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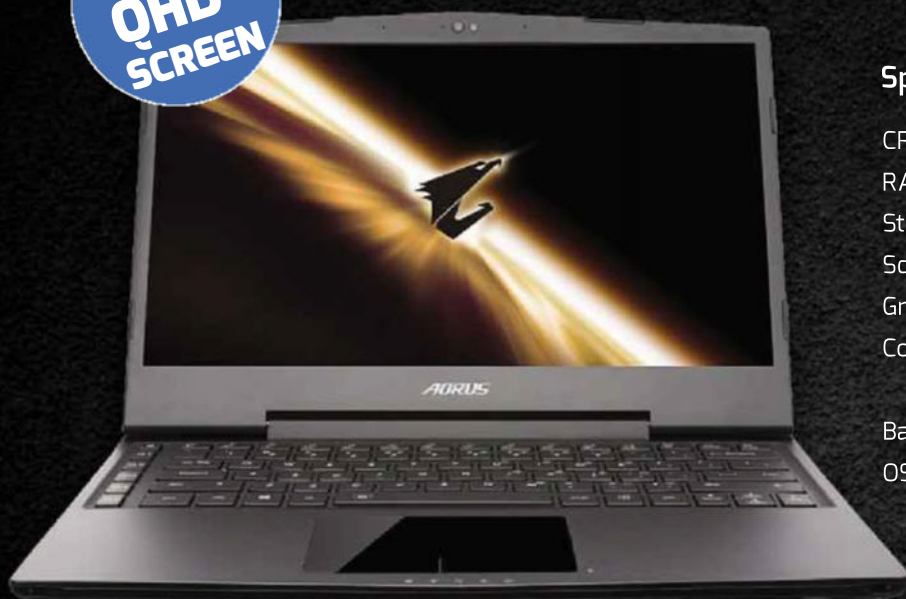
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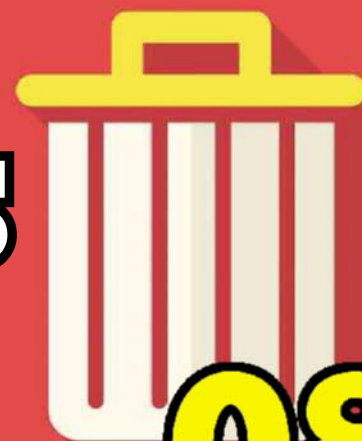
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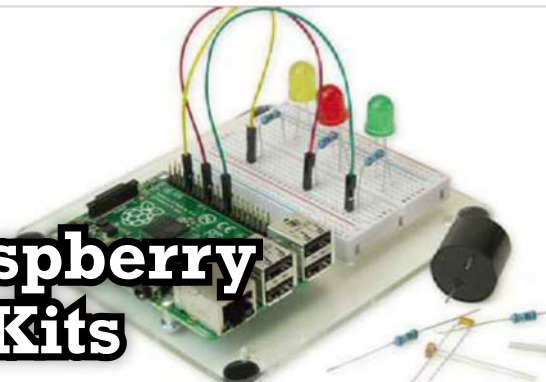
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46 Raspberry Pi Kits

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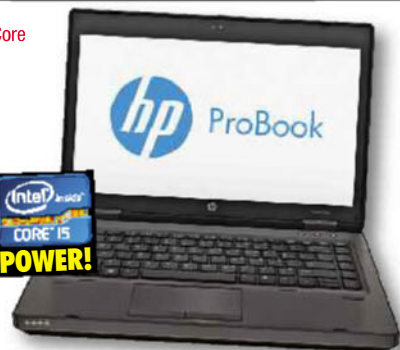
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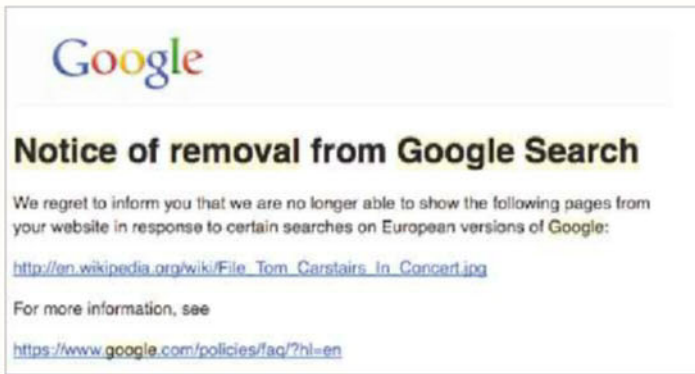
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What's Being Deleted From The Internet?

Companies, groups and individuals are trying to edit the internet, deleting entries from Wikipedia and removing links from Google. **David Crookes** looks at who they are and whether it's ever possible to delete something online





They say the internet never forgets, but it can at least turn a blind eye if you want it to. In May this year, the Court of Justice of the European Union decided that Google and other search engines had to remove links to content if someone affected by it made such a request. Over the past few months, the so called 'Right to be Forgotten' has led to a scramble, as people whose past is having a tendency to haunt them seek a protective virtual blanket to digitally edit their past.

In the process, it has ignited a moral dilemma over whether it's desirable to allow people to remove links to information about themselves on the web. These days, the likes of Google have become the go-to for online daters, employers and anyone else wanting to check somebody out. It can be a safety net for people, a chance to avoid being duped.

“ The BBC has vowed to publish a list of articles that have been removed from Google ”

But it's also having an effect on what we'll be able to see online in the future. Some are calling it censorship and others 'online Photoshopping'. And yet, at the same time it's being welcomed in some quarters, especially those embarrassed by information which is showing up in search engine listings. This, as it happens, was the motivation for the ruling.

Step forward Spaniard Mario Costeja Gonzalez. Having got into financial difficulties some 16 years ago, he spent a great deal of time fretting that a search for his name on Google was resulting in a link to the auction of one of his properties. Fearing his reputation was being damaged and his private life opened up for all to read (in no less than 36 "damning" words), he took Google to court. The outcome? Anyone in Europe now has the right to request information about themselves be removed from search engine results. And more people know about Mr Gonzalez than they ever did before.

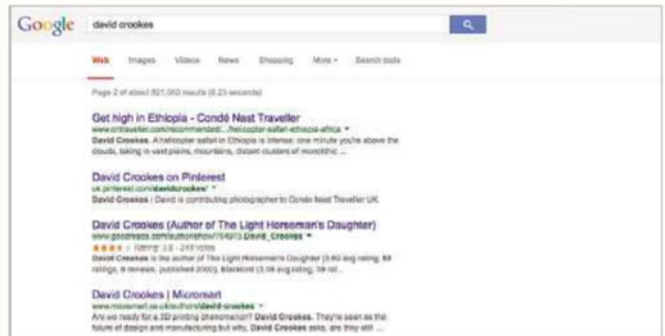
Yet despite the risks involved in effectively editing the internet (by raising a problem, it can alert more folk to it), people are trying to erase their history in ever greater numbers. This can have a damaging effect on the public interest: the ruling has attracted applications from paedophiles, and it has seen requests for the removal of links to web pages about rip-off companies, stalkers and attempted murderers. It's not the case that all applications for deletion are successful (a Swiss financial

How To Remove Yourself From Google

If you fear there are unfair, damaging links about you on Google, then it's time to take some action.

1. Find some links

First of all, type your name into Google to check if the search results are linking to articles that you would rather remain out of sight. Copy and paste the URLs into a document.



2. Click through

If you've clicked on the links and discovered that they do not actually exist, then you can contact Google and ask it to remove the link from its search results by going to support.google.com/legal/contact/lr_eudpa?product=websearch. Google will decide if it should do so.

3. Pick up the phone

If you've clicked the links, and they go through to potentially damaging web pages, go directly to the source and ask the editor or webmaster if they would consider removing your information. Unless it's libellous or breaking any laws, they are not obliged to do so.

4. Ask to be forgotten

Whether or not the editor or webmaster has agreed with your request, go to support.google.com/legal/contact/lr_eudpa?product=websearch and apply for the Google links to be removed, stating a good case as to why it should comply with your request. Enter all of the URLs that you pasted in step one and identify yourself with a passport or driving licence.



5. Wait and see

Now sit back and wait patiently while Google gets to your request and considers it. You will be notified either way and will either be popping champagne corks or drowning your sorrows. As far as we can see, there's nothing to stop you resubmitting an application, though.



professional, for example, failed to have links from Google to a story about his arrest and conviction removed), but many contentious ones are.

An archeology specialist was convicted of trying to steal £200 worth of Christmas presents from Boots in Oxford in 2006, for instance. His story in the Oxford Mail was lingering in Google's search listings, and an application to have the link severed was successful. Similarly, three men were jailed in Bolton for attacking three soldiers. Google agreed to delete a link to the 2010 court report in The Bolton News from its search listings following another application. In both cases, though, the newspaper editors made a mockery of the ruling by republishing the articles.

“ In the latter half of 2012, governments had made a record number of requests for Google to remove political content ”

Ian Savage, editor-in-chief of The Bolton News said, “As the editor of a newspaper, I believe passionately in the freedom of the press and I will fight any attempt to remove legitimate content.” The upshot of this is that searching for those names now go to a republished article. Google can deactivate links to pages from the web, but the law does not order the content creators to remove the ‘offending’ information. By republishing, Google's web crawlers simply pick up on a fresh page and the info shows in the listings again.

BBC Bites Back

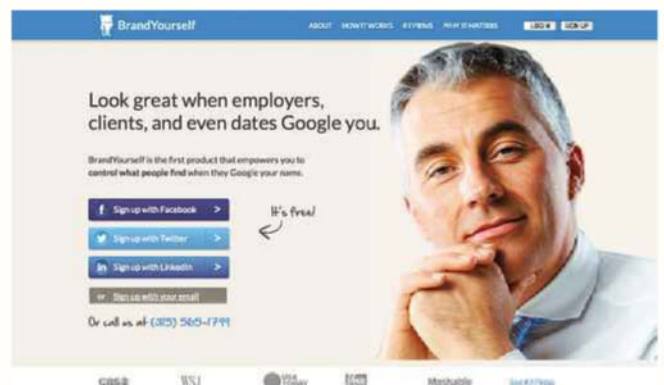
The problem, it would appear, is that Google does seem to be removing some search links that have the potential of hiding important information. The problem is that, in a lot of cases, the Right to be Forgotten is not being used merely to hide some embarrassing photos or an ill-judged blog post rant written through the haze of a potent brew. Instead, they are looking to hide information that really ought to be allowed, and that has led to accusations that Google is not using its best judgement.

Control What Others See

Statistics show that 94% of people click on a first page Google result. Only 6% of people click through the second page. So by trying to manipulate what appears on the front page, you have a much greater chance of preventing people seeing something potentially embarrassing about you.

One way of doing this is via a website like **brandyourself.com**. Advertising itself with the blurb, “Look great when employers, clients and even dates Google you,” BrandYourself asks you to submit the websites and profiles that you want people to find when they Google you. You then have to follow a series of steps to ensure that those websites and profiles rank higher in Google. The site lets you track your progress, and it gives you alerts if the rankings change. You can even find out who is Googling you.

Although there's a free option, it's limited to just three weblinks. While that may just be about enough to cover a particular track, it may not be, so you'll have to stump up a monthly fee. If you want some assistance, you could try the concierge service. It costs some £180 each month. Yes, we hear you splutter – MONTH. Nobody said deleting yourself online was going to be easy, and now we see it may not be that cheap either.



The BBC has reported that it has, so far, been informed of 46 delinked stories, some of which, it believes, are unnecessarily hiding information from the public. One of them involved a trial of members of the Real IRA, and another saw a blog post by BBC economics editor Robert Peston removed following a request by a person who had commented underneath it. According to editorial policy head David Jordan, greater care needs to be given to the public's right to remember, and to show the extent of the issue, the BBC has vowed to publish a list of articles that have been removed from Google, and it will continue to update it. The Daily Telegraph has followed suit: it too will publish a list of delinked articles but, unlike the BBC, it will link to the affected articles.

In the case of Robert Peston's article, Ryan Heath, a spokesman for the European Commission's vice president, said he could not see a “reasonable public interest” for the delinking. The government is also opposed to the ruling and it is challenging the decision. There is a general feeling that it is not a search engine's place to be making such decisions and that if judgements were being made, then it should be the publisher of the information.



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But Google is receiving 1,000 requests per day. It is being swamped with requests. And because it has 90% of the market, it is being bombarded more than all the others. It doesn't matter that the search results will be seen by anyone going to google.com; some people simply want to delete unsavoury or problematic aspects of their online lives. The consequence, according to Martin Clarke, MailOnline's publisher, is "the equivalent of going into libraries and burning books you don't like."

At the same time, there has been a rise in the number of legitimate reputation management PR companies charging for having their personal information removed from the web, leading to even more deleted content. One of these is Igniye, a Leeds-based company which claims to have had a deluge of requests and inquiries for help in removing search engine leaks since the ruling went live. It says these have come from individuals and companies, and it's clear about what it can and cannot achieve.

It spells out what's needed for Google to remove unwanted links and articles. Content, it says, must be aged, out of date, no longer relevant and not in the public interest. It says "the last criteria is the trickiest." "Google do not provide a clear definition of what 'public interest' is," it adds. "From our experience at Igniye, this criteria is being widely applied by Google to various posts about varying subject matters. Because of this broad spectrum of 'public interest' it can make content removal from the national media extremely slim". It goes on to say that if an individual or company is associated with a criminal conviction, fraud or scam, the "likelihood of a Google removal is slim".

Even so, Kim Walker, a partner on the technology team at law firm Thomas Eggar, argues a need to reassess the ruling. "The 'Right to be Forgotten' should not be a licence to airbrush history," she says. "Google is in a monopoly position, so there is no standard that can be applied to its response to the ruling. Removing the link to the data is not the same as deleting the information itself. Even if it is something an individual would prefer was not available, the limitation period for defamation claims is one year under English law, so there must be a presumption that stories that are older than this have not been challenged."

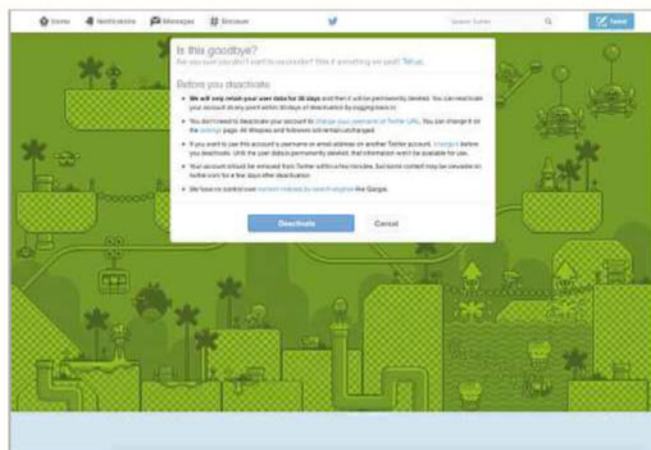
"As to how long it is reasonable to maintain a link thereafter needs some thought, but at the moment that process is entirely governed by Google itself. It would seem sensible that the 'request to take down' procedure should assess the age of a link's subject data. This is because the Data Protection Directive requires data controllers to keep data only for such time as it is necessary to do so. What it should not mean is that anyone who does not like something written about them but which is otherwise factually correct and current can demand that search results are edited."

Deleting the web

However, the issue of deletion on the web goes well beyond Google and the search engines. For a long time, people, groups and companies have meddled with Wikipedia, removing sensitive information that, while not libellous, could cause a few red faces. The CIA and the Labour party are just two organisations found to be editing the site to improve their public image. Someone at Labour's Millbank HQ removed a reference to "careerist MPs" from a section about Labour students. The constituency office of Tory party chairman Grant Shapps was found to have deleted his O-level entry and information about donors that related to a time while he was shadow housing minister.

Remove Yourself From Twitter

If you wish to extinguish your Twitter account, then you can do so by going to twitter.com/settings/accounts and clicking 'Deactivate my account' at the bottom of the screen (in tiny blue). Your user data will be retained for 30 days and then deleted, but the account will be removed within minutes. That said, Twitter warns that some content may be viewable on the service for a few days and that it has no control over content indexed by search engines.



Remove Yourself From Facebook

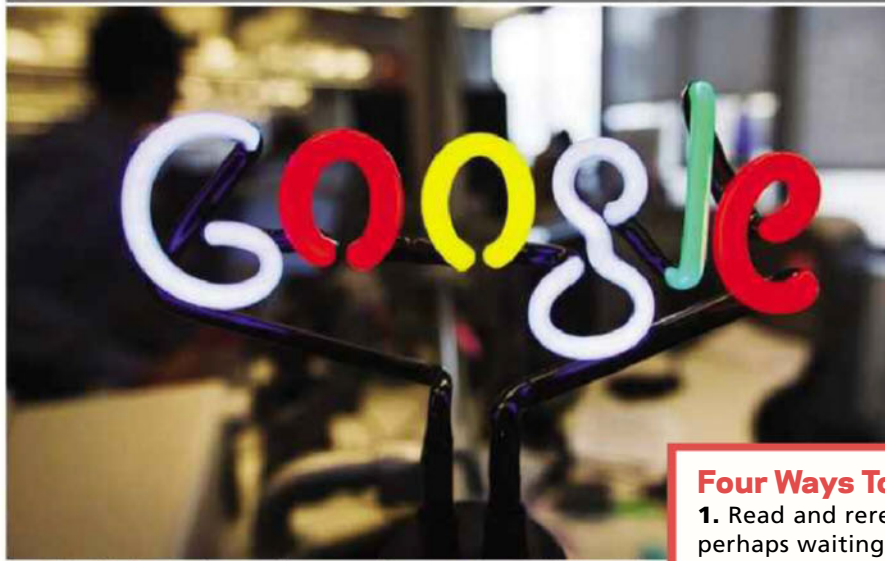
When you go to Settings, Security and Deactivate your account in Facebook, the site doesn't actually remove you for good. It puts you in a state of limbo, ready to reactivate you when you next log in. But deactivating your account will hide your Timeline information, effectively removing your photos and posts. You can delete your account permanently by going to facebook.com/help/delete_account. All trace of you will then be extinguished.

“ The right simply allows a European to identify links that are no longer relevant ”

The Guardian reported last year that, in the latter half of 2012, governments had made a record number of requests for Google to remove political content (a staggering 2,285 requests relating to 24,179 pieces of data). They included requests to remove YouTube videos and blog posts on Blogger. Russia and Brazil saw the largest increases, the newspaper said, and it quoted a Google blog post which stated, "As we've gathered and released more data over time, it's become increasingly clear that the scope of government attempts to censor content on Google services has grown. In more places than ever, we've been asked by governments to remove political content that people post on our services. In this particular time period, we received court orders in several countries to remove blog posts criticising government officials or their associates."

Telegraph stories affected by EU 'right to be forgotten'

EU ruling demands Google removes links to content deemed 'inadequate, irrelevant or no longer relevant' following complaint from anyone named in it. Here we will maintain an up-to-date list of Telegraph content which has been removed from search results



Google should be thought of as part of the press, and given protection not for its own sake, but

Sometimes, website owners have caused problems for themselves. Facebook had to apologise when it deleted a free speech group's post on human rights abuses in Syria. Dr Agnes Callamard, executive director of campaign group Article 19, said the social media network had been acting like "judge, jury and executioner". There have also been tales of Facebook deleting images of breastfeeding. It suspended the account of an Italian woman when she posted a pro-LGBT rights image of two women kissing for "violating the community's standards". It was later restored.

But while both of those issues were resolved, the same cannot be said of the links removed by Google. There is no formal appeal process, and there is pressure on Google to require the identity of the person requesting information is removed be shared – confidentially – with a publication, something that does not currently happen. Editors do not know who is making an application, only that an application has been made and successfully acted on.

Big Problem?

The issue does have two sides, though. Should past convictions, once spent, continue to haunt criminals online, or should they be given the reasonable right to get on with their lives without showing up in web links with every entry of their name? Shouldn't the internet make it as easy to remove items from the web as it is to post?

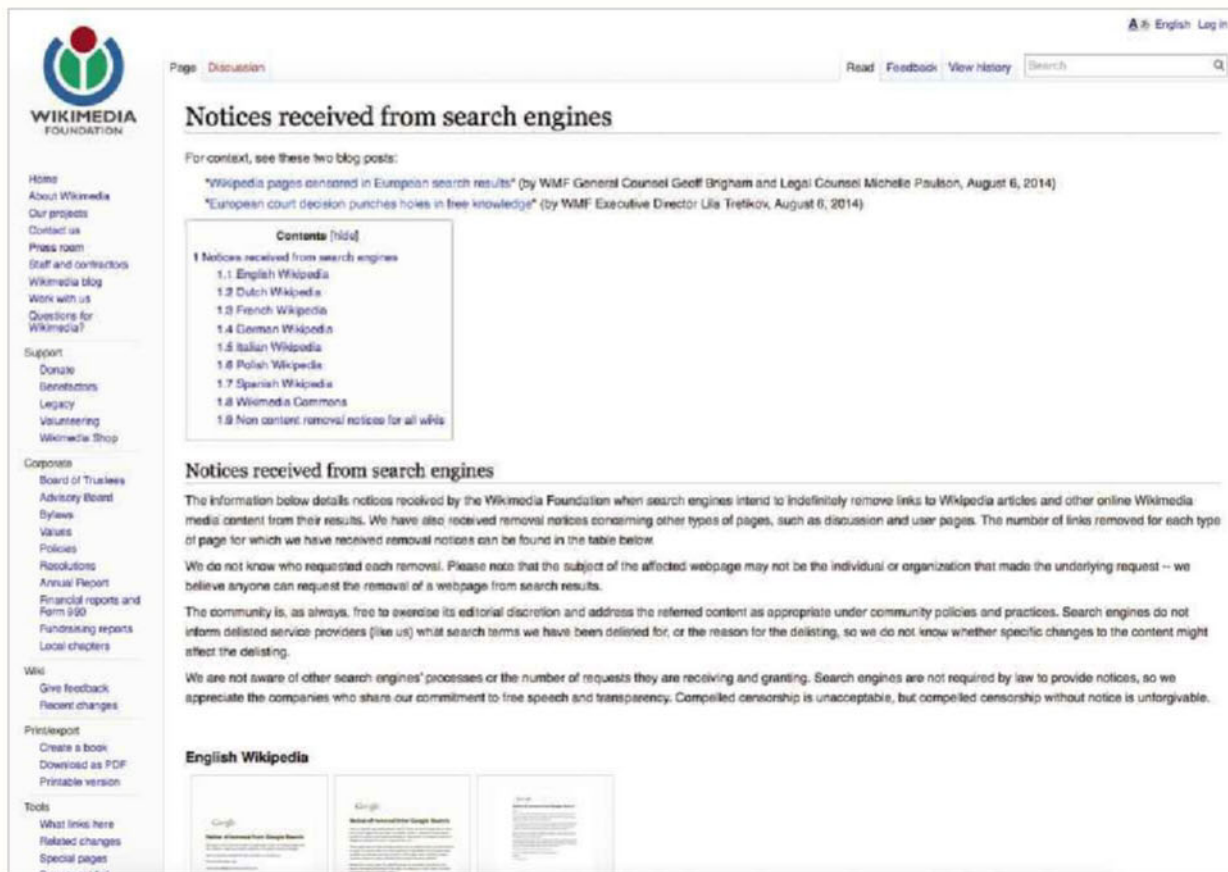
Privacy groups welcome it, as you would expect. Indeed, consumer rights group Consumer Watchdog in the US has asked Google to consider voluntarily offering the Right to be

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Four Ways To Manage Yourself Online

- 1. Read and reread your status updates and tweets** – perhaps waiting a minute before sending – and check your photos carefully. Are they images that, in five years time, you wouldn't mind people seeing? Once they're online, there is no telling what others can do with them, so be careful. Always remember that people can create screenshots and they can save things. That means even the likes of Snapchat can cause problems for you, despite only allowing messages to be seen for a very short period of time.
- 2. Be nice to people.** It goes without saying, but if you fire off at people online or, even worse, troll others, then you will gain an unfavourable reputation. It can lead to retweets on Twitter or Shares on Facebook that you may in hindsight regret. Many people having put something online that has subsequently gone viral. Stuff like that is very hard to remove, and you could be it chasing around the web for weeks, months and potentially years.
- 3. Stay out of arguments online.** You may find yourself wanting to get involved in a debate, but what sounds like a reasonable line of argument to you can sound like a rant or a row to others. People can easily misinterpret what you're trying to say and think negatively of you. Once it's out there, the damage can be done. This goes for social media, forums and blogs.
- 4. Search for yourself.** Yes, it sounds weird, but the best way to manage what is being said about you is to look for it. If it finds you, then you could be in serious trouble. If you find something you don't like, you can take steps to correct it. Set up a Google Alert with your name (not recommended if you have a very common name) and discover when your name is mentioned (go to support.google.com/alerts/?rd=1 to find out more).



Forgotten in the land of free speech. In an open letter that highlighted the 146,357 removal requests involving 498,737 URLs that Google has had to deal with and the 41.8% removal success rate, privacy project director John M Simpson wrote, "The Right to be Forgotten is simply restoring the balance in Europe that is provided with Privacy By Obscurity. The right simply allows a European to identify links that are no longer relevant and ask for their removal. As your examples clearly show, removal won't always happen, but the balance you appear to have found between privacy and the public's right to know demonstrates you can make the Right to be Forgotten work."

As well as claiming that 61% of Americans were in favour of such a policy, the group highlighted positive claims made through the European ruling. They include victims of crime, including rape, asking for links to newspaper reports to be removed and a German man who had an embarrassing private exchange that became public.

But anti-censorship organisations are against the ruling. The Open Rights Group fears deletion of internet links and content to be a threat to free speech online. "We need to take into account individuals' right to privacy but [the Right to be Forgotten] raises significant concerns. If search engines are forced to remove links to legitimate public content, it could lead to online censorship. This case has major implications for all kind of internet intermediaries, not just search engines." It said the ruling went against the opinion given by Advocate General Niilo Jaaskinen last June when he said that Google should not be responsible for content published by third parties.

And certainly, on a lower level, those drunken images posted on university nights out, those ill-judged Facebook posts and off-the-cuff Tweets should be made erasable. They are clearly

Can I Really Delete Myself Online?

Completely? Utterly? A hundred percent? No. Once you're online, it's very difficult to remove yourself entirely, and there is no magic Delete key. One of the problems is that we tend to sign up to a lot of things, giving away information that we're never entirely sure is going to be treated the way we want it to be. And even when we think we're deleting accounts we are, as we can see from the other boxouts, tending only to deactivate them.

To delete yourself online would really mean ceasing use of the web in its entirety. Although you can prevent web browser tracking, it's so easy to leave traces of yourself online. Caches take snapshots of your business for hours and days; sites like the Wayback Machine can keep hold of it for years.

In the US, the Library of Congress receives copies of every tweet. Across the globe, search engines copy the pages they crawl. If you don't want to be traced online, it may well be too late. And even if you do manage to remove yourself entirely, it would only be a matter of time before your footprints are left in the digital snow.

not in the public interest and could, as time goes on, be detrimental to people's lives, haunting them at every twist and turn through careers and socially. Thankfully, as we show on these pages, those kinds of things are removable. But as we also show, deleting online content is not always that simple. Sometimes it's a case of closing the stable door once the virtual horse has bolted away, gone viral and become searchable. **mm**



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What's Eating Your **Android** **Battery?**

We look at how to extend the battery life of your smartphone or tablet

Over the years, smart devices have become much faster, with bigger, sharper screens and all kinds of new features. Battery life, on the other hand, is a different matter entirely. We've gone from being able to charge our phones a few times a week to having to do it once or even twice a day.

Why has this happened, and is there anything you can do stretch your battery life further? Let's take a look at what's draining away all that power and examine what can be done to make it last a bit longer.

1. Quit Background Processes

Due to the fact that Android is a fully multitasking OS, it's easy to end up with a ton of applications running in the background. As you might expect, this contributes to battery drain. On the most basic level, you can reduce this drain simply by closing the apps in question. How you do this depends on the model of phone you have, but it's normally a case of either pressing and holding the home button or tapping the dedicated multitasking softkey. Then you simply close the apps you're not using any more.

“ We've gone from being able to charge our phones a few times a week to having to do it once or even twice a day ”

However, there's a lot more going on in the background than just these apps, and even these apps could still be running certain processes after you've closed them. If you head to the main settings of your device, under 'Battery', you'll see everything that's currently contributing to your battery drain. It's quite probable that the main culprits will be the screen (which we'll come to in a moment) and Android itself. If there are any apps present in the list, then you close them in the normal way. If that doesn't work, then you can also tap them in the Battery list and then hit 'Force Stop'.

2. Uninstall Unused Apps

With the Play store bursting to the brim with interesting, free apps, it's easy to quickly fill your phone or tablet with things you want to try out. Of course, you might not like those apps or you might lose interest in them. If that's the case, it's best to delete them, because even when you're not using them, they could be running background processes, such as checking for updates from the internet.

3. Reduce Brightness

The screen is one of the most significant sources of battery drain there is, but you can reduce its impact by simply swiping down from the top of the screen to open the notification panel, then deselecting the 'Auto' box in the brightness area, before reducing the brightness using the slider. Obviously, you want to be able to still see the screen, so find a comfortable setting.

If you're using your Android device in a darkened area, you might find that the screen is too bright, even at the lowest setting. In that case, you can install an app such as Bluelight Filter, which will reduce the backlight even further, as well as allowing you to alter the colour balance. The primary idea behind this is to



reduce eye strain and stop the light from your screen keeping you awake at night, but it's also better for battery life.

4. Turn Off Wi-fi, Bluetooth And 3G/4G

The wireless technologies in your phone all contribute to the battery drain, and with apps accessing them in the background, the problem is exacerbated. Turn them off from either the settings or the quick panel in your notification tray to save energy.

Of course, if you rely on background services, and want to be notified of new emails, instant messages and so on, then this isn't really an option, but if not, then you can make your battery last a lot longer by turning them on only when you need them.

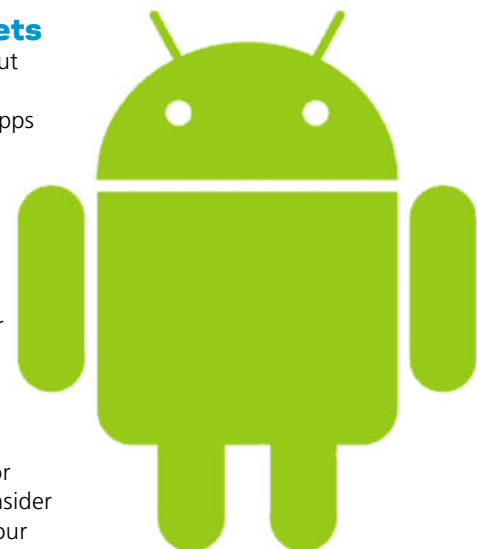
5. Turn Off Location Services

If you've ever used your phone as a satnav, you'll surely be familiar with how speedily the GPS eats up battery power (and how worryingly hot the device gets). Obviously, if you're using it for this, you can't turn the GPS off, because then it won't work.

The problem is that many other apps use location services that you wouldn't necessarily expect. For example, some photo apps include a geotagging feature, so you can record exactly where you were when you took a particular image. While it's possible to turn off this setting in those individual apps, it's easier just to turn off location settings in general, which you can do from the settings menu or, again, using the quick settings panel if your device has one.

6. Use Fewer Widgets

One of the best things about Android is the fact you can have widgets. These mini apps sit on your home screen, giving you fast access to features and information, without having to open a full application. However, they can also put extra demands on your processor and access the internet in the background (updating weather information, for example). If battery life is a problem with your phone or tablet, then you should consider having fewer widgets on your home screen.



7. Turn Off Haptic Feedback And Keytones

Touch-screen, by their nature, don't offer any kind of physical feedback when you touch them. The truth is, though, they don't need to (unless you have some kind of physical impairment), because you know you've pressed something due to the fact that something happens on the screen as a result. If it was so important to have a physical response to a screen tap, then the BlackBerry Storm would have been a rip-roaring success, instead of... well, not being one.

Keytones, similarly, are usually pretty pointless, and they have the added bonus of being incredibly irritating to everyone around you. If you can't work out that you've pressed the screen without some plinky plonky sound playing, then you probably shouldn't be operating anything more modern than a Nokia 3210.

Turn both of these off to give your battery life a boost.

8. Use Power Saving Mode

Some Android phones will come with a power saving mode, which will reduce background processes, dim the screen and more, to give you as much time with your device as possible. Some Samsung phones also come with an 'Ultra Power Saving Mode', which reduces your phone display to greyscale, and limits you to only essential things, such as the phone calls, messaging and the internet. The amount of time you get in this mode is impressive, and even a few battery percentage points can last hours.

9. Turn Off Notifications

Apparently, installing an app isn't good enough for some developers any more. Instead, they have to constantly remind us that the app we installed is still installed, and they do so through the medium of notifications. It's likely that some people find this information useful, because they want to be informed that they have more virtual coins to play the not-very-good *Flappy Bird* clone they installed, but for many of us, these are just an annoyance, and their need to be constantly running in the background is not good for your battery.

