whether I transfer it as an ISO, DMG or BIN file; it doesn't make any difference. The Mac SE has no way to mount it, without Disk Copy, which wasn't included by default until System 7. I could download and transfer Disk Copy of course, but I'd still need some way to extract and mount that before I could use it to mount anything else. Even the tantalisingly named Self Extracting Archive (SEA) file format doesn't work on the Mac SE.

So the bottom line is that I still don't have Lode Runner on my beloved SE. But I'm trying not to be too downcast about it. Being able to transfer files of any description is a big step forward. One day I'll get to the end of this rainbow.

### Next Issue!

> Luis finds a really cool way to control the hot tub in his garden with his iPad!

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THE UK?

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page 30

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# tech companies that Apple should buy

Apple has a mountain of cash, but how should it spend it? **Alex Blake** has a few ideas

**A**pple sits on a pile of gold that even Smaug would be proud of. Its cash reserves stand at a staggering \$158.8 billion, 30 times what they were in 2004. In 2011, for the first time, it had more spare cash than the US treasury; three years later, it had twice as much as the government. You get the picture - Apple is rich.

That kind of war chest tends to get us tech writers a bit hot under the collar. Apple's got to spend it somehow, we reason, so what exciting acquisitions might it embark on? We've compiled a shopping list of companies big and small with expertise in a range of fields that all have something to offer Apple. Here's who we think it should snap up.





Apple is very interested in augmented reality, but doubts have emerged over whether it can catch up to rivals like Microsoft. Buying Magic Leap could help to rectify that.



# Magic Leap

**Tim Cook has made it clear he is very excited about the future of augmented reality.**

In *MF312* we talked about how Apple is behind in a number of technologies, particularly artificial intelligence. Maybe we should add augmented reality (AR) to that list.

Some of Apple's biggest rivals, like Google and Microsoft, have made great strides in this area, with Microsoft already shipping units of its

HoloLens AR headset to developers. And while Google's Glass AR tech didn't take off in the way it hoped, the company still has years of experience in AR behind it. What has Apple got to show for it? Nothing of note yet.

Of course, it could be that Apple is simply keeping its cards close to its chest. Or it could be far behind, and needing to catch up fast. And what better way to do that than to buy one of the most promising AR companies

in the world? Magic Leap is such a company, and one with significant buzz around the tech it's working on.

Such an acquisition would be very expensive; Magic Leap is valued at a whopping \$4.5 billion. But that's small change to Apple, sitting pretty on its \$158.8 billion war chest.

## Leap of faith

Apple is not afraid to invest in AR. It bought augmented reality software firm Metaio in 2015, and took over FlyBy Media in 2016, a company that designed AR camera software. Tim Cook reportedly visited Magic Leap's offices in 2016 and showed an interest in its tech. It also hired former Zeyu Li, Principal Engineer at Magic Leap, strengthening the links between the two high-tech companies.

Apple has been working on its own AR glasses, according to the *Financial Times*, but a launch date is still at least a year away and "perhaps much longer". In contrast, Magic Leap's own

## Tim Cook on AR

When it comes to future tech, Tim Cook reckons augmented reality is one of the most exciting ideas around. "Unlike Virtual Reality which closes the world out, AR allows individuals to be present in the world," he explained to *The Independent*, going on to say he felt it was "a big idea like the

smartphone." He has also said previously that he expects that one day, using AR will be as normal as "eating three meals a day".

All signs point to Apple actively working on this technology. And if anyone has the funds and global reach to make augmented reality a true reality, it's Apple.



Magic Leap is very secretive over what it is working on, but many who have tried its tech hail it as some of the best augmented reality technology currently in development.

AR glasses are expected to come out later this year, and cost about \$1,000.

We know that Apple won't rush out an AR product just to beat its rivals; it prefers to wait until it has perfected a product before making it available to consumers. That's one reason why purchasing Magic Leap would make sense - Apple would have access to

## We know that Apple won't rush out an AR product just to beat its rivals

the best AR tech on the market, and could thus blow away the competition.

But what's more, such a purchase would also allow Apple to come to the market much more quickly. A quick entry combined with a killer product could make for a huge success for Apple. It would be a costly acquisition, sure, but that wouldn't scare Apple.

# Mimi Music

**It's fair to say that Apple loves music.** From its wireless AirPods to Apple Music,

plus a \$3 billion takeover of Beats, Apple is heavily invested.

But there's one problem it can't easily solve - everyone's hearing is different. So imagine if there was a way to guarantee you heard music in a way that best suited your ears. That's the pitch from Mimi Hearing Technologies, a startup that claims it can "transform sound just for your ears" with its Mimi Music app.

Here's why Apple should buy it. Mimi Music conducts a quick ear test to create an 'earprint' of your hearing. It then uses that to tweak your music playback so that it's best suited to your own hearing.

If Apple bought this firm it could integrate its clever software into the AirPods or Apple Music (or both). Upon setting up your AirPods for the first time, you could take a quick test much like the genre-selection screen when you first launch Apple Music. You'd then have perfect,

customised sound on your AirPods, seamlessly set up with minimal effort. The AirPods would have the best sound on the market because each pair would be tailored to each user. It all sounds very Apple.

## Healthy hearing

There are implications beyond music for the app, too - its creators are also interested in health. Before Mimi Music, they launched the Mimi Hearing Test, which was designed to test your hearing ability for issues. Both apps are medically certified. Recently published patents show that Apple is looking to build health-tracking features into its AirPods, so acquiring Mimi Hearing Technologies would give it access to technology backed by 12 years of research and testing on millions of ears. It's not just a moonshot, it has plenty of history and backing.

Buying this company would be a fairly straightforward affair for Apple - it's small and relatively new, but has exciting software on its hands that could really improve Apple's own products.



Mimi Music tweaks music to match your hearing, and could integrate well into Apple's AirPods.

## TOP FIVE Apple targets

# 3 Avizia

**Chances are you've never heard of health firm Avizia. But**

it aligns well with a lot of work Apple is already doing.

Apple is excited to work in healthcare, launching HealthKit in 2014 and ResearchKit and Carekit in 2015 and 2016; all apps designed to establish Apple as a force in the industry.

Avizia looks like the perfect next step for Apple. It enables patients to more easily contact their doctors, both through a 'telemedicine cart' equipped with a mobile video screen, and with remote consultation software.

That matches work Apple has already been doing to get iPads into hospitals. For example, at Cedars-Sinai Medical Center in Los Angeles, patients can use iPads to view their prescriptions or send direct messages to their doctors and carers. Buying up Avizia would give Apple access to a company that has introduced its own software and hardware

Avizia's 'telemedicine' tech could be of great interest to Apple.

into hospitals in a way that closely lines up with Apple's own goals and actions. It's a company that has a proven track record and experience of operating in a hospital setting - and navigating the tricky regulatory maze that faces any firm looking to get into healthcare. (Incidentally, Tim Cook has spoken about his reluctance to make the Apple Watch too healthcare-focused, lest it face regulatory scrutiny.)

### "Good as gold"

Since it was founded in 2013, Avizia has raised almost \$26m in venture capital funding, including \$11m in July 2016 and \$6m in October 2016. It now operates in 37 countries around the world, which would instantly give Apple access to these markets should it decide to snap up the startup.

"For our use, it's as good as gold," says Dr John Shufeldt of medical group MeMD when discussing Avizia's software. It's successful, trusted, and should be on Apple's shopping list.

Didi Chuxing is the most popular ride-sharing company in China. Even Uber couldn't compete, and recently pulled out of the country completely.



# 4 Didi Chuxing

**Project Titan is the worst-kept secret in Silicon Valley.**

Details are scarce, but it seems almost certain that Apple is working on automotive tech.

However, with the project supposedly stalling and workers apparently being moved to different tasks, now may be the time for Apple to buy an established name in the field to kickstart its own efforts.

### Project Titan 2.0

Tim Cook has already shown that Apple is not shy to invest in car tech firms, as he amply demonstrated when Apple ploughed \$1 billion into Chinese ride-sharing company Didi Chuxing in May 2016. He justified the move by saying that it represented "a chance to learn more about certain segments of the China market." What he didn't mention was that it was also a great opportunity to learn more about the automotive space.

**It seems almost certain that Apple is working on automotive tech**





Recent ruminations on Project Titan have suggested it's more about in-car tech than about actually building a car. If that's the case, buying a ride-sharing company like Didi Chuxing would be a way to integrate iOS into a successful car company without needing to worry about the logistical and regulatory nightmare of building physical cars. It would let Apple weave its own mapping app tightly into Didi Chuxing's service, and also let users pay using Apple Pay.

The most exciting part? Didi Chuxing has opened a US-based research centre and is reportedly working on self-driving cars - exactly what Project Titan was originally thought to be.

## Uber Apple

Interestingly, not long after investing \$1 billion into Didi Chuxing, Apple had become a shareholder in one of Didi's main rivals in China - Uber.

That's because Didi Chuxing invested \$1 billion into Uber a couple of months after Apple's investment. That saw Didi acquire all of Uber's Chinese operations, making it easily the largest ride-sharing firm operating in China.

With fingers in many ride-sharing pies, Apple will be well positioned to make a good return on its investment, and also further develop Project Titan - whatever that might entail.

## Top five **APPLE TARGETS**

# 5 SlamdunQ

There are two things that are surely high on Tim Cook's list of priorities:

**make the Apple Watch set the world on fire, and finally crack India.**

Startup SlamdunQ won't do either by itself, but buying it would help Apple make progress on both goals.

SlamdunQ makes apps to help athletes improve their technique and performance, and currently offers apps that help you tweak your golf swing and cricket throws. What will be of interest to Apple is that it makes use of the Apple Watch to measure each user's actions, rather than relying on its own hardware product.

Buying SlamdunQ would grant Apple access to the company's impressive software and allow Apple to make it a key feature of the Watch. Apple has already shown it is keen to emphasise the sporting prowess of its wearable, for instance by teaming up with Nike to offer a special athlete-focused Watch. Integrating features of SlamdunQ would add another string to the Watch's fitness bow.

The purchase would also give Apple an important foothold in India. In *MF312* we discussed how Apple's failure to properly penetrate the Indian market could lead to it falling behind its rivals (like Samsung) who already have a sizeable presence on the subcontinent. SlamdunQ was founded in, and is based in, India.

### Grand slam

While this would be a much smaller acquisition than the likes of Didi Chuxing, it makes a lot of sense. Apple regularly snaps up smaller firms whose technology aligns with Apple's own future and current plans. SlamdunQ is a perfect match for the Apple Watch and makes use of the wearable in exactly the kind of way that Apple is keen on promoting. The firm's relatively small size (and cheap price), and its presence in India, will only sweeten the deal.

Having won funding and accolades from Google, SlamdunQ is clearly attracting outside interest. Apple should move fast to grab this startup and integrate its tech into the Watch, before someone else does.



SlamdunQ's apps are designed to work with smartwatches; Apple could add their features to the Apple Watch.