Normally, apps will have some kind of setting to turn off notifications, but that's not always an option, plus you have to then open that app and locate that setting. Another, easier way of achieving the same thing is to tap and hold a notification when it appears, then tap 'App info'. Now, uncheck the 'Notifications' tickbox. You'll probably see a warning about how turning the notifications off means you might miss important alerts and updates, but assuming you're okay with that, simply tap 'OK'.



“ There's a desire among consumers for ever thinner, lighter phones. Sadly, that runs counter to the need for longer battery life ”

10. Use Static Backgrounds

Android doesn't just allow you to have an image as a background for your home and lock screens; you can also get it to display an animation. These are referred to as live backgrounds, and you even get ones that change in response to information from sensors such as the gyroscope. All of this naturally has an impact on your battery life, so by changing your background to a static image or a blank colour, you can squeeze a few more precious minutes from your device.

11. Get A Bigger Or Spare Battery

As Apple's apparently bendy iPhone 6 shows, there's a desire among consumers for ever thinner, lighter phones. Sadly, that runs counter to the need for longer battery life, because bigger batteries simply store more energy.

Thankfully, you don't have to be limited to what you're given by the manufacturer, because there are plenty of third-party extended batteries available for mobile devices. These do add quite a bit of bulk, but the energy boost they offer is significant.

Another option is to just purchase a second, regular battery, so you can swap it out when the other one runs out of charge. In either case, though, you'll obviously need a phone that allows you to change the battery, and you should be careful when purchasing third-party batteries, because cheap fakes could be poor quality or even dangerous.

A safer option, perhaps, would be to use an external battery pack. These are charged separately and allow you to top up your phone when out and about, using the usual charging cable. There are no shortage of these available from sites like Amazon, but it's worth checking out independent reviews before committing to purchase, so you get a high quality product. The important things to consider are the capacity (measured in mAH), the size and weight, and perhaps the voltage if you want to charge a tablet.

12. Turn It Off

Clearly this is a fairly drastic measure and one that largely defeats the point of having a mobile phone or tablet, but if your usage of the device is only occasional and you don't have a desire to be constantly reachable, then switching off could be a reasonable option. **mm**

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The **Best** Money Can Buy: Tablets

Tablets now rival laptops in terms of popularity, and we're going to take a look at some of the most expensive

With mobile devices getting smaller and smaller, to the point where a simple mobile phone is more powerful than most PCs of a few years ago, it's no surprise that portable computing technology has become so dominant. Even if someone has never used a PC before, it's likely they have a smartphone or a tablet.

Tablets are the most recent new avenue for mobile computing, and with the arrival of the Apple iPad and the various Android flavours of tablets, these devices have become very desirable. They're more portable than laptops, more powerful than phones, and they can make many day-to-day tasks far easier. There's almost no limit to their flexibility in terms of the number of apps you can get, and while the market may have slowed somewhat, they're still very popular.

Tablets began their life as expensive toys, but as time went by, cheaper and cheaper options surfaced, and we now have all manner of tablet styles to fit most budgets. Of course, just because you can get cheaper models, don't think there isn't a market for the extravagant. Let's have a look at some wallet-busting tablet models.

Product: Stuart Hughs iPad2

Price: \$8,000,000

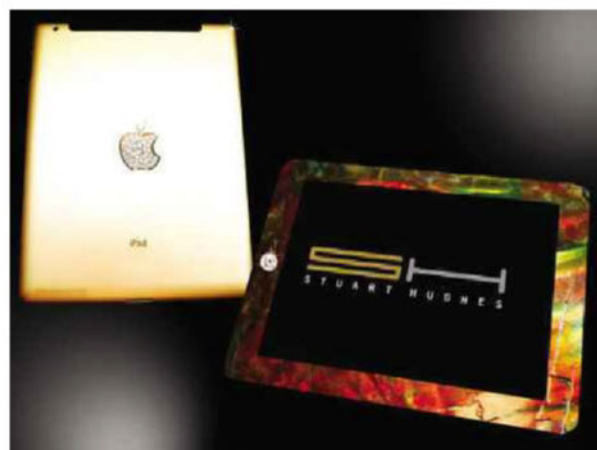
You didn't read that incorrectly. This custom iPad2 reportedly costs \$8 million, making it one of the single most expensive computing items we've ever seen. What's more, when you find out why it's so expensive, you'd think someone was taking some very strong substances when they came up with the idea.

Just like many decadent custom devices, the Stuart Hughs iPad2 is augmented with an elaborate and expensive case. The backing of the iPad is made of solid 24-karat gold, and the Apple logo and home button incorporate 65 flawless diamonds. Now, that's extravagant enough for most, but then we come to the screen frame. This is made from ammolite rock, which is a multi-coloured rock made from the remains of prehistoric molluscs and, get this, slivers of T-rex thigh bones. Yes, this iPad has parts of a T-rex making up its case. Why? Who knows? What's clear is that it certainly tops a neon pink colour scheme. The frame is topped off with a single cut 8.5 carat diamond inlaid into a platinum surround with 12 more flawless diamonds. Oh, the iPad inside? It's a normal unit, so you're paying for the chassis here.

Product: Panasonic Toughpad

Price: \$6,000

Billed as the world's only 4K tablet, the Panasonic Toughpad is an impressive device. It runs Windows 8.1 Pro and features an Intel Core i7-3687U vPro CPU that runs at 2.1GHz, with a turbo boost up to 3.3GHz.



▲ *Stuart Hughs iPad2*



▲ *Panasonic Toughpad*



➤ *Fujitsu Stylistic Q704*

There's 16GB RAM, a 256GB SSD and a 5MP camera. However, it's the Nvidia Quadro K1000M GPU that'll probably impress the most. This powerful mobile GPU has 2GB VRAM and is able to produce a display of 3840 x 2560 on its 20" screen.

The screen is an LCD model with LED backlight, and it features a 10-point multi-touch along with an optical pen. The unit also features USB 3.0, SD card slot, mini-DisplayPort, Ethernet, Wi-fi and Bluetooth, and as it's a Toughpad, it's very durable, with a 2.5ft drop rating on the bottom side, and 1ft elsewhere. This is helped by the magnesium alloy frame.

It's a powerful and very impressive tablet, and although it's very pricey, there aren't many other mobile devices that can offer this kind of impressive power and display resolution.

Product: Fujitsu Stylistic Q704

Price: £1,900

This pricey option from Fujitsu is, as the name suggests, a stylish 12.5" model that comes with an Intel Core i7-4600U 2.1GHz CPU, 8GB RAM, a 256GB SSD and Windows 8. It's slim and durable, designed for those who need to work in various environments as it can resist a range of weather conditions, and it features anti-theft protection that's rated at an enterprise level.

It weighs just under 1kg and has support for 4G as well as wi-fi and Bluetooth. Like Microsoft's own Windows tablets, it also comes with the option of using a dockable keyboard, two of which come with the unit.

It's a flexible tablet, mainly designed for professional use, but it's also just as useful for everyday home users, as it's powerful enough to replace a larger PC or laptop.

Product: Microsoft Surface Pro 3

Price: £1,649 (Core i7, 8GB RAM, 512GB SSD)

Microsoft's push to take on the iPad is its range of Surface tablets that the company claims can actually replace your standard laptop. To this end, the Surface tablets come with a unique clip-on keyboard that effectively turns them into laptops, and once removed, they can be used as normal tablets. It's a good system, and one that offers more flexibility than most tablets, and it's ideal for those who simply can't get the hang of touch-screen keyboards.

The specifications of the Surface Pro 3 vary depending on the model chosen, and here we have the top-of-the-range model that comes with an Intel Core i7-4560U 1.70GHz CPU, Intel HD Graphics 5000, 8GB RAM, 512GB SSD storage and a 12" ClearType full HD display. Wi-fi and Bluetooth are featured as standard, and it also has a 5MP camera (front and rear), USB 3.0, micro-SD and Dolby-enhanced audio.

It's a solid entry from Microsoft, and although not quite as popular as Apple's iPad range, it's a great alternative and a perfect option if you want to stick with Windows and don't fancy moving over to either iOS or Android.

Product: Ruggedbook 750

Price: £1,500

This is a tablet that has one goal and that's to be the most durable tablet around, able to be used by anyone, anywhere. To this end, this tablet features rubberised bumpers that surround the edges of the tablet and rubber plugs protecting each and every port. The whole chassis is designed to be durable rather than stylish, only outlining the purpose of this device.

In terms of specifications, this is a 10.5" unit that features an Intel Atom N2600 1.6GHz CPU, 2GB RAM and a 32GB HDD. It also features Wi-fi, Bluetooth, integrated webcam and comes with Windows 7.

It's interesting to note that the cooling for the laptop is passive, meaning there are no cooling fans, making it very quiet, and it has been drop tested to three feet.

Although not your usual home tablet and more for engineers and other people on the go that need a rugged design, this is a sturdy option and



▲ Surface Windows 8 Pro



▲ Ruggedbook 750



▲ Toshiba Portege Z10T-A-124



▲ Asus Transformer P1801

may be a good purchase if you're a little more accident prone than some.

Product: Toshiba Portege Z10T-A-124

Price: £1,320

The tablet market isn't just made up of simple slabs of plastic and silicon, and alongside the traditional tablet comes the dockable, convertible breed. These units, similar to the likes of the Surface Pro with its dockable keyboard, can be turned into makeshift laptops.

Toshiba's Portege Z10T-A-124 is an example of this and is made up of the main, 11.6" tablet that includes an Intel Core i5-3339Y 1.5GHz CPU, 4GB RAM, 128GB SSD storage and 4200 HD graphics. This tablet comes with its keyboard dock, which it slots into, making it into a desktop PC.

This makes the unit useful for both mobile and desktop use, and in terms of performance, it's a powerful unit and one that's suitable for work and home use.

Product: Asus Transformer P1801

Price: £1,000

This is another changeable tablet, this time from Asus. The Asus Transformer P1801 is a tablet that can change into a desktop and is branded by the company as an all-in-one machine. In fact, Asus actually markets this as a PC that changes into a tablet, and it does so in a rather interesting way.

Unlike most other similar tablets that use dockable keyboards, this unit has a full desktop stand, and when docked, the unit is a fully fledged Windows 8 PC, with keyboard, mouse and so on. However, when you detach the 18.4" display, which forms the tablet, the unit switches to an Android OS and becomes a fully functional tablet. Ingenious.

It's the best of both worlds, really, and gives users the ability to have a desktop PC and tablet in one device, with two operating systems, one for the home and one on the go.

Product: Samsung Galaxy Tabpro

Price: £750

Samsung is a big name in the mobile computing market these days, with the Galaxy being one of the most popular smartphones around, and the Samsung Galaxy Tabpro is a tablet form of the range. It's a 12.2" unit that features a Qualcomm quad-core CPU, 3GB RAM, 32GB SSD and runs the Android OS. The tablet comes with a keyboard dock and a stylus, and it weighs only 200 grams.

It's a good tablet entry, and although it won't win performance awards when compared to other tablets in our list, it's still a strong performer, especially for the size. It has the high-quality Samsung display, which we've come to expect from the Galaxy range, and the keyboard dock adds some flexibility to the device.

Product: iPad Air 2

Price: £660 (Wi-Fi + 3G, 128GB)

Apple's iPad kicked off the massive growth of the tablet market (not the first time the company has injected a market with the energy to become the next big thing), and here we have the latest ultra thin version of the most popular tablet.

The iPad Air is a mere 6.1mm thick and weighs under half a kilo. It features a 9.7" display and is powered by the 64-bit A8X chip and M8 motion co-processor. It includes fast wireless performance using 802.11n and has a decent battery life of up to ten hours while in use. It also has an 8MP iSight camera



▲ Samsung Galaxy Tabpro



▲ iPad Air 2



▲ iPad Mini 3

Being an Apple device, it's also backed up by the Apple Store, giving owners a massive selection of applications and games. The latest versions of the iPad Air come installed with iOS 8.

Product: iPad Mini 3

Price: £580 (128GB SSD, Wi-Fi + 3G)

A trend of many tablets released in the last couple of years is growth, not only in terms of popularity, but also in physical size. They're getting bigger, with larger screens and more power. This means that the standard tablet isn't quite as portable as it once was. That is, unless you have an Apple Mini.

Apple has always known the value of small portable devices, and has released various 'mini' and 'nano' variations of its products, and the iPad is no different. The iPad Mini 3 is the latest in the smaller line of tablets from the style-focused company, and despite the smaller size, it's still a very nice option.

Although less powerful than its larger cousins, the iPad Mini 3 still features the 64-bit A7 CPU and M7 motion co-processor, 128GB SSD, 5MP camera, along with a 7.9" LED-backlit, 2048x1536 display. [mm](#)

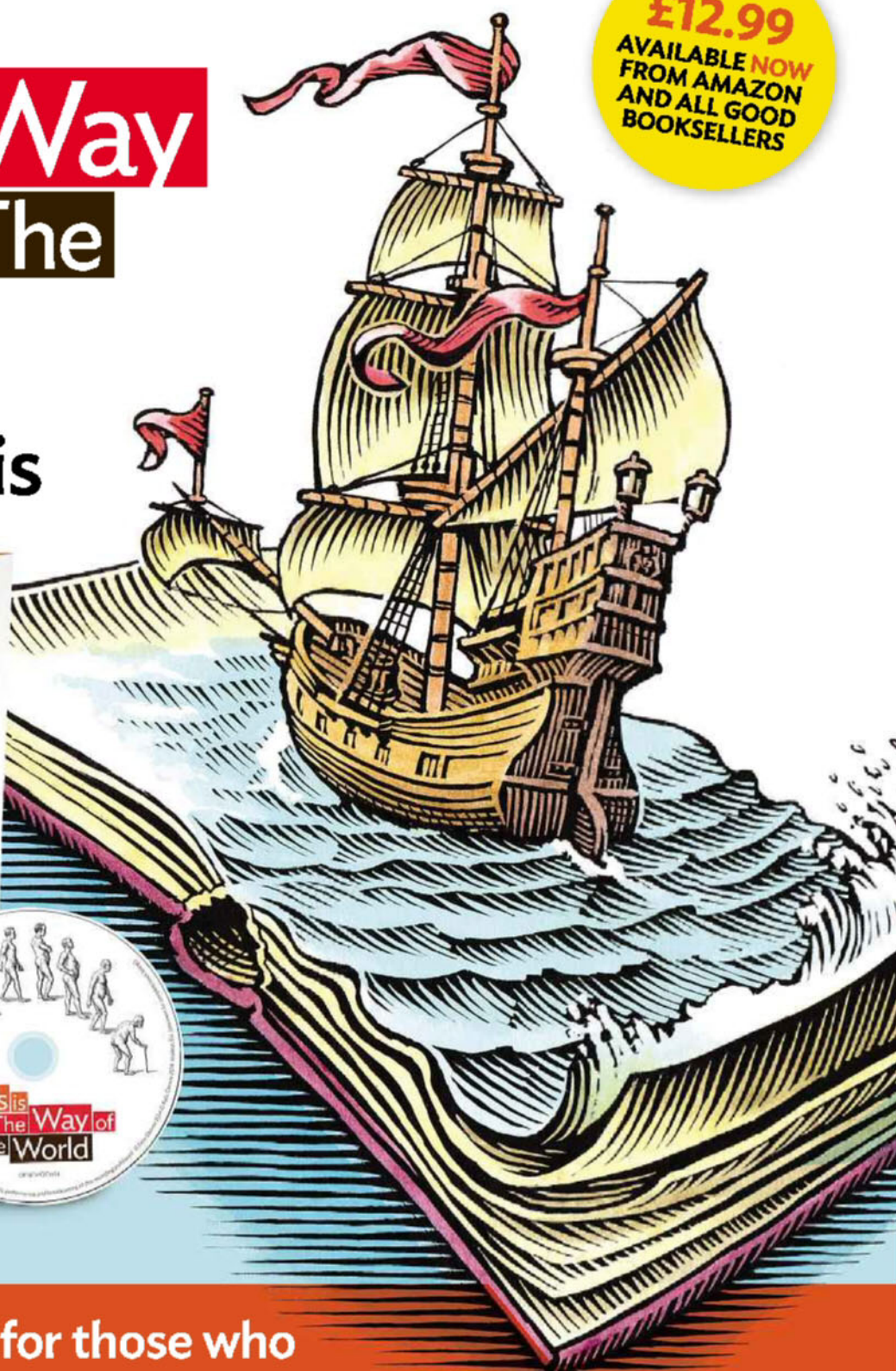
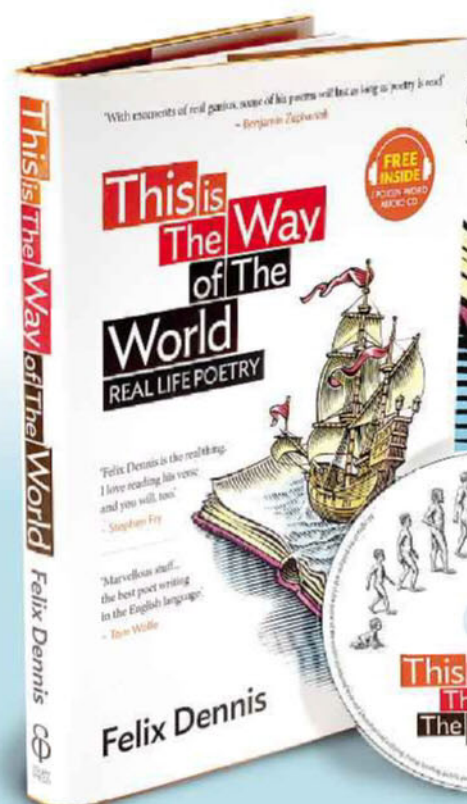
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Keep Your Inbox Spam-free



Roland Waddilove looks at how to rid your email account of junk

Many email accounts have features that filter out spam, those junk email messages that everyone receives, but they're never perfect, and some always seems to get through. Phishing emails that pretend to be from your bank, PayPal, eBay, iTunes and other services try to trick you into revealing login details like usernames and passwords so the perpetrators can use your account, buy goods or withdraw your money. How can we stop them?

If you don't have spam filters on your email account, you'll know how bad it can get. At one time, an account I had was getting more than a thousand junk messages a day.

It's not nearly so bad these days, though, probably because some big spammers have been brought down in recent years. However, it still gets up to 50 on a bad a day. How do you get on a spammer's email list and how do you stop these awful unwanted messages?

Phishing emails are among the junk that ends up in your inbox, and a common theme is that they point out a problem with your account at your bank, PayPal, iTunes Store, eBay and even government services like tax collection. A problem that many people have is that it can be difficult distinguishing between real and fake phishing emails. How do you know whether a particular message really is from your bank or whether it's from someone trying to gain access to your account and empty it?

One way to combat spam and phishing emails is by using an alternative email address. There are two ways to do this: you can either sign up for a new account somewhere else, such as Google, Microsoft and Yahoo!, or you can add an extra email address to your current email account.

In this article, I'll consider the second option and see how to add an extra email address that uses your existing email account. It can be more convenient than having a separate account with a different email provider.

The way that this can help with spam and phishing is that you can easily apply filters to the incoming email. For example, there are many websites and services that require you to sign up in order to access them, and you have to provide an email address.

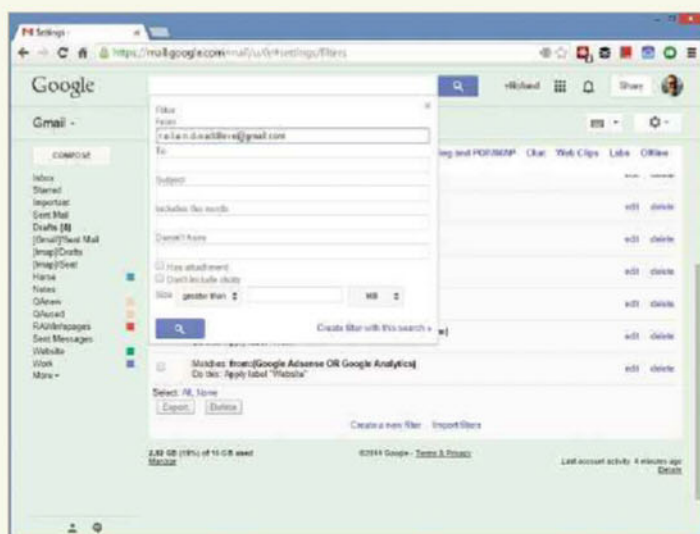
Most good websites will not pass on your details to others, but unscrupulous ones may do so. Your email address could be sold to an email marketer, and you then end up getting lots of junk messages in your inbox. By signing up with an alternate email address instead of your regular one, you avoid this problem. You can easily set up a filter to redirect messages sent to your alternate email address to a junk folder or even to delete it as it arrives.

Another way to avoid junk and phishing is to create a new email address and then use it only with your bank, PayPal, eBay, iTunes and other reputable services. These companies do not pass on your email address to third parties. If an email arrives in your alternate email address inbox, you can be sure that it is really from the relevant company. If an email arrives on your regular email account, then it must be fake.

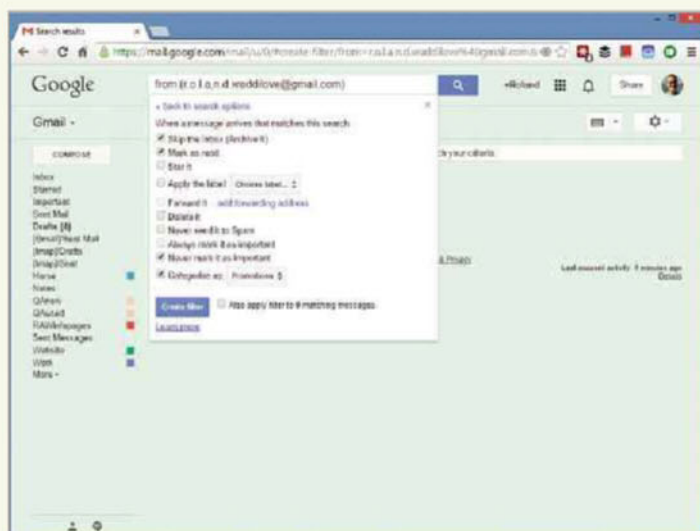
I get lots of phishing emails, and I instantly know they're fake because they do not arrive on the email address that I use with my banks, credit cards, iTunes and other services. It's really useful having a secret email address that only they know.

Extra Gmail Addresses

There are many email services and many different ways to create an alternative email address. Let's look at the two most



▲ Use any number of dots in your name, then create a filter to apply to incoming mail



▲ You can delete it, add labels, mark it as read, skip the inbox and more with these options

common services, Gmail and Outlook.com. An odd feature in Gmail is that you can put a dot anywhere in the first part of your email address and you still get the email. So if your email address is bobsmith375@gmail.com then all these variations can be used and you will still get your email: bob.smith375@gmail.com, bobsmith.375@gmail.com, b.obsmith375@gmail.com, bobsmith37.5@gmail.com and so on. Put the dot anywhere in front of the @ and you still receive email.

Suppose you want to sign up for a website or service and don't want to give your email address. Instead of registering as bobsmith375@gmail.com, you could register as bob.smith375@gmail.com. Alternatively, you could go to your bank, PayPal, eBay and so on, and change your email address to bobsmith.375@gmail.com or some other variation.

Emails to all these variations end up in your Gmail inbox. By looking at who an email is addressed to, you can perform an action, such as applying a label, deleting it or whatever you want to do. Go to the gear menu, then Settings in Gmail, and select the Filters tab. Click 'Create a new filter' at the bottom and in the To box, enter the email address, such as bobsmith.375@gmail.com. Click 'Create filter with this search'.

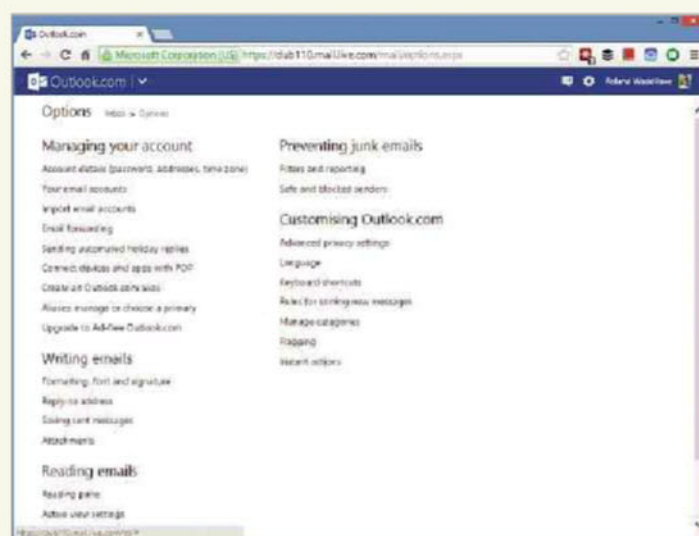
You now have several useful options, and you can decide what to do with emails to this address. For example, you could delete it, skip the inbox or apply a label. What you do depends on whether you're using the email address as a private one for trusted people or as a public one that you use to sign up for websites and services, which might attract spam.

Add Outlook Aliases

With Outlook.com, go to the gear menu and select Options. Create an Outlook.com alias. You're prompted to sign in to Outlook.com again, and then you can enter the email address you want to use (it has to be one nobody else is using). Outlook.com then asks if you want to make this the default, which is up to you. It's best to decline the offer by clearing the tickbox unless you actually want to switch to a new email address.

You're then asked if you want to store incoming emails to this address in a new folder or an existing one. Make a new folder, and if you use it to sign up for websites and services, any spam will automatically be stored here and not in your inbox. Alternatively, if you want to keep the email address private and used only with trusted companies, their email will end up in the folder, and it will be clear of spam and phishing. It's up to you how you use this email address and folder.

An extra email address with Gmail, Outlook.com or wherever you have your email is really useful, so you should get one immediately. Use it for spam or keep it private – it's up to you. [mm](#)



▲ Among the options at Outlook.com on the gear menu is Create an Outlook.com alias



▲ You can use any email address you like and incoming mail is stored in a separate folder

Your Letters

Unsolicited Phone Calls

I wish to congratulate Harry Deakin's sons (letters issue 1333) for trying to inject some substance into their parents' response to the harassment of unsolicited telesales phone calls and scams. I fear if Mr and Mrs Deakin ever read any of my responses to these provocations they would dissolve in a fit of the politically correct vapours! Most recently, after I had informed network 3 that I was changing my broadband provider, I started getting bombarded with calls from their foreign [distinctly Indian accent] call centre. After establishing who the centre was calling on behalf of, I firmly told the operative that my phone was registered with the TPS, explained what the TPS was and that it was illegal to contact any number registered with this service. Of course, operating in India the call centre is not under any obligation to respect our laws or protocols, and my request had no effect whatsoever. The calls continued twice a day morning and evening, disturbing my convalescing husband's rest and our TV viewing respectively. But this is of no consequence to these operators. They are social thugs, with the mentality of a bull at a gate. I then wrote by conventional post to the CEO of the 3 network – a synopsis of this is as follows.

"Would you please ensure that your foreign call centre stops making calls to my telephone. They have been making calls at least twice a day for several weeks. This is clear cut harassment. As you have commissioned the foreign agency, you are responsible

for making sure that they conform to UK practice standards in the execution of your commission. My number is registered with the Telephone Preference Service (TPS) this makes it an offence to make unsolicited calls to the registered number. If these calls persist, I will have no option but to pursue the issue with Ofcom."

The important principle here is that, as the company is based in the UK, it is responsible for the actions of the company it commissioned to implement its sales recruitments policy in this country. They are, therefore, by proxy, the instigator of the harassment and offence. I am tempted to suspect that the legal teams advising companies who use these overseas services are not sufficiently learned in the law to have properly thought through the consequences of abrogating responsibility for the promotional tactics of their overseas agents.

The 3 Network would have received my letter about a week ago and as of two days ago the calls have stopped. If they start again, I will pursue the issue with Ofcom as I advised them I would do. As a word to the wise here, don't let the brainwashing of political correctness subjugate you to the bullying of those who are under no such obligations from their own culture, and never just threaten action; be prepared if necessary to take the action as stated.

ME Ormsby

In The Money

Today, I received an email from one Dr Fatma Al Khalaf, informing me that I had been nominated to receive one million Great British pounds as part of an 'international development program'.

Naturally, I immediately phoned work and told them to stuff their job, before placing a down payment on a very expensive sports car.

As you might expect, my boss was a little bit upset that I was leaving and the revelation that I didn't really have a very high opinion of him. Once I told him about my good fortune and Mr Al Khalaf, though, he immediately plucked up and even managed a bit of a chuckle, so clearly there were no hard feelings.

What did I have to do to be in line for this huge windfall? Absolutely nothing.

The internet gets a lot of bad press, with pornography, piracy and that other unspeakable 'P', politics. But if a complete stranger is happy to give me one million Great British pounds just for having an email address, then it can't be all that bad, can it?

And, as if I needed more proof, I've just this minute received an email telling me I've won the Spanish lottery. All I need to do is send my registration fee to Nigeria.

At this rate, I'll be richer than Bill Gates by Christmas.

Darren Johns

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W1T 4JD

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forum.micromart.co.uk



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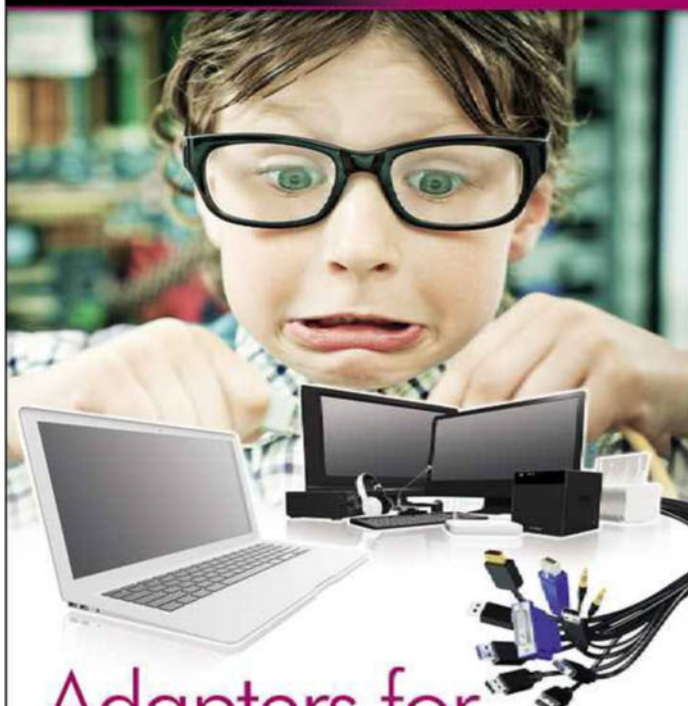


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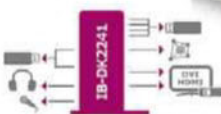
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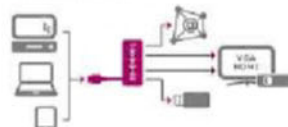
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Component Watch

The prices of hard drives have tumbled over the years, and here's the proof

It seems like a lot of focus goes on finding cheap SSDs these days, but what if you're still more interested in getting a high capacity of storage for as little money as possible? To help you, we've checked around for the best prices on 4TB hard drives that you can find anywhere online!

Deal 1: Seagate Barracuda 4TB

RRP: £120 / Deal Price:

£109.56

As cheap a 4TB hard drive as you can possibly find, the Seagate Barracuda is the reliable workhorse of the desktop market, with good reliability and speeds that'll keep the average user happy under any conditions. A 16MB cache and SATA-3 interface set the bar for 4TB drives, and a two-year warranty inspires confidence in the drive's longevity. It's not overloaded with features, but even at this price it's a fantastic all-rounder.

Where to get it: CCL - bit.ly/1x4QH0m



Deal 2: Western Digital Caviar Green 4TB

RRP: £125 / Deal Price:

£112.99

Western Digital's Caviar Green units are optimised for power saving and efficiency in low-power and low-noise systems. This comes at a small speed sacrifice (it's only 5400rpm instead of the usual 7200rpm), but don't let that put you off if you need quiet and cool operation but can't afford SSD prices for high-capacity storage. Eco-consciously manufactured and with a two-year warranty, it's an ideal specialist unit for specialist users.

Where to get it: Dabs - bit.ly/1rpOliG



Deal 3: Western Digital Caviar Red Pro 4TB

RRP: £200 / Deal Price: £167.99

Intended for use in NAS units, the Western Digital Caviar Red Pro 4TB is optimised for access and specifically units with 8-16 active bays. A five-year warranty is complemented by 24/7

phone support, anti-vibration measures and a 35% MTBF improvement over standard drive units. There's also built-in error recovery suite firmware to keep the drive safe when running in RAID mode. A fantastic array of features, all at a low price.

Where to get it: Overclockers - bit.ly/1nxWiMO



Deal 4: Seagate Constellation V.3 4TB

RRP: £259.99 / Deal Price: £204.53

The Seagate Constellation V.3 is a 4TB drive aimed at enterprise servers, boasting best-in-class energy efficiency, low power and cooling requirements, and a 1.4 million hours MTBF record that ensures your data is kept as safe as possible even if the drives are running for extended periods of time. Unlike most drives, it also has a huge cache – no less than 128MB, which is double that of its closest competition, ensuring fast access times and smooth operation even under multi-user conditions.