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### 90-94 MAC HARDWARE

> New iPad, Wi-Fi bridges, plus headphones and more

### 95 HEAD-TO-HEAD

> Two hybrid watches try to outsmart each other

### 96-99 GROUP TEST

> 6 photo editing apps battle it out for the top-shot hotspot

### 100-101 MAC SOFTWARE

> Advanced music production, easy PDF conversion, 3D design

### 102-103 IOS SOFTWARE

> Image sculpting and customisable calendars



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# APPLE CHOICE

EDITED BY ALEX BLAKE



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# iPad

## Subtle tweaks and lower pricing

Reviewed by **MATT BOLTON**

> From £339 > **FROM** Apple, apple.com > **FEATURES** 32GB and 128GB storage options, 2048x1536-pixel Retina display, A9 processor, 8-megapixel camera



The iPad's battery has been upgraded, giving you 10-12 hours of standard use.



Alex says...

> Hardly a blockbuster change, but we're OK with that. The iPad has reached maturity, and it's hard for Apple to do anything truly radical to improve it - faster CPU here, better battery there. It's still the best tablet by some distance, it just won't change the world any more.

**T**his iPad is the most exciting boring update to a product we've ever seen. It's the replacement for the iPad Air 2 at the lower-price end of Apple's 10-inch tablet range, and doesn't include any fancy new tricks, or features we've never seen before, or anything like that. What it does is take a great tablet, make it a little bit faster, a little bit cheaper, and give it even better battery life. It's more of the same, and when the same is a fantastic tablet, we're good with that.

These upgrades come with a surprising downside: it's thicker and heavier than the iPad Air 2. It's pretty weird to see Apple add bulk to a product given its near fetish-level obsession with all things thin and light, but this iPad is the same 469g weight and 7.5mm thickness of the original iPad Air. That's a weight increase of just 32g, and a more noticeable 1.4mm thickness. While we admit to being kind of obsessed with our tech being the smallest, thinnest designs possible, even we have to admit that this is... fine, really.

So that's the one really obvious downside, but even that comes with a bonus, in that this has a bigger battery than the Air 2 - in fact, it's even bigger than the 9.7-inch iPad Pro. That's especially interesting when you pair it with the new processor, which is an Apple A9, as seen in the iPhone 6s. It's not, you'll



The new iPad is 32g heavier than the iPad Air 2, but that kind of weight increase is not hugely noticeable.



Apple has made the Retina screen brighter in the new iPad, and it looks great in everyday use.

note, an A9X processor, which is what the iPad Pro models run - basically a beefier version of the same chip.

### Power play

This means you've got a power-sipping phone processor that's paired with a battery nearly five times larger. The main power draw on a tablet is the screen, and the iPad 5th-gen (as Apple is calling it, apparently pretending that the Airs didn't happen, a bit like when *Superman Returns* just skipped over the existence of *Superman III* and *IV* - except the Airs were actually good) has a slightly brighter screen than the Air 2, so you'll still get around the standard 10-12 hours of use from it, as you do from other iPads. But in our tests, it does work out as one of the longest-



lasting tablets around. It's good for 12-13 hours of video at mid-level brightness, and nearly as much from regular light use such as emailing and browsing the web. We think only the iPad mini 4 was as good for battery life, and that had a much smaller screen. Obviously, games or other really intensive tasks lower the figures a lot to more like 6-7 hours. The difference over an iPad Pro isn't totally transformative, but it can mean an extra hour of use in some cases.

The A9 processor is a good step forward from the A8X in the iPad Air 2, despite being a phone chip, rather than a dedicated tablet one. It's a dual-core chip, and despite being slower than the iPhone 7's A10 chip, it's more than fast enough for everything you probably want to do with a £339 tablet. Apps don't hang, web browsing is fast, everything is totally fluid, and it comes on instantly from

want something beefier – the Pro, or the Samsung Galaxy Tab S3, or just a laptop.

### Bright and beautiful

The screen is 9.7 inches, with a resolution of 2048 x 1536. There's nothing fancy about it – you don't get the TrueTone display or wide colour gamut of the iPad Pro. It's just a beautiful, detailed, bright screen that we have no complaints about for the cost.

There are a few minor disappointments; we'd love to have seen the vastly improved speakers from the iPad Pro, and the camera is pretty lacklustre. It may sound like we're a bit down on the new iPad, but that's only because its improvements aren't the flashy kind. It's exactly what we liked about the iPad before, but cheaper and faster, and comes with 32GB of storage as standard. Or you can get 128GB for an amazingly reasonable £429.

## ALTERNATIVE CHOICES



iPad mini  
From £419

### SPECIFICATIONS

- > FROM apple.com
- > 7.9-inch Retina display
- > 128GB storage
- > A8 processor
- > Built-in Wi-Fi with cellular option



iPad Pro 9.7-inch  
From £549

### SPECIFICATIONS

- > FROM apple.com
- > 9.7-inch Retina display
- > 32GB-256GB storage
- > A9X processor
- > Built-in Wi-Fi with cellular option
- > Apple Pencil support

sleeping. It's only got 2GB of RAM, but with the way iOS manages apps, this doesn't really get in the way, or slow things down the way it might on a laptop or Windows hybrid tablet. If you want to create or edit an 8K image, then you'll



## Mac FORMAT VERDICT

> It's not the most exciting update, but it's an amazing piece of kit for the price.



- Storage options have been doubled
- Better processor
- Fantastic value
- Middling speakers

# Devolo GigaGate

## Spread your home network

- > £219 (starter kit) > FROM Devolo, devolo.co.uk
- > FEATURES 5GHz Wi-Fi, five Ethernet ports per unit (one Gigabit)



Devolo has chosen to clothe GigaGate in black as opposed to the white of many rivals.

**J**oining the growing band of home 'mesh' networking devices is this kit.

There are only two devices (a base station and a satellite) in the starter kit. GigaGate is designed to extend the range of your network into areas of your home where your standard router's connection is poor.

Obviously, it's worth seeing if you can upgrade your router (unless you have an especially large house) before buying gear like this, as it really is meant for exceptionally large or tall

homes. Alternatively, it can also be used to share internet between two adjacent flats or even between two close-by buildings (it's ideal for, say, an office in an outbuilding). If you fall into that category, the GigaGate set can boost your network substantially, boosting signal and range thanks to 4x4 antenna tech.

It's also great for devices (such as smart TVs) that can be wired directly into the GigaGate satellite. Each satellite has five networking

ports, including one Gigabit port for high data transfer devices such as a NAS storage box.

Setup is fairly simple and you're guided through the whole process. Additional satellites are available for around £130 and you can install up to eight of them. But if you only need a base and one satellite in your home, GigaGate is a fantastic choice. **DAN GRABHAM**

### Mac FORMAT VERDICT

> GigaGate will solve networking issues if you can't get Wi-Fi to stretch far enough.



- ⊕ Super strong Wi-Fi
- ⊖ Expensive solution

# Netgear Arlo Pro

## Weatherproof, wireless security

- > £300 > FROM Netgear, netgear.co.uk
- > FEATURES 130° wide-angle lens, waterproof, two-way audio

**T**he wire-free Netgear Arlo security cameras

offer a lot. You get night vision, weatherproofing and seven days of free cloud storage for your footage (we still think it should be free for longer, though).

The Arlo Pro takes the design a step further, with a 130° wide-angle camera, two-way audio, a 100dB siren that you can trigger remotely and improved motion detection.

The camera runs on rechargeable batteries so is wire-free, but you can also

Arlo's motion tracking is superb and you can see the live view from your cameras at any point.



use it plugged in, as well as connect a USB drive to the Arlo Pro base station to locally back up footage.

All of these new features make the Arlo Pro a bit of a no-brainer – until you see the price. A single camera and the base station, which plugs into your router, is a whopping £300. Two, three and four camera kits are also available for around £480, £680 and £840.

Now, agreed, you are getting a superb package for the money, and the whole thing eschews the main problem with Nest's cameras (they need to be tethered to power). But you are paying a lot for the privilege, and whether you can stomach that depends on how much you're willing to spend to keep an eye on every aspect of your home and garden. **DAN GRABHAM**

### Mac FORMAT VERDICT

> The best wireless security system out there, but it comes at a hefty price.



- ⊕ Wire-free is great
- ⊖ An expensive system

# D-Link Omna 180 Cam HD

Apple's HomeKit gets a boost from its first compatible camera

Reviewed by **CLIFF JOSEPH**

> £200 > **FROM** D-Link, [dlink.com](http://dlink.com)

> **FEATURES** 1080p resolution, HomeKit support, 180° lens, night-vision mode

The Omna includes an infrared night-vision mode

## Mac FORMAT VERDICT

> You'll need an Apple TV or iPad to make the most of it, but the Omna is a real step forward for Apple's HomeKit tech.



- ⊕ High-quality 1080p camera
- ⊕ Wide-angle lens
- ⊕ Supports HomeKit
- No online storage

**A**pple really missed a trick with the first version of its HomeKit software, as it didn't work with cameras at all. Fortunately, Apple updated HomeKit with iOS 10, and the Home app can now display video and control cameras. And that has allowed D-Link to step forward with the Omna – the first camera we've seen that works with the HomeKit platform and the Home app in iOS 10.

The Omna camera boasts a resolution of 1,920x1,080, and a very effective 180° wide-angle lens. The Omna also includes an infrared night-vision mode, and a motion sensor that can send alerts if it detects movement. It can stream live video to iOS devices, but there's no option for online storage, so if you want to store recordings you'll have to buy a micro-SD memory card. Netatmo's Welcome camera is the same price and includes an 8GB memory card – although the Welcome doesn't support HomeKit.

### Motion and automation

The real attraction with the Omna, though, is that HomeKit support. It took us a couple of attempts to get the camera set up properly; we couldn't initially connect the Omna app to the camera when using an iPad. The app worked fine when we switched to an iPhone, and once the camera was set up it worked on the iPad as well, but we're still not entirely sure what caused that initial hiccup with the iPad.

The Omna app works on its own, allowing you to view live video from the camera, record onto a memory card, and to adjust features such as the sensitivity of the motion sensor. However, the Omna also shows up inside the Home app in iOS 10, showing both the image



The Omna is the first camera to work with Apple's HomeKit and the Home app in iOS 10.

from the camera, and the motion sensor, which is listed as a separate device. That allowed us to create an 'automation' within the Home app that linked the camera to our Philips Hue lights, so that the motion sensor would automatically turn on the lights when we walked into the room. The one drawback in this case is that you need either a fourth-generation Apple TV or an iPad to act as a control hub in order to create automations or to provide remote access. But that's because of the way that Apple has designed HomeKit, so it's not a criticism of the Omna itself.

There are plenty of more affordable cameras available that rely on their own apps to monitor your home and send alerts, so a HomeKit camera such as the Omna isn't essential. But if you do own other HomeKit devices, such as the Hue lights, or Netatmo's forthcoming Smoke Alarm, then it might be worth spending a little extra on the Omna so that you can link all of your smart devices together for a truly smart home.

# Mass Fidelity Core

## Bluetooth goes premium

> £479 > FROM Mass Fidelity, massfidelity.com  
> FEATURES 120W amplifier, Bluetooth, NFC



### Mac FORMAT VERDICT

> High quality audio output, but bear in mind its faltering multiroom support.



- ⊕ Great sound
- ⊖ Multiroom issues

**T**his boxy speaker looks interesting, but what's it like

to use? Once paired we had no trouble automatically connecting to the speaker in the future. But although it features optical input, the Core's support list pales in comparison to dedicated multiroom setups, which normally offer up AirPlay, Spotify Connect or Google Cast support.