Where to get it: CCL - bit.ly/1wsuc7B



Deal 5: HGST 4TB Ultrastar 7K4000

RRP: £282.99 / Deal Price: £222.48

The 4TB Ultrastar 7K4000 is an Enterprise-level drive designed to be run 24 hours a day, seven days a week, and that's why it's so expensive. Its five-platter design is aimed at online servers and storage units, with a two million hours MTBF specification and a full five-year warranty. Clearly, it's more than the average home system needs, but if you want the best 4TB drive money can buy, this is quite clearly it.

Where to get it: Scan - bit.ly/1uztnVS



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AMD Cuts Workforce

Facebook Launches Safety Check

Disaster response tool released post-Japan

When the 2011 tsunami and earthquake hit Japan, Facebook began work on creating a product to improve how people reconnected following a disaster. The fact is social media circles such as Facebook are a crucial way to check up on loved ones and to get updates on what's going on.

Now, Facebook has launched its Safety Check tool which

will help users to let friends and family know they're safe, check on others in the affected area and mark friends as safe. Furthermore, only your friends will see your safety status and the comments you share.

This has all come about following positive response from the company's Disaster Message Board, initially built and tested following the Japan incident. Let's hope it never has to be used.

Computer Conservation Society Hits 25

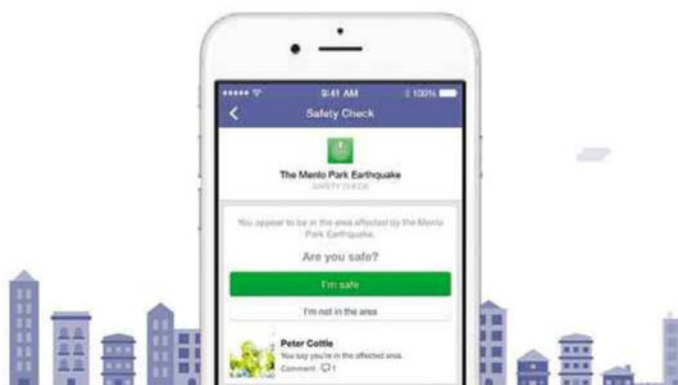
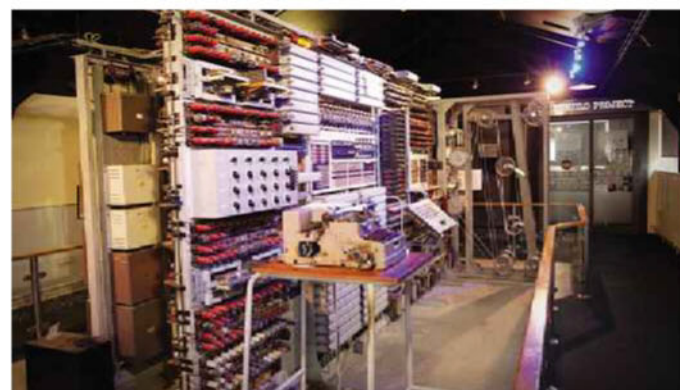
Happy Birthday All

We hope you'll raise a glass to celebrate the silver jubilee of the Computer Conservation Society, which we don't mind saying has carried out some sterling work on many projects here in the UK.

Restorations on projects such as the Colossus system, EDSAC and the Manchester Baby have all come under the watchful eye of the good people of the CCS, which started out life in

1989. Over the past 25 years, the many volunteers of the CCS have worked hard to contribute their all to projects like these, and their work has established conservation standards and models that have been recognised and accepted around the globe.

Did you know that it's also open to anyone interested to join? Indeed so. For more information on that, type **www.computerconservationsociety.org** into your browser choice.



Profits sought after by move

AMD is the latest in a depressingly long line of tech companies to announce cuts to its workforce. The chip maker has said that it's going to cut 7% of its workforce around the world in a bid to improve its profitability. It's also worth noting that this is the first big move

made by new CEO Lisa Su, only in the role for a few weeks.

AMD has been in a bit of bother for a while as lower revenue and profits figures have featured, and it's hoping that this move, worrying though it is, will save around \$85m next year. The job cuts are going to come to pass in the fourth quarter.



Ever since the rules regarding the 'right to be forgotten' on the internet came in, they've attracted criticism and, it seems, been used in ways they were (probably) never intended to be.

On one hand, we have the issue of censorship and the fact search results can potentially be tailored to suit a particular person or group. This is what a lot of the controversy is about, of course.

On the other hand, though, some people really do deserve the protection this law offers. It's easy to focus on the big headline cases where someone did something that perhaps the public should know about, but there are also ordinary people who might find their name unfairly linked to undesirable subject matter in search engine results.

Clearly, then, this law is not without merit, but its execution is a mess, and like a lot of government legislation of the internet, it seems they simply haven't thought it through properly.

See you next time...

Anthony

Editor

Android Releases Sweet OS

Lollipop is here

Google has updated its Android OS with the release of Android 5.0 Lollipop.

Designed for use on all Android devices, Lollipop is all about promoting a sharing platform allowing for interaction between phones, tablets and TVs. Sounding an awful lot like the kind of thing Apple's guys have been up to with its latest Yosemite OS, Google wants its users to feel safe in the knowledge that they can pick up from where they left off, no matter the Android device. So music, photos, apps and recent searches can be immediately enjoyed across all devices.

Google's Material Design approach provides a cleaner, flatter UI and there are also a whole host of nice touches and updates beyond simply

the look. A new battery saver feature will extend the life of your device by 90 minutes, quick settings provides instant access to frequent settings such as wi-fi and Bluetooth, multiple user accounts and a guest user mode are enabled, while any device can be secured with a PIN, password,

pattern or by pairing a device to a trusted device. There should also be performance improvements.

There's plenty more to read on this over at **android.com** but all the signs point to an upgrade that's a definite change from what's gone before.



perform their own memory upgrades

Meanwhile... On The Internet...

The massive push to make money from social media is now fully underway: massive share offerings like those that valued Facebook and Twitter at such astronomical values were never going to result in more of the same. Thus, it was no surprise to see that in the same week, both brands launched initiatives designed to further their reach and increase their potential to make money. The approaches were quite different, though.

Twitter's offering came first, but not by much, and was fittingly called Fabric. We say fittingly because it's widely accepted as being an attempt to weave Twitter into the everyday operations of mobile apps everywhere – because Fabric is a software development kit that will try to tempt coders to use it to provide crash analysis, advertising and real-time information feeds for the kind of apps we all use virtually every day (tinyurl.com/Motl1335a). This puts it directly in line with the aspirations of Google, Facebook and Amazon, and probably means that pretty soon it won't matter one jot whether we consider Twitter to be the best or most stupid invention modern man has been responsible for, we'll still be making it money. As the company's VP of product for revenue (great job title), Kevin Well, put it, "After Fabric, as the platform grows, you won't think about Twitter as just the consumer app. You'll think about Twitter as a broader mobile services company" (tinyurl.com/Motl1335b). Happy now?

Another interesting offshoot of Fabric, is Twitter's new password replacement initiative called Digits. This is essentially a two-step verification service that will attempt to replace your need for passwords by tying your online accounts to your mobile phone number in a method similar to WhatsApp or Google verification procedures. While anything that gets rid of passwords once and for all is potentially the best thing since sliced bread, as The Verge astutely points out (see the link above), Twitter has burned a lot of bridges with developers in the last few years, not least by cracking down on a range of third-party apps offering alternative ways of accessing the service in its Developer Policy (dev.twitter.com/overview/terms/policy). So whether any of this gains traction remains to be seen.

Facebook, rather than completely trying to rewrite its business model – or, at the very least, significantly expand it – simply offered us something that seems so obvious it should probably be suffixed with the word 'duh'. Rooms, for that is its name (though we're sure you probably already know that), appears to be a mobile-centric version of the good old forum we've been using for years, and years and years. Whatever its derivation, it's a fairly simple

We quite regularly come across the 'nothing you do is ever forgotten now we have the internet' phenomenon within these pages. An offshoot of this, specific to performers, is the 'nothing embarrassing you appear in will ever be allowed to slip into obscurity. While, say, Sylvester Stallone (*A Party At Kitty And Studs*) or Sandra Bullock (*Fire In The Amazon*) may occasionally blow their noses on a \$100 bill while sobbing over that embarrassing career decision they made way back-when, we're pretty sure they're philosophical about it. However, for some, the literally photographic memory of the modern web can have effects that stretch way beyond a little bit of embarrassment.

Take the case of Jacqueline Laurent-Auger (tinyurl.com/Motl1335d), a drama teacher sacked by the school where she taught after students discovered footage of her appearing nude in the French film *Le Journal Intime d'une Nymphomane* (*Secret Diary Of A Nymphomaniac*) something like 40 years previously, while she was a struggling young actress trying to make her way in 60s Paris.

It's ground we've somewhat covered before with the tale of teacher Stacie Halas, a name that will now forever be suffixed with the words 'aka Tiffany Six', who lost her job as a – cough – biology teacher after it was discovered that she had appeared in pornographic movies (tinyurl.com/Motl1335e) while between teaching jobs. Laurent-Auger's case appears very different, though. Not least in the fact that she was not qualified or working as a teacher at the time and, as she points out, the kind of softcore nudity which she undertook is pretty much part of the job for an actress (as is, we're sure many will tell you, working on projects that have questionable artistic merit).

Rather pleasingly, the internet blogosphere has rallied around the now-70 year-old a little, questioning whether or not her employers are out of order to punish her in such a way. Indeed, the strength of feeling – which goes as far as to accuse them of participating in the all-too-internet penchant for slut-shaming – appears to have prompted a change of heart from her erstwhile employers (tinyurl.com/Motl1335f).

sounding concept that allows anyone with the app to create a themed topic-led conversation in a customised online space (tinyurl.com/Motl1335c), where the to and fro can be enhanced by multimedia content. Rocket science isn't. Very similar to Apple's penchant for branding technology we've already had for years (AirPort, anyone?), it is. Yoda, we are becoming...

The big news, though, is that Rooms will be the first Facebook product that doesn't demand you use your own name. It's a long way from offering anonymity (frankly, there's little to no money in that), but for Facebook it's a big step.

Aaaaaaaaand Finally...

We're sure none of you are interested in checking out the new Haynes manual showing schematics for various Marvel universe vehicles, but we'll just leave this link here anyway: tinyurl.com/Motl1335g. Boring... A bit like every time *The Simpsons* does a homage to other well-loved cartoons (tinyurl.com/Motl1335h).

.AVWhy? Videos For Your Eyes... Not Necessarily For Your Brain

The stress of shopping in Ikea has long been a topic of comedy; you may well remember the excellent *Gravity* trailer spoof (tinyurl.com/Motl1335i) created by YouTuber Daniel Hubbard last year. It would seem that Ikea itself has become hip to this fact too – at least the staff working for it in Singapore, who have produced their own homage to cinema. While the *Gravity* film was tense, nothing can prepare you for the horror of a trip to the infamous Swedish flatpack emporium reimagined in the style of *The Shining*. Shopping for FLÄRDFULL will never be the same again (tinyurl.com/Motl1335j).



Caption Competition

"<weeps> I just got used to Windows 8.1!"



What's bothering this laptop user? Here's what you thought:

- **wyliecoyoteuk:** "Tony had come to the realisation that he would have to buy a printer."
- **wyliecoyoteuk:** "Playing rock scissors paper online was harder than Richard thought – especially as he didn't have a rock or scissors."
- **doctoryorkie:** "Paperless office trial."
- **doctoryorkie:** "A netbook for work was a bad choice."
- **JayCeeDee:** "Tomito had completely misunderstood the dialogue box that said 'Awaiting execution'."
- **D-Dan:** "5, 6, 7, 8, 9, ermm, I mean 8 and a bit, ermm, sorry, 10."
- **PlaneMan:** "On-line origami is far easier than the real thing..."
- **Frank Everett:** "Oh no!! I just ran the latest version of the MS Malicious Software Removal Tool and it deleted XP."
- **Thomas Turnbull:** "My online origami lessons arn't going to well."
- **Thomas Turnbull:** "My online paper aeroplane company has crashed and I'm surrounded by the wreckage."
- **David Mullen:** "Well how do you wipe your nose in the paperless office?"

The winner this week, though, was Stuart Halliday, with "<weeps> I just got used to Windows 8.1!" We know how you feel, Stuart.

To enter this week, head to the 'Other Stuff' section of our forum (forum.micromart.co.uk) and say something funny (but not too rude) about the picture below or email us via caption@micromart.co.uk.



Samsung Clocks Fastest- Ever 5G

Well done, sirs

Those chaps over at Samsung are a clever lot. It would seem that Samsung is in the enviable position of being able to claim two industry milestones in 5G technology.

Firstly, it's clocked 7.5Gbps, the fastest-ever transmission rate in a stationary environment. Secondly, it has become the industry's first to achieve an uninterrupted and stable connection at 1.2Gbps (150MB per second), in a mobile

environment from a vehicle travelling at over 100km/h.

Both achievements are important, although the speed taken in the travelling vehicle is arguably the biggest as previous successful tests have been taken in "stabilised, indoor environments". So a room then.

As these results were a ten-fold increase on testing results from last May, it's time for a moderate, respectful round of applause for Samsung.

Internet Trolls Facing Bigger Sentence

Government announces new laws for web worriers

The Justice Secretary Chris Grayling has said that internet trolls could face up to two years in prison under new laws.

His words were reported in the press and this would represent a sentence four times greater than the current system of a maximum six-month prison term.

The proposed laws also mean that magistrates could pass more serious cases of online trolling to the crown courts, something else clearly designed to make online abusers think twice before aiming some horrible comments at someone. Should the law be passed, it will apply to England and Wales only.

Snippets!

Golden Joystick Awards Giveaway

The headline sponsor of the mighty Golden Joystick Awards for 2014 has announced that it's going to give away *XCOM: Enemy Unknown* to anyone who voted in this year's awards.

Quite a nice touch from the sponsors and the studio behind the title, 2K Games.

Missing Page In MM1334

Owing to an editorial oversight, page 74 was repeated on page 75 last week. Firstly, apologies for the mix-up. Those responsible will be forced to listen to James Blunt on a loop all day as punishment. Secondly, you can download the missing page from tinyurl.com/MM1334PG75.

Intel Ships 100m Processors In A Quarter

For the first time in its history, Intel has shipped 100 million processors during a single quarter. You could, as we're sure Intel is going to do, argue that this represents a recovery for the laptop and desktop computer markets, and Intel's revenue was up for the third quarter of the year too.

Minecraft City Built By Student

That's two years of his life he'll never get back

Look, we're full of respect for gamers in the *Minecraft* universe. There's little doubting how influential the title has been on the modern gaming world, and we're fans ourselves. This following case does rather beg the question as to whether or not some people are perhaps too involved in it, however.

Delaware local student Duncan Parcells has spent two years building a virtual world, Titan City, which is made out of 4.5 million building

blocks and houses 96 buildings. Averaging out his time to up to five hours a week, it follows his previous effort of building the World Trade Center (that took 18 months).

According to the BBC, Parcells has been quoted as stating that his city is "inspired by New York" rather than acting as an actual recreation of it, and while he built it on the Xbox 360 version, he's since moved it over to the PC, as this provides more construction opportunities.

Nexus Player Now On Pre-Order... In The US

Google's streaming media player also for gamers

As we're now well and truly in the age of the digital entertainment hub, it's hardly surprising that Google should launch its Nexus Player device, its first to run Android TV.

Something of a jack-of-all-trades, the Nexus Player will let users play Android games with a gamepad, play music, TV and movies thanks to partners including Netflix, and because it's Google Cast Ready, users can cast media from a Chromebook, Android phone or tablet to the TV. Lovely.

The Asus-developed device comes with voice-activated remote, Android 5.0 Lollipop, a 1.8GHz quad-core Intel Atom processor and an Imagination PowerVR Series 6 GPU, while the 8GB flash storage provides more than enough for downloading apps and games.

As another alternative to the likes of the Apple TV and Amazon Fire TV, this has plenty going for it. As ever, a lot will come down to the content providers and how well the UI works, but on paper this is another welcome addition to the digital streaming box universe. Presuming it finds its way over to our shores eventually, of course.



Firefox Beta Brings Free Calls

Voice and video calls via browser

If you're currently using Firefox Beta, you'll now be able to make free voice and video calls through your browser, even to other users who are not using Firefox.

The system around this is called Firefox Hello and you don't have to set up an account to use it. Guest Mode will provide a callback link via email to whoever you wish to speak with, with the call starting when the link is opened. The recipient just needs to be using a WebRTC-

enabled browser such as Firefox, Chrome or Opera. Obviously, this no sign-up feature is big news for Firefox and it's rightly promoting it as the big seller here.

Expect this to be rolled over over the coming weeks.



Users React To Twitter Timeline Plans

They're not happy

Well, it was always likely to be the case that Twitter users were going to be unhappy with the service's plans to display posts in their timelines from accounts that they don't follow.

The 'experiments' are designed to "continue improving your home timeline" but, no surprise here, people

have largely viewed it as a huge invasion of privacy. Twitter users choose who to follow in order to manage the information coming into their timeline – that's kind of the point. However, under these new plans Twitter is going to be taking users outside of their comfort zone.

Funnily enough, they took to Twitter to complain. Now that's irony.

Google Changes Search Engine Policy

Online piracy targeted

Google has tweaked its search engine in a bid to help put a stop to online piracy.

Music trade association BPI has welcomed the move, which will list legal services such as Spotify in a box at the top of search results, effectively pushing illegal sites down to

the bottom of the list. Google's also 'refined' its algorithms to point links to illegal content further down the list, as well as taking away autocomplete results related to these kinds of sites, which can only be a good thing.

A small story, but a positive one for the good fight against piracy.

Ferrari And Facebook Sued By Fans

Legal dispute over who owns pages

A father and son team behind a couple of fan pages devoted to Ferrari have filed to sue against the company and Facebook over who has control over the pages.

Swiss residents Olivier and Sammy Wasem created the fan pages which have reportedly attracted over 16 million fans, and you may have heard about this suit previously, as there have been legal issues raised before. According to the Wasems' fairly blunt assessment of the situation, "Ferrari wanted it... So with Facebook's knowledge and substantial assistance, Ferrari took it."

What they are also claiming is that Ferrari asked Facebook

for control over the pages as they were more popular than its own, with the Wasems "downgraded" to content creators from co-administrators of the pages. It's all rather too complicated to get into in any real detail here, but we'll keep you informed if we hear any more from this intriguing case.



HP Envy 5640

Michael checks out an all-in-one device with Instant Ink

DETAILS

- Price: £99.99
- Manufacturer: Hewlett-Packard
- Website: www.hp.co.uk
- Required spec: Windows Vista or later / Mac OS X Lion or later

The Envy 5640 is an all-in-one device that forms part of Hewlett-Packard's latest line-up of printing devices. This particular model combines print, scan, copy and photo printing capabilities within a box offering a choice of USB or wireless connectivity.

The Envy 5640 is reasonably compact with dimensions of 454 x 410 x 161mm, and the rounded front of the box features a protruding lip-like design that consists of the paper input and output elements. The latter contains a tongue, which automatically pops out just prior to the commencement of a print job to help stop the printed documents being scattered around.

Situated between the printer module and the top-mounted A4 flatbed scanner is a sloping area containing the unit's various controls. Central to this area is a 6.75cm colour touch-screen. Touch sensitive buttons run along the left side and bottom of the screen. Also present in this area is the power button, wi-fi indicator light and a circular door giving access to an SD card slot.

The Envy 5640 is a two-cartridge device and is eligible to take advantage of HP's recently introduced Instant Ink scheme. By signing up to use one of the monthly plans

covered by the scheme, HP believes you can save between £78 and £516 depending on print copies over the course of a year's ink usage. This seems amazing when you consider that the Envy 5640 is currently priced at £99.99. As part of this scheme your printer will inform HP, via an online link, when ink is running low so that replacement cartridges can be dispatched.

A CD, included in the box, will lead you through the setup procedure for this all-in-one device. This process is

not the quickest or slickest I have seen, and it took a couple of attempts to locate any wireless network in my vicinity. I was then forced to enter my network password using the very small on-screen keypad. Furthermore, it was necessary to sign up to a free HP account for online activation to gain access to the unit's full functionality – a first, in my experience, for this type of product.

When printing documents, you have a choice of Draft, Normal or Best quality, with

a range of print styles that include General, Duplex, Photo and Economical. Print speeds for basic documents and photo printing using various settings with this product are listed below.

Text and image quality was good in all cases, with a slight darkening of text when using Normal and Best modes. Print quality was also good when using the duplex feature, which produced a ten-page 5,850-word document on five pages in 97 seconds. Using the scanner to produce photocopies was not as successful. Producing an A4 page in monochrome and colour took 100 seconds in both cases. The print quality was just about acceptable in an emergency, but it was not of the standard I was expecting following the previous tests.

At one point during the review process, I encountered a paper jam. While this was easily cleared, I discovered that the wi-fi connection had been lost. Fortunately, turning the Envy 5640 off and then on cleared the problem.

mm Michael Fereday

The Envy 5640 is fine for printing but not when scanning is involved

HP Envy 5640 Print Speeds With 101-Word Document

	Monochrome	Colour
Draft	25ppm	20.5ppm
Normal	21ppm	12ppm
Best	5ppm	4ppm

HP Envy 5640 Colour Photos

4 x 6 print	5 x 7 print	A4 print
25 seconds	36 seconds	25 seconds



Samsung 845DC EVO SSD 480GB

Samsung assaults the Enterprise SSD market with its 845DC

DETAILS

- Price: £342.87
- Manufacturer: Samsung
- Website: www.samsung.com/uk
- Required spec: SATA RAID array



Over the past few years I've covered quite a number of SSD products that claim to be the fastest, most agile devices to date. The Samsung 845DC isn't one of those, because by SSD standards it's actually rather slow.

The immediate conclusion most might be drawn is that this is therefore a budget SSD, where performance has been sacrificed for price. But that is also untrue, as this is actually rather expensive on a per gigabyte basis.

What you're paying for here isn't awesome speed, its reliability, because the Samsung 845DC is built for RAID servers, and the abuse they dish out.

The use pattern of this drive in its proper home isn't at all like one in a conventional PC, because what's critical here is IOPS. This 480GB model can manage 87,000

random read IOPS and 14,000 random writes.

What's critical to understand about these IOPS figures, compared with many that are quoted on SSDs, is that this drive will sustain these levels indefinitely and not just over the short benchmark sprint.

That's not bad, especially when you combine it with a MTBF of two million hours, and TBW of 300TBW (terabytes written) with a five-year warranty.

Obviously it's not realistically possible for me to test those latter claims, but it would be commercial suicide for Samsung to unrealistic about warranty periods on server technology.

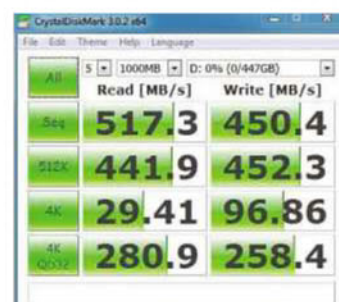
These drives also have a power-loss protection capacitors in them that hold sufficient power to flush any

pending writes in the event of a complete power outage.

The arrival of the 845DC demonstrates well where Samsung is in its SSD technology development path, as this incorporates its new MEX 3-Core ARM controller and 19nm toggle 3bit MLC NAND modules.

In many quarters, 3bit MLC NAND was seen as something of a gamble, but the fact it's used here is well beyond a vote of confidence.

The issue I have with these units is that very shortly PCIe SSD devices will be arriving to replace those limited by the bandwidth of SATA and SAS. While that might not be an issue for a configuration where you're using five or more of these drives for performance, if you're looking for the ultimate, then you might be thinking beyond SATA.



If you're happy with SATA, then these, I jest you not, are priced competitively at around 72p per GB.

But those who aren't spending their own money might justify the PRO variants that offer 50,000 sustained IOPS, but which cost around £1.27 per GB for the privilege.

mm Mark Pickavance

Abuse resistant SSD technology designed for servers

845Dc Range	Capacity	Model Code	Sequential Read Write	IOPS Random RW	RRP
845DC EVO	240GB	MZ--7GE240EW	SR: 530MB/s SW: 270MB/s	RR: MAX 87000 RW: 12000	£171.39
	480GB	MZ--7GE480EW	SR: 530MB/s SW: 410MB/s	RR: MAX 87,000 RW: 14000	£342.79
	960GB	MZ--7GE960EW	SR: 530MB/s SW: 410MB/s	RR: MAX 87,000 RW: 14000	£571.29
845DC PRO	400GB	MZ--7WD400EW	SR: 530MB/s SW: 460MB/s	RR: MAX 92,000 RW: 50000	£571.29
	900GB	MZ--7WD800EW	SR: 530MB/s SW: 460MB/s	RR: MAX 92,000 RW: 51000	£1,142.59



Canon Powershot D30

Mark reviews a product that might well end up in the ocean

DETAILS

- Price: £244 (Amazon)
- Manufacturer: Canon
- Website: www.canon.co.uk/
- Required spec: SD memory card

The compact camera market has a real struggle on its hands, as the quality of phone cameras gets progressively better. One approach, as well represented by Canon's new D30, is to provide features that phones generally don't have.

On paper the Canon Powershot D30 has an average specification, with a 12.1MP CMOS sensor and 5x optical zoom. But these aren't the real selling points; instead the D30's party trick is to be rated to withstand 25m (82ft) depth underwater and to survive being dropped from 2m (6.5ft).

The target audience here are the typical GoPro purchasers, who are going river rafting or on a scuba adventure and want to return with pictures to

remember the experience later.

Where Canon has been very clever here is by being able to brush off extremes of environment while the exterior of the camera seems almost identical to what you might experience from a normal compact camera. There are no rubberised buttons or

awkward enclosure, and the two internal compartments are accessible without a screwdriver. Instead rubber gaskets keep the liquid out, hopefully.

The big 7.5cm rear display is bright and sufficiently high enough resolution to properly review images, and even

in bright sunlight it's easy to read. It's this screen that effectively dictates the size of the D30, which is large by compact camera standards yet still easily pocketable.

Those who like geotagging their images will be pleased to discover that Canon included a basic GPS for that purpose, although I should point out that GPS technology doesn't work underwater, in case you wondered.

If this design has a weakness, it's the old DIGIC 4 processor that first appeared two generations back and the image stabilised optical system, which are both borrowed from the prior D20 model. That's not to say that these solutions are poor, because they're not, though most of Canon's recent cameras now use the DIGIC 6 chip.

However, D30 is well equipped to focus and shoot those fleeting action moments,



D30 Features

- Compact and tough digital camera for active outdoor adventures.
- Waterproof down to 25m, shockproof up to 2m drops, freezeproof (-10 °C) and dustproof.
- Enhanced low light capability with 12.1 megapixel HS System.
- 28mm, 5x optical zoom with Intelligent IS.
- Underwater mode and custom white balance.
- GPS to tag your shots and log your journey.
- Easy viewing in bright light using large 7.5 cm (3.0") PureColor II LCD with Sunlight LCD mode.
- Full HD movies (1080p) with optical zoom and HDMI.
- Simply point and shoot with Smart Auto (32 scenes).
- More ways to capture action with Movie Digest and Super Slow Motion Movie.





though you need to be aware of some well documented limitations of this sensor.

What it doesn't care for is very high contrast environments, unfortunately, like bright sky and dark seas, where it tends to be exposure biased to the brightest components. The ISO range available is from 100 to 3200, with visible grain only

becoming an issue above 800. In low light conditions, the D30 is rather good, which is pretty useful considering the lack of light you might encounter at 25m underwater.

What this sensor lacks is the extreme dynamic range of the latest technology, resulting in some minor detail losses in the darkest and brightest parts of a shot.



Again, I need to stress the D30 isn't a bad camera, I've just seen better, and I've also seen plenty of cameras that are much, much worse at clipping the dynamic range.

If you learn to work within these idiosyncrasies, and use the special modes like 'underwater', then you can take some exceptionally nice images. Not having to worry about getting it wet also makes it ideal for beach and alpine breaks generally.

Professional photographers would probably sneer at the chromatic shift around the frame corners and the moderate barrel distortion in wide angle mode on this lens, but most people wouldn't notice these technical points.

The tricks that Canon missed are the lack of a wi-fi capability, and the provided wrist strap just isn't strong enough for serious dive use. There's also no HDR mode, no RAW capture, and it only comes in blue at this time.

The D30's competition includes the wi-fi enabled Ricoh WG-4 GPS, but that's a more expensive camera, and I

actually found this one better to hold and use.

If you're spending lots on the adventure holiday of a lifetime, then the D30 might be an ideal digital companion to invite.

If you like the specification, but think the D30 pricey, you might want to consider the D20 that it replaces. It can be found for as little as £170, has an almost identical photographic spec, but is only rated to ten meters underwater.

mm Mark Pickavance

A decent compact camera designed to go anywhere



Avast! Premier 2015

For the best anti-virus protection, who do you trust?

DETAILS

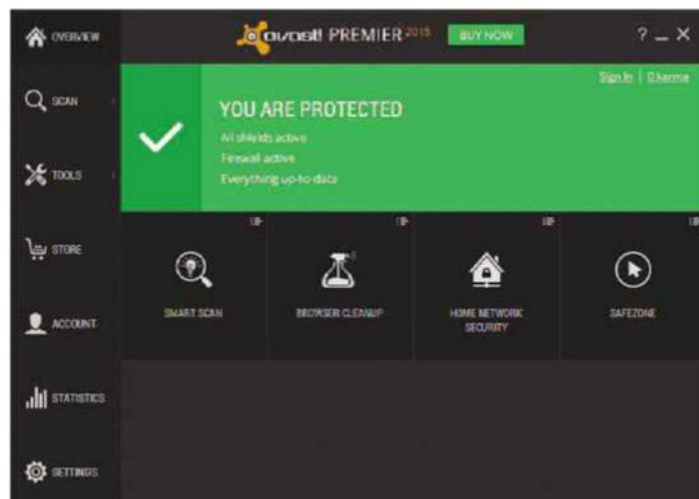
- Price: One year - £49.99; two years - £74.99; three years - £99.99
- Manufacturer: Avast!
- Website: goo.gl/uRiEQ6
- Required spec: Windows XP or later, dual-core CPU, 128MB RAM, 1GB disk space

Avast! has fast become a recognised and well respected anti-virus developer due to its excellent free product, and now it's just released its 2015 range, made up of four versions: Free, Pro, Internet Security and Premier.

Avast! Premier offers the highest possible levels of security, with the inclusion of the Automatic Software Updater and Data Shredder. However, there are a number of new elements to the 2015 range to take into consideration across the Avast! family.

First up is the all new Home Network Security feature, which comes as standard on all versions, which when run will seek out any security holes or potential problems within your home router connection, be they wi-fi for wired. Based on what the detection process finds, you can then take steps to plug those holes and follow the recommendations and guidelines from the completed scan.

There's a Secure DNS feature that's designed to protect users by making sure they aren't maliciously directed to a hijacked site that's designed to ape a trusted site. And to further the browser side protection, the



▲ The updated UI is slick, and responsive with plenty of protection available for you

Avast! WebShield now scans HTTPS sites for any malware and threats.

To assist with the scan and threat detection process, Avast! has included another buffer

as a result is also quicker and smoother to use.

Naturally there are a vast number of other improvements, such as better online support, a faster software updater, an

“Manages to keep everything running smoothly without becoming bloated”

layer of protection through hardware assisted virtualisation, which will create a virtual test area for suspicious downloads. And there's an updated level of protection against potential unwanted programs (PUPs) to help stop any rogue programs from slowing down your PC.

On top of the technical, protective interior of Avast! there's a more updated and easier to use interface. Notifications are now limited, and getting to the options and features you want is a few clicks away instead of nested within other menus. It's a more fluid experience, and

updated MyAvast page and a beta version of the Avast Social Media Security. The SafeZone online banking feature has been improved, and DeepScan 2.0 is now more powerful than ever before.

It's certainly an impressive line-up, and we were pleased to see that despite all these new and updated features, Avast! Premier 2015 still manages to keep everything running smoothly without becoming a bloated resource hog. Installation is simple and quick, and the rescue media was more than capable of detecting and eliminating the



▲ Avast! has just gone one better than the competition. Where next, we wonder

virus-riddled test virtual machine we use in these circumstances.

The Premier versions has features galore, admittedly more than you'll probably ever use. It's these extra features that make this the more expensive version, as you would expect. Thankfully, this means you won't see any of the alluring features locked behind a paywall, as you do continually in the free version.

Avast! Premier has quite an arsenal at its disposal, which is what makes it one of the best anti-virus and anti-malware security products available. With the new additions to the Avast! family and the updated elements, we're pretty sure it'll still retain its highly regarded ranking while keeping you safe online.

mm David Hayward

Still one of the best anti-virus products available



Acronis True Image 2015

The best backup and imaging solution just got a little better

DETAILS

- Price: £39.95
- Manufacturer: Acronis
- Website: goo.gl/U4pftM
- Required spec: Windows XP SP3 or later / Mac OS X 10.8 or later, 1GB, 1GHz CPU, 1.5GB disk space

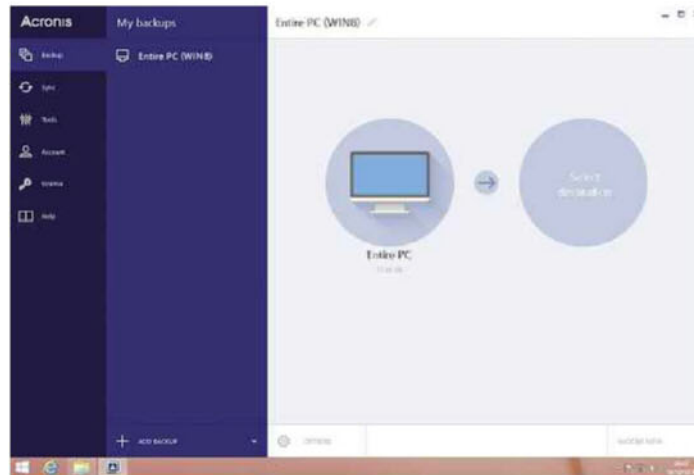
We've been using Acronis True Image solutions since at least 2003 on both the desktop and in the server room to create quick and reliable backups of all our mission critical machines. It rarely failed us, and the times that it did were usually due to an error on our part rather than the software itself.

However, we often felt it lacked a certain ease of use in its interface and that the more common features were a little hidden away from view, as opposed to being brought to the forefront where they could be utilised better.

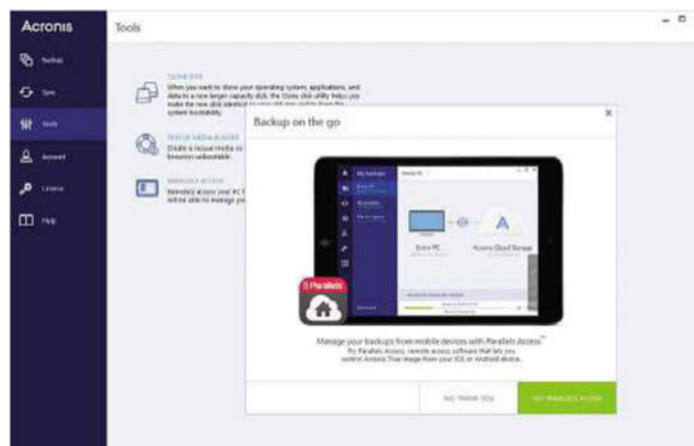
With the next generation of True Image, the 2015 version, Acronis has pulled out all the stops and crafted something pretty spectacular looking.

The same levels of backup still exist, with a complete system image, files or folders that can be compressed into a single file for convenient storage, or for a more modern approach, Acronis has included the ability to back up to its Secure Cloud Storage, which appeared a few years ago and offers plans ranging from 250GB through to 1TB.

Additionally, there's a more flexible recovery and restore solution in place, where an easier approach to locating individual files and folders at the brick level makes everyone's job a little



▲ The new UI is easy to use and easy on the eyes



▲ New features are easier to find, with the entire package being responsive and comprehensive

easier. Also, the Acronis Universal Restore feature is inherent to 2015, meaning that not only can you restore an image of your PC to its original hardware, but you can also restore it to any other PC regardless of its make and model – obviously it'll need enough space to install into, but you won't get the annoying errors that occur when you restore an image to a different PC.

The main emphasis, though, is on the new interface and the speed at which it performs all its tasks. The UI is now Windows 8.1 in appearance, with sliding panels, a large clear font and easy

to understand graphical prompts. The wording has been simplified too and makes the task of backing up much less of a chore. It's a more comfortable and stable routine to get into, and with it being a Windows 8.x themed style, there's plenty of support for touch-screens and tablets.

The speed of a backup and restore was never really all that much of an issue in the past for local or networked machines; backing up to the Acronis cloud, though, was often regarded as being an incredibly slow process. These flaws appear to have been addressed, and now there's a

significant improvement across the entire backup and restore procedure regardless of whether that's from the Acronis cloud or across your own network.

There are a number of other features that can be accessed easily, such as cloning one disk to another, creating a rescue media boot device or disc, and Parallels Access to allow you to remotely access your PC from a tablet or phone to manage your backups. There's also the ability to tweak the compression, add encryption, split the backup image and support for all kinds of removal and optical formats. Interestingly, the Backup Reserve Copy feature, which will essentially duplicate a backup to a secondary location, makes a welcome addition to the list of True Image's abilities and offers extra peace of mind and security that you won't find anywhere else.

Acronis True Image 2015 is about as good an imaging and backup software as you will find. The new interface and speed boost lifts it beyond the norm and makes a more comprehensive yet friendly backup solution for the home and business user.

mm David Hayward

An excellent, reliable, and fast backup solution



Edimax EW-7438RPN

Extending your wireless has never been so easy

DETAILS

- Price: ~£30
- Manufacturer: Edimax
- Website: goo.gl/n3trld
- Required spec: Spare plug socket, WPS button for easy setup, latest browser for manual setup

Transmitting your wireless signal through the walls of your home or office can either be an absolute breeze or a significant pain in the neck. How often have you tried to connect a wireless device only to find that it'll work perfectly in one room but fail spectacularly in the next?

The solution, of course, is to extend the wireless signal and boost it to those otherwise unreachable wi-fi areas. There are plenty of extenders on the market, but some are better than others.

The Edimax EW-7438RPN is a diminutive and compact wall plug wi-fi extender that is capable of attaching to existing 802.11b/g/n networks. It features 2MB of NOR flash memory, along with 16MB of SDRAM, has dual internal antennas that scan the 2.4 to 2.4835GHz frequency band, and can offer a much improved speed boost when the device you're using is at the outer reaches of the current wi-fi zone.

Our tests had an Android tablet dropping the signal of the router close to the rear of a house and transmitting speeds of just 8Mbps, but with the EW-7438RPN installed close by, we managed to increase the signal to 21Mbps. From there we were able to move



▲ The tiny Edimax EW-7438RPN will make wi-fi extending much easier

several more metres before the signal began to fade once more. Overall, the EW-7438RPN managed to add an extra five or six metres of coverage beyond the ISP supplied router.

Furthermore, the EW-7438RPN also includes a side mounted Ethernet port, which will allow a desktop PC without wireless capabilities to attach to the wireless network without the need to purchase another wi-fi adaptor. You could even connect the Ethernet section of the extender to a switch and service a few PCs should you so wish, although to be fair you'd be stretching the capabilities of the signal bandwidth at that point. In fact, the Ethernet port can be used to add wireless connectivity to an existing non-wireless router, creating a perfectly good wi-fi access point.

Setting up the EW-7438RPN is easy enough. You can either opt for plugging it in and pressing the WPS button in conjunction with the one on your router and letting the hardware synchronise

and pair itself. Or you can instead connect to the extender via a browser and enter the router wireless details manually.

The front of the extender houses five small LEDs indicating wireless signal strength, wi-fi connection, power, WPS activation and connectivity through the Ethernet port. They're a simple solution to determining any issues through the number of times they remain solid or the rate at which they flash. You'll obviously have to have the quick setup sheet handy if you want to refer to their code in the future, though.

Although the Edimax EW-7438RPN did a sterling job of connecting and especially extending our wireless network, we did find that it took some time for it to actually connect after being powered up or after we rebooted the router. On average the connection to the router's wireless signal took around 50 seconds, which may not sound long but during that time the front LEDs



▲ For around £30, it's certainly worth investing in

were flashing as if to indicate a problem. However it did eventually connect, and as long as we didn't turn either device off, they worked perfectly well.

Correct placement of the Edimax EW-7438RPN is essential to enjoy its benefits. When you have that, it's a solid, quick and cheap way to improve and extend your wireless signal, so it's worth experimenting. On the whole, a great little device.

mm David Hayward

A cost effective way of extending and maximising your wi-fi



Transcend CFast 2.0 Card Reader

Transfer your 4K content with speed and ease

DETAILS

- Price: £31.99
- Manufacturer: Transcend
- Website: goo.gl/MWnPkU
- Required spec: USB 3.0 port, CFast 1.0, 1.1, 2.0 cards

Just a few months ago, Transcend announced the launch of its CFast 2.0 CFX650 and CFX600 range of memory cards. These cards are designed for cinematographers who want to utilise the ultra-high end 4K cameras, with their on-paper SATA-3 speeds of up to 510MB per second and storage capacities topping the 512GB mark.

However, transferring the data captured on a 4K camera took considerable time and effort, which ultimately factors in a time/money loss into the equation. Now, though, Transcend has released a CFast compatible reader, which will make transferring 512GB of 4K cinema significantly easier.

The CFast 2.0 card reader is a simple enough setup. It's a USB 3.0 enabled card reader, which takes up just 67 x 45 x 15mm of desktop space and weighs a mere 26 grams. The rear of the card reader houses the SS (SuperSpeed) USB 3.0 connector, for which a cable is provided in the box. And the front of the unit is taken up with the CFast slot, along with a tiny pinhole blue LED to signify power and data transfer.

It's a plug and play device, so there's no need for drivers or specific operating system, provided they're as modern as Windows XP of course. Once



“ There’s no reason why the stated speeds won’t apply ”

connected, all you need to do is slot in a CFast 1.0, 1.1 or 2.0 card, and it'll instantly be recognised as a new drive. After that, you can enjoy accelerated transfer speeds without the extra hassle of having to hook the 4K camera up to your PC or laptop.

With a 256GB CFX650 CFast 2.0 card in place, we clocked an impressive 440MB/s, which is pretty close to SSD SATA3 speeds. This is obviously thanks to the USB 3.0 SS standard, which is supposed to offer a theoretical 625MB/s. The 440MB/s we scored is slightly slower than the advertised speeds from Transcend, but there are other factors to take into consideration, such as the OS itself (we tested on a

Windows 7 64-bit OS) and the quality of the motherboard components. Basically, if you have a USB 3.0 capable but average machine, then you'll be able to achieve the same kind of speed as we managed. If you're using a system that's significantly more powerful, then there's no reason why the stated speeds won't apply.

Obviously, this may require more expensive hardware, but if you're already dealing with a 4K camera and equipment, we're fairly sure the PC hardware is going to be up to scratch as well.

Using the card reader instead of plugging the camera in has its benefits. Naturally, the camera work can be continued without needing to be offline

during the transferring (the camera operator just needs to swap out CFast cards), and the workflow can remain cost effective and efficient.

Other than that, there's not much else to add. The CFast standard may be a little niche for most users, what with talk of 4K cinematography and such, so perhaps multiple card compatibility would make this product more appealing to the rest of us. However, for those who do use CFast card storage, there's no doubt the Transcend CFast 2.0 card reader is a must-have device.

mm David Hayward

A little niche perhaps, but great for those who use CFast cards



GROUP TEST

Raspberry Pi Kits

The Raspberry Pi captured the hearts and minds of the technology world with its diminutive form and limitless possibilities.

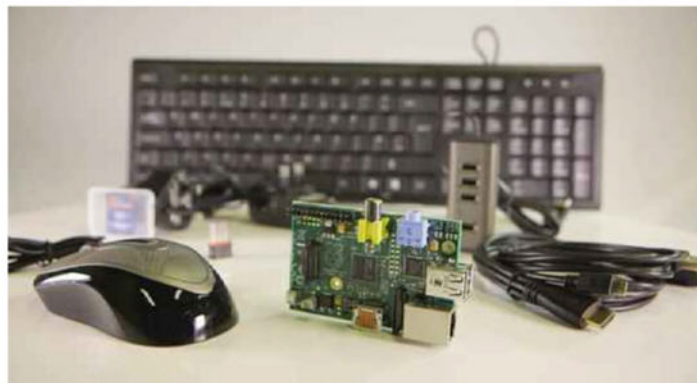
Buying the RPi on its own is perfectly fine, but if you opt to purchase a kit, then you're getting something extra for your money. The question is, though, what and for how much? David Hayward finds out with six Raspberry Pi kits

Raspberry Pi Kits

Maplin Raspberry Pi Board And Starter Kit

DETAILS

- Price: £69.99
- Manufacturer: Maplin
- Website: goo.gl/rRRlX9
- Required spec: Monitor, possible case for RPi



▲ The Maplin RPi Kit is very reasonable and contains everything you'll need

Maplin is one of the few last remaining, true electronics high street stores for the hobbyist and enthusiast. It's an unfortunate state of affairs, but there you go – we can thank the internet for that.

Maplin appears to have shifted up a gear in recent years, in terms of what it offers to the customer. Aside from items such as home surveillance gear, it also sells 3D printers, lasers, remote control kits and all manner of robotics. Recently, it upped its stock of the Raspberry Pi and now offers a complete starter solution to anyone who walks in off the street.

The Maplin Raspberry Pi Board and Starter Kit consists of a Model B Raspberry Pi, a 4GB Transcend SDHC card with the latest Raspbian OS pre-installed, a micro-to-full-USB cable in conjunction with an appropriate USB power plug, a powered four-port USB hub, keyboard and mouse, an N150 nano wi-fi dongle and an HDMI cable.

Basically, this little lot, when hooked up to a TV or monitor, will boot into the Raspberry Pi Foundation's OS of choice and give you access to the world of the Pi and, of course, Linux. Consider it an absolute starter's pack, for the user who wants to see what all this Raspberry Pi fuss is about without being scared off initially with extra items such as breadboards, LEDs, wires and volumes of wiring diagrams.

Jokes aside, although there's everything you'll need here to get you up and running, it does lack a little when it comes to the electronics side of the Raspberry Pi. However, not everyone is into

cheaply from various online sources. But when you consider the components, no matter how cheap or generic they are, the overall convenience of the starter kit generally wins.

“ A decent enough buy for someone who's trying the Pi for the first time ”

fiddling around with the GPIO, so for the user who wants to test the inherent programming abilities or simply play around with the interface, this is a fairly good choice of starter kit.

The powered hub is an interesting inclusion to the kit, as are the wired keyboard and mouse and the nano wi-fi dongle. It would have been far easier for Maplin to bundle an extremely cheap wireless keyboard and mouse and leave the networking side of things to the customer's spare Ethernet port on their home router. The hub, nano wi-fi and everything else therefore give the customer a neater approach to setting up their Raspberry Pi.

The cost of the kit isn't too bad either. At £69.99 it's fair to say you could cobble the individual items together more

The Maplin Raspberry Pi Board and Starter Kit is a decent enough buy for someone who's trying the Pi for the first time. There's plenty of scope to expand the kit, the more knowledge an individual gains over time, plus the neat layout of the kit means you're never left feeling too cluttered to expand. It would certainly make for a good birthday or Christmas present.



Raspberry Pi Kits

SK Pang Raspberry Pi Starter Kit-C

DETAILS

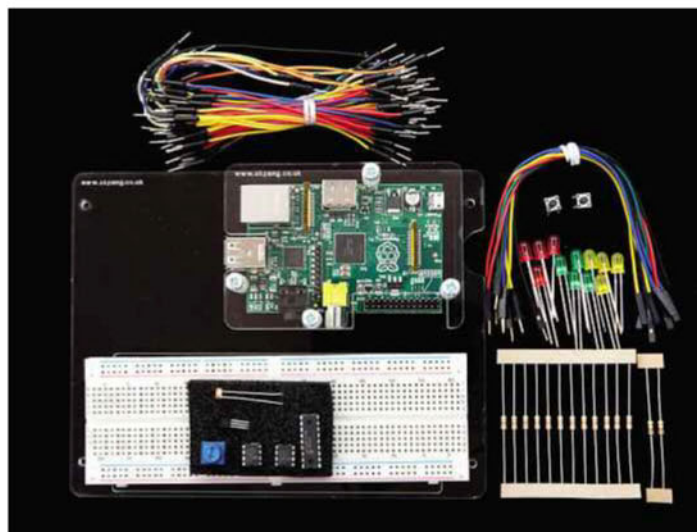
- Price: £74.28
- Manufacturer: SK Pang
- Website: goo.gl/QElbcP
- Required spec: Keyboard, mouse, power, HDMI/video, SD card, case, monitor

While the starter kits we've reviewed so far have opted for a more generic type of Pi user, SK Pang Electronics has instead used its many years of expertise to produce a kit aimed squarely at the beginner or hobbyist electronics user.

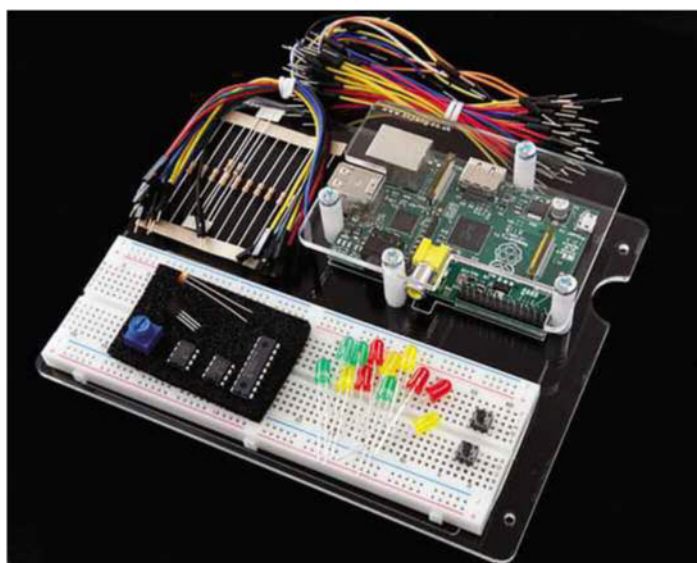
There's little doubt that the Raspberry Pi is a board designed to help bring back the late 70s feel of building a kit from computer or fiddling around with electronic components to build a radio set or something similar. SK Pang has fully embraced this with its Starter Kit-C and has included a selection of wonderful components.

The kit comprises of a Model B Raspberry Pi; a Perspex cover and workbench setup; a breadboard with 840 contacts; 65 male-to-male jumper wires; ten male-to-female 150mm jumper wires; four lots of red, yellow and green 5mm LEDs; two mini push buttons; a pair of 10k resistors; 12 LED resistors and a breadboard friendly Trimpot 10k potentiometer with an easy turn knob.

And we're not finished. With that lot you also get an MCP23008 8-bit I2C IO Expander, an MCP3002 dual-channel 10-bit AD convertor with SPI interface, an MCP 4802 dual-channel 8-bit DAC with SPI interface, a TMP36



▲ The SK Pang kit provides some great electronics components



▲ It does lack some necessary items, though

temperature sensor and finally an LDR (light dependent resistor).

You will, however, need to get hold of an SD card with a Raspberry Pi operating system installed, as well as a keyboard, mouse and some way to power the thing and display onto a monitor. We gather, though, that anyone who even remotely knows what the above components do won't have any trouble finding themselves the extras

needed to get the Raspberry Pi working and displaying its content onto a monitor.

Naturally, this isn't the sort of kit you'd buy someone without any prior electronics knowledge; thankfully, SK Pang has other kits available for that, complete with the Wiley book *Adventures in Raspberry Pi* by Carrie Anne Philbin. This is a bit more advanced and the sort of kit you could purchase after the user has already become

acquainted with the ins and outs of basic electronics.

Admittedly, this does make the entire package a little niche. While the previous kits avoided the electronics and GPIO side of things, this one does the exact opposite, although as we said, it's aimed at a particular consumer and not your average Raspberry Pi user. This isn't a bad point – far from it, in fact. And it does go to show the versatility of the board itself.

SK Pang has a number of electronics projects available in its catalogue which, together with the Raspberry Pi kit, mean you're going to be purchasing a package that is extremely well coordinated and comprehensive from a supplier who really knows its stuff.

You do get a lot of electronics for the £74.28, but a few extras such as the SD card and connective cables would have been a welcomed bonus. All in all, a superb Raspberry Pi electronics starter kit for the hobbyist and enthusiast.



U:Create Raspberry Pi Model B+ Project Kit

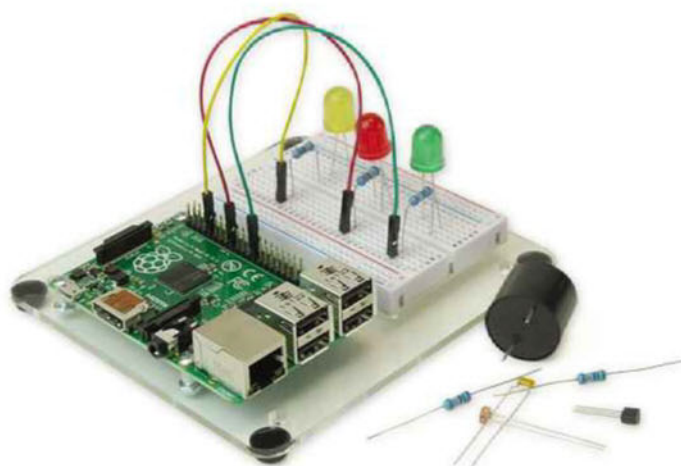
DETAILS

- Price: £53.99
- Manufacturer: U:Create Education
- Website: goo.gl/2pRQcp
- Required spec: Monitor, keyboard and mouse

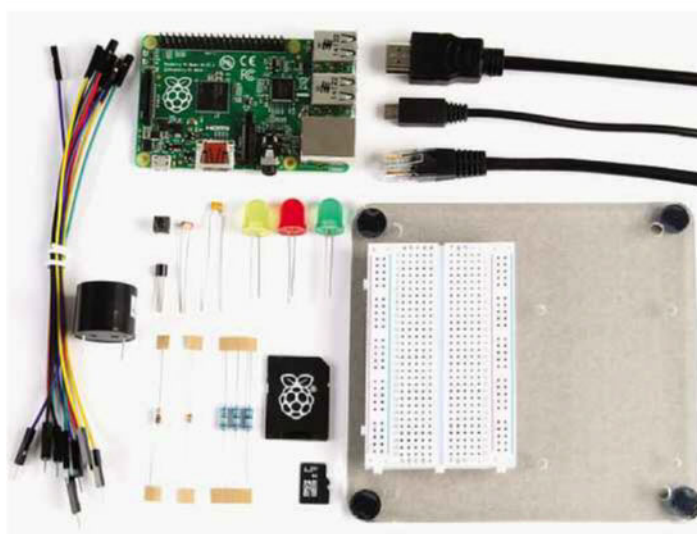
U:Create Education is a relatively new company, which has a number of Raspberry Pi kits available and sells their stock through CPC. The kits cover the absolute basics through to more specific uses of the Raspberry Pi, such as a media centre kit. In this instance, though, we're focusing on its Model B+ Project Kit.

As you might expect from the title, this is a kit built around the new Model B+ Raspberry Pi. Aside from the board itself, you also get an SD card complete with pre-loaded NOOBS OS, a UK plug mini USB power supply, HDMI cable, Ethernet cable, a 400 contact breadboard, transparent Perspex workstation board, eight male-to-female jumper wires, three different coloured LEDs (red, green and yellow), a switching buzzer, a mini push button, light dependent resistor and various other LED resistors.

In addition to that, there's also a 36-page booklet and user guide that will walk you through the operation of the Raspberry Pi, and it also includes a number of projects for you try. The project themselves aren't too strenuous but cover setting up *Minecraft*, creating a stand-alone media centre with RaspBMC and using the breadboard with the LEDs, buzzer and various other sensors.



▲ The U:Create kit is a good mixture of RPi starter and electronics



▲ The whole kit is well presented and very educational

The kit is presented in a neat, colourful box with everything individually wrapped and labelled accordingly. It's a wonderful setup, and you can clearly see that it's aimed at more educational, younger people, as opposed to the more mature technology adventurer.

Having said that, there's no reason why someone older can't enjoy this kit. It's easily put together, easy to understand and doesn't delve too deep into the various

intricacies of electronics, motors or even the software side of the Raspberry Pi. However, at the same time, it manages to touch on all the aspects of the board that make it such a versatile and exciting product.

But while there's an emphasis on the younger user, we think that the addition of a keyboard, mouse and maybe even a powered hub would be beneficial. This way you could buy a complete desktop setup for someone rather than

having to look around for the parts that are missing and that you'll soon discover are needed as you begin to use the Raspberry Pi.

The book and user guide is well written and clearly details the various steps needed to complete any of the projects within, although as we stated, not to any great depth. We imagine the book is probably revised for other kits available, to take into consideration the particular use of the Raspberry Pi they're aimed at, but it's worth checking. Either way, it should be more than enough to whet the appetite of someone before they wander off to seek further instructions.

For just £53.99, the U:Create Raspberry Pi Model B+ Project Kit is a splendid purchase. A younger person will benefit more from the content and presentation, but the foundation for creativity is there in abundance.



Raspberry Pi Kits

The Pi Hut Raspberry Pi Starter Kit

DETAILS

- Price: £35.20
- Manufacturer: The Pi Hut
- Website: goo.gl/WZValw
- Required spec: Keyboard, mouse, monitor, breadboard for electronics work

The Pi Hut is a Suffolk-based online store that's home to all things Raspberry Pi, Arduino, robots, gadgetry and electronics. Although it's not as big as some of the other Raspberry Pi selling authorities, the Pi Hut holds its own thanks to its extensive knowledge of the device and its friendly service.

It offers a number of kits, from various sources, but it's the Raspberry Pi Starter Kit that we're looking at in this instance. This is a very basic kit, but one that's put together to get you up and running with the minimum of fuss.

This starter kit includes a Model B+ Raspberry Pi, an 8GB SD card pre-imaged with NOOBS, a 5V 2A mini-USB power supply (UK, EU and USA plugs available), a piano-black Raspberry Pi case, and HDMI and Ethernet cables.

It may not sound like much, especially after reviewing the previous kits that are packed with all manner of extras, but what this kit lacks in substance, it makes up for in quality and price.

The case, for example, isn't some shoddy 3D-printed, ill-fitting enclosure; it's a perfectly engineered and good-looking case embossed with the Raspberry Pi logo. The HDMI cable is a decent-



▲ Although there's not a lot there, the Pi Hut's kit is very good quality

quality, version 2.0, gold-plated connector, and the Ethernet cable is of the snagless, 2m Cat6e type.

In addition, the kit is priced reasonably at just £35.20, which is only just over £10 more than the Model B+ sells for, which makes it pretty good value for money. Delivery time is, on average, a couple of days, and the kit is presented in a well-padded box.

However, the addition of a few extras would make for a better all-round starter

kit. Even the inclusion of a keyboard and mouse would make it more appealing to a wider audience and, depending on the type of keyboard and mouse, the price would still be lower than the starter kits of this kind from the competition.

As far as a basic kit goes, though, this is a good choice. There are, of course, other extras available from The Pi Hut, such as GPIO specific breadboarding and wiring bundles, and you can purchase other items like the Raspberry



Pi heatsink collection, all of which appear to be very reasonably priced.

This kit from The Pi Hut is therefore a simple and inexpensive solution to getting someone up and running with the Raspberry Pi. Where they take it after that is purely down to the user, but as a present and introduction to the Pi, it's worth looking into.

Fuze T2-A

DETAILS

- Price: £179.99
- Manufacturer: Fuze Technologies Ltd
- Website: goo.gl/hSv2H2
- Required spec: Monitor, HDMI and Ethernet cables

If you're serious about using the Raspberry Pi for both programming and electronics, mechanics and robotics projects, then you won't find a better all-in-one kit than the Fuze.

We've looked at the Fuze in a previous issue of Micro Mart, but it's the sort of project that refuses to be sidelined in favour of the more conventional RPi kit forms we've already reviewed.

What you get from the Fuze is an expertly designed programing and electronics workstation, all packaged in a superb BBC-esque keyboard and housing with a Raspberry Pi Model B+ at its heart. There's a section for the supplied 840 contact slim breadboard to fit next to the custom developed Fuze GPIO board, above the built-in 88-key keyboard and all the relevant Raspberry Pi ports, HDMI, Ethernet and so on are accessible from the rear of the casing.

The Fuze kit also comes supplied with an electronics toolkit, comprised of various jumpers, wires, LEDs, sensors – both digital and analogue – and micro switches. There's a wireless mouse included too, and the entire kit is backed up with a set of well-designed project cards that take you through the basics of the GPIO, as well as the custom



▲ *It's expensive, yes, but it's also an extremely well devised project*



▲ *Fuze Basic and the electronics workstation all in one make for an amazing setup*

designed Fuze Basic and RPi OS that comes pre-loaded onto the 8GB SD card.

Fuze Basic is where the project shines. While the likes of Python and Scratch are still present, the Fuze team decided on creating its own version of the classic BBC Basic programming language. While this may seem like an odd element in the modern programming world, Basic in many ways makes for a good

learning platform from which to expand.


As well as the older style commands, Fuze Basic carries with it an extended array of graphical and control commands that can be linked to the GPIO. So in essence, you could write a Basic game in which a wrong answer to a question will trigger an LED and beep from any attached components on the Fuze GPIO and breadboard.

This makes the Fuze a more rounded and certainly far more powerful educational tool than any of the other kits we've looked at so far. And it's hardly surprising. The amount of effort and thought gone into this project is quite astonishing. Plus the motivational and inspirational impact it can have on the user (regardless of age, we might add) is commendable.

However, the thing that will no doubt shock the majority of users is the price. The cost of the Fuze ranges from £89.99 for the base model, £129.99 for the next model up, £179.99 for the Fuze T2-A that we tested and through to £229.99, which includes a robot arm and controls. Bear in mind, though, that while this isn't the cheapest kit we've had through our doors, it's certainly the best we've ever tested.

Despite the sharp intake of breath over the price, the Fuze offers a superb setup that operates far beyond the base requirements of the other kits on test. It depends on whether you see the workstation as an investment for the education of yourself or children or whether you just want to toy with a passing interest.



Fuze T2-A

Yes it's the most expensive product on test here, but the Fuze represents the best and most comprehensive package of the Raspberry Pi's abilities in a single, well-designed unit.

So while it costs £179, its educational quality and uses far outweigh the competition.




ModMyPi Ultimate Raspberry Pi Kit

The kit from ModMyPi has such an amazing range of choices available and the quality is extremely good as well.

If the Fuze is a little too rich for your budget, then the Ultimate Raspberry Pi Kit will certainly do everything you'd expect.

How We Tested

Each Raspberry Pi Kit was set up and tested with what was delivered in the package. Where possible, we used the kit for programming, electronics and simply playing around on – especially the Fuze, which we enjoy a spot of BBC Elite with.

	Maplin RPi Board Starter Kit	ModMYPi Ultimate RPi Kit	SK Pang RPi Starter Kit-C	U:Create RPi Project Kit	Pi Hut RPi Starter Kit	Fuze T2-A
Price	£69.99	£71.99	£74.28	£53.99	£35.20	£179.99
RPi Model Included	Model B	Model B	Model B	Model B+	Model B+	Model B+
SD Card Supplied	4GB SD pre-loaded with OS	8GB, 16GB, 32GB pre-loaded with OS	No	4GB SD Pre-loaded with OS	8GB SD pre-loaded with OS	8GB SD pre-loaded with OS
Keyboard Supplied	Yes	Yes	No	No	No	Yes, built-in
Mouse Supplied	Yes	Yes	No	No	No	Yes
Power Supplied	Yes	Yes	No	Yes	Yes	Yes
HDMI Supplied	Yes	Yes	No	Yes	Yes	No
Breadboard Supplied	No	No	Yes	Yes	No	Yes
Case Supplied	No	Yes	Yes	Yes	Yes	Yes
Starters Guide/ Manual Supplied	Yes	No	No	Yes	No	Yes

Tech Origins

Digital 3D Printing

David Briddock reveals how to transform digital designs into real objects

The concept of fabricating everyday objects from a 3D digital representation has long inspired designers, engineers, architects, novelist and film makers. Today we're on the threshold of turning this dream into reality.

From Ink To Material

In the mid-1980s, after a decade of research, Canon and Hewlett Packard successfully created the inkjet printer, an affordable alternative to the dot matrix.

Inkjet printers eject particles of ink through nozzles in a moveable print head, so it wasn't much of a leap to consider replacing the ink with other materials. In this way a 3D object could be fabricated in an additive, layer-by-layer process – and the term 3D printing was born.

Stereolithography

A significant step forward came with stereolithographic apparatus (SLA). Patented by Charles Hull in 1984 it used a UV laser to solidify a photopolymer liquid, which typically had the viscosity and colour of honey.

Two years later, Hull formed 3D Systems and used SLA to develop the first commercial 3D printing machine to fabricate 3D objects directly from digital data.

However, SLA equipment was large, expensive and only suited to factory-like environments.

Fused Deposition Modelling

In 1989, Scott Crump founded the Stratasys company. Its products were based around the Fused Deposition Modelling (FDM) technique (goo.gl/QnSkPr), invented by Crump himself. In FDM, the print head extruded a heat-softened material (usually a plastic polymer) to build models via multiple fused layers.

By the early 1990s, Stratasys had introduced the 3D modeller FDM machine, which was followed a few years later by the Genisys range.

Industrial Scale

Despite their dominance, traditional 'subtractive manufacturing' processes like casting and CNC machining were rather inflexible and discarded large amounts of material.

As the new millennium dawned, industrial-level 'additive manufacturing' research surged dramatically. The goal was to fabricate elaborate objects in a single efficient operation.

In one technique, called Selective Laser Sintering (SLS), a powerful laser beam fused materials together. As SLS was applicable to a range of materials, including metals and ceramics, it proved a boon for designers, who could now create much more sophisticated models with more complex behavioural characteristics.

For Everyone

The marriage of low-cost FDM equipment with cheap plastic polymers kickstarted the personal and DIY 3D printing era.

One of the first products was called RepRap (reprap.org). Developed by Dr Adrian Bowyer in 2006 at the University of Bath, it came in the form of a bare-bones style kit. RepRap soon evolved into an open source project, where anyone could redistribute and/or modify the design under the GNU General Public Licence terms.