While there is multiroom support here, you have to set this up every time. You need to press a button on the Core to enable it to broadcast to

your connected device, then select multiroom as the input on any other Cores you want music to play through. The Core is further limited by its inability to be in a room with another Core. Each unit operates as a pair of stereo speakers; put more than one in a room and the two channels conflict horribly.

Keep the Cores separate, though, and multiroom performance is solid. Each track keeps in good time, with no drop off in quality. It's a nice-sounding speaker, too – tracks have definition

The Core is an impressive sounding speaker, but it's limited in terms of multiroom support.

and clarity, and the stereo separation is impressive. At louder volumes, the sound is rich and full, and doesn't disappoint.

But while the Core's sonic ability is good, its lack of AirPlay or Spotify Connect support – or the ability to retain multiroom pairing – means that if you want a winning multiroom setup, you may be disappointed.  
JON PORTER

# Beats<sup>x</sup>

## A pair of easy-pairing buds

> £130 > FROM Beats, beatsbydre.com > FEATURES Bluetooth, inline remote control and microphone, Lightning to USB-A cable charger



The Beats<sup>x</sup> earphones feature Apple's W1 chip, so pairing with your iPhone is easy.

### Mac FORMAT VERDICT

> Wireless convenience, practical controls and a good fit, but sound quality is merely OK.



- ⊕ Cable fits well
- ⊖ Expensive

**T**he Beats<sup>x</sup> boast the new W1 chip used in Apple's

AirPods. The chip makes it a real cinch to pair up the headphones and your iPhone; power them on, put them near your iPhone, and confirm on screen. The pairing is added to other compatible Apple devices by way of iCloud. Although this isn't a sole reason to buy Beats<sup>x</sup> (or AirPods), it's hard not to appreciate it.

The two earpieces are joined with a flat cable, the middle of which is shaped to rest around your neck.

Above the left one is a cheap-looking inline remote control with mic. This seems a tad old-fashioned, but the responsiveness is reassuring. In comparison to Apple's AirPods, there's no in-ear detection, which pauses or resumes playback when a bud is removed or reinserted.

The rest of the cable fits more loosely, which avoids an earpiece pulling out when you turn your head, and the buds snap together magnetically when not being worn. There's an exposed Lightning charging port on the left bar, and a

charge lasts eight hours.

The buds afford some noise isolation, but at around mid-volume we could hear nearby chatter. The sound quality is pleasant, and holds up reasonably well when pushed louder, thanks to more restrained bass than you might expect. However, we've enjoyed punchier, more vibrant sounds from more affordable buds.

ALAN STONEBRIDGE

# Hybrid smartwatches

If an Apple Watch lies outside your budget then these hybrid smartwatches could be just what you're looking for



## Misfit Phase



## Withings Steel HR

Reviewed by **GRAHAM BARLOW**

> £165 > **FROM** Misfit, misfit.com > **FEATURES** Call, text and app notifications, six-month battery, 50m water resistant

> £169 > **FROM** Withings, withings.com > **FEATURES** Heart rate, call, text and app notifications, 50m water resistant

### Features ★★★★★ <

The Phase connects to your iPhone via Bluetooth and vibrates whenever you receive a notification, or an alarm goes off. It tracks your sleep and activity patterns and an iOS app shows you if you're reaching your targets.

### > Features ★★★★★

In addition to activity and sleep tracking, the Steel HR also has a digital screen that shows your heart rate and notification information, like caller name. A second analogue dial shows your daily activity progress.

### Design ★★★★★ <

The Phase has the more stylish design of the two watches here, with a classic, simple watch face and a gorgeous leather strap, but there's no digital screen. Our biggest issue was how chunky it is though, meaning it stands proud on your wrist and feels a little heavy.

### > Design ★★★★★

The Steel HR has a more cluttered watch face than the Phase, but that's because it incorporates a lot more features. It is noticeably thinner, though. The strap isn't leather, but it's comfortable nevertheless.

### Ease of use ★★★★★ <

Because there's no digital screen, you press a crown to access the Phase's smarts. On each press the hands cycle through different 'phases' to give you information. The watch hands indicate your daily activity, when your alarm is set for, and then return to showing the current time.

### > Ease of use ★★★★★

Being small and sleek, it was never a chore to wear the Steel HR, and only having one button to control everything, coupled with a digital display, made it far more intuitive to use.

### Daily use ★★★★★ <

A second crown can control music playback on your iPhone, and the watch also reminds you not to sit still too long, which we found handy, but it still felt a bit chunky.

### > Daily use ★★★★★

Seeing a caller name on your watch before answering your phone was genuinely handy, as was the heart rate monitor. The app's activity tracking features were a lot easier to understand and you get lots of useful notifications about your progress. Its 21-day rechargeable battery is plenty.

> We have no real complaints, and loved the stylish look and feel of the Phase, but its features didn't quite match the Steel HR.



**Mac  
FORMAT  
VERDICT**

> Offering a great compromise between looks and functionality, this smartwatch had superior features and felt better for daily use.



# PHOTO EDITING SOFTWARE

Want to improve your photos? Here's our pick of the six best editing suites to choose from

Reviewed by **DAVE STEVENSON**

**T**he astonishing popularity of the iPhone as a camera hasn't diminished the Mac as a tool for editing photographs one bit. (Incidentally, iPhones occupy four of the top five spots on Flickr's most popular cameras list.) Indeed, the last 18 months have seen a spectacular – and welcome – growth of photo editing apps on the platform, from fire-and-forget preset machines to per-pixel editors with features even professional photographers wouldn't sniff at. 'To Photoshop'

## PHOTO EDITING APPS ON TEST...

- > Acorn **£29**
- > Adobe Photoshop Elements 15 **£87**
- > Affinity Photo **£49**
- > Corel AfterShot Pro 3 **£55**
- > Luminar **£52**
- > Pixelmator **£29**

an image might still be the verb, but Adobe's industry-standard software is far from the only game in town. Choosing an editor is difficult, though, and which is appropriate for you depends on a number of factors. Your experience level is one, as some editors drop

you in at the deep end, so if you're not familiar with terms like 'curves' or 'saturation', you might benefit from an editor that walks you through. Precisely what you want to do will also be a factor. If you're into compositing multiple images together, either to achieve heavily abstract effects

or produce stunning astrophotography images, you'll want an editor with support for layers and masking. If you shoot photos in

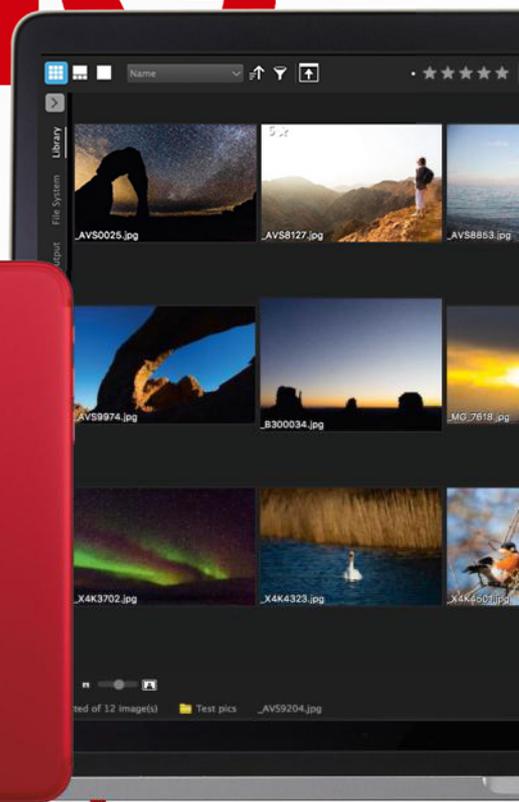
If you're not familiar with terms like 'curves', you might benefit from an editor that walks you through

a more editorial style, an editor that can apply the same processing preset to a number of images at once might suit your run-and-gun style.

## Usability is key

Whatever you want to use your photo editor for, the software should feel intuitive and smooth. Once you start printing images, every little snag in your photographs – from over-enthusiastic sharpening to clumsy paths or layer masks – will be laid bare. Attention to detail is rewarded, and the last thing you want is a photo editor that feels like hard work.

Here, we've gathered six diverse editing apps – one is sure to suit your needs.



## How we tested

> We subjected each piece of software to a thorough investigation, looking for how easy each was to use, as well as how long it took to get up to speed.

At the same time, we performed a few common tasks on the same image, looking for performance, ease of use and the quality of the final result. We also considered how easy it was to automate tasks and how many useful features each app had.



## Things to consider...

Everything you need to know before getting started

- 1 File formats**  
Finished files, for sharing or printing, will be industry standard JPGs. But a photo editor that allows you to work on files in its own native file format means that all your changes, such as layers or clipping paths, will be preserved.
- 2 Organisation**  
If you already have your shots tightly arranged in folders, you might not need an all-singing, all-dancing organiser. If your shots are all over the place, an app that lets you see your images in one window could be useful.
- 3 Layers**  
If you want to do any photo-compositing work, make sure your chosen app allows you to

work with layers, whereby you can stack elements from different images on top of each other to produce new effects and compositions.

- 4 Automation**  
Often, you'll want to apply an edit to a number of images. This is particularly true if you shoot time-lapses, where many images may require the same exposure correction or straightening. If this is the case, look for an editor with some decent batch-editing features.

- 5 Presets**  
A decent selection of presets will allow you to instantly give your images a totally new style, and can be very useful for simply getting images out of the door.



### Higher...

> **Adobe Creative Cloud Photography Plan** At £10/month for Lightroom and Photoshop CC, this is a bargain for pros. Just make sure you'll use enough of the features before splashing out.

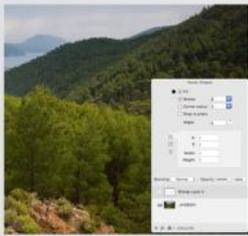


### ...or lower?

> **GIMP** The GNU Image Manipulation Program is a very powerful image editor, all the more so considering it's free. But be warned - it takes a bit of getting used to.

## Test 1 Ease of use

Power is nothing without control



> Affinity Photo's layout offers the perfect blend of ease of use and quick access to powerful features, while an abundance of text labels makes it easy to find what you want. Pixelmator and Photoshop Elements are similar in this respect, offering familiar-looking windows and tools. AfterShot Pro 3

looks a little busy, but working with the library on the left side of the screen and editing tools on the right is soon second nature.

Luminar is trickier – the icon-only tool palettes may use industry-standard icons, but beginners will need to rely on tool tips initially. However, the interface is extremely fluid and easy to get around once you've experimented for an hour.

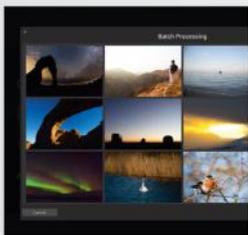
Acorn looks pretty similar to Pixelmator, but is perhaps just a little less accessible – the lack of consumer-friendly preview screens on things such as filters makes a big difference.

### TEST RESULTS

Acorn	★★★★★	Corel AfterShot Pro 3	★★★★★
Photoshop Elements 15	★★★★★	Luminar	★★★★★
Affinity Photo	★★★★★	Pixelmator	★★★★★

## Test 3 Automation

How easy is it to do batch processing?



> Luminar puts batch processing front and centre, allowing you to load entire folders at the click of a mouse. From there you can apply a preset and export the whole bunch to a new format or size. Affinity Photo also gives a good range of options, allowing you to record macros and play them back on entire folders of

images. We'd expect batch processing in an end-to-end app like Corel AfterShot Pro 3, and it's implemented in a pleasing way: select a bunch of images in its catalogue, click the preset you want and it's instantly applied to your shots. Exporting selected images is another example of its batch processing prowess. Photoshop Elements also offers a very powerful multiple file processor for those with large folders of images to sort.

Acorn and Pixelmator both allow batch automation, but only with the involvement of OS X's Automator app.

### TEST RESULTS

Acorn	★★★★★	Corel AfterShot Pro 3	★★★★★
Photoshop Elements 15	★★★★★	Luminar	★★★★★
Affinity Photo	★★★★★	Pixelmator	★★★★★

## Test 2 Toolsets

Get up to speed with what you need



> Opening an image in Photoshop Elements is a doddle, and quick-fire tools make accessing popular elements easy. Selecting a crop aspect ratio in Corel AfterShot Pro is a touch fiddly, but common tools are obvious, with things such as tone curve living under the Color tab at the far right.

You can use Affinity's Develop mode to step through photo editing, or opt for its full-fat interface. Purists will like Acorn, but the lack of walkthroughs could frustrate. In Luminar, adding a tone curve means adding a new Filter, which is a bit odd for such a commonly-used tool, and choosing from a text list of filters isn't intuitive. But once you know where to look you can get up to speed.

Finding the curves tool in Pixelmator was a pain; it and other important tools are buried in the Effects Browser. But the interface is common-sense, and there's a shallow learning curve.

### TEST RESULTS

Acorn	★★★★★	Corel AfterShot Pro 3	★★★★★
Photoshop Elements 15	★★★★★	Luminar	★★★★★
Affinity Photo	★★★★★	Pixelmator	★★★★★

## Test 4 Features

How comprehensive is the software?



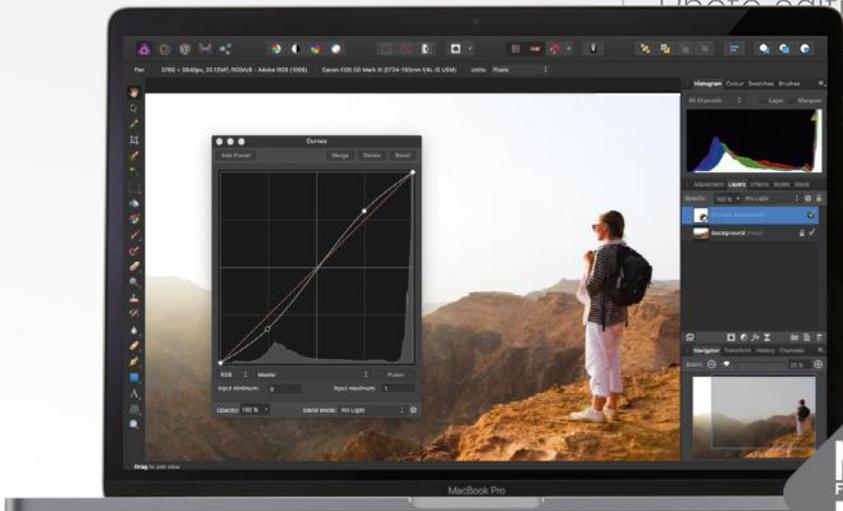
> Photoshop Elements' Organiser app is similar to Adobe's high-end Bridge, and makes sorting through images easy. Similarly, the way AfterShot Pro 3 bundles an organiser and editing software into the same app is handy. The online store for presets and filters grates though – having spent money

on the app, few will be happy to be asked for more money.

Nothing critical is missing from Luminar, and we like the compare tool, where you can drag a vertical line across your image to see what it looked like before and after. Pixelmator is as fully fledged as they come, offering a quick mask mode, soft proofing and plenty of other tools. Affinity Photo scores well too, with different 'Personas' allowing you to focus on a particular job at a time. Acorn is a comprehensive choice, but lacks a little in terms of photography-specific features.

### TEST RESULTS

Acorn	★★★★★	Corel AfterShot Pro 3	★★★★★
Photoshop Elements 15	★★★★★	Luminar	★★★★★
Affinity Photo	★★★★★	Pixelmator	★★★★★



We love Affinity's mixture of photography-specific tools and industry-standard image editing options.



Jo says...

> I really struggle with some photo editing suites - I often tend to feel overloaded with options, and confronted with a steep learning curve that I just don't have the time or ability to overcome. Affinity solves that - it comes with a really impressive feature list, but still manages to feel very user-friendly.

## THE WINNER Affinity Photo

A great blend of organisation, editing power and features

**P**hotoshop Elements isn't dead yet, as proven by its decent scores across the board. However, the competition is incredibly fierce, if for no reason other than it's uncomfortably pricier than any other software here.

Affinity Photo is a great choice for most users. It handles raw files well, and offers a good blend of straightforward development options alongside industry standard features like layer blending modes, masking and so on. The lack of an organisational mode hurts it a little, and photographers looking for keywording,

captioning and labelling would do well to look at Corel AfterShot Pro 3, which offers a good blend of editing and organisational prowess.

Elsewhere, Pixelmator and Acorn are both strong budget choices, with Pixelmator arguably the more user-friendly of the two, although both are more general-purpose image editors than Affinity or AfterShot 3's strong photographer-orientated slants. Luminar is a great piece of software which marries photography-specific tools with options such as adjustment layers, but we recommend you opt for the similarly priced Affinity Photo instead.

> How do they compare?



>THE SPECS	Acorn	Adobe Photoshop Elements 15	Affinity Photo	Corel AfterShot Pro 3	Luminar	Pixelmator
Websites	flyingmeat.com/acorn	adobe.com	affinity.serif.com	aftershotpro.com	macphun.com/luminar	pixelmator.com
Price	£29	£87	£49	£55	£52	£29
Batch processing	No	Yes	Yes	Yes	Yes	No
RAW file	Yes	Yes	Yes	Yes	Yes	Yes
Supported file types	ACORN, BMP, GIF, ICO, JPG, JPEG-2000, PNG, TIFF	BMP, GIF, PSD, PSE, JPG, PDF, PIXAR, PNG, PSD, TIFF	AFPHOTO, EPS, EXR, GIF, HDR, JPG, PDF, PNG, PSD, SVG, TIFF	JPG, TIFF	GIF, JPG, JPEG-2000, LMNR, PDF, PNG, PSD, TIFF	JPG, PDF, PNG, PSD, PXM, TIFF
Layers	Yes	Yes	Yes	Adjustment, healing/cloning	Yes	Yes
Clipping paths	No	Yes	Yes	No	No	No
> EASE OF USE	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
> COMMON TASKS	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
> AUTOMATION	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
> FEATURES	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
> FINAL VERDICT	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

Note: The final verdict scores reflect the overall opinion of a product and are not necessarily an average of the criteria listed in the table.

# SoundSource 3

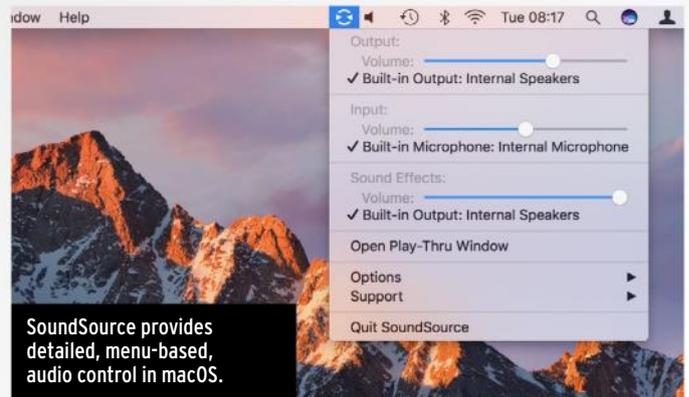
## Menu control for your Mac's audio

> £9.99 > FROM Rogue Amoeba, [rogueamoeba.com](http://rogueamoeba.com)  
> NEEDS OS X 10.10 or later

**S**oundSource claims to be “the sound control that should be built into macOS.”

The top three groups in the app's menu are for switching inputs and the destinations for master output and sound effects, each with their own volume slider. Controlling the volume of sound effects is a nice touch if you want to temporarily mute system alerts, for example, yet still want other sounds to play.

The app also provides a Play-Thru window, where



you can redirect an input to a specific output device, and adjust the volume/channels used for each device. You might use this to monitor an input through headphones, for example, though output is subject to a slight delay.

It is a little pricey, and would do more to justify its price if it complemented macOS's built-in keyboard shortcuts for the master output volume with its own

for input and sound effects.

The big issue, though, is that while speakers and mics connected by cable or over Bluetooth appear in the list of available outputs, AirPlay speakers and Apple TV units don't. If you send your Mac's audio to that type of output, perhaps because you have wireless speakers, you may find it better to stick with macOS's built-in control.

ALAN STONEBRIDGE

### Mac FORMAT VERDICT

> A helpful controller for Bluetooth or cabled audio, but useless for AirPlay.



- ⊕ Input, output and effects volume sliders
- No AirPlay support

# ReadKit 2.5

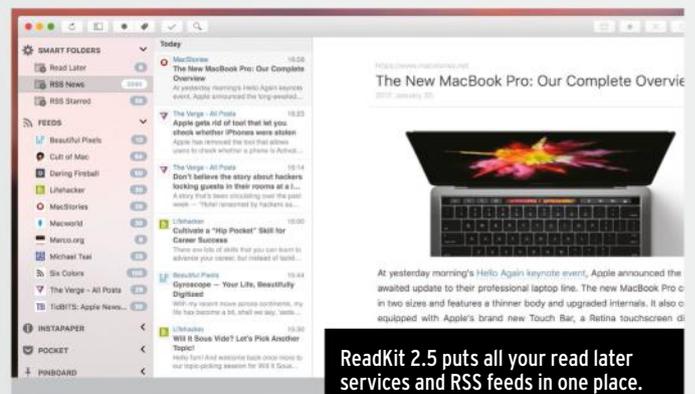
## The king of aggregators

> £9.99 > FROM Webin, [readkitapp.com](http://readkitapp.com)  
> NEEDS OS X 10.10 or later

**F**inding a good RSS reader is no easy business.

Between Instapaper, Pocket, Pinboard, and a variety of RSS sources, Mac users wind up bouncing between multiple applications to get caught up with news subscriptions. ReadKit unites these disparate services under the same roof, providing a single destination for all your news.

In addition to those services, ReadKit includes its own offline RSS engine for new or imported OPML feeds, but also syncs with



popular providers Feedly, Fever, NewsBlur, Feed Wrangler, and Feedbin. Some need a premium subscription to work, but free accounts are often OK.

The beauty of having everything under one roof in ReadKit is that you can drag and drop articles, feed stories or bookmarks across different services with ease.

Feeds are grouped by account in a sidebar, with a

unified Smart Folders inbox that sorts unread content into predefined categories of your own choosing.

You can also customise pretty much every aspect of the app, including the toolbar buttons, font style and page width. There are four light/dark colour themes, and full articles can be read in a clean, text-only view, if that's what you prefer.