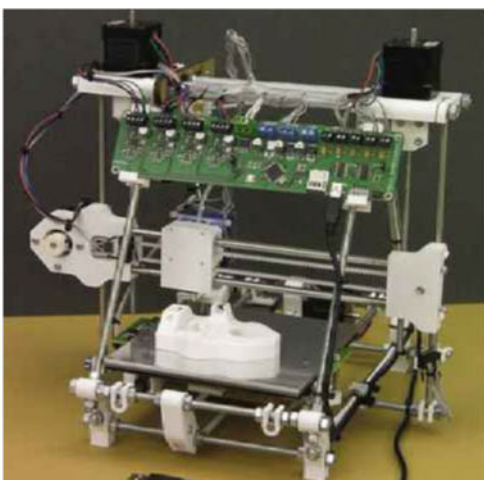
Self-replication was a key RepRap feature. With a capability to print around 50% of its own parts, owners could fabricate new RepRap machines for others or create modified versions.

Limitless Possibilities

As the availability of affordable 3D printers and low-cost 3D printing services mushroomed, it fueled people's imagination.

Engineers at the University of Southampton built the world's first 3D printed drone aircraft. Despite the complex spitfire-like elliptical wings, it cost only £5,000 and took just seven days to build.

Others created the Urbee prototype car (with 3D printed body), 3D food printers, custom-designed prosthetic limbs, plus advanced bio-printing techniques that formed bone scaffolds for reconstructive surgery. [mm](#)



▲ RepRap 3D printer



▲ 3D drone aircraft

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How-to Basics

Create Your Own Arcade Cabinet

We revel in nostalgic bliss this week

We thought we'd go all out in this How-to Basics and declare our love of the gaudy, neon-drenched arcade cabinets that we spent a small fortune on back in the day.

Most of us will have fond memories of standing in the arcades in our youth. The smell of burning electronics mixed with the sweat of the players, painfully hunched over the cabinets with their forefingers a blur, while enacting some kind of dance on the many buttons adorning those shining and towering structures.

Anyway, before we get all watery eyed, let's get on with how to make your own arcade cabinet.

The Cabinet

There are a number of cabinet types you can opt for. There's the upright, stand-up cabinet, in the classic form. Being about six foot in height, these wooden monoliths were astounding-looking creations and were such a size that a big screen could be fitted with ease.

They can be picked up from eBay or from a more specialised outlet that deals in cabinets, and they're usually priced in the region of £100 to £300. Of course, you could always have a go at making one yourself, if you're technically inclined.

Another choice is the cocktail cabinet. This is the more subtle sit down and look into affair that's less obtrusive and can double up as a drinks table. The same applies to the upright cabinet here, although they tend to be a little more expensive on average.

The bartop cabinet is, to all intents and purposes, an upright cabinet with the bottom half cut off. As the name

suggests, they were designed to sit on the top of the bar and provide a more space saving access to a games machine. These generally are a lot less expensive, but they also have much smaller screens when compared to the previous two examples.

The Monitor/Screen

There are camps for against certain types of monitor or screen in the arcade enthusiast world. Some swear that the more modern LCD screens are superb for arcade format graphics and that the CRTs have had their day. And the other camp are very much for the CRTs and feel that LCD doesn't give the same grainy quality that the arcade PCBs were designed for.

It's up to you if you're a purist or not. However, the CRT monitor does have the edge in some respects due to the age of the PCB being used or if you decide to go down the MAME route via VGA.

The obvious problem, though, is getting hold of a good working CRT. That and the fact that you'll soon recall just how much an old CRT weighs. Also, a damaged CRT is probably capable of

killing the person stood in front of it, should anything go wrong.

Using a CRT can be difficult to fit into a cabinet, so unless you're a finalist in the World's Strongest Man, you're likely to need an extra pair of hands to help you mount it. An LCD is far more manageable and doesn't store 20,000 volts like a CRT does, but the crisp image can make early PCB games look a bit naff. MAME is best on an LCD, sometimes. It's up to you, in the end.

Joysticks And Buttons

Classic joysticks and buttons can be picked up from many different sources these days, and they're generally not too expensive either.

There's not much to add really, as the electronics are similar across the board. The only thing worth looking into is whether you're going to need a four-way or an eight-way stick and how many buttons you'll need. Plus, if you're using an old PCB, take note that a more modern digital controller won't often work on these old boards, so you may need a converter or old hardware.



▲ Remember these?



▲ The classic Cocktail Cabinet – for gaming and holding pint glasses



▲ *MAME – purists don't often like it, but for the rest of us it's more than capable*



▲ *This Galaga PCB costs a few hundred pounds but looks amazing*

PCB Or PC Hardware

This decision is a little more tricky, as it depends on what you want from your arcade machine. Do you want to play *Pacman*, *Space Invaders*, *Galaga*, *Rygar*? In their true forms? If that's the case, then you'll need to get hold of the PCB for that game.

The PCBs can range from £25 for a relatively unknown game, such as *Gals Panic*, through to thousands of pounds for *Galaga* or *Fast 'N Furious Tokyo Drift*. As well as taking cost into consideration, you'll need to look into the JAMMA (Japan Amusement Machinery Manufacturers Association) arcade circuit board and wiring standards to see if you can actually connect everything to the screen, controllers and the power supply. Plus, you may need to look into creating a JAMMA swap-out board that can allow you to change PCBs within the same cabinet easily without having to take everything apart and resolder connections.

Alternatively, you could instead opt for an easier route and fill the inside of your cabinet with PC hardware. This way, you'll get something you can easily manipulate, power and upgrade if necessary, and you'll be able to easily incorporate ROMs into the emulator of your choice.

Emulation is often sneered at by the purist, but a MAME cabinet done well makes for a superb addition to a games room, and it's significantly easier to get up and running. You don't even need a powerful machine; even a Raspberry Pi is capable of being a MAME cabinet, complete with keyboard encoder via the GPIO.

Setting Up MAME

To elaborate a little further in getting MAME up and running, here's a quick step-by-step to help make things run a little more smoothly (from forum.arcadecontrols.com):

Create the directories:

```
C:\Emulators
C:\Emulators\mala
C:\Emulators\Programs
C:\Emulators\Programs\mame
```

Steps to Install MAME:

- 1) Double-click on 'mame.exe', then install it directly into the 'C:\Emulators\Programs\mame\' directory. You can do this by clicking the '...' to launch the pop-up window and navigate to this directory or by typing it in.
- 2) Copy your ROMs into the 'C:\Emulators\Programs\mame\roms\' directory. Keep the zip. MAME uses the .zip format to organise game files.
- 3) Open a command line prompt window.
- 4) Execute the following command to go into the mame install directory:

```
cd C:\Emulators\Programs\mame
```

- 5) Execute the following command to produce a 'mame.ini' file:

```
mame -cc
```

Note: This file allows you to customise your MAME emulator to the way you like it.

Steps to install MaLa:

- 1) Copy the unzipped MaLa files into 'C:\Emulators\Mala\'
- 2) Copy MalaLayoutConverter.exe into

the 'C:\Emulators\Mala\' folder

- 3) Double-click on 'C:\Emulators\Mala\Mala.exe', and it should inform you that 'This is your first start of Mala'. Click the OK button to bring up the Options Window.

- 4) Under the 'Mame Config' basics tab click on the '...' for 'MAME executable' and select 'C:\Emulators\Programs\Mame\mame.exe'

This will inform you that MALA has 'Found mame M.A.M.E V0.xxx'. Click OK to close.

- 5) MaLa will inform you that there is no .xml file associated with MAME. Click OK to create the file automatically.

- 6) Click on the '...' button associated with the 'Rom Path' line and select the following directory:

```
C:\Emulators\Programs\mame\roms
```

- 7) Under the 'Mame Config' tab and in the 'Pictures and Videos' sub tab, click on the '...' button associated with the 'Snap/Title' line and select the following directory:

```
C:\Emulators\Programs\Mame\snap
```

- 8) Click the OK button at the bottom of the MaLa Options window now. This should result in a window popping up indicating 'Your configuration has changed. Refresh main game list?' Just click Yes and wait for MALA to refresh the game list. After, MaLa should be displaying the MAME game list with MaLa's default background image.

- 9) You should now have successfully installed MaLa and configured the MAME emulator.

Software

If you're using a PCB with the original ROM chip, then you won't need any software, as such, to get up and running; just a hardware ROM test will power everything up. For a MAME cabinet, though, you're going to need some software installed.

Setting up MAME isn't as simple as running the EXE and expecting everything to work from the off. You get find the latest version of MAME from goo.gl/a2oIEy, which you can install to any directory you wish. After doing so, drop into a command prompt, navigate to the MAME directory and run 'mame64 -cc' or just 'mame -cc' depending on the version you have installed.

Once that's done, head on over to MaLa, the MAME front end at goo.gl/CrBLzQ, and install that in the same directory. Then run MaLa, point it to the MAME executable and the program should set itself up.

When done, it's just a question of finding MAME ROMs (which we'll leave for you to look up), running MaLa and playing the game.

The Rest Is Up To You

We can only offer advice and where to look for it in just two pages. Needless to say, there's plenty on Google to search through; just look for 'setting up MAME' or such. mm

First

NAS

Mark explains how you set up your first NAS box, from unboxing, through configuration, all the way to deployment

These day's people like to keep plenty of digital data handy. If by choice or circumstance, we've all become collectors, and managing that data can be something of a challenge.

Some people take the somewhat brave and possibly ill-considered position of letting cloud services handle everything. That's fine to a point, but unless you have very large amounts of free online storage and a fibre connection to it, there are some major limitations to taking that approach.

The logical approach is to place some things, mostly those items with smaller footprints onto the cloud, while retaining the larger or more personal documents at home. To do that you'll need your own network attached storage (NAS), and that's the subject of this article.

Here, I'll show you how to set up a good but inexpensive NAS box from scratch, and I'll talk about how you might grow the facility in the future and manage it as you progress.

You can buy what are essentially fire-and-forget solutions, like the Seagate Central, but I'll also talk about why the technology I'm using here is superior in terms of the control it offers the user.

The device I've chosen to use is the Synology Diskstation DS115J, a single drive NAS box made by one of the industry leaders in this type of technology. I've chosen this particular model because it's new and powerful yet inexpensive, and it gets regular updates to its operating system.

Other NAS hardware will be different, although most of them require the same types of configuration tasks as this one.

Enough preamble. Let's unpack that NAS box and make it work for us.





▲ For this job I need just two hardware devices and a small Phillips cross-head screwdriver handy. The DS115j is the NAS box of choice, and I also have a single hard drive to place inside it. You can get NAS boxes that take two, four or even more drives, but for those starting out, a single drive system is just fine.



▲ The DS115j is a rather slick looking piece of tech, finished in shiny white plastic. You can pick one up for less than £80 delivered if you can use Google which, considering what it can, do is something of a bargain. Inside is an 800MHz Marvell Armada 370 CPU, 256MB of DDR3 RAM and room for a single 3.5" SATA hard drive.



▲ You can spend more on a single drive NAS box than the DS115j. For example, the DS114 looks almost identical from the outside (except black), but it has a 1.2GHz CPU and double the amount of RAM. It can be found for about £150, for which you get more performance, which allows even more flexibility about how you use it.



▲ The other critical component here is the hard drive. In this instance I've used a Western Digital Red Pro 4TB. Western Digital Red drives are specifically designed for NAS and server use, and are built to withstand the prolonged use. A 4TB Pro drive like this costs about £175, but the ordinary Red model is only about £130.



▲ You could use any SATA drive, but ones made for NAS activity are probably the sensible choice. To get the drive inside the DS115j you simply slide the two halves of the case apart, revealing where the drive goes. It comes without any screws in place, so you don't need to remove them to open it up. The screws come in a small plastic bag.



▲ This should be familiar to anyone who has worked with PCs in the past ten years. These metal plates have holes to secure the drive, and in the middle is a connector that combines SATA power and data in one. You could put a 2.5" drive in here if you only use the left hand plate, though you'll limit the possible capacity you have available.



▲ With a 3.5" drive you could have 8TB, although I think at this point Synology only officially supports 5TB. I've tried a DS415 with a 6TB Seagate drive, and it worked, so it's only a matter of time before the bigger units get the official nod. Personally, I wouldn't bother using a drive that's less than 2TB, because it's a false economy.



▲ Synology provides screws to secure the drive: use them. How badly things might go if the working drive slid off the SATA edge connector doesn't bear thinking about. Those in a rush might be tempted to just use one or two screws, but I'd take the time to use all four and make a good job of locking it down properly.



▲ The case slides back on easily, and you're provided with some screws to hold the two parts together. This is more of a lifestyle choice, because the case won't fall apart if you leave them out. My view is that I won't be going inside this box for some considerable time, so use them. It also stops them being lost if you throw the box out.



▲ This view of the back shows you some critical features, including the cooling fan. Below that are two USB 2.0, sadly, the gigabit Ethernet port and power block connection. As the box is likely to be left running 24/7, making sure that this fan is rotating and that there is good circulation is important.



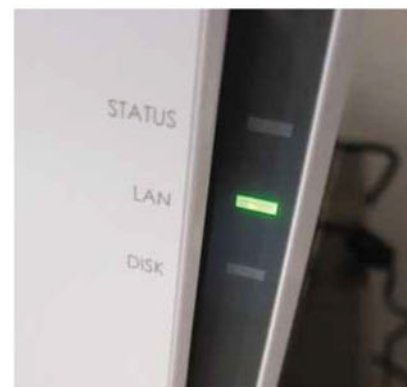
▲ If you want the most out of your NAS box, then you really need a network with gigabit Ethernet. Depending on the hardware, you could be getting up to 80MB/s from a NAS box and even 35-40MB/s from this one. If you use a 100Mbit network instead, that number will be much less, maybe 12-13MB/s on a good day.



▲ To get this system configured, I placed it next to my BT Homehub 5, as this is also one of the switches/hubs in my wired network. This isn't where I'll be deploying the unit, but it's a good place to check out everything is working, as it's an easily accessible place with access, power and free Ethernet ports.



▲ The DS115j comes with a black Ethernet cable, which I placed in a free port on the Homehub, while the other end went into the DS115j. If you are wondering why there's no cable in the broadband WAN socket, that's because this Homehub has its own Infinity modem built in, avoiding the need to have it as a separate box.



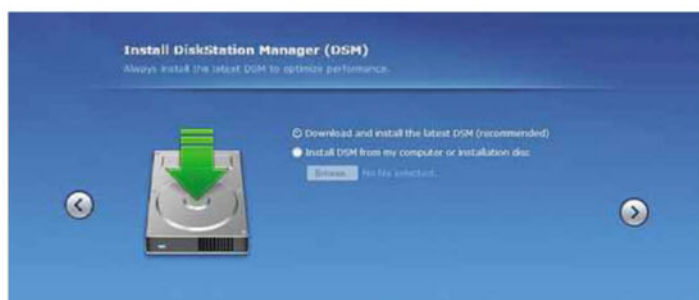
▲ With the LAN and power connected, all you need to do is push the power button on the very bottom right of the unit, and it will spring into life. From this point onwards there are lots of flashing lights that indicate activity. If you don't get any, then check that everything is correctly connected and that the drive is properly engaged inside.



▲ The DiskStation has no screen, so you can't use it like a PC. To access the system you need to use another computer and a web interface. Opening up a Network Explorer in Windows 7, you see the box under 'Other Devices'. By right-clicking on it, you have the option to 'View device webpage', which is what you need to do.



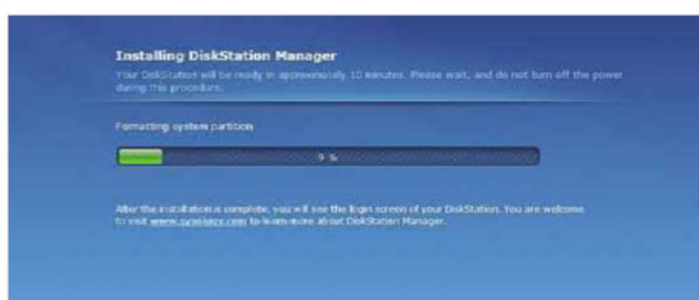
▲ Slightly oddly, the DiskStation doesn't come with an OS in place, because it will be installed on the hard drive, so when you get to the web page it will be 'Not installed'. Please note, the process of installing it will erase the contents of the hard drive, so don't load it with data expecting it to be there once the system boots up.



▲ Clicking on the right arrow takes you to this page where you get to install the DSM (DiskStation Manager). Older DiskStation models used to come with a disk with this on, but these days it's all done over the internet, assuming you have access. Select 'Download and install the latest DSM' to initiate the downloading of the latest firmware.



▲ There's one last job to do before the DSM is installed, and that's to provide a password for the admin account. You can also change the name of the box. That's useful for me, because I already own a DS411 and don't want two network devices with the same name. I named this one 'DiskStationII' and clicked 'Install Now'.



▲ It's probably a good time to go make a cup of tea or coffee. Exactly how long it takes to format the drive and install the DSM will depend on how quick and large the drive is, among other things. Synology has sped this part up massively, because it used to take hours, and now it takes about ten minutes.



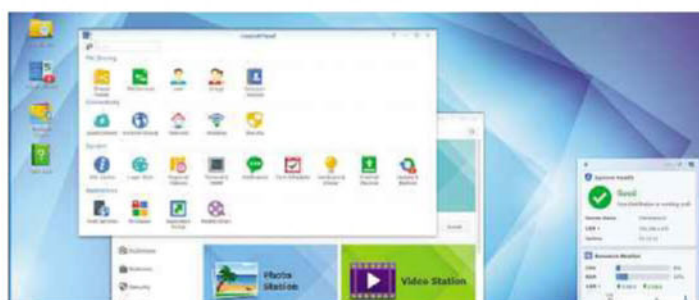
▲ Success will be greeted with this screen. Unless you've already forgotten what the admin password was, you should be able to sign in and gain access to the DSM interface. From here you'll get a 'Welcome' screen, and then you need to configure a few more operational aspects before you get truly get to the internal gubbins.



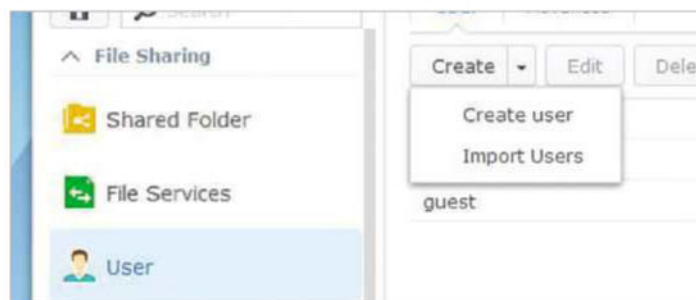
▲ QuickConnect is a mechanism that allows your Diskstation to be accessed remotely across the internet by giving it a unique number. If you never intend to do that you can skip this, though you can create a QuickConnect ID later if you change your mind. I already have a MyDS account, so I went with that option here.



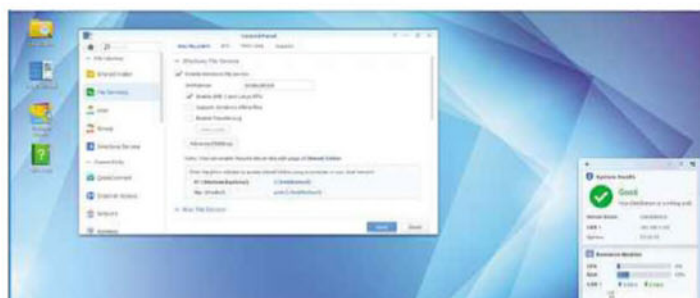
▲ At last we're allowed into the DSM interface, which is a bit like remotely accessing a PC with some proprietary OS on it. The only thing missing is some office tools, really. When you first launch it, it offers you the 'Package Center', but I'd ignore that and open the Control Panel. You'll find that as an icon on the desktop.



▲ In the Control Panel are many configuration tools, but the one I'm interested in has a '1' against it, and that's 'Update & Restore'. Here's the first firmware update for the system, which you need to install. The policy seems to be to make the second to last update a start point, so not to accidentally scupper a system from the outset.



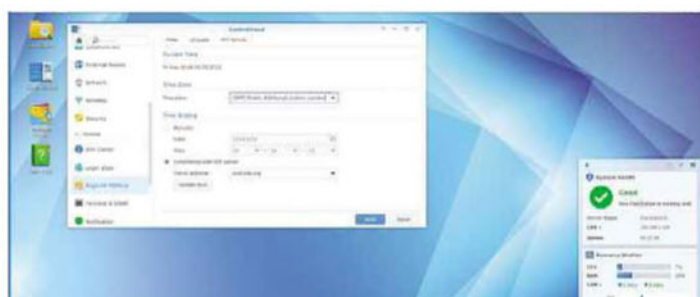
▲ With the system now running the latest version of DSM, the next job is to add some users. Generally it's a bad plan to use the Admin account for everything, so I create a personal account, giving it the same login and password that's on my Windows PC. That makes the networking part function more elegantly when I connect to shares.



▲ Another adjustment I make is to go into file services and change the Workgroup name to the one that I use at home. And while I'm here, I also scroll down and disable the Mac File Service, since I don't have any Apple hardware whatsoever. Servers generally work better if you just have them running services you use.



▲ Now I've returned to the Package Center and start adding a few apps, like the Audio Station. As this is a relatively low-powered NAS I don't go mad here, because it's easy to overload the CPU and memory. So I just add Audio Station, Photo Station, Video Station, Media Server and Download Station at this time.



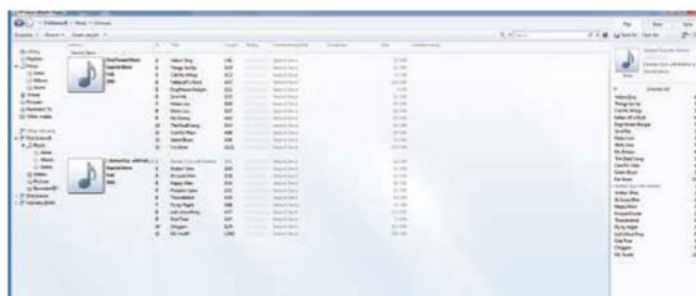
▲ If you want anything to do with time to work correctly, then it's also a good idea to select 'Regional Options' and adjust the Time Zone and sync. Why this is wrong from the outset I've no idea, but putting it to GMT and selecting a NTP server fixes it in only a few clicks. Those who like to change Language you can do that too.



▲ The next step is to find the DiskStation on the network and try to browse some of the shares, so you can load some initial files onto the box. That it asks who I am is a hint that there's a problem, and when I offer my login and password it denies me access. This is the point at which those who aren't technically minded feel paranoid.



▲ The answer is simple, thankfully. When you add the various apps and their shares are created automatically, it assumes by default that all the users should be excluded from using them. Select the user or group, and then give some permissions and it will all work as advertised. Using Groups is quicker if you have many users to alter.



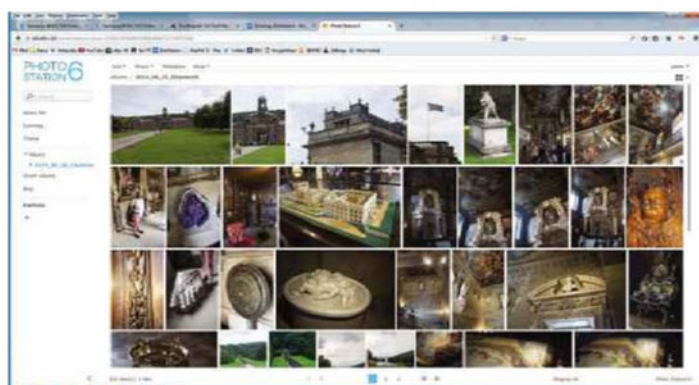
▲ To prove we're all good now, I fire up the Windows Media player, which connects to the DNLA media service and shows the DiskStation in its library list automatically. By clicking on 'DiskStationII' and Music, I can bring up the test files I've copied over to the shared Music folder. These files will also appear on any networked DNLA client.



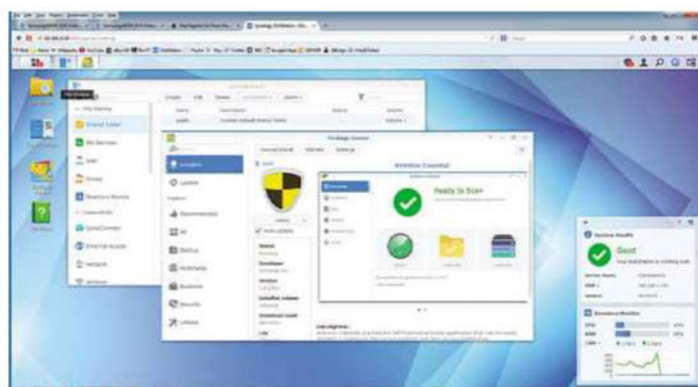
▲ At this point the NAS box is operational, and you can start loading it with media and also look at some of the other applications you might be interested in. Personally, I'd recommend Antivirus Essential and Cloud Station as good additions, but there are plenty of others to choose from and new ones added on a regular basis.



◀ There's one final job to do, and that's to shut the DS115j down and move it to a permanent home, out of the way. If you're worried that it might have a problem, then you should set the system to send you a personal email in the event of an error, so the system will alert you if something untoward occurs with the drive or system.



▲ The Photo Station application allows you to browse photos stored on the DiskStation from any web browser, even if the system that's on is connected only via the internet



▲ The DS115j can install its own anti-virus application, so that potentially dangerous malware can't migrate around your network using the NAS box

Final Thoughts

There were a few things I didn't do that I'd like to mention because most people may want to also configure these aspects of their NAS box.

The obvious omission is creating a backup, which is critical if you put data on the NAS box that you haven't secured elsewhere. I didn't cover this specifically, because on the Synology systems there are so many ways to do this. What I'd recommend is that you take a USB external drive and configure a backup to run at night.

The USB 2.0 ports aren't very fast, so it's worth organising this before you load up the box, so that it can incrementally build as you do. If you only have a 1TB external drive, then you could tailor the backup to just focus on personal areas and pictures, so you don't create a capacity problem further down the line. It's also worth noting that while you can set as many backups as you like, only one can run at a time, should you schedule them to happen simultaneously.

The external drive can be formatted in FAT32, NTFS, EXT3/EXT4 (Linux) or HFS+ (read only), depending on what's the most convenient for connecting to your other systems should that be necessary.

Another area that you might want to tweak is the power management controls, as it is possible to make the DS115j go into hibernation at specific times of the day or week. If you're at work in the day, you can make it sleep then and also in the early morning hours, unless that's when you've scheduled a backup. By setting these things up you can reduce the power consumption, though when not being accessed the system will automatically spin the drive down.

In terms of expansion, a single-drive NAS box doesn't have much by definition. However, you can share external storage that's connected on the USB, so that's one way to grow the system. What you can also do is get another Synology NAS box and get them to work together, cross-securing data and sharing the necessary services.

Depending how you're organised, this might also work with other brand NAS boxes, though probably not as elegantly as with the same tech.

Some people reading this will be wondering why they should bother with a NAS box, when they have a PC that can share files and secure them just as well. If you live alone and only have one computer, then that's a valid question.

However, if you aren't the single user of the data on the system, then it's a much better idea to provide a dedicated facility that can share and disperse media without a specific PC being on or not in use. The NAS box can do this efficiently, and it also provide a means to access things remotely or do a hundred other automated jobs.

Having a NAS box is about taking control of your data and making it work for you whenever you need access to it, and that's either of interest to you or it isn't.

For those who do want that capability, it's never been cheaper to get a good NAS system, and the solutions available offer fantastic features. [mm](#)



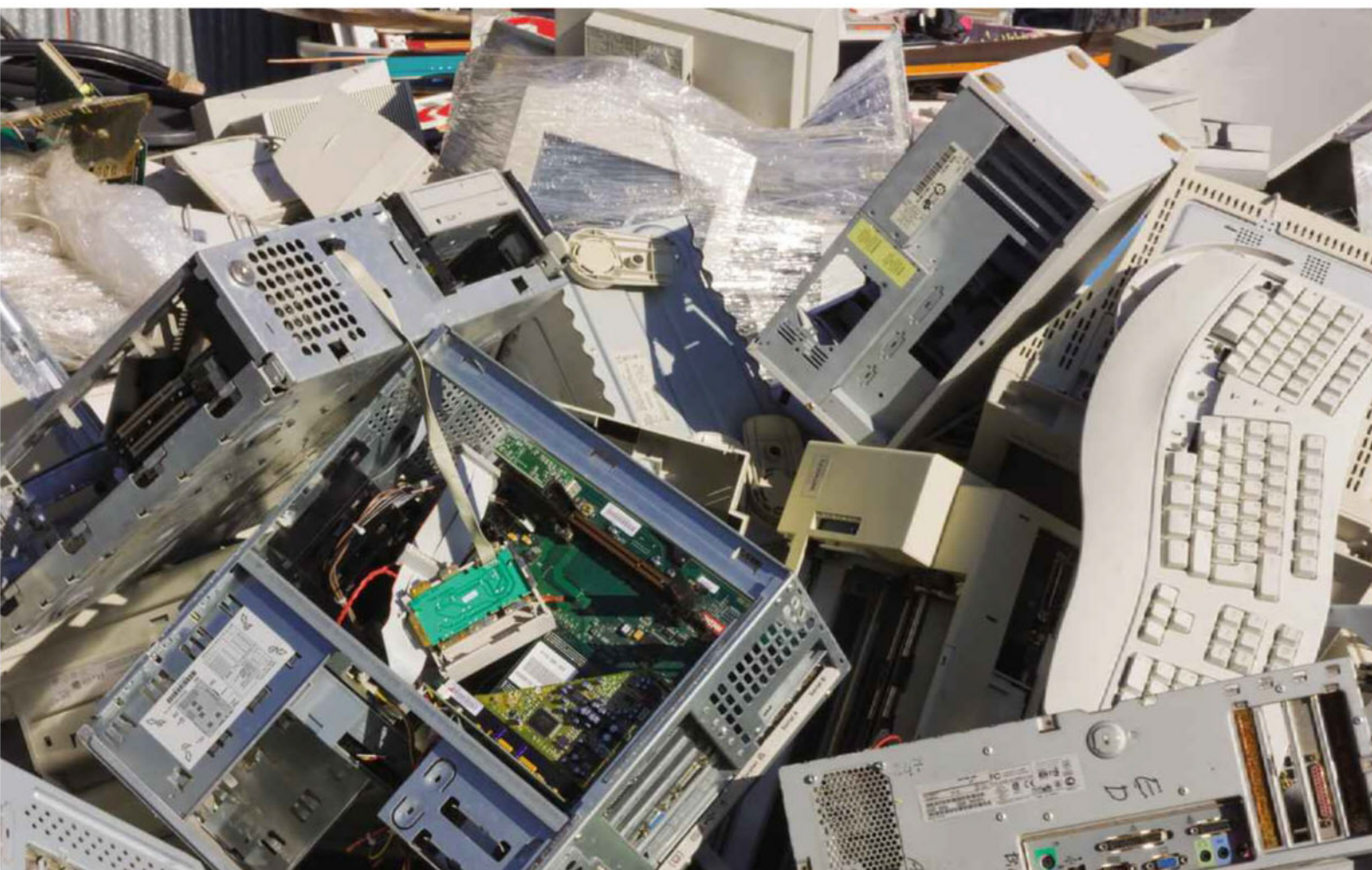
▲ The DSM desktop is very like a PC. It has colourful themes, a windowing interface and even widgets to tell you critical information about the operational aspects of your NAS box



▲ Once you've got your Synology NAS box operational and media installed on it, you can load apps created for both Android and iOS to access them on your phone and tablet hardware



▲ If you don't have a wired network, but still want to use this technology you could use a Belkin F5D8053 v3 USB wireless adapter to add WiFi to your DS115j. Synology supports many more wireless USB adapters, for a full list check their website (www.synology.com/en-us/knowledgebase/faq/427).



Good Health And Long Life

Why The Death Of
The PC Has Been
Greatly Exaggerated

The PC has a lot more life in it than some people say,
as Shaun Green explains...

We have all, by now, heard the phrase ‘the death of the PC’. It has become a common feature in the headlines of news reports concerning the growth or contraction of businesses in the IT sector, as well as in reports on new products like Apple’s latest iPad or Google’s newest Nexus. We’ve even seen it in the context of the rise of web apps replacing traditionally popular software suites like Microsoft Office.

Tracing the phrase back to its origins is a tricky business, but it seems likely that it moved into popular parlance in 2010 after Apple found success with the original iPad. Many were initially scornful of the iPad concept – your author included – wondering who would want an oversized iPhone that was nowhere near as good as a proper laptop. We were quickly proven wrong: Apple announced 300,000 were sold on the device’s first day, while it took only two months for the two million sales milestone to be passed. Apple knew something that most of us didn’t: that the consumer market was ready for change, and they were ready for a device like the iPad.

This enthusiastic response to the iPad was, at least, a familiar sight. The original iPhone, and its successors in the intervening years, had all enjoyed a similar reaction from consumers. It’s quite plausible that ‘the death of the PC’ was mooted even back then, as far-sighted analysts and commentators speculated on what the immense success of this revolutionary new approach to the smartphone might come to mean.