JR BOOKWALTER

### Mac FORMAT VERDICT

> The one Mac RSS reader to rule them all – but where's the iOS version?



- ⊕ Smart Folders
- Some paid features

# Logic Pro X 10.3

Touch Bar support, and much more

Reviewed by **GARY MARSHALL**

> £200 (free for existing users) > **FROM** Apple, apple.com > **NEEDS** OS X 10.11 or later



The summing engine has been upped to 64 bits – a kind of Retina for audio

**A**dmittedly we were beginning to fall a little bit out of love with **Logic Pro X**. What was once a lean, mean, music production machine had become rather sluggish and crashy, and we found ourselves dreading even simple tasks such as bouncing tracks, because they'd often take down Logic completely. But version 10.3 fixes that, and introduces important improvements.

The most obvious difference is the revised interface, which is flatter, lighter, and less likely to give you eye strain. With Advanced Tools turned off, the app looks more like GarageBand than ever, although pro users won't see the fake woodgrain. If you're a GarageBand for iOS user, you'll love the new export feature: you can flatten your project, work on it in GarageBand, and then bring the amended version back in as a proper Logic project again. That's great not just for mobile musicians, but for podcasters too – you can go out, record new audio and put it straight into your project even when away from your Mac.

## Touch Bar support

The other obvious new feature – if you have a new MacBook Pro – is Touch Bar support, which is very clever. You can use it to control track playback, to get quick access to key

The new interface is brighter and flatter than before, which should be easier on the eyes during long sessions.

effect settings, or to navigate the timeline, and you can even use it to play software instruments or trigger drums.

There are new tools for all other Macs too. You can now use the Fade tool to fade multiple tracks at once, and the new selection-based processing enables you to apply groups of effects and/or plugins to a selected region or regions. That's particularly useful for fixing the odd fluffed note or unwanted plow, but you can also use it to apply all kinds of things to a specific area. The new track alternatives capability enables you to store multiple versions of the same song in one project, so you can play with different arrangements.

Under the hood, the summing engine has been upped to 64 bits – a kind of Retina for audio – and there's support for up to 256 busses, genuine stereo panning, and music XML. Software instruments can now trigger sidechained plugins, and MIDI plugins can control other plugins' parameters.

If you're a GarageBand user, it's never been easier to go pro with Logic: with its Advanced Tools off, Logic feels like a kind of GarageBand Pro.



The MacBook Pro Touch Bar allows you to play instruments, access effect parameters or navigate the project timeline.

## Mac FORMAT VERDICT

> Rock solid and with useful new features, 10.3 restores our faith in Logic.



- ⊕ Track alternatives
- ⊕ Good selection-based processing
- ⊕ Touch Bar support
- No new genres for Drummer

# Overcast 3

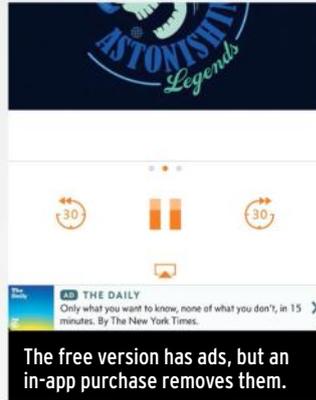
## Pure podcast perfection

> Free (£8.99 in-app purchase) > FROM Overcast Radio, overcast.fm  
 > NEEDS iOS 10.2 or later

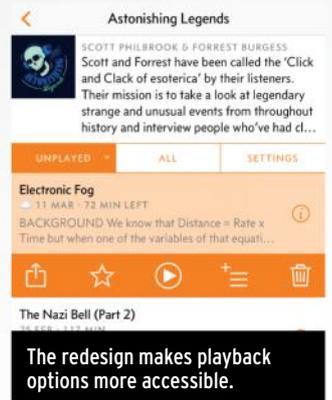
**W**hat's the best way to improve an app that's already fantastic? With lots of small but significant changes, as Overcast shows.

Most of those tweaks are focused squarely on ease of use. For instance, playback settings can be accessed by swiping left or right, rather than hiding in the corners of the screen. Changing the playback order has an explicit label, instead of a tiny triangular icon. And, best of all, you can *finally* create proper playlists.

Before, the only option



The free version has ads, but an in-app purchase removes them.



The redesign makes playback options more accessible.

was for Smart Playlists, which added new episodes based on rules you set (like adding every new episode from one playlist, and a handful from another).

That was fine in some cases, but there was no way to make a playlist of cherry-picked episodes. Now you can create a list of favourites that isn't irritatingly updated with every new episode. It may only be a minor change,

but it's much appreciated.

Our only gripe is that there's no way to quickly add an episode to a playlist from the Now Playing screen, which would be great for playlist management on the go. But with all the new interface changes – plus the app's clever features like silence shortening and voice boosts – it's still our number one podcast app by some margin. **ALEX BLAKE**

### Mac FORMAT VERDICT

> Interface tweaks don't sound exciting, but they make a great app near-perfect.



- + Proper playlists!
- + Easy-to-use interface

# Vantage Calendar

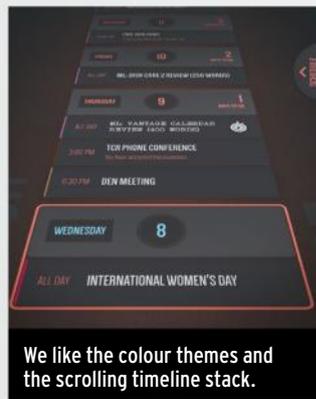
## Add some flair to your dates

> £5.99 > FROM Fortyfour, vantage-app.com  
 > NEEDS iOS 9 or later

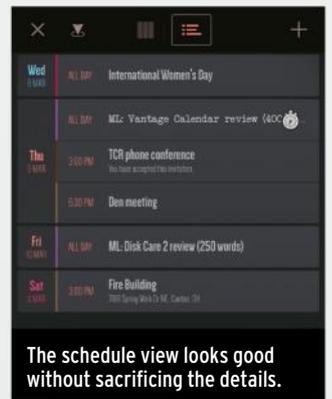
**V**antage Calendar's main view looks like a *Star Wars*-style opening title crawl in reverse. It has the current day's activities at the bottom, grouped into stacks that scroll into the past or future.

You can scroll through connected iCloud, Google, Outlook or Facebook Events calendars with a horizontal swipe across the top grid, followed by a tap to jump to a specific day. A tap on any event expands to fullscreen.

Events can be assigned colours, fonts, and stickers. (Such embellishments



We like the colour themes and the scrolling timeline stack.



The schedule view looks good without sacrificing the details.

currently won't sync across to other calendar apps.)

Vantage Calendar also includes weekly summary and hourly schedule views, as well as a mini-month summoned by tapping the name of the current month, which displays events as coloured dots. Tap the arrow at the bottom to expand into a slick full-month view, complete with event titles.

Sadly, the app has no

landscape mode except on iPad. Although you'd expect month views to work better on a tablet, they wind up being artificially crammed into the centre of the display, which looks less than great.

We liked the ability to switch an event to a to-do list item, but alert options are limited. There's also no way to search events, although this is being added shortly. **JR BOOKWALTER**

### Mac FORMAT VERDICT

> Visual flair without sacrificing familiar features, but the iPad version needs work.



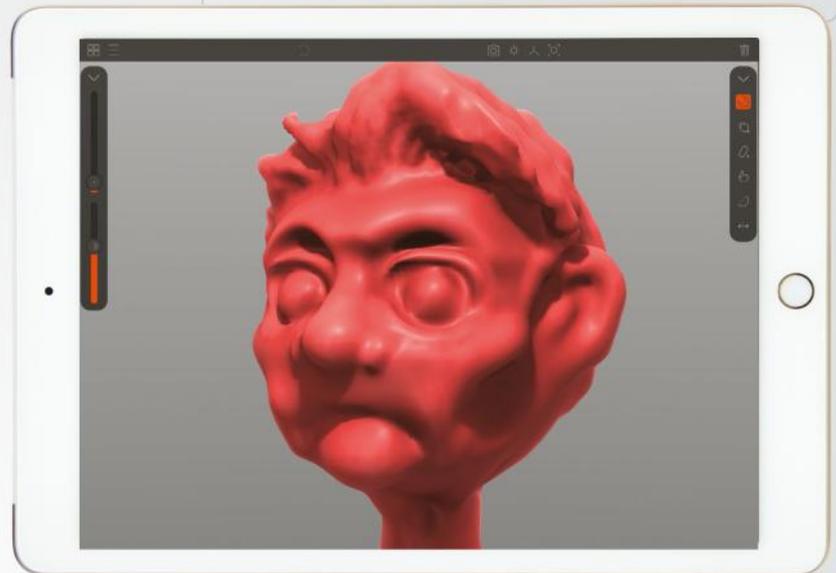
- + Colours, fonts, stickers
- In-app purchases

# Putty 3D

An intuitive digital 3D sculpting app

Reviewed by **JR BOOKWALTER**

> £4.99 > **FROM** Nga Nguyen, putty3d.com  
> **NEEDS** iOS 10 or later



It's quite remarkable what you can come up with after spending only a few minutes with Putty 3D

**P**utty 3D's speciality is letting you create digital sculptures with just a finger. It's easy to

sculpt, carve, and model using a variety of different virtual materials such as putty, clay, plastic and ceramic.

Gestures enable you to zoom with a pinch, rotate the camera by dragging two fingers, undo with a two-finger tap, and more. The user interface is straightforward, intuitive, and easy to use. Most importantly, the available tools don't hinder the creative process, allowing creations to occupy the maximum amount of on-screen real estate. (There's even a setting to automatically collapse tools while sculpting.) It's quite remarkable what you can come up with after spending only a few minutes with Putty 3D.

## 3D Touch and Apple Pencil

For the more artistically inclined, the app offers full support for 3D Touch on recent iPhone models, as well as Apple Pencil support, which allows for more accurate, pressure-sensitive sculpting. We tried both, and found the Apple Pencil nicely suited to smaller details or fine-tuning designs.



Putty 3D's user interface stays out of the way, allowing your creative freedom to bloom.

Putty 3D turns your iPad into a fully fledged virtual sculpting studio, complete with support for Apple Pencil.

Speaking of finishing touches, you can change the background to white, black, a gradient or image-based lighting, change the focus for a bokeh effect, or add a vignette as needed; you can't import existing background images, however. When you're finished, Putty 3D enables you to export high-resolution PNG files via the iOS sharing extension, with or without transparency if needed.

The app is optimised for both iPhone 7 and iPad Pro, which allow for larger objects and higher-quality rendering with Wide Color thanks to the heftier GPU of those devices. Rendering looked good in our tests, but the edges would occasionally show subtle blocking at times.

One feature we'd love to see added is iCloud sync – there's currently no way to start a sculpture on iPhone and finish on iPad, for example. The developer is working on OBJ and STL file export for the next version, which will allow sculptures to be imported into Mac or PC applications, and to be used for 3D printing.



You can use a wide variety of materials including putty, clay, plastic and ceramic for your virtual creations.

## Mac FORMAT VERDICT

> For a mere £5, Putty 3D puts digital sculpting in the palm of your hands.