This is not, however, all about Apple. It may have most publicly led the charge of the modern smartphone and the modern tablet, but it’s far from alone in pursuing these lines of development. Its competitors, from Google to Sony to Microsoft, have all recognised, either prophetically or reactively, the same essential truths: that people want genuinely mobile computers.

Even where companies may have come late to this idea, basic market analysis will have revealed the truth. Organisations like the IDC (the International Data Corporation, one of the largest market info providers for IT and related fields) have consistently released quarterly statistics reflecting contracting sales of traditional computers and expanding sales of tablets and smartphones. Other research has indicated that our patterns of web usage are steadily shifting away from desktops and towards mobile devices, or that some other area of computer usage traditionally reserved for PCs was being supplanted by mobile – gaming, for example.

So if the PC is being replaced by mobile devices, does it not stand to reason that the PC is dying?

In fact, it does not, because the argument is fallacious. Let’s take a look at why, focusing on two of the key areas of argument for the PC’s demise.

For: The Rise Of Smartphones And Tablets

It has been widely reported for some years that many people do the majority of their personal computing using their mobile devices, whether for web browsing, reading emails, checking in on Facebook or Twitter or playing games.

It’s undeniable that there has been a huge impact here, as smartphones have many unique strengths. Their portability is one; it’s a genuine technological marvel that hardware as powerful as that boasted by today’s latest and greatest phones can be crammed inside such a slender package. The other important factor in their portability is, of course, mobile internet connections, whether via network data connections or wi-fi hotspots – increasingly common in public spaces or on public transport, not to mention innovative schemes like BT’s Openzone.

Both the web’s infrastructure and the corporate giants that dominate it have evolved alongside changing patterns of web usage. Responsive web design – the idea that the layout of web pages can dynamically shift and rescale to fit the display size in use – was devised primarily for handheld browsing, while native apps have proven the mobile solution of choice for large companies like Facebook, Amazon, Twitter, Spotify and many more. Although native apps cost more to develop and maintain than a multi-purpose responsive website, they offer far greater degrees of control over content and presentation, not to mention a tailored connection to users and customers – all of which is considered of paramount importance in our online world.

It would also be remiss to not mention the importance of the touch-screen interface: without it, these devices would not be anywhere near as popular or influential as they are. Mobile devices have used a lot of interface solutions over the years.

“ If the PC is being replaced by mobile devices, does it not stand to reason that the PC is dying? ”

Touch-screens that required the use of styluses have been around for decades, for example, but these offered only a single interaction point (the tip of the stylus), while styluses were also easy to lose. Traditional mobile phone interfaces – keypads, sticks and trackpads – offered a reasonable degree of control, but they could not even approach the intuitiveness and flexibility of modern multi-touch capacitive touch-screens.

Tablets have all the same strengths as smartphones – albeit most are a little harder to slide into the average pocket – but they often feature even mightier hardware, plus of course a larger screen size. They’re slightly less suited to being used briefly



▲ More than a few individual PCs probably died after exhibiting a BSOD.

here and there on the move, but they're hardly difficult to carry with you and use on a bus or train.

In comparison desktop and laptop PCs are either practically non-portable or heavy, use significantly more electricity and, in the case of laptops, offer poorer battery life than most mobile devices. Netbooks are a little more portable but they sacrifice a lot of hardware heft for that advantage, and their cramped keyboards have rarely been popular. All three kinds of personal computer are also typically quite expensive, especially given that many smartphones and tablets are acquired as part of an ongoing contract with a mobile network provider.

It's also worth mentioning that, despite sleep and standby OS modes having been commonplace for some years now, personal computers are for the most part not really designed to be left

“ Tablets have their place in working environments, but their role is largely supplementary ”

on in perpetuity, unlike smartphones. Despite this they also take a lot longer to boot up; even with a solid-state hard drive your phone would probably win a start-up race.

Against: Mobile Devices Aren't Fit For Every Purpose

The biggest counter to the idea that the strengths of mobile devices indicate that the PC is dying is to observe that they're not the only computers that have unique strengths.

For example, PCs are superior for the majority of work-based tasks. A few blue-sky thinkers have floated the idea of offices switching from PCs to tablets, which is no doubt a pleasant dream to indulge in. However, anyone who actually spends time using a PC for the majority of their working day will recognise the tablet's impracticality.

It is hard to imagine that those who spend a lot of time working with lengthy documents or desktop publishing software, designing websites or writing the code for them, developing applications or games, using digital art software, working in accountancy or even software testing would prefer to use a tablet over a PC for any serious amount of time. Tablets have their place in working environments, but their role is largely supplementary.

That said, this counter-argument is not about dismissing the upstart challengers that are modern mobile devices as a fad. Rather it's about recognising the strengths of both the traditional and new approaches and working out how to make use of both.

Similarly, enthusiastic gamers will already be aware that the games available for PCs and mobile devices are very different indeed. PC gaming has been rekindled in the last seven or eight years, and today an astonishing breadth of genres is represented by the platform. The Steam platform alone represents an audience of 100 million users. In contrast, while mobile gaming has exhibited almost incredible growth and has proved a massive source of revenue for many companies, the possibilities of mobile devices for gaming are still being explored. Meanwhile, the highest-grossing games are largely of a particular type, designed

specifically to place roadblocks in front of players without upsetting them too much, encouraging them to spend money to remove inconveniences in a nominally 'free' game.

Finally, it must be noted that mobile computing is still notably immature in some areas, resulting in reliability issues. Few Britons will have failed to experience moments when their standard network connection – let alone their data connection – has gone dark, whether it's while travelling, at a holiday destination or even in certain rooms of their own home. The technology does exist to make mobile data networks as fast as traditional wired home connections, but unfortunately the infrastructure investment required is enormous. The result is that network infrastructure improvements are arriving much more slowly than corresponding developments in the shiny devices most people upgrade every two years.

For: Declining PC Sales

Those who follow trends in IT reporting (including, of course, readers of Micro Mart!) will likely be aware that many reports have indicated that far fewer desktop, laptop and netbook PCs are being sold than was once the case.

Consumers have largely been buying tablets instead; the sales of these devices have been very strong year on year since 2010. If people primarily want a computer to read their emails, browse the web, do a little online shopping and maybe play a simple game when a TV show they don't care for is on, why would they need to buy an expensive PC? Besides, the odds are good that they already have at least one within their household, following a period of many years when owning a PC and getting access to the internet was an increasingly important part of modern life. So should they need to, for example, write a letter, that option is still there.

Businesses, meanwhile, are investing less in Microsoft and Intel infrastructure. There are a number of reasons why this might be so. For example, as versions of the ubiquitous Office suite



▲ There are probably better ways of getting rid of old hardware than this



▲ *The idea that smartphones represent the pinnacle of computer evolution is flawed*

became obsolete, it was once the norm to simply purchase a newer version. Now Microsoft is driving people toward Office 365, which is essentially licensed via a subscription as opposed to copies bought outright. But today there are numerous free alternatives to Microsoft's offering that might fit a business's needs, such as Google Docs.

As for hardware, to some extent developments in personal computing have reached a plateau. There's always more to squeeze out of any particular line of technology, and Intel and its competitors are constantly pursuing innovative new solutions to the law of diminishing returns, but it's a reasonable argument that where the upgrade cycle for PCs was once considered two to three years for power users, it's now entirely reasonable to use at least some of the same hardware for significantly longer. Businesses simply don't need to buy new hardware as often as was once the case.

Coupled with that is the fact that Microsoft's last OS, Windows 8, has been widely dismissed as a poor product as well as particularly ill-suited to the enterprise environment. This is similar to the situation that Microsoft found itself in with Windows Vista eight years ago and with other Windows versions before that, but it's never before faced such significant threats to its core business as it does today. Windows 8 has also achieved less market penetration than Vista, reflecting just how unpopular the OS is.

It follows that if both individuals and businesses are voting against PCs with their wallets, then the PC is struggling, and if these trends continue, it's liable to be staring death in the face.

Against: What those sales figures don't describe

Part of this argument for the death of the PC contains the counter-arguments within it!

Firstly, both individuals and businesses are still using PCs – they're just not buying them as often as they once did.

Secondly, while many households and businesses may already have all the PCs they currently need, it's far less likely that they will own all the tablets they want.

At some stage, the growth in tablet sales will begin to taper off as the market becomes saturated. This will not be a death knell for tablets but will simply mark the point where the gold rush ends, indicating that it's time for the industry to slow down and become less of a frantic race to get tablets into customers' hands. Meteoric sales booms simply never last, and sensibly led businesses recognise this. To some extent it's clear that numerous major players already have, which is why we're seeing tentative commercial forays into less-exploited fields such as wearables.

It's undeniable that there will inevitably be fewer individuals who feel they need PCs now that tablets and smartphones are providing for so much of our everyday computing and web

“ To some extent, developments in personal computing have reached a plateau ”

needs. However, anyone who wanted a PC for specific reasons five or ten years ago is still likely to want one today or in five years time, and if their existing machine is beginning to fail or is simply outdated, it's probable that they'll replace it with something similar yet better. There are, after all, plenty of reasons to own a PC to support a hobby, whether it's for gaming, writing, coding or simply for the love of tech.

As for businesses, that most are currently avoiding investment doesn't necessarily mean much. Upgrades in IT infrastructure are expensive and disruptive processes, and it's likely that many businesses have decided that they either do not currently need to pursue upgrades or that there's wisdom in waiting to see what Windows 8 is replaced with. Windows 10 might prove to be the worthy successor to Windows 7: a stable, powerful and flexible



▲ *Rust In Pieces, dear friend*

OS ideally suited to business environments and compatible with existing software solutions.

Setting aside that the 'declining sales' argument needn't be a zero-sum affair, it's worth noting that some statistics have actually indicated growth – or at least stability – in areas of the traditional PC market. For example, Intel has achieved strong revenue and income most quarters since early 2011. Given Intel's centrality to the traditional PC market, such figures don't fit with the idea that PC sales are in irreversible decline. It's also relevant that where figures around PC sales and PC businesses have indicated decline or stagnation, this has been occurring alongside a worldwide recession (although by the same token, so too have those astonishing tablet sales).

Finally, history offers an interesting parallel. Similar arguments were made about the death of mainframe computers in the early 1990s, when client/server PC networks were increasingly being deployed in businesses at a fraction of the cost. Although the market for them is not what it once was, mainframe computers are still built and sold today because there remains a place for them in various business and research contexts.

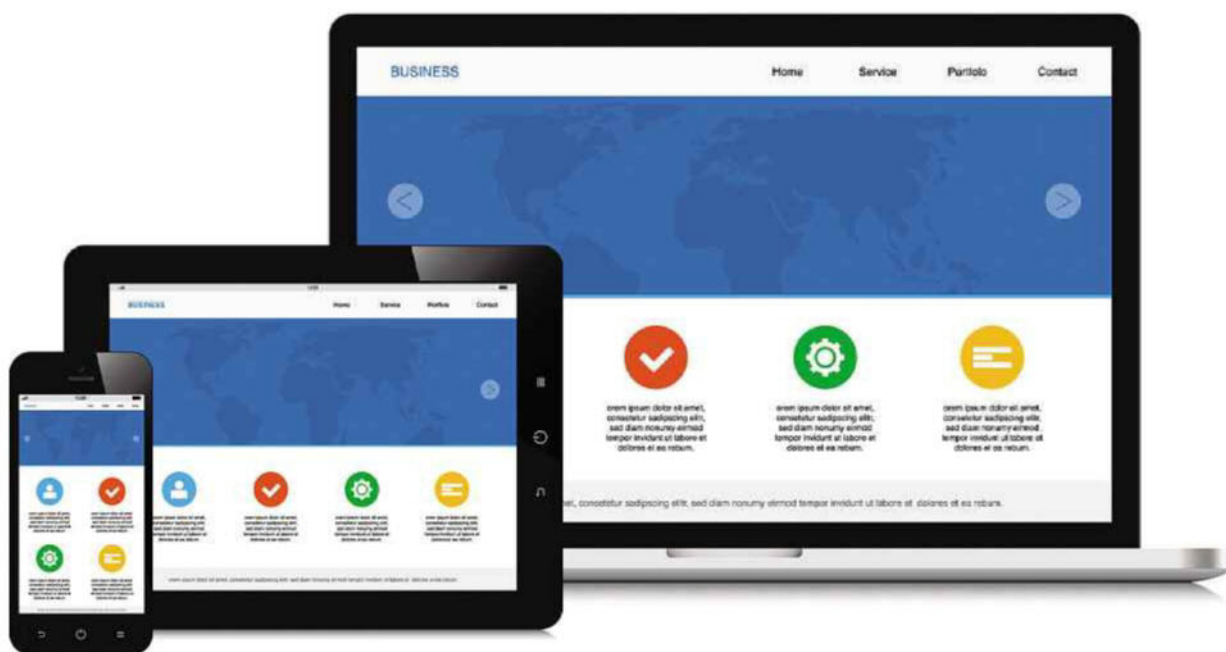
The Big Picture

When you take a broad look at what is happening in the computing industry at large, it's apparent that the reality is often at odds with the rhetoric of companies with a specific line of business to promote.

The PC isn't dead or dying; at most it's just not growing as it once was because that growth has largely transferred into other areas, namely mobile computing, where there's a lot more scope for innovation. However, this no more indicates that the PC is obsolete than did the invention of the motorcycle for the bicycle. Both have their place in modern society.

There are also interesting studies that support this line of reasoning. The e-commerce platform ShopVisible reviewed the 2013 figures for its product in its various deployments, and found that while mobile browsers accounted for 30% of traffic to its customers' web stores, they represented only 15% of sales. This became even more stark if tablets were categorised alongside PCs rather than smartphones; at that point only 4% of sales were handled via smartphones.

ShopVisible also explored some of the reasons why this was so, and noted that many smartphone users are either 'on the go' or 'higher up the funnel'. Picking apart the marketing lingo, what this means is that smartphone users are largely using their mobile browsers to research products and then either buying them in physical shops or switching over to their PC to make the actual purchases. This suggests that many people are either unhappy with cumbersome mobile payment systems for online shopping or feel uncomfortable handling this through their phones – one is a technical and design challenge, while the other is down to



▲ *The future is not a single computer: the future is multiple computers*



▲ *We will not be (re)moved!*

human psychology. Clearly, there's still some work to be done before mobile e-commerce solutions are comparable to the desktop experience.

All that said, there is one type of PC that has been very hard hit by the 'mobile revolution': the humble netbook. These devices were originally designed as low-powered, long-life, lightweight

“ The reality is often at odds with the rhetoric of companies with a specific line of business to promote ”

and portable machines that could be used for basic computing activities and web browsing. In other words, they were an attempted solution to the same need as tablets provide for, and they have simply been outclassed by tablets. If any kind of PC is to die, it will be the netbook – although they do still have their uses. I still own an upgraded netbook that I find useful to take on holiday in case I want to do any writing – which is something I avoid like the plague on my tablet or smartphone!

Netbooks aside, what is 'dead' is the era of the PC as the only significant computer in a household. Today, it's one of many, from

phones and tablets to games consoles and NAS, not to mention the ever-threatened 'internet of things' and the increasingly promoted idea of a fully wired home.

No one can accurately judge what the future will hold beyond a few years ahead; there are just too many factors in play. Anyone can speculate, however, and it can be fun to do so. For example, I imagine that two areas which will continue to see research and development will be flexible hardware and cross-device communication. Further innovation might make it practical for a person to carry around a smartphone in their pocket and a tablet in a bag, switching between the two depending on environment and usage. Data and sessions could be shared seamlessly between the two. This is not particularly controversial speculation; Microsoft, Apple and Google are all actively working toward it.

Where I become more fanciful is in imagining that when our hypothetical person needs to do something active rather than passive (e.g. writing a lengthy email rather than reading them) they can unroll an adhesive flatscreen that can be attached to a nearby surface and unroll a full-size keyboard with actual tactile feedback (i.e. not just the haptic vibration of modern touchscreens). Both peripherals would connect seamlessly to the other devices, essentially providing the same experience as a modern PC as a portable, lightweight solution.

Speculation aside, what is for the time being very much alive is a future of computing multiplicities, which will include the PC for the foreseeable future. Long may it do so. [mm](#)



Alarm Clock Apps For Android

Keep track of time with **Keir Thomas's** examination of five alarm clock apps

Telling the time is a basic human need, and mobile technology is all about that kind of thing, so it's no surprise the app no phone or tablet lacks is a clock. Even the old indestructible Nokia handsets defaulted to showing what hour it was and therein trained us to glance at our phones several times a day.

c, as this month's group test demonstrates. We've rounded up five of the best alarm clock apps for Android, and as usual they're all available free of charge in the Google Play store. We tested each on Android Jelly Bean (4.3).

Bitspin Timely

As clock apps go, Timely has two things in its favour. Firstly, it's made by a Swiss firm, and the Swiss are supposed to know a thing or two about horology. Secondly, the company was recently acquired by Google, so you can probably expect parts of it to appear in upcoming Android releases.

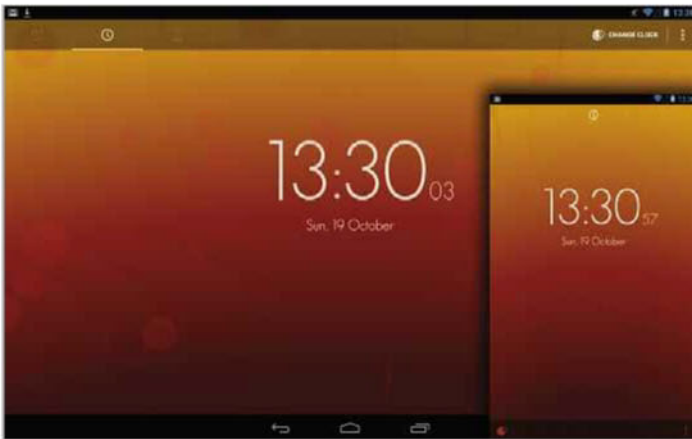
Until then, however, the app is still available via Google Play, and what an app it is: some serious attention has been paid to look and feel in a way that's sadly missing from the majority of Android apps. Any digits shown morph into one another, for example, something that it's claimed makes for a more restful appearance (and don't forget the app is designed for use at night). The background image is gently animated, and a selection of different colours and alternative animations

are available. Tapping the screen anywhere creates a ripple effect, like throwing a pebble into a pond. You can also choose from three clock faces: the default semi-digital display showing numerals in what looks like a Helvetica font and two analogue-style faces involving clock hands.

The headline features are much as you might expect for this type of app. Swiping left or right on the interface or clicking the icons at the top lets you switch between setting alarms, simply viewing the clock (the default mode) and the timer/stopwatch feature.

What you will find innovative, to the point where it becomes a little annoying, is how you set and configure the various features. For example, alarms are set by dragging up and down within a vertical 24-hour timeline. The time shown will increase/decrease by 30 minutes as you drag, but once you release you can set the exact time in five-minute intervals. Still, this means that setting a specific alarm for 8.32 isn't possible; you must set either 8.30 or 8.35. The alarm can be set for any selection of days of the week, although a variety of clever features can be configured beyond a simple alarm tone. The Smart Rise feature can slowly fade in music 30 minutes before the alarm is due to sound, for example, to help rouse you to wakefulness. The challenge feature lets you set maths puzzles to turn the alarm off (example: '91+29=?') or the requirement to trace with your finger a random pattern shown on screen. A third challenge requires you to drag shapes into holes, or you can also simply shake the device to deactivate the alarm. It's not clear

ALARM CLOCK APPS FOR ANDROID



▲ *Timely offers interesting animated effects and non-typical yet intuitive touch interface features*



▲ *Digital Alarm Clock takes bedside clocks as its inspiration*

how many alarms can be set, but we set five without an issue, and a welcome additional feature is that these are automatically synced with any other Android device signed into the same Google account.

The timer and stopwatch are as peculiar as the alarm, with the timer involving dragging a finger around the edge of the clock face to set it. A widget is supplied but doesn't do much other than show the time, date and when the next alarm is due.

While the features on offer in Timely aren't ground-breaking, it does the job it's supposed to and does so with style. So many apps attempt to copy Apple iOS's style or simply look like PC apps, but Timely tries a new way of doing things – and gets away with it too.

Digital Alarm Clock

As its name suggests, this app is designed around the concept of a bedside digital alarm clock, with the intention you leave your clock or tablet running all night as it charges. As such, the app displays very large faux LED digits along with the date, day, and the amount of battery charge left in your device. This display moves up and down every minute or so in a bid to avoid screen burn, even though this isn't an issue with modern TFT displays. This can be disabled within the Settings panel, and most aspects of the app can also be configured here, such as the colour of the LED segments and even the font – five choices are available and each is a variation of the standard faux LED style. The Settings panel is also where you can switch the date from US format (10-19-2014) to UK format (19-10-2014), although we're surprised the app didn't simply auto-detect region settings and do this itself.

Tapping on the time back in the main app display causes the time to be spoken in a pleasant British female voice. There doesn't appear to be any way to switch voices, and the time is read as a series of numbers: 15:00 is read as 'fifteen zero zero', for example. 24-hour time is automatically set for the time display and speech synthesiser, and again we couldn't find any way to deactivate this.

Alarms can be set, but it's rather clunky to do so, involving working through a series of settings options. However, there are some unique and useful features, such as the ability to limit 'snoozes' to a certain number. We particularly liked the ability to set an alarm for a particular date. Again, however, these useful features were tempered by annoyances: a good range of alarm sounds are available (including the ability to use your own music collection), but there was no way to preview them other than waiting for an alarm to sound.

A Nap feature lets you set 15, 30, 45 or 60 minutes for a quick snooze, after which the alarm will sound. During this period the display dims, and dimming can also be done by tapping an on-screen icon. Tapping and holding this icon provides fine-grained control over the brightness.

There's also an icon on screen for a stopwatch/timer, but this functionality is borrowed from another app by the same developer, which is a free download away via Google Play. Still, we wonder why this wasn't simply included here. Why make the user jump through hoops?

Digital Alarm Clock is entirely free, but adverts appear on all of the settings screens, whether that's to configure the app or set an alarm. The developer asks users to consider the ad-supported app a free and unlimited trial, after which upgrading via a fee of 99p to deactivate ads

“ **Android's built-in clock app is passable but there's a lot of scope for innovation** ”

should be paid. We're not sure about this approach, but at least adverts don't blight the main clock screen.

A small widget is available which displays the time and date, and provides a quick way to jump into the app to set an alarm.

Sleep Time

Even though most of us are very practised, we're all bad at sleeping. That's the premise behind this app, which claims alarm clocks are often rude interrupters of our sleeping patterns – waking us when we're in the middle of a dream, for example. Sleep Time aims to fix this situation by getting into bed with you – literally. Once you set your alarm time each night, you lay your phone face down on the bed (the app doesn't work with tablets) and it senses movements you make via mattress vibrations using the device's motion sensors. It is then able to calculate what mode of sleep you're in, and will only wake you up at the opportune moment so you open your eyes feeling refreshed.

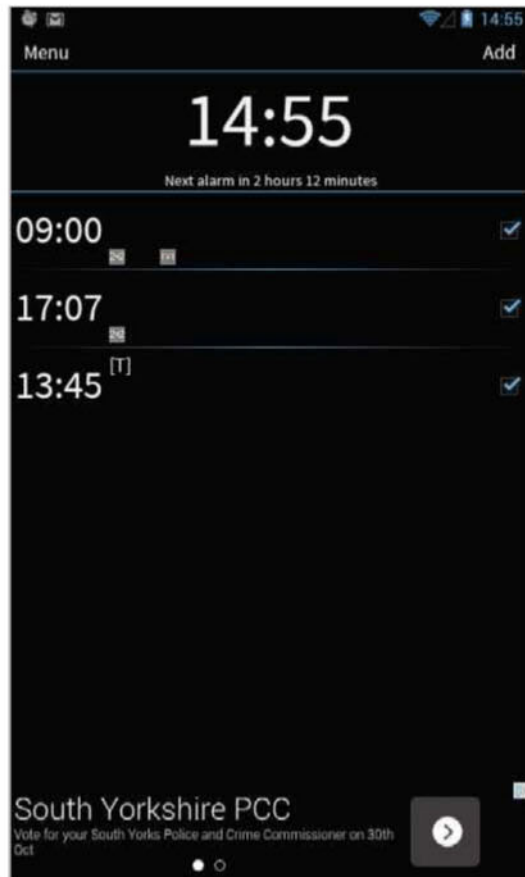
The drawback of this approach is that the app's a little fuzzy about when you'll get woken up. Set an alarm for 7am, for example, and it could potentially wake you at any time between 6.30-7.00am (although always within half an hour prior to the time you set).

As the days go by, the app collects data using its unusual sensory techniques to plot charts showing when you fall asleep and wake, and what phase of sleep you're in at any given moment. This can be accessed by tapping the Sleep Lab button at the top of the app interface.

The main interface is dedicated to a simple but attractive clock face, complete with a jaunty, yellow second hand. The alarm can be



▲ *Sleep Time uses your phone's motion sensors to detect movements when you're asleep in order to wake you at the most opportune time*



▲ *To ensure you don't fall back to sleep, I Can't Wake Up makes you perform puzzles or challenges in order to silence the alarm*

set by dragging the red handle around the clock face. Unfortunately, this approach means only one alarm can be set and also limits you to 12-hour chunks; you can't set an alarm for 7am the next morning after waking up because this will mean the alarm will sound at 7pm that evening.

When you climb into bed, it's necessary to tap the Start button and, as mentioned, place the phone on the mattress. The phone's screen will then darken and show how long until the alarm is likely to sound. Several alarm sounds are available via the Settings panel, where you can also configure the alarm volume and whether it's accompanied by vibrations. You can also deactivate snooze mode and set the snooze period.

Sleep Time is a crazy app, but perhaps even crazier are the legion of four- and five-star reviewers on Google Play who claim it works really well. This is despite the fact that sleeping with a partner or even a pet on the same mattress will surely confuse the app. All we can suggest is that you give it a try and see if it works for you.

I Can't Wake Up!

Do you have trouble getting out of bed? Do alarm clocks simply not work for you? This app might be the answer, although it verges upon cruelty. In addition to setting an alarm, it lets you set one of several tasks that must be completed before the alarm will stop sounding. These tasks include answering mathematical equations, completing a card matching game, completing a sliding tiles game, a Simon-like flashing square memory game, a typing task (copy typing a random sequence of letters), and a game wherein you match countries with their capital cities. You can also opt to shake the phone to disable the alarm and, perhaps most fiendish of all, set the app to require a

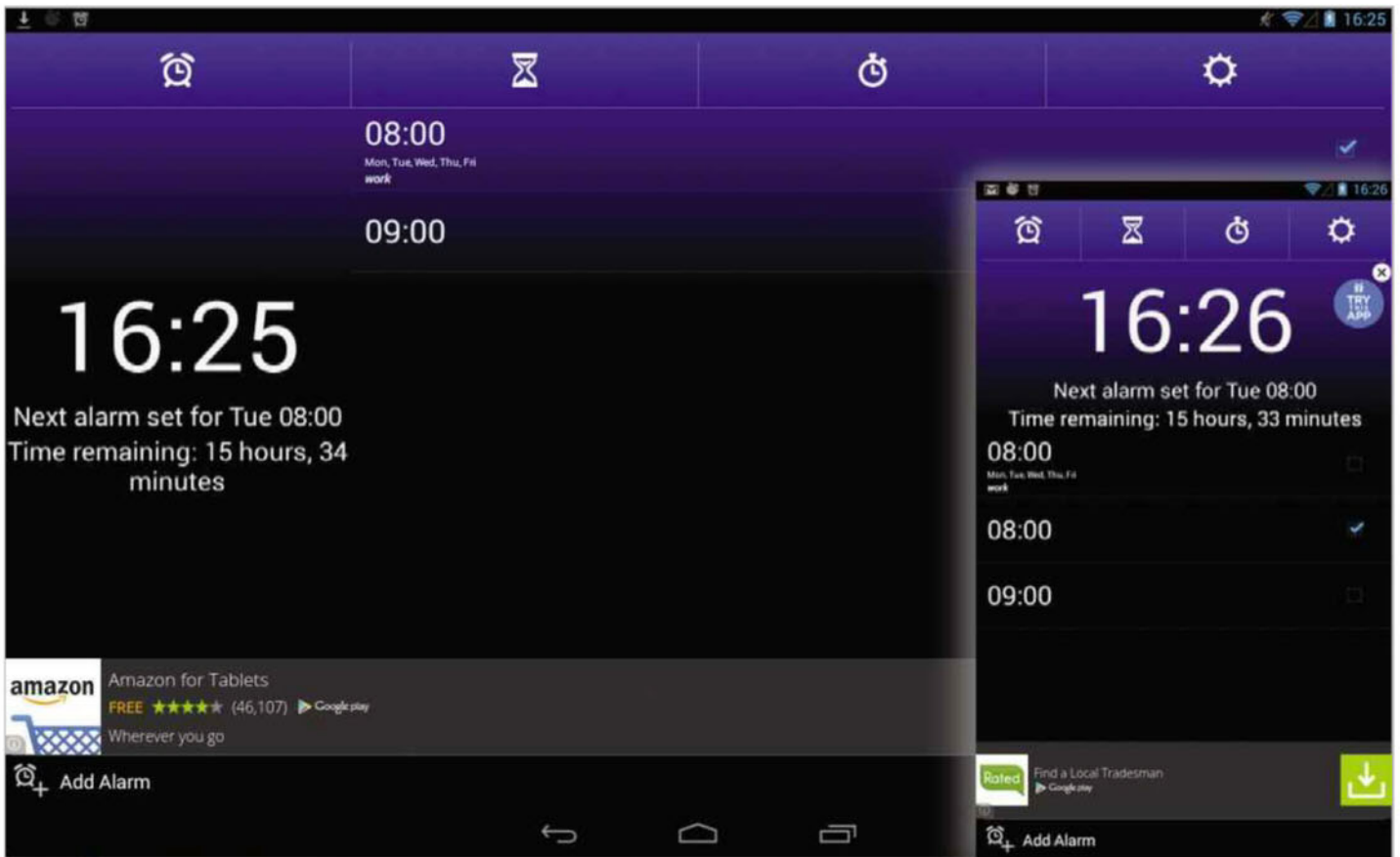
scanned in barcode that you've previously printed out and secreted elsewhere in the house. Remember that the alarm won't stop sounding until these tasks have been completed, although it will quieten when you start the task in order to give your mind space to think. It will soon fade back up again, though!

The tasks can be as easy or tough as you want them to be. Indeed, on the hardest settings, you'll probably need a calculator for the maths

“ Do you have trouble getting out of bed? Do alarm clocks simply not work for you? ”

problems, but this is the whole point – by the time you've rummaged around for one or switched out to the calculator app on your phone, you'll be awake. Even if you decide to force quit the app, you'll still have done enough activity to destroy your drowsiness!

In terms of look and feel, there isn't much to write home about: the app shows nothing more than a 24-hour clock at the top of the screen (portrait orientation is the only option), along with a button to let you set alarms. You can set multiple alarms, which are then listed below. A tick alongside each shows whether they're active or not, and once an alarm is set a countdown is shown beneath the time above. By tapping the menu button you can also set countdown timers for anything from one minute up to 23 hours and 59 minutes.



▲ Famous for its anti-virus software, AVG has moved into the area of apps, but Alarm Clock Xtreme Free is ultimately disappointing

If you don't fancy the rather dull display listing alarms while you sleep, you can switch to simply viewing the time by tapping it within the program window. This isn't a huge improvement aesthetically and there didn't appear to be any way to adjust the screen brightness.

The Settings panel is loaded with customisation options, including the ability to switch to 12-hour time and also to set a smoother alarm tone when headphones are attached to your phone – useful if you fall asleep wearing them!

There's much to like with this app, and it's a classic example of a solid app full of useful features. Unfortunately the visuals just aren't up to much, and in the world of apps, that matters. This isn't 1985, and we're not using IBM PCs. Additionally, the app is ad supported, and £2.99 is required to remove them. Ads don't appear when you switch to just the basic time display, however.

The app works on both phone and tablet, although it merely assumes the tablet is a large phone, which works fine in this instance, even if the text is almost too small to read.

Alarm Clock Xtreme Free

This app has two potential commendations: first, it's created by the same people behind the popular AVG anti-virus software. Secondly, it's claimed that over 25 million people already use the app for their alarm clock needs.

All of this comes as a surprise, however, because in every way we could measure, this is a very pedestrian app. The feature set is comprehensive, but there's nothing you won't find anywhere else, and there's also a curious lack of innovation. The user interface looks dull and is very workaday.

Central to the app is the ability to set alarms, of course, and a wide variety of configuration options are available. For example, you can set an alarm tone to wake up to or music (including random

songs) or even launch an entirely separate app. The alarm volume can be set to increase as a crescendo, to avoid jarring you awake, and you can set the app so the device needs to be shaken to snooze or dismiss the alarm. You can also set the app to display a maths problem that has to be solved before the alarm is either snoozed or dismissed. Additionally, when dismissing the alarm you can make it so that a Captcha must be completed, such as those found on websites when registering.

In addition to an alarm you can also set a countdown sleep timer, which will sound an alarm after a certain amount of time has passed – from one minute to 23 hours and 59 minutes. A further icon allows access to a stopwatch feature, but this requires another AVG app to be installed to provide the functionality. We're guessing this policy of forcing users to download a second app rather than integrate the functionality directly is done to boost download figures. We're not entirely happy about that.

Perhaps the strangest thing missing from the app is the ability to switch to 'set' mode, wherein the time and (optionally) date fill the screen to provide a time display during the night until the alarm sounds. Nor is a widget supplied. Put simply, if you want to leave your device charging overnight and displaying the time while it does so, then you'll need to use a different app. Bizarre. This is an app that you're supposed to set and forget, although it does add an entry to the pull-down notifications list.

The Settings panel offers some customisation options, including the ability to change the colour scheme, but ultimately this is an app that you must take as you find it.

Officially, AVG refers to this free version of the app as a demo, and an always-visible banner ad is shown until you stump up £1.99 for the full version. You could do that, but there are quite simply better alarm clock apps available. [mm](#)

Remembering...

Gravis Analogue Switch Transparent Joystick

Of all the sticks in all the world, none brought as much joy as this one did

In the early 90s, we enjoyed a boom in the PC gaming market. There were excellent titles available such as *X-wing*, *Wolfenstein*, *Doom*, *ROTT* and a plethora of flight simulations and combat aircraft variations.

To better enjoy these games, though, we needed a controller that could handle being wrenched from one direction to the next. This is where Advanced Gravis Computer Technology led the way, with its selection of controllers for PC and other platforms.

Its History

Advanced Gravis Computer Technology, usually referred to simply as Gravis, was a Canadian company that first appeared in 1982.

Its range of controllers were second to none and provided the gamers of the time with as near to arcade-like feel and looks as possible. The micro-switches used in its later models were state of the art, and the Gravis Gamepad for the PC was one of the most successful gaming controllers ever sold.

It also branched out somewhat and offered a soundcard competitor to the all-powerful Soundblaster 16 in the guise of the Gravis Ultrasound. However, the Ultrasound never really gained the ground it so rightly deserved, despite being, pound for pound, a better soundcard.

The joystick makers of the time were producing pretty standard and dull looking affairs. Gravis, on the other hand, was taking careful note and rather than going down the same road as the competition, it opted for something a little different, and in 1990, it came up with a solution.

The Gravis analogue switch joystick was a joy to behold. With an eight-position handle tension adjuster, recessed trim and centring controls, a full-sized foam paddle handle, three micro-switch buttons, suckered feet and button control selectors, it ruled the roost as far as the PC gamer was concerned. It was also capable of being used on the Sega Master System, via a different connector.

The Good

This was an incredibly intricate joystick. You could use a small Phillips screwdriver and adjust the tension and calibrate the joystick to your own preference. It was large enough to hold comfortably and, as a bonus, because it was clear, you could see all the inner workings – which was very cool.

Also, depending on where you got the joystick, you also got a copy of *Commander Keen: Marooned on Mars* or the slightly better *Commander Keen 4: Secret of the Oracle*, which kept us entertained for many an evening.

The Bad

Sadly, although the Gravis analogue switch joystick was as awesome a joystick as you'd find anywhere, it did have a couple of problems.

The first was the adjustments you could set. Although very fine, they often suddenly changed overnight, which meant the next time you played the game you'd find the character, spaceship or whatever drifting across the screen without you touching the stick.

Also, the foam padding on the handle had the annoying habit of retaining the moisture of the previous person's sweaty mitts, so when you used it next it was like holding a wet sponge.

Conclusion

Indeed, they don't make them like that anymore. In fact, they really don't. Gravis was bought out by Kensington Computer Products Group in 1997 and was never heard from again, which is sad indeed.

Still, while it lasted, it created some marvellous gaming hardware. So thanks, Gravis. [mm](#)



▲ The foam handle got a little, er, damp at times



▲ The thing took some abuse, we'll admit that

Did You Know....

- The Gravis gamepad was a rip-off of the SNES controller.
- There was a special edition version of the analogue switch stick, with a rapid fire mode.
- Some Gravis sticks bundled the *Prince of Persia* in the box.
- The transparent version was initially designed for the Master System but was later made for the PC.
- Gravis's postal address was 101 3750 North Fraser Way Canada V5J 5E88 Burnaby.
- It later changed its trading name to International Gravis Computer Technology Inc..
- *Commander Keen* was a cool game

The Things That Frustrate Us About... Emails

Yes, we use them every day, but sometimes, don't they just get on your nerves?

Do you remember the days before email was commonplace? People had to rely on letters, phone calls or, God forbid, faxes to communicate with one another. It feels like an impossibility now. How did anyone ever get anything done? So much of the way we work and keep in touch socially relies on emails, whether it's a quick group email to see who wants to head to the pub after lunch or a long, agonised over email to a long lost friend or relative. Email's quick, convenient, free and arrives straight to your pocket or desktop. Let's have a good moan about it, shall we?

Grrrrrrrr! Too Many Carbon Copies

The 'CC' field in emails is a menace. It makes it all too easy for colleagues to copy in everyone in the entire department, even when the conversation isn't relevant to them. It's also way too easy to be passive-aggressive with the CC field, copying in someone's boss to show them up. (Don't do that.)

The real annoyance with the CC field, though, usually isn't the first email you get in a chain. That one, you can delete or archive without thinking about it. The problem is you'll usually end up caught in a never-ending chain of replies. Recently, a PR sent out a mass email to technology journalists and used the CC field, meaning everyone had everyone else's email address – a bit of a privacy fail – and also that everyone spent all day replying to mock the initial mistake. It wasn't very funny.

Fix it: You can't fix other people's misuse of the email system, but you can at least practise good email etiquette yourself. Think before you copy people in, think before you reply and, if you can, use the BCC field. That way, you don't end up with an email pile-on.

Nrgh! Never-ending Inbox

A related but not exactly the same annoyance is the way email seems to be never ending. Whenever you check your inbox, there'll be something there, nagging away at you to deal

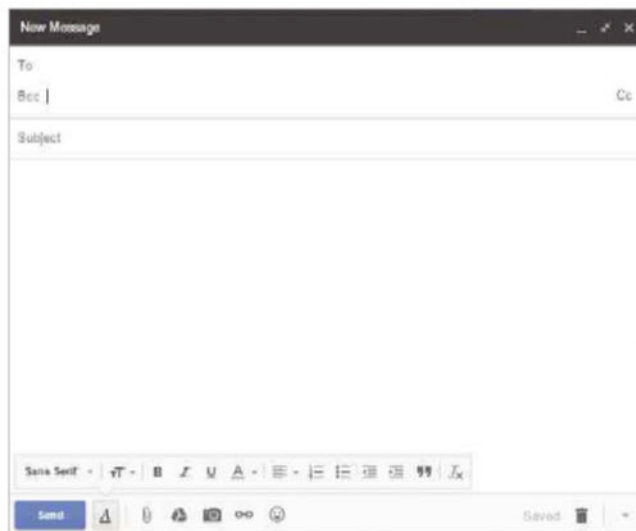
with it. Sometimes, it's a wonder any of us get any actual work done, what with all those emails to reply to.

Fix it: Productivity experts recommend only checking your email a couple of times a day – and not at the beginning of the day either. You can still get everything dealt with in a timely manner, but you're not running around trying to respond to things all the time, and with your email program shut down you can concentrate on your work without notifications going off every couple of minutes. It sounds good in principle, but it does require some willpower...

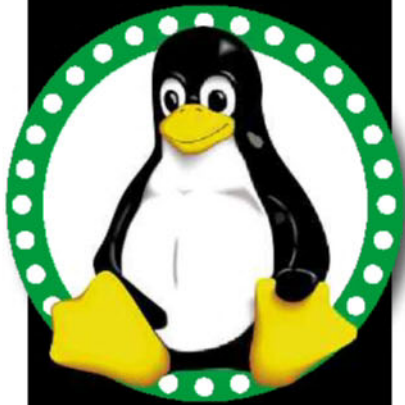
Argh! Too Much Spam

Email that's actually intended for you is bad enough, but sadly, we're still dealing with unwanted, unsolicited email, usually from people trying to trick you into handing over your money. Will spam ever truly go away? It seems unlikely.

Fix it: Make sure your spam filter's up to scratch, and hopefully you won't see any spam emails until you come to empty your spam folder. Gmail is pretty good at filtering dodgy emails, if you're wondering which webmail provider to go with. [mm](#)



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<input type="checkbox"/>	Olivia Gibbs	Revamp your website today - A website's design will make the visitor decide whether to stay and take action or leave -
<input type="checkbox"/>	Nancy	RE:Floor displays-shelves - Dear friends, Good day! I am nancy from Shenzhen Heinyuan Paper Display Co., Ltd. We are
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<input type="checkbox"/>	Jordan Deeg	Manufacturing service - Dear Purchasing Manager/Engineering Manger We provide precise CNC machining service according to y
<input type="checkbox"/>	Press GameArt Studio	Not for publishing! Review Keys for Quantum Rush: Champions / Options for competitions - Not for publishing! Review Key
<input type="checkbox"/>	Snow	RE: SMD5050 4in1 chip RGBW LED Strips - Hello dear, How are you? Hope all is well with you! Very glad to share good news w
<input type="checkbox"/>	Rebecca	Printing supplier in China - Dear Sir/Madam, Good day! Hopefully I am not disturbing. Our company supplies excellent printing
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David Hayward has been using Linux since Red Hat 2.0 in schools, businesses and at home, which either makes him very knowledgeable or a glutton for extreme punishment

Linux

Tails, You Win

Tails 1.2 is out

Tails, The Amnesic Incognito Live System, version 1.2 is now available to download and use to help you remain as anonymous as possible when online.

Aside from various, up-to-date security fixes and support for some of the more modern vulnerabilities found in Linux, Tails 1.2 has some new features worth looking into.

The Tor Browser is now the main and only viable secure browser available, replacing the formerly used Iceweasel based browser from previous versions of the distro. I2P has been upgraded to version 0.9.15 and is isolated from the main Tor browser by including a dedicated I2P browser. Truecrypt has also been removed (or at least all traces of it will be by 1.2.1), and syslinux has been upgraded to help solve any pesky UEFI problems for the latest motherboards.

It appears to be significantly faster than previous versions, with the desktop appearing in a matter of seconds as opposed to the long wait we've had to endure in the past with Tails.

Connecting to the Tor network also appears to be vastly improved. If this has got to do with less people using it since the issue with security a little while back or not is unknown. Maybe the developer has streamlined the process and tweaked things?

However, aside from some bug fixing, there's little else to report, which makes us wonder if the likes of Tails or other equally niche Linux distros have run their course and are now just being updated for the sake of it.

While the whole NSA is spying on us thing is still out there, the popular media have instead waved goodbye to that news item and moved onto the next big thing, which in Linux terms is the imminent release of the next Ubuntu and the ever-following distros that are spawned after the main release.

But Tails Is Good

True enough, Tails will keep you hidden and forget were you've been on the internet. So in a sense it's doing the job it was designed to do. In that sense, it's a good thing, but is it necessary any more?

With more VPN providers and developers including Linux in their releases (Linux being a Debian-based or another popular offcut), is there any need for something like Tails in the future? Rather than the user having a USB pen based, secure Linux to surf from, their usual Linux desktop could provide just as much anonymity with some careful configuration of the OpenVPN elements.

It also makes you wonder if the days of other such super-secure distros, such as LPS, Surprise!, Backtrack and so on are indeed numbered.

We're not so sure. We think there may be an influx of new secure distros, especially since the old adage of security through obscurity no longer seems to apply with Linux systems these days and since we're hearing of many new threats being discovered that can open up holes in your distro for those who can to peek into.

Either way, Tails 1.2 appears to be a small step in the right direction. Whether you use it or not to further mask your internet obscurity, it's certainly an interesting distro to get into a project with.



< Ultra secure, or ultra-unnecessary these days?

A Tour Of The 12 Hundred

Sven Harvey takes a closer look at the last of the Commodore home computers.

In previous Amiga Marts, we have come to the conclusion that the best classic Amiga to pick up to start with is probably the Commodore Amiga 1200 (or A1200.) If you're in the market for one of these machines, it's worth giving them a good look over, so to aid you here are some useful photos.

The Commodore Amiga 1200 is outwardly identical to its AmigaTechnologies sibling but has a few key internal differences, the floppy drive being an issue with compatibility with certain games.

The A1200 can be very well connected. The RGB video out is signal compatible with the SCART standard, so RGB to SCART leads are available and are still being made now for the machine (they also connect to the audio outs to send the signal to the TV.) Look out for any pin damage back here or corrosion. The blanking plate to the left allows the addition of an array of add-ons, though initial main uses were for SCSI-II interfaces and graphics cards connecting to trapdoor installed accelerators.

Book Kickstarter

You may recall me mentioning the Kickstarter for the Amiga Compendium book kicking off. Well, the project was funded within 12 HOURS of going live and at the time of writing is so far past the £25,000 initial funding requirement that it's homing in on the £75,000 final (at the time) stretch goal. This stretch goal bonus is to get a CD with the brilliant Tim 'CoLD StoRAGE' Wright's remakes of the music from the original *Shadow Of The Beast* as originally composed and produced by David Whittaker.

This project is something I'm really looking forward to seeing the fruits of, and the good news is you still have time to jump onto the Kickstarter at goo.gl/zaigNg!

The credit card slot port (PCMCIA II) allows the connection of various peripherals including SCSI adaptors, dedicated CD-ROM drives, and now even Ethernet network adaptors and wireless network cards that are supported thanks to third-party driver developers. Have a good look inside to ensure there's no damage, as it's almost inevitable that you'll be using this port!

The connector residing in the trapdoor allows signals to go to virtually the whole A1200 motherboard. The main expansion that gets installed in here are accelerator cards,

featuring a faster processor than the on-board 68EC020 14MHz processor in the 'vanilla' machine, and 'Fast RAM' dedicated to that new processor. Other devices could be added to the accelerator such as battery backed up clocks, SCSI interfaces and even graphics cards. CPU options in these expansions went from faster 68020 processors right up to 'G2' generation PowerPC 603 chips. It is absolutely vital that the edge connector in the trapdoor is intact and usable for expansion of the A1200.

We'll have a look 'under the bonnet' soon!



Sven Harvey has been our Amiga specialist for over 14 years, drawing on his 23 years of retailing computer and video games and even longer writing about them.

Amiga



▲ From left to right – Expansion blanking plate, Mouse/joystick port 1 and 2, external disk drive connector, serial port, parallel port, audio out R&L, RGB video out, composite video out, RF out and power in.

◀ An 'honest' example of a Commodore Amiga 1200 (bottom) and its Amiga Technologies (EsCom) re-release



◀ The trapdoor slot under the machine. Note the connector on the Phase 5 card in the upper machine, which allows the connection of a daughter card that is secured in the exposed bay when the rear panel blanking plate is removed

► The PCMCIA MkII or credit card slot can be incredibly useful





Ian is a professional IT analyst, a semi-professional writer and a pretty amateur electronic musician. He likes gadgetry and loves making gadgets do things they were never designed to do

Mobile

And The Winner Is....

Ian McGurran sifts through the raft of new products this month

Product launches are like buses: you wait for one, and then suddenly they are never on time and the prices have shot up. Well, that doesn't quite apply here, but certainly the latest launches from Google and Apple have been a little muted.

First up was the people from Mountain View's new line of Nexus products. While hotly anticipated, especially off of the back of the success of 2013's Nexus 5 phone and Nexus 7 tablet, the launch was so low key it didn't even warrant a show much beyond a blog post and a new giant lollipop for the Google lawn. That's not to say the devices launched were mere afterthoughts, as both are pretty impressive in their own right.

The Nexus 6 is the phone they are all going batty over, a (unsurprisingly) 6" phablet based on the 2014 version of Motorola's excellent Moto X. Featuring a better-than-HD 1440 x 2560 pixel screen, it manages to also pack in a very healthy 3GB RAM, 32 or 64GB storage and is powered by four 2.7GHz cores of a Snapdragon 805 CPU. In other words, the Nexus 6 is Google's beast to rival the G3, the Note 4 and the iPhone 6 Plus.

Next, the Nexus 9 is an interesting bit of kit. Its release sees an amalgamation of the smaller 7 and larger, aging 10

series tablets into one suspiciously familiar size and ratio. The Nexus 9 is also HTC's first tablet since the rather lacklustre Flyer way back when. Thankfully, the Nexus 9 is an altogether classier affair, with power to spare. Based on the near-desktop power Nvidia K1 CPU, the Nexus 9 is a high-end Android tablet that finally adopts the much more web friendly 4:3 screen ratio. Sure it leaves bars on widescreen video like an old CRT TV, but it's argued that tablet users spend more time staring at web pages than films. The screen itself is a rather tasty 1536 x 2048 pixel affair that's surrounded with a pair of the excellent HTC Boomsound speakers, and while it may only have a dual-core 2.3GHz CPU, that Kepler GPU will eat graphics for breakfast, lunch, dinner and post-pub kebab.

Apple's launch was not as low-key as Google but certainly low-key by its own standards, and once we saw the good, it was easy to understand why (discounting the iMac's 5K Retina screen, of course).

Starting with the iPad Mini 3 is easiest as it won't take long. Unlike 2013's parity in the iPad line, the Mini 3 doesn't enjoy any major hardware boost in 2014. In fact, all that is brought to the party this year is Touch ID and the classiest of iColours, gold. Unless you're massively beholden to

Touch ID (no offence to it; it is rather cool) or the new colour, the lack of new CPU, memory and especially a change to the rather washed out screen are all omissions that mean the Mini 3 isn't one to drop everything for.

The iPad Air 2, on the other hand, is at least more of a new machine, though it's not that much of one, as we will see. Like the Mini 3, gold makes its way into the Air's colour palette, as does Touch ID, but unlike the Mini, the chips get boosted too. The A8 of the iPhone 6 is given steroids, boosting the two billion transistors by half again and the CPU power by 40%. GPU performance is claimed to be some 2.5 times that of the Air 1, and RAM is also rumoured to now be 2GB, hopefully curing those interminable page reloads in Safari. Finally the screen has adopted some of the technology from the iPhone 6 range and has bonded the LCD to the glass, as well as adding an anti-reflection coating for outdoor viewing. All this and Apple still makes it thinner.

So who's the winner here? Well, compared to the show that was the iPhone 6 launch, these devices all launched relatively quietly. Apple has pretty much just released slight bumps to its line, Macbook-style, and there's rightly been little fanfare. Owners of their predecessors may well not see these as an essential upgrade, but then again, people still buy the S-model iPhones every other year, so who knows.

For Google, this quiet launch is somewhat more perplexing, as both the Nexus 6 and 9 are the most premium devices the company has yet released (including in terms of cost). Both are impressive and make good upgrades. Plus, in the 9, there's an iPad-Mini competitor right there. Google – winner is you.



Cronosoft Round-up

Another retro round up from our favourite retro columnist

The independent 8-bit publisher Chronosoft has been busy again. It has finally got two games ready for release on cassette tape, just in time for when many people are thinking about what to include in their letter to Santa Claus.

As mentioned in previous weeks, Ian Munro's excellent puzzle game *Shape Shifter* is available at the pocket money price of £3.99 including UK postage and packing, with Jonathan Cauldwell's superb single-screened marine themed blaster *Coracle* ready to purchase at the same price.

Coracle is a game with two main components; firstly, the patrolling ship, which is constantly moving laterally, must dispatch the clouds above in order to raise the water levels. There's a turret on it which may be pointed from left to right over various points across a 180° angle.

Once the water level is sufficient, there are floating bubbles that pass by, which contain various fish and crab specimens. These must be collected, and once you have 16 varieties, it's on to the next level.

The game becomes more difficult with falling desert islands and other sky-borne items, which will reduce your water level and potentially deplete your collection of sea-based creatures. There's also a time limit to consider.

All in all, it's a rather interesting take on a shoot-'em-up and well worth the budget price. For further information about these releases, see either cronosoft.co.uk or facebook.com/cronosoftgames.

Impossible?

Uppercase Software, along with a trio of prominent

Commodore 64 developers, has released a title called *The Impossible Game* for the old bread bin micro computer.

The game is a simplistic left-to-right scrolling affair in which you control a rectangular object that must avoid other items that head towards it.

There's only one way to do so, and that is to 'jump' over each fatal piece. It's as much of a case of timing as anything else, as the blocks on the landscape leave little room for manoeuvre, so sharp reactions are often required. Despite its title, though, this game is not impossible, and nor is it highly improbable, although I don't know whether it's possible to finish.

Like *ZXAgon*, this has a rather simple game mechanic but is rather fun nonetheless. The accompanying chip music is slow and thoughtful on the title screen, and in-game audio sounds a little



▲ Two new releases on cassette from Cronosoft

influenced by the great shoot-'em-up *Mega Apocalypse* [for the C64/128] developed by Simon Nichol in 1987.

This unlikely game may be downloaded from the Commodore Scene Database at csdb.dk.release/?id=129903.

Pac-ed In

Brian Lewis has released a high-resolution version of Pac-Man for the expanded Sinclair ZX81, which is a fast and somewhat difficult version of Namco's arcade classic.

The graphics are software driven, rather than using some of the hardware hacks or modifications that are available for the personal computer. The software method of simulating pixels doesn't achieve the same clean results (as the hardware modifications would) and rather approximates the visual display, which gives Brian's game a rather distinctive look and feel.

Eat pills, avoid or chomp through ghosts, and try to consume the fruits that periodically appear – it's all there, and certainly would have been hailed as a classic had it been released in 1984 even as the quirky monochrome personal computer was on its last commercial legs, rather than in 2014. This is a commendable effort that fans of the ZX81 and Pac-Man will certainly enjoy. For details, see the Speccy Live news website at tinyurl.com/retromm1335.



Shaun has a passionate interest in 8-bit computing and gaming and has been finding novel ways to use retro technology since 1994

Retro



Ryan Lambie has loved videogames since he first stared up in awe at a *Galaxian* arcade cabinet in his local chip shop. 28 years on, Ryan writes about gaming for Micro Mart. He's still addicted to chips and still useless at *Galaxian*

Gaming

Bio Shock

Don't panic: indie dev Flying Mollusk's forthcoming horror game looks ingenious. The more your heart races, the more scary and difficult Nevermind becomes

This week, Ryan checks out an innovative bio-feedback horror indie game and takes a look at a phenomenally detailed city created in Minecraft....

Plug & Play

With the dank chill of autumn all around us, even the latest games releases start to go all dark and scary. Some of you may have already shuddered through Creative Assembly's terrifying *Alien Isolation*, which has had us hiding in lockers and under desks while HR Giger's otherworldly monster stalks around outside. Or maybe you've been playing *The Evil Within*, Resident Evil creator Shinji Mikami's gleefully grotesque survival horror shooter.

One game that's really caught our (bloodshot) eye recently, though, is a forthcoming indie title called *Nevermind*. Although its name might recall a famous grunge album of the 90s, developer Flying Mollusk's could be little short of ground-breaking. Described as a 'bio-feedback horror game', the idea behind *Nevermind* is to travel through its world and try to remain as calm as possible. The more you panic, the more the world you're exploring will distort and try to intimidate you, and the harder your progress will become.

The 'bio-feedback' bit of the game is achieved by monitoring your heart rate and tracking your movements with a camera. Flying Mollusk has already made a deal with Intel to use its RealSense camera, or you'll also

be able to use a Garmin Heart Rate Monitor (the kind of thing you might use when you go jogging) and a range of other devices with the same function.

In the game itself, you play a doctor who uses *Inception*-like technology to poke around in the minds of his patients, and the surreal world laid out before you is the product of their subconscious. There are puzzles to solve as you explore the landscape, but your main opponent is your own brain and how it responds to stressful situations.

Flying Mollusk even believes that *Nevermind* could have a useful application in real-world therapy and could be used to help people who suffer from stress or chronic anxiety. While that aspect of the game is still undergoing clinical trials, it has to be said that it's a potentially fascinating concept, and we're intrigued to see how long we can spend in its company before our heart rate starts soaring. The developer's currently running a Kickstarter campaign (kck.st/1CVDcUF) which, if successful, will result in support for Oculus Rift – which will probably make the game even scarier than it already looks.

Appropriately enough, *Nevermind* is due for release in

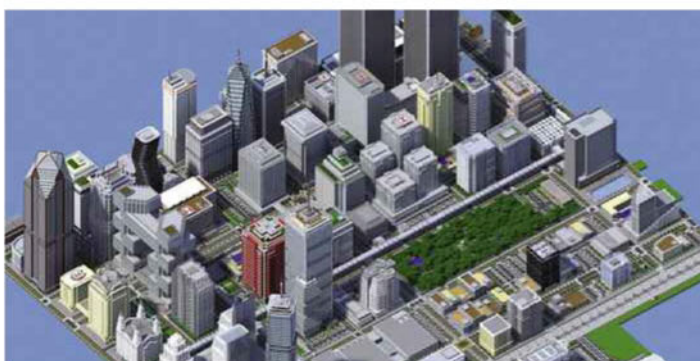
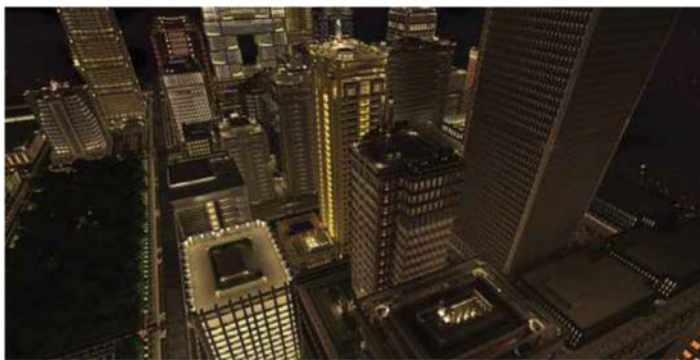
October 2015 – just in time for the dank chill of autumn.

Online

Anyone who's played *Minecraft* will tell you that the first few days can be hard. You're in an unfamiliar place where food and resources are hard to come by, and if you want to survive for more than one night, you'll have to build some sort of shelter – perhaps out of dirt or sand, or maybe by digging a little hovel into the side of a hill. Gradually, though, as you explore and forage and craft, you can make incredible things – and one of the joys of seeing Mojang's indie game grow over the past few years is the amount of creativity it's unlocked.

The term 'digital Lego' has often been applied to *Minecraft*, and that's certainly appropriate when you see the extraordinary array of scale models (including, famously, a gigantic Starship Enterprise) and even simple yet functional computers and hard drives. We've yet to see anything quite as gob-smacking as what a 19-year-old student named Duncan Parcells has built, however.

Parcells, a resident of Delaware and known by the YouTube name Colonial Puppet, has spent the past two years constructing



▲ Using 4.5 million blocks, American student Duncan Parcells has created Titan City in *Minecraft*. Its 96 buildings and detailed infrastructure have taken him two years to put together

an entire city within the environs of *Minecraft*. Modelled after New York City, the project began when Parcells tried to recreate a version of the World Trade Centre out of the game's chunky blocks. But gradually, the city grew; what was initially a pair of buildings went up to 96, and all told, he's used an estimated 4.5 million blocks to construct it all.

The sheer scale of what Parcells has achieved with his metropolis – which he's called Titan City – can only really be appreciated when you actually see it. His YouTube video (youtu.be/vPaVQ4BcgVI) provides a brief guided tour of its soaring skyscrapers created from cube after cube of stone and glass, its long straight roads, rail systems and parkland. Some of the buildings even have plush interiors.

Parcells began building his city when the Creative mode appeared on the Xbox version of *Minecraft* in October 2012, and he's been busily pushing blocks around ever since. You can even download Titan City by following the links on the YouTube page mentioned above

and take a stroll around the fruits of his labour for yourself. He hasn't finished yet, though: his future plans include a stadium and an airport. "I guess it's an outlet for architecture and energy," Parcells told the BBC.

There's been some worried discussions about the recent purchase of Mojang by Microsoft and what the £1.5bn deal will mean for the future of *Minecraft*. But in an interview with the BBC, Mojang's chief operating officer Vu Bui insisted that the phenomenally popular game – which notched up its 100 millionth user back in February this year – would remain unchanged by the purchase.

And while he won't be drawn on what the developer would be making next, he said that Mojang would be following *Minecraft*'s approach to creativity and sharing.

"People are at their most creative sometimes when you just let them do what they want," Bui said. "You have to give them guidelines, but for the most part if you let people be creative they will come up

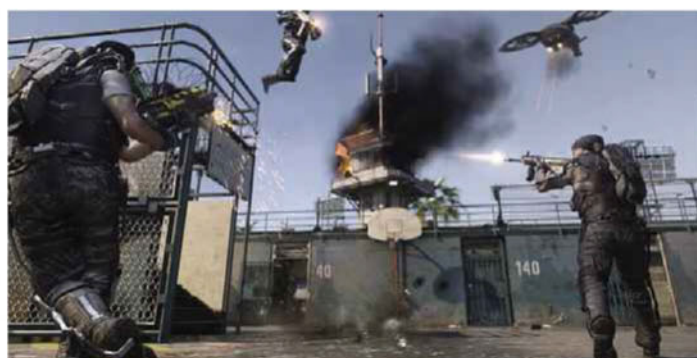
with cooler stuff than we ever could ourselves."

Incoming

We're now approaching one of the games industry's busiest times of the year and a season that has long been dominated by one name in particular: *Call Of Duty*. The 4th November is traditionally the day when Activision's shooting behemoth appears, and it's true again this year, with *Advanced Warfare* being the 11th instalment in the franchise. Created by Sledgehammer, it aims to shake up the series' perennially popular multiplayer mode by adding exo suits, which will give players superhuman powers. There have been some nips and tucks to the

score system too, with its newly updated Scorestreaks. These will offer rewards for reaching score levels which can be spent on modifications in the game's Pick 13 system.

It's recently been revealed that *Advanced Warfare* will contain zombies and that these undead ghouls will also be wearing exo suits. Only time will tell whether these changes and additions inject a sense of freshness into *Call Of Duty* while still retaining the franchise's flavour. But given just how eagerly the previous entries have been snapped up by fans, it seems all but certain that Activision has another colossal hit on the way with *Advanced Warfare*.



▲ It's that time of year again. Three years in the making, sledgehammer's *Call Of Duty: Advanced Warfare* is out on 4th November

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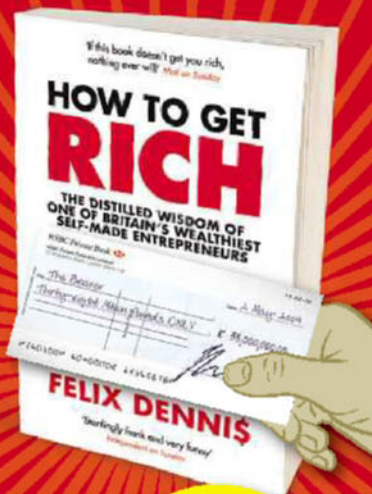
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Dell Inspiron 660 Intel i5 QUAD CORE with ACER 23 Inch LED monitor. AS NEW. Operating System: Windows 8.1. MPN: 620MT. Memory (RAM): 4 GB. Hard Drive: 1 TB. Processor Type: Intel Core i5. Primary Drive: Optical DVD+-RW. Processor Speed: 3.0 GHz. Features: Graphics Card GT620 1GB. Acer LED monitor 23" HD. £520
Tel: Hitesh Rao (01163) 198895

PRINTER CARTRIDGES. Suitable for Epson printers range T711 - T714. Work perfectly. 50 pence each, plus postage (brand new unused sealed). Over a dozen available.
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Panasonic KX-P7105 mono laser duplex printer. Some toner left. Up to Windows XP only - hence £25. Buyer collects from N2, East Finchley
Tel: (02083) 431527 Email: pnaikiel@gmail.com

Exchange wanted! My HP Pavilion 17" W8 laptop for laptop with Windows 7 or XP that MUST be able to play MST5. Poss. Cash adjustment.
Email: Alandick@gmail.com

INKJET CARTRIDGES suitable for Epson Printers T711 - T714 range, and T481 - T486 range. 79 pence each, plus postage. Work perfectly, good crisp printing quality.
Tel: (07526) 988594 Email: petedew@gmx.co.uk

50 copies of Micro Mart magazine. Mainly 2013 through 2014. Pick up as heavy. Devon. Price £20,
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Powered PCI Express x1 To x16 Riser Card Extension via USB 3.0 + Power Cable Adaptor. Allows you to add an extra Pci-Express X16 slot to your Pc converting an existing x1 slot to x16. Useful for adding an

Extra graphics card to create a Crossfire triple configuration or for Bitcoin data mining up to 7 cards can be installed using these adaptors. Quality model - Brand new still boxed. £10. Price includes p&p.
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Laptop Removeable drive tray. Allows you to add an extra hard drive to your laptop by taking out the

CD/DVD Drive. This device inserts into the Cd/Dvd Empty Slot and holds 1 Hard Drive. Excellent Engineers Gadget - Great for data recovery or just beefing up your laptop. Two types available - standard Sata To Sata or Sata To Ide (Pata) Slot type. Brand New Still In Box. £20.
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Amstrad PCW 9256. In perfect working order including on-top printer with a few 3" disks.
Offers.
Tel: John Adams (02088) 641202 Email: meeching@uwclub.net

2 HP Laserjet 3100 printer-fax-copier-scanners. In good working order. £25 each.
Tel: John Adams (02088) 641202 Email: meeching@uwclub.net

Mini-Tower. P4 / 3.06, 1.5 gigs, 80 GB, DVD, Floppy, Network, Sound, USB 2 etc. XP-pro fully updated, with Office suite, Anti-Virus & all usual Utilities, COA sticker & System Image. £55 (P&P £11)
Tel: Pat (07710) 348638 Email: pat4cars@aol.com

Esprimo Mini Tower. Pentium 2.8 Dual-Core, 2.0 gigs, 250 gig, DVD-RW, Gigabit network, sound, XP-pro fully updated, with Office suite, Anti-Virus & all usual Utilities, COA sticker & System Image. £65 (P&P £11)
Tel: Pat (07710) 348638 Email: pat4cars@aol.com

HP DC5700 MiniTower. Dual-Core E2160, 160 gig, 2.0 gigs, DVD-RW, card reader, sound, Gigabit network, XP-pro sticker, upgraded to Vista Business, activated, Word, Excel, usual utilities, Recovery image. £65 (P&P £11)
Tel: Pat (07710) 348638 Email: pat4cars@aol.com

Dell Mini-Tower. Intel P4 / 3.00 HT, 1.5 gigs, 80 Gig, DVD-RW, Network, Sound, XP-pro fully updated, with Office suite, Anti-Virus & all usual Utilities, XP-pro COA sticker & System Image. £55 (P&P £11)
Tel: Pat (07710) 348638 Email: pat4cars@aol.com

Lian Li PC-X2000 Computer Case. Supports mATX, ATX, eATX; hot swap SATA drives, six 3.5" & two 2.5" hot swap disc holders. Three 140mm intake plus two 80mm and one 140mm exhaust fans. £140.
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1.5tb SATA drive. Fully refurbished by government acknowledged company. All data taken off (some drives are still under Western Digital warranty) ONLY £40 including P & P
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2tb Western Digital SATA drive. Model WD2002F-YPS 64mb cache, fully refurbished by government acknowledged company. All data taken off (some drives are still under Western Digital warranty) ONLY £50 including P & P

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6 P314 PC bases for sale, £100. The lot all with XP must be collected.