- + Apple Pencil and 3D Touch support
- + Universal build
- Some blocky edges
- No iCloud sync

# STORE GUIDE

EDITED BY **ALEX BLAKE** >

Your complete guide to the best Apple hardware and third-party accessories

**W**elcome to MacFormat's Store Guide, the place to go to find out about all the Apple kit that matters, whether you're looking for your next iPhone or a powerful new desktop Mac.

We've highlighted the model of each product that's ideally suited to your needs, whether you're a recent

convert or a seasoned Apple user. So be sure to check our handy tables to see which Mac, iPad or iPhone is best for you.

We've also highlighted the gold standard in audio, storage, cameras, and many other categories, helping you complement your Mac or iOS device with the best accessories.

## > Who's it for?

### ENTRY LEVEL >

> You're just getting started in the world of Apple and need to know where to begin.

### UPGRADER >

> A firm Apple user, you're ready to move on and get even more from your tech.

### HIGH END >

> Apple is your life. You prize quality and want the best that money can buy.

	> MODEL	> KEY SPECIFICATIONS	> PRICE
ENTRY LEVEL	21.5-inch 2.8GHz quad-core Intel Core i5	MEMORY 8GB of 1867MHz LPDDR3 GRAPHICS Intel Iris Pro Graphics 6200 STORAGE 1TB (5,400rpm) hard drive DISPLAY 1920x1080 (IPS, sRGB gamut) ALSO Magic Mouse 2, Magic Keyboard	£1,249
UPGRADER	21.5-inch 3.1GHz quad-core Intel Core i5	MEMORY 8GB of 1867MHz LPDDR3 GRAPHICS Intel Iris Pro Graphics 6200 STORAGE 1TB (5,400rpm) hard drive DISPLAY Retina 4K (IPS, P3 gamut) ALSO Magic Mouse 2, Magic Keyboard	£1,449 
HIGH END	27-inch 3.3GHz quad-core Intel Core i5	MEMORY 8GB of 1867MHz DDR3 GRAPHICS AMD Radeon R9 M395 STORAGE 2TB Fusion Drive DISPLAY Retina 5K (IPS, P3 gamut) ALSO Magic Mouse 2, Magic Keyboard	£2,249 

## > Inside your buying guide...

iMac.....104	Monitor.....109	Portable speaker.....110
MacBook.....105	Ultra HD monitor.....109	On-ear headphones.....110
MacBook Air.....105	External SSD.....109	In-ear headphones.....110
Mac Pro.....105	Network storage.....109	Portable battery.....110
Mac mini.....105	Wireless router.....109	Action camera.....110
MacBook Pro.....106	Thunderbolt dock.....109	Bluetooth tracker.....110
iPhone.....108	Printer.....109	Microphone.....110
iPad.....108	IP camera.....109	Fitness smartwatch.....110
iPad Pro.....108	MacBook bag.....109	
Apple Watch.....108	Wireless speaker.....110	

 = Retina display



## iMac

> Ever since the famous Bondi Blue iMac debuted in August 1998, Apple's all-in-one desktop computer has been setting standards in gorgeous design and powerful performance. Apple's innovation was as clear back then as it is today – the iMac was the first Macintosh to drop the floppy disk in favour of USB, and its colourful aesthetic set it apart as a playful pretender in a world of staid beige boxes.

Today, Apple is again pushing boundaries with the iMac, blessing all of its 27-inch models with a massive 5K (5120x2880) resolution and a wider colour gamut than previous models. Add in a quad-core Intel Core i5 processor (configurable from 3.2GHz up to 4.0GHz), 8GB of memory, a fast and capacious Fusion Drive, and a powerful AMD Radeon R9 graphics processor – and the large iMac is *the* desktop system to own. In 2015, Apple introduced the first 21.5-inch iMac complete with a Retina 4K (4096x2304) display. All except the entry-level, 21.5-inch model have a quad-core processor.

## > Choose an iMac

	> MODEL	> KEY SPECIFICATIONS	> PRICE
ENTRY LEVEL	21.5-inch 2.8GHz quad-core Intel Core i5	MEMORY 8GB of 1867MHz LPDDR3 GRAPHICS Intel Iris Pro Graphics 6200 STORAGE 1TB (5,400rpm) hard drive DISPLAY 1920x1080 (IPS, sRGB gamut) ALSO Magic Mouse 2, Magic Keyboard	£1,249
UPGRADER	21.5-inch 3.1GHz quad-core Intel Core i5	MEMORY 16GB of 1867MHz LPDDR3 GRAPHICS Intel Iris Pro Graphics 6200 STORAGE 1TB (5,400rpm) hard drive DISPLAY Retina 4K (IPS, P3 gamut) ALSO Magic Mouse 2, Magic Keyboard	£1,629 
HIGH END	27-inch 4.0GHz quad-core Intel Core i7	MEMORY 16GB of 1867MHz DDR3 GRAPHICS AMD Radeon R9 M395 STORAGE 2TB Fusion Drive DISPLAY Retina 5K (IPS, P3 gamut) ALSO Magic Mouse 2, Magic Keyboard	£2,654 

UPDATED  
APR 2016  
EXPECTED  
2017



## MacBook

> The baby of Apple's laptop family, the MacBook was updated in early 2016 with slightly improved specs and a new Rose Gold colour. Weighing in at just 0.92kg, it's Apple's most lightweight laptop but still packs in a 226ppi pixel density in its 12-inch Retina display.

The MacBook is powered by an Intel Core M processor (at 1.1GHz, 1.2GHz or 1.3GHz), which doesn't require a fan to keep cool, so the MacBook runs silently. It also features a Force Touch trackpad, which can trigger different responses as you apply more pressure. All models of the MacBook come with 8GB of 1866MHz memory, with no option to add more, and Intel HD Graphics 515 - that's 25% faster than the previous iteration - and there are 256GB or 512GB flash storage options. There are four colour options: Silver, Space Grey, Gold, and the new Rose Gold.

### > Choose a MacBook

	> MODEL	> KEY SPECIFICATIONS	> PRICE
ENTRY LEVEL	12-inch 1.1GHz dual-core Intel Core m3	MEMORY 8GB of 1866MHz LPDDR3 GRAPHICS Intel HD Graphics 515 STORAGE 256GB SSD	£1,249
UPGRADER	12-inch 1.2GHz dual-core Intel Core m5	MEMORY 8GB of 1866MHz LPDDR3 GRAPHICS Intel HD Graphics 515 STORAGE 512GB SSD	£1,549
HIGH END	12-inch 1.3GHz dual-core Intel Core m7	MEMORY 8GB of 1866MHz LPDDR3 GRAPHICS Intel HD Graphics 515 STORAGE 512GB SSD	£1,684

UPDATED  
APR 2016  
EXPECTED  
TBC



## MacBook Air

> Apple's MacBook Air has felt a bit neglected, with its place as the light, portable laptop for use on the go having been usurped by the 12-inch MacBook.

Still, it has the longest-lasting battery of all of Apple's MacBooks, going strong for 12 hours of wireless web browsing. It's also the most affordable MacBook, starting at £949. It has 8GB of memory, and flash storage includes 128GB, 256GB and 512GB options. There's a 1.6GHz processor, configurable to 2.2GHz.

That said, it's difficult to recommend. While it is the cheapest MacBook, we think it's likely this will only be the case until prices drop for the MacBook and MacBook Pro, at which point Apple will probably phase out the Air range.

It also lacks a Retina display, and feels a bit stuck between Apple's other laptops. This is one MacBook whose time is severely limited.

### > Choose a MacBook Air

	> MODEL	> KEY SPECIFICATIONS	> PRICE
ENTRY LEVEL	13-inch 1.6GHz dual-core Intel Core i5	MEMORY 8GB of 1600MHz LPDDR3 GPU Intel HD Graphics 6000 STORAGE 128GB SSD	£949
UPGRADER	13-inch 1.6GHz dual-core Intel Core i5	MEMORY 8GB of 1600MHz LPDDR3 GPU Intel HD Graphics 6000 STORAGE 512GB SSD	£1,279
HIGH END	13-inch 2.2GHz quad-core Intel Core i5	MEMORY 8GB of 1600MHz LPDDR3 GPU Intel HD Graphics 6000 STORAGE 512GB SSD	£1,409

UPDATED  
APR 2017  
EXPECTED  
2018



## Mac Pro

From  
£2,999

> If you need power - and we mean *serious* power - this is the computer for you. Even the entry-level model comes with 16GB of memory, a six-core 3.5GHz processor, 256GB of speedy PCIe flash storage and dual AMD FirePro D500 graphics cards. Apple brought minor speed boosts to the Mac Pro in April 2017 and has confirmed it'll unveil a new modular version some time after 2017, so it's worth holding out until then.

UPDATED  
OCT 2014  
EXPECTED  
2017



## Mac mini

From  
£479

> A welcome update in 2014 brought a £100 price drop to the most affordable Mac, but rises in late 2016 added £80 back on. The mini comes with some interesting talking points: the entry-level model has a 1.4GHz dual-core Intel Core i5 CPU and 4GB of memory, making it one of the lowest-spec Macs around, with a 500GB hard drive and no display. Higher end models come with 1TB storage (Fusion Drive and SSD options are available), 8GB of memory, a better graphics processor and either a 2.6GHz or 2.8GHz Intel Core i5 for £679 and £949. Those models can be upgraded to a Core i7, but there aren't any quad-core options available at the moment.

IN FOCUS:

# MacBook



UPDATED  
OCT 2016  
EXPECTED  
OCT 2017

Find out why Apple's high-end mobile champion is still the king of notebooks

**N**otebooks make up about 80% of Apple's Mac sales, and a huge chunk of that will be made up of the MacBook Pro. It's the computer to get if you need a powerful work machine wherever you are.

There were some big changes when Apple updated the MacBook Pro line in October 2016. Most notable was the new Touch Bar, which replaced the row of function keys at the top of the keyboard.

The Touch Bar is an OLED strip that features context-aware shortcuts. For instance, if you're browsing through a photo album, the Touch Bar displays a row of thumbnails that you can quickly scroll through à la Cover Flow. Create a track in djay Pro and the mixing and track controls will display on the Touch Bar. It's even got a Touch ID button to quickly log in or pay for purchases, for example.



The Touch Bar adds shortcuts and commands above the keyboard.

The keyboard also got a revamp, and now comes with the second generation of Apple's 'butterfly' switches. These first debuted in the 12-inch MacBook, and feature less travel than regular keyboard keys. It takes a bit of getting used to, but can be very comfortable once you do. The keys are also much larger than those on Apple's past keyboards, helping you to make fewer errors when typing quickly.

Elsewhere, the trackpad has been expanded and is now up to twice the size of those in previous MacBook Pro models. It's also Force Touch enabled, allowing for a wider range of gestures and actions.

And with new Thunderbolt 3 ports, a thinner and lighter design, plus a brighter Retina display, faster graphics cards and better speakers, the MacBook Pro is ideal for power-hungry work on the go.

## Four things to consider >

**1** **Touch Bar or no Touch Bar?**  
> The new Touch Bar lets you control your apps with a context-aware OLED bar, replacing the function keys. Not all MacBook Pros have it, though.

**2** **The keys to success**  
> The MacBook Pro now features the second generation of Apple's 'butterfly' switches in its keyboard. It's got less travel than a traditional keyboard, but bigger keys.

**3** **Storage solutions**  
> Now that Apple has removed the SD card slot, you'll have to rely on external USB-C drives if you later decide you need more storage than your MacBook Pro comes with.

**4** **Bolt from the blue**  
> The entry-level 13-inch MacBook Pro from 2016 has two Thunderbolt 3 ports, whereas the other 2016 models have four. If you need to connect lots of Thunderbolt peripherals, the four-port option is worth considering.

	> MODEL	> KEY SPECIFICATIONS	> PRICE
ENTRY LEVEL	13-inch 2.0GHz dual-core Intel Core i5	MEMORY 8GB of 1866MHz LPDDR3 GPU Intel Iris 540 STORAGE 256GB SSD Touch Bar No	£1,449 
UPGRADER	13-inch 2.9GHz dual-core Intel Core i5	MEMORY 8GB of 2133MHz LPDDR3 GPU Intel Iris 550 STORAGE 256GB SSD Touch Bar Yes	£1,749 
HIGH END	15-inch 2.6GHz quad-core Intel Core i7	MEMORY 16GB of 2133MHz LPDDR3 GPU Radeon Pro 450 STORAGE 256GB SSD Touch Bar Yes	£2,349 

# Pro



Graham says...

> While the Touch Bar is great, I've found my favourite part of it is the Touch ID button. It makes logging in so fast and simple that you barely have to think about it. No more forgetting passwords, I can just get started in seconds. It also makes switching user profiles a doddle.



Apple greatly expanded the size of the trackpad on the new MacBook Pro models.



## iPhone

> The iPhone 7 represents a big update, no doubt about it. Apple introduced an amazing dual-camera setup in the Plus model, which allows for 2x optical zoom and on-the-fly depth of field effects.

Both sizes feature the improved A10 Fusion chip, a redesigned Home button with haptic feedback, better battery life, Lightning EarPods, and storage ranging from 32GB to 256GB.

The iPhone 6s and 6s Plus are still available, and are great devices in their own right. With 3D Touch giving you a greater range of interactions with apps, plus a 12MP rear camera with 4K video recording and Live Photos, consider these if the iPhone 7 is too expensive.

And let's not forget the iPhone SE. Updated with 32GB and 128GB storage options, it packs in an A9 chip and M9 motion coprocessor, and has a bright, crisp and compact 4-inch screen.

### > Choose an iPhone

	> MODEL	> KEY SPECIFICATIONS	> PRICE
ENTRY LEVEL	iPhone SE (4-inch display)	CAPACITY: 128GB PROCESSOR: A9 3D TOUCH No CAMERA 12MP photos, 4K video recording	£479
UPGRADER	iPhone 6s (4.7-inch display)	CAPACITY: 128GB PROCESSOR: A9 3D TOUCH Yes CAMERA 12MP photos, 4K video recording	£599
HIGH END	iPhone 7 Plus (5.5-inch display)	CAPACITY: 128GB PROCESSOR: A10 Fusion 3D TOUCH Yes CAMERA 12MP photos (dual-camera), 4K video	£819



## iPad

> Apple shifted the iPad range around in March 2017, replacing the iPad Air 2 with a 9.7-inch model simply called 'iPad'. The entire Air range has been phased out, but the iPad mini 4 is still available.

The 9.7-inch iPad features an A9 CPU and M9 motion coprocessor, and comes in 32GB and 128GB storage flavours. The Retina display has been made brighter compared to the Air 2, but the new iPad is slightly thicker and heavier. It's also got an 8MP rear camera and a 1.2MP front-facing camera.

On the software side, the iPad adds multitasking features, which are a boon for productivity. You can slide a second app over the right side of the one you're working in, then dismiss it to get back to work. Picture in Picture enables you to watch video in a corner of the screen. There's also Split View, which lets you work on two apps side by side.

### > Choose an iPad

	> MODEL	> KEY SPECIFICATIONS	> PRICE
ENTRY LEVEL	7.9-inch iPad mini 4	CAPACITY 128GB PROCESSOR A8 CONNECTIVITY Wi-Fi CAMERA 8MP TOUCH ID Yes	£419
UPGRADER	9.7-inch iPad	CAPACITY 128GB PROCESSOR A9 CONNECTIVITY Wi-Fi CAMERA 8MP TOUCH ID Yes	£429
HIGH END	12.9-inch iPad Pro	CAPACITY 128GB PROCESSOR A9X CONNECTIVITY Wi-Fi CAMERA 8MP TOUCH ID Yes	£819



## iPad Pro From £549

> The iPad Pro comes in 9.7-inch and 12.9-inch sizes, packed with either 32GB, 128GB or 256GB of storage. All models except the 32GB 12.9-inch one are available with the option of mobile network connectivity. The Pro's A9X chip is the most powerful in any iOS device, and it has an impressive four-speaker sound system, too. Adding the pressure-sensitive Apple Pencil makes it an accomplished drawing tool.

UPDATED SEPT 2016  
EXPECTED LATE 2017



## Apple Watch

From £269

> The Watch has already made Apple the second biggest watchmaker in the world. Apple is continuing this push with Apple Watch Series 2, which sees a big update to the Watch. It's water-resistant to 50 metres so you can take it for a swim, it has a faster dual-core processor and GPU, and a brighter display. There's also built-in GPS, which can measure routes, pace and distance when you're out on a run or hike without needing an iPhone.

Apple also introduced a ceramic model to replace the gold Edition, and has partnered with Nike to create the Apple Watch Nike+, a range of runner-oriented models. The Hermès straps come in new colours and designs, too.

**BEST BUYS...** Curated picks of third-party kit >> **MONITOR****ViewSonic VP2772****£650**

viewsonic.com



> If you're not fussed about 4K but still want exceptional image quality, this IPS display is truly superb. It offers 99% coverage of the Adobe

RGB colour space, 10-bit colour and a 2560x1440-pixel resolution. It has HDMI 1.4, DVI and Mini DisplayPort connections, and four USB 3.0 ports for expansion.

> **ULTRA HD MONITOR****Philips 328P6VJEB****£573**

philips.co.uk



> We love this display. At 32 inches diagonally it's big enough to make its 4K resolution worthwhile, and its colour rendering is excellent - 100% of sRGB,

93% of Adobe RGB and 97% of the P3 gamut that Apple's new MacBook Pro uses. It's big, bold, beautiful and superb for productivity and colour work alike.

> **EXTERNAL SSD****G-Technology G-Drive Slim SSD USB-C****£157**

g-technology.co.uk



> Most USB SSDs we've tested have peaked at about 440MB/sec, but not this 500GB one; it peaked at 496.1MB/sec for write speeds and

534.7MB/sec when reading, very close to the claimed 540MB/sec. It lagged a bit in our random read test, but for copying big files over USB-C, this is the drive to pick.

> **NETWORK STORAGE****QNAP TS-251+ 6TB****£480**

qnap.com



> We know a good NAS drive when we see one, which is why the 6TB TS-251+ won *MF302*'s group test. It's one of the

quickest NAS drives we've seen lately, with transfer rates of over 105MB/sec for large files. It has an HDMI port and a remote control for watching your media directly on your TV set. Four USB ports top it off.

> **WIRELESS ROUTER****D-Link AC3200 (DIR-890L)****£209**

dlink.com



> Being a tri-band router, this blows every other router we've seen out of the water when it comes to speed. We saw speeds of 600Mbps between two

Macs in the same room. Wi-Fi speeds hit up to 3.2Gbps, so its three channels mean it's no slouch there either. It's costly, but is a worthy investment if speed is your thing.

> **THUNDERBOLT DOCK****CalDigit Thunderbolt Station 2****£210**

caldigit.com/uk



> Our *MF297* group test winner got the nod for its beautifully compact form and superb menu bar tool, which lets you eject individual drives as you

please (something its rivals failed to offer). It's not the most laden with ports, but has everything that most people will need, and comes in at a great price point.

> **PRINTER****Brother HL-3150CDW****£108**

brother.co.uk



> This versatile laser printer got the nod in *MF300*'s group test. Its light design, feature list, and impressive print quality make it a great

choice for home office users. AirPrint and Wi-Fi connectivity means it plays nice with your iOS devices. It's not great for printing photos, but is a winner at everything else.

> **IP CAMERA****Netatmo Presence****£250**

netatmo.com



> The Netatmo Presence is an impressive outdoor security camera. Set in a sturdy housing, it's built to defy the elements. It has a built-in floodlight to

deter intruders, and a 100° field of view recorded in 1080p. There's also an SD card included, making it easy to store and access your footage.

> **MACBOOK BAG****Knomo Hanson****£90**

knomobags.com



> Deceptively spacious inside, the Hanson is full of well padded pockets to protect your precious portables. It's extremely comfortable, distributing

weight well so your shoulders don't feel the strain, and is rather good looking, but remains subtle enough not to attract the attention of light-fingered thieves.

## BEST BUYS... Curated picks of third-party kit >

### > WIRELESS SPEAKER

**Bowers & Wilkins  
Zeppelin Wireless** £499  
bowers-wilkins.co.uk



> This airship-inspired speaker is certainly striking, but it's more than just a looker, with crisp, clear treble and refined bass output over previous

Zeppelin models. Support for Bluetooth, Spotify Connect and AirPlay makes for plenty of connectivity, and dynamic EQ ensures controlled bass at all volumes.

### > IN-EAR HEADPHONES

**Apple AirPods**  
£159  
apple.com/uk



> Apple's answer to dropping the 3.5mm jack is the AirPods; we tested them against four rivals this issue (see p96) and they cleared the pack.

With instant iPhone pairing, balanced sound and a comfortable fit (even when exercising), the AirPods are classic Apple. They're even reasonably priced.

### > BLUETOOTH TRACKER

**Tile Slim**  
From £23  
thetileapp.com



> The little tracking device that won us over in issue 299 has been made even smaller with the new Slim model. It's now far more portable than before, and

easily slips into your wallet as it's about as thick as two credit cards. With a great app and a loud alarm, your valuables will be kept safer than ever with this little beauty.

### > PORTABLE SPEAKER

**Libratone Zipp**  
£144  
libratone.com



> Want a multiroom audio system in your home? This is your best option, hands down. It cleaned up in *MF309's* group test, scoring five stars in every

test category. From top-notch sound to tons of great features, the Zipp is a superb choice. It even boasts AirPlay for great integration with Macs and iOS devices.

### > PORTABLE BATTERY PACK

**Apple iPhone 7 Smart  
Battery Case** £89  
apple.com/uk



> Despite that silly-looking hump on its back, the official battery case for the iPhone 7 is rather impressive. It's easy to fit, the buttons feel great,

and the soft inner lining protects against scratches. It isn't the largest capacity case, yet it has more than enough juice for busy days, and the bump is surprisingly comfy.

### > MICROPHONE

**Blue Microphones  
Raspberry** £204  
bluemic.com



> Don't be fooled by this mic's small form factor; it punches hugely above its weight. Its close-up sound is intimate and bassy, and brings out the best in any

voice. No matter whether you're recording an interview, creating a podcast or just jamming with your band, its clarity and depth makes it easy to recommend.

### > ON-EAR HEADPHONES

**Sennheiser PXC 550  
Wireless** £330  
sennheiser.com



> We love these wireless cans. They're comfortable and lightweight, and their long-lasting battery keeps them going for 22 hours. Sound quality is amazing:

wide, rich and detailed, with plenty of bass, too. The controls take some getting used to, but active noise cancellation is superb and the EQ allows plenty of customisation.

### > ACTION CAMERA

**GoPro Hero5 Black**  
£349  
gopro.com



> We looked at GoPro's new flagship action cam this issue, and it coloured us impressed. GoPro has finally improved its cam's usability, and it's a cinch to

get started with the Hero5 Black. Add in superb 4K video quality plus a great range of shooting options and you've got a hugely powerful camera on your hands.

### > FITNESS SMARTWATCH

**Garmin Vivoactive HR**  
£184  
garmin.com



> Packed full of tracking features for a host of sports, and filled with genuinely insightful metrics, this is a fitness smartwatch for nearly

any occasion. Its battery will last you days, perfect for the odd weekend hiking trip. With all this, it's not hard to see why it won *MF308's* group test.



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# PHOTO STREAM

## GET ON INSTAGRAM

› Share your images with us by using the hashtag #MacFormat and we'll print the best here in the magazine. While you're there, follow @MacFormat (Twitter) and @MacFormatUK (Instagram).

It's a 'mystery'!

BY R.A.CHALMERS

### MISTY MAC FAN

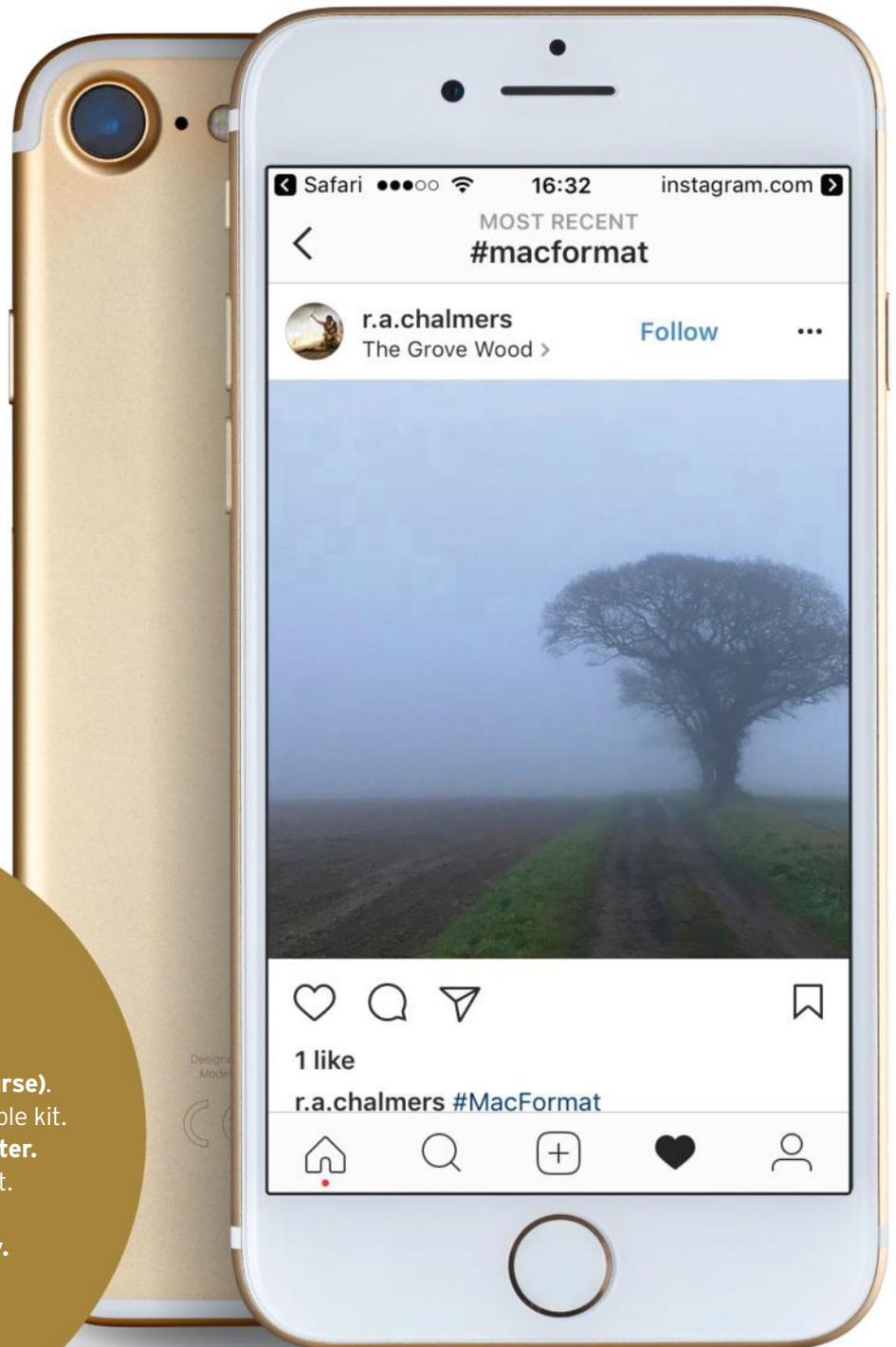
The Grove Wood

So, a little investigation has revealed that Grove Wood is on the Suffolk coastline, very close to Felixstowe, so presumably that beautiful, atmospheric mist has come rolling in from the North Sea. The idyllic spot, also known as Abbey Grove, boasts four hectares of woodland. We've no idea what equipment R.A.Chalmers used but we're very much liking the shot!

Share your pics with us using the hashtag #MacFormat on Instagram. In each issue we'll pick our favourites to feature on this page.

## WHAT TO DO!

- › **1** Open an Instagram account.
- › **2** Follow @MacFormatUK (of course).
- › **3** Take a picture of, or with, your Apple kit.
- › **4** Share it on Instagram or Twitter.
- › **5** Use the hashtag #MacFormat.
- › **6** Feel the warm glow of an appreciative Apple community.
- › **7** See if you made it onto the pages of this very magazine!
- › **8** Repeat.



## EDITORIAL

Editor-in-Chief **GRAHAM BARLOW**  
graham@macformat.com  
Art Editor **PAUL BLACHFORD**  
paul@macformat.com  
Operations Editor **JO MEMBERY**  
jo@macformat.com  
Commissioning Editor **ALEX BLAKE**  
alex@macformat.com

## ADVERTISING

Commercial Sales Director **CLARE DOVE**  
Senior Advertising Manager **LARA JAGGON**  
Director of Agency Sales **MATT DOWNS**  
Advertising Director **JOHN BURKE**  
Head of Strategic Partnerships **CLARE JONIK**  
Advertising Manager **MICHAEL PYATT**  
michael.pyatt@futurenet.com  
Account Sales Manager **ANDREW TILBURY**  
andrew.tilbury@futurenet.com

## PRINT & PRODUCTION

Production Controller **FRANCES TWENTYMAN**  
frances.twentyman@futurenet.com  
Head of Production UK & US **MARK CONSTANCE**  
mark.constance@futurenet.com

## MANAGEMENT

Creative Director, Magazines **AARON ASADI**  
Editorial Director **PAUL NEWMAN**  
Art & Design Director **ROSS ANDREWS**  
Senior Art Editor **JO GULLIVER**

## LICENSING

International Licensing Director **MATT ELLIS**  
matt.ellis@futurenet.com Tel +44 (0)1225 442244

## PRINT SUBSCRIPTIONS

Tel 0844 848 2852 Web myfavouritemagazines.co.uk  
Email macformat@myfavouritemagazines.co.uk

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5 Churchill Place, Canary Wharf, London, E14 5HU

## CONTRIBUTORS

**EDITORIAL:** Matt Bolton, JR Bookwalter, Nate Drake,  
Dan Grabham, Hollin Jones, Cliff Joseph, Gary Marshall,  
Rob Mead Green, Howard Oakley, Nick Peers, Jon Porter,  
Dave Stevenson, Alan Stonebridge, Luis Villazon  
**ART:** Apple, Future Photo Studio (Ollie Curtis), iFixit.com



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**Chief executive** Zillah Byng-Thorne  
**Non-executive chairman** Peter Allen  
**Chief financial officer** Penny Ladkin-Brand  
Tel +44 (0)1225 442 244

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The best Mac accessories **NEXT ISSUE**



# THE BEST MAC ACCESSORIES

GET THE VERY BEST KIT  
FOR YOUR MAC, NO MATTER  
WHAT MODEL YOU HAVE

## ALSO INSIDE...

- > Become a Smart Albums power user in Photos
- > Improve your productivity with Pastebot 2.0
- > More macOS Sierra tips & tricks
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# The history of iPod

We roll back the years on classic Apple tech



**F**ew tech devices have had such a long and varied life as Apple's iPod. Born as a simple way to put 1,000 songs in your pocket, it diverged simultaneously into a tiny clip-on music player on the one hand, and a full-on pocket computer on the other. We track the story of a modern icon.

## Design classic

> The iPod, with its click wheel, quickly became a design classic, as did the TV adverts that went with it. The adverts often featured silhouetted dancers. The silhouetted figures emphasised the white iPod earphones, which quickly became an important part of the iPod brand, living on today in all Apple's earphone products, which are still only available in 'Apple white'.

The classic iPod dancers featured in Apple adverts.



### January 2004

> The iPod mini, a smaller model in 5 colours is introduced.

### October 2004

> The first colour iPods that display photos are released. iPods now have USB.

### September 2007

The last iPod 'classic' is available in sizes up to 120GB. A 160GB model is introduced in 2009, but the classic is discontinued in September 2014.

### September 2007

> The first iPod touch is released, starting a new life for the iPod brand as an iPhone, without the phone.

### September 2010

> The fourth, and still the latest, generation of the iPod shuffle is launched with a clip-on design and five different colours.

### July 2015

> A fifth generation iPod touch available in 6 colours, a 128GB model and an A8 processor is released.

2001

### October 2001

> iPod launches with 5GB storage, a mechanical scroll wheel and sporting a FireWire connection.

2002

### July 2002

> A second generation iPod introduces a touch sensitive wheel, 10 and 20GB storage.

2003

2004

### January 2005

> The iPod shuffle is born, but the 'stick of gum' with lanyard only lasts a year.

2005

2006

### September 2005

> Apple launches the iPod nano, and even slimmer version of the iPod mini. Initially only available in black and white, colours were added in 2006.

2007

2009

### September 2009

> The new 5th generation iPod nano becomes the first iPod with a video camera. The iPod touch doesn't get a video camera until the release of the 4th generation in 2010.

2011

2012

### September 2012

> The 7th generation nano is released, and is still the most recent version. It features a tall form factor and has video playback.

2013

2016

## iTunes

> With the MP3 player sorted, Apple needed a way for people to (legally) fill it up with digital music. The iTunes Music Store was born in 2003 in the US, and launched in the UK, France and Germany in 2004 as a way for people to download music. It changed the way people purchased music forever.

Digital downloads rocketed with the launch of the iTunes Store.



## iPhone impact

> With the release of the iPhone in 2007 it became clear that stand-alone MP3 players like the iPod had a limited shelf life. The iPod became an app on the iPhone (these days called Music). Meanwhile, the iPod touch was launched, which gave the brand a new lease of life and the iPod nano and shuffle kept going as smaller players for use when exercising.



The shuffle is a neat player for use when exercising.

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