Tel: (02380) 733312 Email: zen96403@zen.co.uk

Motherboard Bundle. 2.4Ghz AMD Athlon XP 32bit CPU 512MB Ram Sxpci 2IDE LAN sound good for gaming, office work, surfing the net, watching movies generally a good all round system spec can slightly be changed if required please email or call me for a price.

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4 gb (2 x 2gb) of OCZ Reaper PC2 6400 ddr2 memory. Fast gaming memory, used but in excellent condition, £49.95 inc postage.

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500GB SATA drive. 3.5" formatted ready for use. Software can be installed for an extra charge. Windows 7 extra £35 includes disk and certificate of authenticity. Only £23 including P&P.

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CISCO CONSOLE CABLES. I have a lot of Cisco console cables all new let me know how many you would like please email or call me for a price and more information.

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750GB SATA drive for sale. Perfect working order. Formatted ready to use. Only £25 plus £3 p&p. Genuine Windows XP with Certificate of Authenticity can be pre installed for an extra £10.

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Six p3/p4 PC with XP. £100 the lot. Buyer collects. Get in touch for more information.

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Socket 775 System. Coolermaster Case, audio + USB. Asus P5KPL-AM EPU E6600 CPU. 250 GB Hdd. DVDRW, ATI 5450. Boxes, drivers. Samsung 19" Monitor HDMI USB. Keyboard mouse. Windows 7 Professional SP1. £100 collect from Louth, Lincolnshire.

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2 x 2GB Samsung DDR3 pc3-8500 1066 SODIMM. 204 pin as new laptop memory. £15 inc postage to inland UK.

Email: jvtal@mail2web.com

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Dell OptiPlex 755 (80 GB, Intel Core 2 Duo, 2.33 GHz E6550, 1GB memory, DVD/CDRW) Ultra small form factor. Fantastic small and very fast computer. You will need to load the drivers. XP Pro or Vista Business can be loaded for an extra £10. The hard drive and memory can be upgraded for an extra cost. £70 plus £10 for delivery.

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Internal Card Reader. Compatible with most camera memory cards. Also has a USB port. Colour: black or silver. Please email or call me for a price.

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AGP, PCI and PCI-e graphics cards. Please email or call me for a price.

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Motherboard Bundle. 3Ghz AMD 64bit CPU 512MB Ram Sxpci 2xSATA 2IDE 1Gb LAN 6 channel sound firewire. Comes with driver CD and manual. Good for gaming, office work, surfing the net, watching movies, generally a good all round system. Spec can slightly be changed if required. Please email or call me for a price.

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PC gaming hardware. I have got 1 x force feedback steering wheel, 1 x force feedback joystick, 1 x normal joystick, lots of game pads. Please email or call me for a price.

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Vintage Apple Macintosh Classic II PC for sale. Complete with keyboard, mouse and microphone. Offers.

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Desktop cases. AT and ATX types and tower and flatbed form factor different sizes and colours can be posted or picked up from Manchester please email or call me with your requirements.

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Laptop RAM. 2x1GB PC3-8500 DDR3 1067MHz pulled from a working mac book pro but can be used in other laptops this is the quickest way to boost your laptop's speed. Please email or call me for a price.

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Computer Monitor. HP s2231a. 1080p, 22 Inch display, 1920x1080 resolution. 60 Hz, contrast 15,000:1. Price £40 ONO
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Email: checkpobly12@hushmail.com

Two Apple G4 iBook Laptops. 12" screen, 800 MHz CPU 640MB RAM. OSX (Tiger) 30GB HDD batteries ok M/Chargers, nice machines. £105 each or £200 for the two.
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Email: checkpobly12@hushmail.com

Gaming PC HAF-X case. ASUS P6X58D-E, i7 930 4GHZ 6GB Corsair i7 mem, gigabyte gtx470, Asetek CPU LCLC 240mm radiator + watercooling. Two 12cm fans, PSU needs replacing. DVDRW, networking, original software, extra cabling. (Price: £400 ONO).
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Email: checkpobly12@hushmail.com

SATA Drive Tray For Laptops. Allows you to remove your CD/DVD Optical Drive and insert a second Hard drive.

Very useful for backups, file recovery and RAID setup on a laptop. Brand new, still sealed and boxed. £10 including P&P.
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Rugged Magnesium Alloy cased HP 5101 Business Netbook. 120Gb HDD 2Gb Ram, running Linux Mint 16. Excellent for Uni, Holiday or just as a spare machine. Complete except for PSU. £60 plus £8 P&P
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Two Apple G4 iBook Laptops. 12" screen, 800 MHz CPU 640MB RAM. OSX (Tiger) 30GB HDD batteries ok M/Chargers, nice machines. £105 each or £200 for the two.
Email: micksharp@live.co.uk

XFX Radeon HD 6870. 1GB GDDRS. Original packaging, never overclocked. £75 plus £6.95 pp.
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Asus Sabertooth 990FX Mobo. £100 plus £6.95pp (with Phenom II 980 add £50).
Tel: Simon Hardwicke (01536) 724334 Email: simon.hardwicke1@ntlworld.com

Lian Li PC-X2000 Computer Case. Supports mATX, ATX, eATX; hot swap SATA drive compartment. Includes six 3.5" & two 2.5" hot swap disc holders. Three 140mm intake plus two 80mm and one 140mm exhaust fans.
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Matricom G Box Midnight MX2 Android HTPC. New boxed. £85 ono. Postage £3.
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Funai D50M-100Y VCR recorder, 6 head A2 stereo. New boxed. £90 ono. Postage £4.
Tel: Mick Young (02072) 321695 Email: mick.young@o2.co.uk

Cartridges for a Xerox 8500/8550 Phaser Colour Laser Printer. 6 Black, 5 Cyan, 4 Magenta, 2 Yellow solid block cartridges going very cheap! Check out cost new from Choice Stationary and make me an offer. My Xerox has given up the ghost after several years.
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Gaming PC. HAF-X case ASUS P6X58D-E, i7 930 4GHZ, 6GB Corsair i7 mem, gigabyte gtx470, Asetek CPU LCLC 240mm radiator + watercooling. two 12cm fans, PSU needs replacing. DVDRW, networking, original software, extra cabling. £390 ONO
Tel: Alex Thomas (01842) 813630 Email: chackpobly12@hushmail.com

Custom PC. AMD FX-4100, 8Gb Ram, 500Gb HD, DVD Writer, AMD HD-6750 GPU, Keyboard & Mouse, 19 inch LCD Monitor, Genuine Windows 7 Pro, £250 + delivery.
Tel: Mike Whittington (07533) 270020 Email: mike.whittington@blueyonder.co.uk

XFX HD 7950 GPU. I have 2 for sale, both have 6 months guarantee, willing to split, £180 for pair or £100 each + delivery.
Tel: Mike Whittington (07533) 270020 Email: mike.whittington@blueyonder.co.uk

Nvidia GeForce 9500GT Super+ 1GB DDR2 Video Card (Palit). Unboxed. Great Condition. Not Been Overclocked. £30 inc P&P
Tel: Steven Seward (01354) 656578 Email: steven_seward@sky.com

16GB Corsair Vengeance DDR3 RAM (2 X 8GB). £120 ONO. Brand new and unopened
Tel: Chris Paul (07827) 447779 Email: cmpaul25@gmail.com

New Cooler Master HAF X USB 3.0 XL ATX Case. No PSU. Reason for sale it will not fit in my computer station. Buyer collect only. £80.
Email: paul_999@sky.com

Two laptop hard drives for sale. 1- HITACHI 250GB - SATA3 - 5400rpm. Sell for £25. 2- WD SCORPIO BLACK - 250GB - SATA3 - 7200rpm. Sell for £30. Paypal only please.
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Mini-USB Finger Optical Laser Mouse. Attaches to your finger and has two side buttons. Great replacement for standard mouse. Ideal for disabled users or for use where a normal mouse would not work. £10 p&p included.
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Arima HDAMA rev G serverboard. Dual Opteron 250 cpus included. Totally unused stock. Extended format. 4GB SDRAM, Socket 940. Updated bios to 2.18b, Windows 7 compatible. A real bargain. £45 courier incl.
Tel: (01223) 360986 Email: jhturner77@outlook.com

ASUS PSN-SLI Motherboard with SATA and IDE sockets. Includes manual cables and Intel 2 core panel, cables and Intel 2 core 2.4 ghz. CPU cooling fan and 4GB RAM. £75 including postage.
Tel: (01359) 270218

Gateway MT6220G Laptop. Dual Core CPU, 2GB memory, 200GB HDD, 15"4 WXGA screen, Vista license. Excellent condition long battery life. Wireless superb, some disks. £120 with free postage.
Tel: (01619) 501218 Email: medicineman@ntlworld.com

Toshiba Satellite L350-159 17 inch screen laptop. 320GB HDD, Vista license, 4GB memory. Restore disks, charger, WED lightly. Wireless excellent, long battery life, excellent condition. £165 with free postage.
Tel: (01619) 501218 Email: medicineman@ntlworld.com

ASUS P8B75-m socket 1155 motherboard. With Pentium 620 processor and 4 gigs memory drivers for XG7.8 on disk. Original box and rear 1/0 cover £50. Free postage, please ask questions.
Tel: (01619) 501218 Email: medicineman@ntlworld.com

Be Quiet Power Zone 750W '80 Plus Bronze' Fully Modular Power Supply. I won this in a competition, brand spanking new. This PSU normally retails for £100, selling for a bargain-tastic £75.
Tel: Martin Welch (07971) 528739 Email: welch_martin@yahoo.co.uk

Mini-USB finger optical laser mouse. Attaches to your finger and has two side buttons - great replacement for standard mouse. £10 p&p included.
Tel: Gary Gemmell (01415) 712822 or (07551) 293083 Email: omendata@gmail.com

HP P02015dn extra lower 250 page feed tray. £20.
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New, boxed Belkin 24-Port CAT 5e Patch Panel. Part # F4P338-24-ABS. The RJ45 CAT 5 patch panel is 19 inch rack mountable and supports both 568A and 568B installations. Compatible with both 110 and Krone punch down tools. £15.00.
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Wanted: HD 3850 Graphics card, must be AGP.

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Tel: Brian Taylor (07570) 452557 Email: bmorgant@yahoo.co.uk

Wanted: Factory system restore disc for a Dell Inspiron 1750.

Tel: Darren Day (07707) 556193 Email: ddshaggy@btinternet.com

SOFTWARE FOR SALE

Windows XP Professional. New and sealed. Book, software and license (certificate of authenticity) 100% genuine and unopened. (Dell branded but will install on any machine) ONLY £15 including P&P.

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Microsoft Office Small Business Edition 2003 with Business Contacts. Legitimate Office Small Office Business Edition comprising Word, Excel, Powerpoint, etc. Comes with small piece of OEM hardware and original license code (coa) £10 incl. delivery, cheque or PO. £10.50 by Paypal. Tel: (07794) 528857 Email: it_central@ntiworld.com

Norton Utilities 16 for 3 PCs. Runs under Windows 8, 7, Vista or XP. Original Symantec CD with unused product key £12.50 Tel: Ian (01932) 856971 Email: a2345@btinternet.com

Dell Windows XP Pro SP2 Reinstall Original Cd. Allows You To Restore Your Dell PC / Laptop Without A Licence Key. Brand New Still Packed. £10. Price includes p&p. Email: omendata@gmail.com

HP Windows XP Pro SP2 Re-Install Cd. Allows You To Restore Your HP PC / Laptop Without A Licence Key. Brand New Still Packed. £10. Price includes p&p. Email: omendata@gmail.com

HP Windows 7 Pro Sp1 Re-Install Dvd. Allows You To Restore Your HP PC / Laptop Without A Licence Key. Brand New Still Packed. £10. Price includes p&p. Email: omendata@gmail.com

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HP Windows 8.1 Pro Recovery Dvd X 2. Allows You To Restore Your HP PC / Laptop Without A Licence Key. Brand New Still Packed. £15. Price includes p&p. Email: omendata@gmail.com

Windows 7 ULTIMATE 32 bit version. NEW software and license (certificate of authenticity) 100% genuine and unopened software. ONLY £45 including P & P. Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

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Office 2007 Pro Plus for sale. Includes Word, Excel, PowerPoint, Excel, Publisher and Outlook. Disk only with serial number. £40 including postage. Email: ianmatthewuk@yahoo.co.uk

SOFTWARE WANTED

Wanted: Windows Millennium Upgrade for Windows 98 SE. Tel: (01983) 613464 Email: tonyfagg.plus.com

Wanted: LG GSA 2164 D software disc to replace broken original. Tel: Glen Fremantle (01387) 248976 Email: bidamsys@yahoo.co.uk

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We work very hard to police our classified ads, and make them as secure as possible. However, please do your bit too and use the following guidelines:

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- Be wary of anyone who insists on you paying by the above methods if in doubt, get us to check them out by mailing editorial@micromart.co.uk
- Keep copies of all correspondence
- When sending out goods, at the least obtain a certificate of posting from the Post Office

If in any doubt, feel free to mail us at editorial@micromart.co.uk. Every year, thousands of successful transactions take place through our classifieds, and that's just how we like it. Help us help you keep them one of the safest and most secure places to buy and sell computer kit.

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Contact Aaron by email at:
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Please try to keep your queries brief and limit them to just one question per letter, simply so we can squeeze in as many as we can each week. Please include relevant technical information too.

Aaron

Laptop DOA?

I just purchased a second-hand laptop via eBay (a Toshiba), which I purchased as a second machine, since I already have a desktop PC. I wanted a laptop to use around the house and when I'm away, and this was a decent system that was quite cheap. The seller described the laptop as in good condition, and it certainly looks okay, apart from not actually working.

When I try to turn on the laptop, all I can hear is a whirring sound, which I think is the fan, but nothing else happens. The screen doesn't power up, and Windows never loads – at least I don't think it does. I'm fairly sure the hard disk is making noises too, but I can't see what's going on.

I know that LCD screens do light up a little when powered on, even if the screen is black, but it doesn't appear as though this is happening with the laptop. Literally nothing happens with the display.

Would you know what the problem may be and if I can fix it?

Neil

Buying second-hand computers is always a risky proposition, especially if you do so via sites like eBay, where you have no solid place to return faulty goods and cannot usually check the state of items before you buy them. However, you can also save a lot of money, making the risk worth it occasionally. In this case, I suspect you may have just been unlucky, and the system may simply be faulty.

As the screen does nothing but you can hear the fans and/or hard disk working, I'd

suspect the display or the graphics chip is damaged, but there may be other causes. You could check to see if the laptop works at all by connecting your desktop PC's monitor to the laptop via whatever external display connection it has, such as VGA or HDMI. If you do this, and the monitor works, then you know the laptop works, and the display doesn't.

To make the monitor work, and maybe to even fix the display, you may need to switch the laptop's video output. This is often done using a function key combination, which varies depending on model. It's the key combination you'd use to send the display output to a projector. My own laptop, for example, uses FN+F8 to do this. Try this, to see if you can send the display to the monitor.

As you say the monitor doesn't even light up, I'm fairly certain the display is faulty in some way (rather than a faulty GPU), perhaps even damaged in the post, and your only avenue may be to try to contact the seller for a refund. If you're confident in your technical abilities, you could open up the unit and make sure the cable that connects the display to the system board is connected and not damaged, but this may interfere with any possibly refund.

Even auction sites like eBay have operating guidelines, and you can apply for a refund. Get in touch as soon as you can, so you can arrange this, as fixing an older laptop can be more costly than getting a new one.

▼ **Laptop screens can fail, especially following a fall or strong impact, and can be replaced, but this can be expensive without a warranty**



Which VM?

I have a couple of questions that I hope you can help with. I wanted to try out the new version of Windows, number 10, but I don't want to mess around with my PC, as I'm not sure if I'll like the new version.

I've been reading online that a lot of people who have chosen to have a go with Windows 10 have decided to use virtual machines, which is something that I've never tried, but I understand it's a good way to try out new operating systems. I want to give this a go, but wanted your advice first.

Basically, I need to know if trying out Windows with a virtual machine is a good idea, and would you recommend it as a good test? Also, I've already looked online for a virtual machine, but I've been unable to find a good, free program. I see that the best is VMWare, but it's also expensive. I know Windows has one, but is it true that this is for older versions of Windows only?

I hope you can help, and I'm sorry if I'm asking too many questions.

Greg

Now that Windows 10 is available in a technical preview form, and a lot of people are giving it a go mainly to see if it improves on Windows 8 and its various shortcomings. Giving it a go using your standard PC as an install base isn't a good idea, as you'd have to replace your existing OS or install Windows 10 alongside it. Using a virtual machine, however, is a great idea. You can install Windows 10 on the virtual machine, leaving your existing system setup alone. This

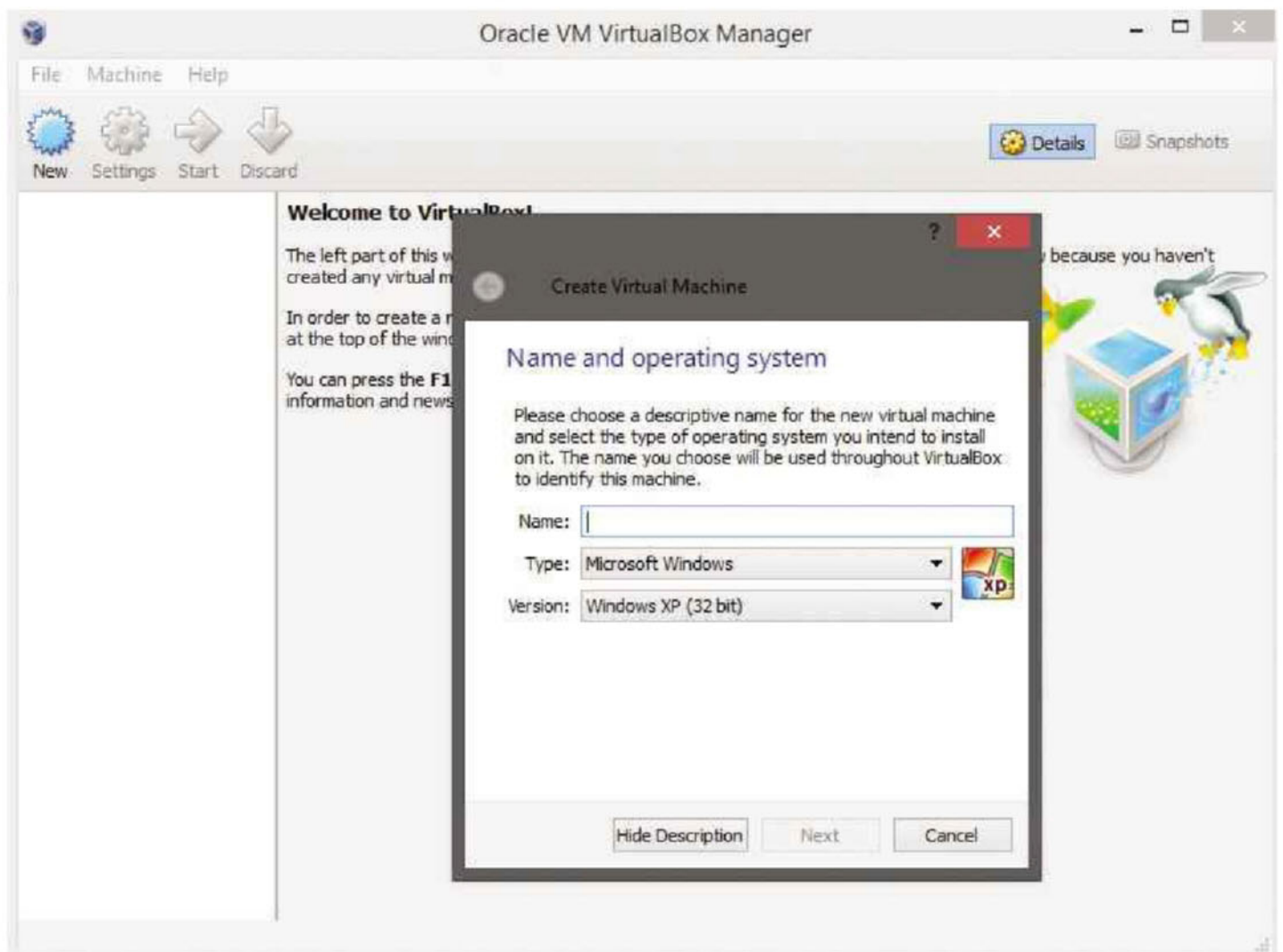
way, if you have any problems, the only thing affected will be the virtual machine.

Virtual machines are also great for using software, especially downloaded applications, and they make for an excellent safety precaution for other things, like using the internet in total safety. Essentially, they're disposable PCs, and if you also back up the image, you can quickly delete a machine that has problems and replace it with a fresh system instantly.

So I'd certainly advise you to give virtual machines a try with Windows 10 and any other new software you may want to experiment with. As for which VM you should use, and for free, there are various options, but one of the best around and one I'd recommend is VirtualBox (www.virtualbox.org). This is an open-source virtual machine, and it's easy to use, making the setup of a Windows installation simple, and you can have multiple machines set up at once.

Windows' own virtual machine is only for legacy operating systems, including Windows XP, so it wouldn't be any use here, and although VMWare is a very good VM, as you've pointed out, it's also quite expensive, and even free versions of it are a little overkill for most home users, as it's now aimed mostly at enterprise server use. The VMWare Player application is a good choice, though, and you can still find the free download online.

▼ **Virtual machines like VirtualBox are great test beds for software and new operating systems**



ASK JASON



Meet Jason D'Allison, a veteran of Micro Mart's panel of experts. He's here to help with any technical questions, including anything to do with tablets or smartphones, as well as PCs

Send your questions to:
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Micro Mart
Dennis Publishing
30 Cleveland Street
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Contact Jason by email at:
jason@micromart.co.uk

While we try to cover as many questions as we can, we regret that Jason cannot answer your questions personally, but he'll cover as many as he possibly can each week. Please ask one question per letter and remember to include the full specification of your computer, including its operating system.

Jason

A Code Less Travelled

The 'holiday season' is approaching and no mistake...

My son has asked for a DVD box-set for Christmas, one that's only available for region 1 (USA). He uses his PC for playback, running ArcSoft's TotalMedia Theatre. He doesn't want the PC to become stuck on region 1 for ever – I can't remember how many region changes are allowed before there's a lock-out – so could he use different software for different regions? Is there a registry tweak to set the region back to 2 (Europe) if it becomes fixed to 1?

David Edwards, TalkTalk

The region code on a DVD drive can normally be set five times – once at the factory and four times by the user. After that, it's locked. Playback software typically displays a prompt if the user inserts a disc made for the 'wrong' region, allowing the code to be changed from there. This is probably what'll happen in your son's case, Dave. The code can also be changed directly, by double-clicking the drive's entry in Device Manager and hitting the DVD Region tab.

Now, you've probably gleaned from the above that the code is linked to the drive, not to the OS or the playback software. The easiest solution for your son is therefore to fit two drives, one for each region. There won't be any conflicts – he'll simply have to point TotalMedia

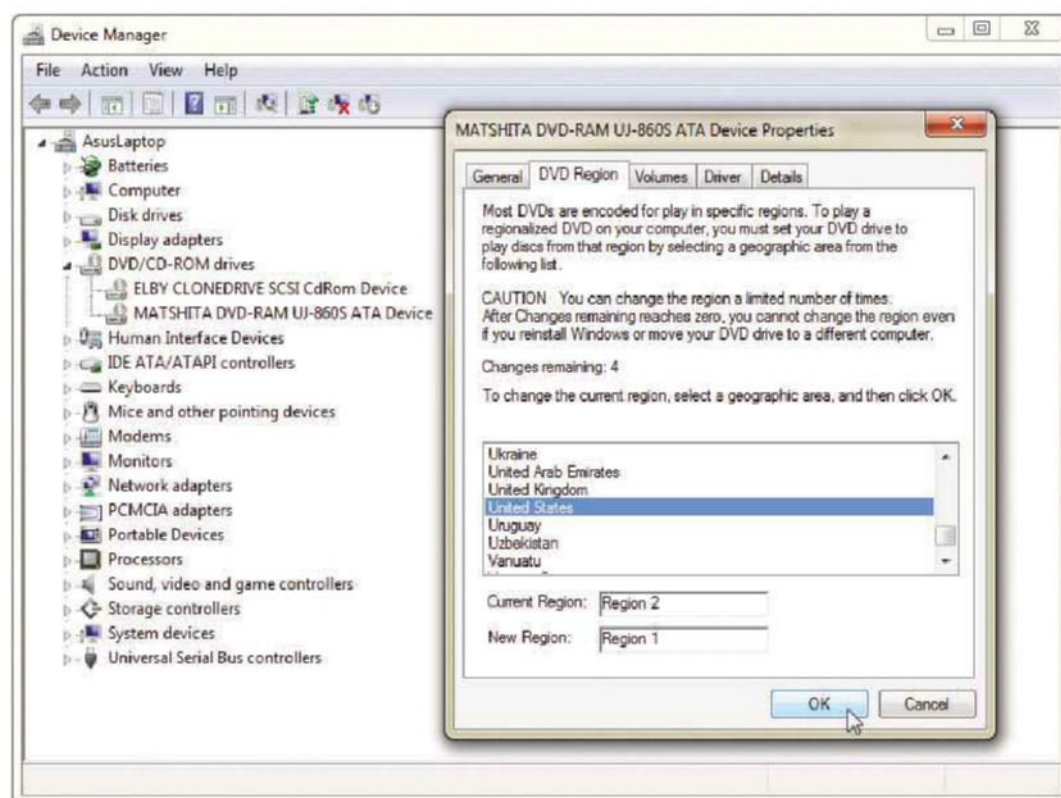
*Theatre at the drive he wants to use. If the software *does* insist on being tied to a single region, he can do as you've suggested – run two programs.*

An internal desktop DVD reader costs only about £11, or about £12 for a rewriter. Second-hand units off eBay are roughly half as much, including delivery. These days, too, there's no end of free playback software. Expense shouldn't be a factor, then. Of course, the purchase of a second drive could be delayed until the current drive runs out of changes. That day may never come, especially if your son moves on to Blu-rays.‡

Even when a drive becomes locked, it's often possible to flash it with new firmware. This could be stock, putting the drive back to its factory-fresh state, or region-free, usually a hacked version of stock. Region-killer software can also be downloaded. Some playback programs have region-killer routines built in, and many free programs ignore region codes altogether.

‡ With Blu-rays, the allowed region code – A, B, or C – is determined by the playback software, not by the drive. Hacks are often available to reset a program's change counter. Also, and rather oddly, many major film studios release their Blu-rays as region-free.

▼ A DVD drive's region code can be changed directly in Device Manager



Get Your Game On

For Christmas I'll be treating myself to a gaming laptop. My budget is just £500, however. Is this enough to buy something that'll handle first-person shooters? Will I be able to get a beefy enough graphics card? Any advice you can offer would be greatly appreciated.

Keith Langton, Gmail

As you know, Keith, the key ingredient to get right on a gaming laptop is the GPU.* This needs to be a dedicated unit, not integrated, and my rule of thumb for an entry-level setup is to stick to GPUs from the last two or three generations – nothing earlier – and to avoid anything much below a third as powerful as the best GPU in the chosen series.

For example, Nvidia's newest GeForce lineup is the 9xxM series, so I'd say you're fine to consider 8xxM and 7xxM models. The leader of the 8xxM pack is the GTX 880M, with 1,536 shaders. From the same series, the models offering somewhere around a third of the power are the GTX 850M and GTX 860M, both with 640 shaders, and the 840M (no GTX label here), with 384 shaders. As a rough-and-ready guide, look at a GPU's shader-count to gauge performance.†

Fire up a site such as saveonlaptops.co.uk. Have a browse through the laptops that meet your criteria – use the search filters to weed out systems that aren't appropriate. On the above site (others are available!), the cheapest offering with a GTX 850M or GTX 860M is the Gigabyte P15F V2-CF1, priced at £779. That's way too rich, so you'd need to lower your guns to the 840M systems. There's an Acer Aspire V3-572G at £499, which is bang on target.

Of course, I'm just giving basic advice here, Keith. You may decide to go the AMD Radeon route, or perhaps you've seen some end-of-line laptops with top-end GPUs from an earlier generation. In general, though, don't be tempted to dip below the 'rule of thirds'. Dedicated GPUs with too few shaders will provide only limited improvements over integrated GPUs (though AMD's best APUs feature integrated GPUs that knock many low-end dedicated GPUs into a cocked hat).

Will a £499 laptop meet your needs? Well, fast-paced action games – your first-person shooters and the like – will run okay at 720p, but you may need to dial down the details a little. At that price point, the screen will likely be a 15.6" job with a resolution of 1,366 × 768. That's perfect for an entry-level gaming machine, as a higher resolution would bring

the GPU to its knees. If it's 1080p you're after, I fear you'll have to raid the piggy-bank and perhaps consider a 17.3" system.

* Naturally, a decent CPU is also essential. However, any laptop with a decent GPU will also have a decent CPU (typically a Core i5 or i7) – they go hand in hand. No company makes an Atom-based laptop featuring an 8GB GeForce GTX 980M, for instance!

† Shader-counts and other details for GeForce GPUs can be found at bit.do/Tzsg. The same for Radeon GPUs can be found at bit.do/Tzsv.

▼ While mainstream laptops have become cheaper, gaming laptops have become pricier (the pictured MSI GT72 2QE Dominator Pro is a steal at £2,299)



Is There Anybody Out There?

I was interested to read your advice last week regarding the poor signal on an iPhone 4s after a screen repair. I don't have a 4s, but I've recently acquired an iPhone 5. The signal's great, but unless I use the speakerphone, I can't hear the person I'm talking to! Have you any idea what the problem is, and can it be sorted? The phone's out of warranty.

Tom, Anglesey

To start, I'll repeat from last week my rather scathing opinion of iPhones in general: 'I used to think they were over-engineered – more screws, screws within screws, clips, brackets, and gaskets than were strictly necessary, lending extra tolerance and reliability. But now I think they're under-engineered – flawed designs patched up with extra bits and bobs to make them work properly.'

The earpiece problem on your iPhone 5 is a good example. Does the earpiece function when you're dialling, Tom? Does silence descend only when the call's connected? I wouldn't be surprised. Such a phenomenon doesn't make any sense, yet I've witnessed it with my own ears. I mean, surely an earpiece either works or it doesn't?

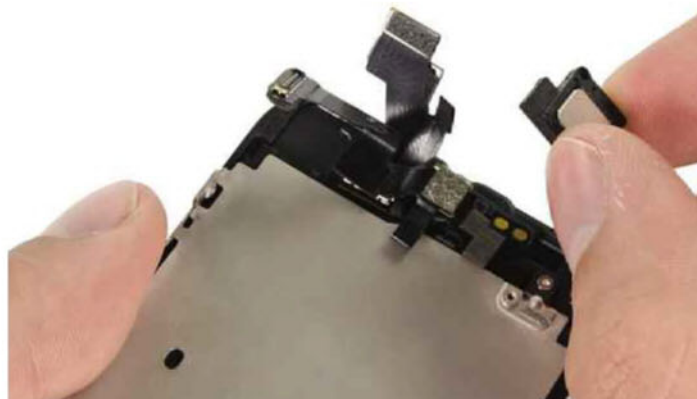
It's not a software issue, either. Try pressing down near the right-hand side of the earpiece grille. Can the person you're speaking to now be heard? That's a common outcome, where it seems pressure's needed to make the earpiece work correctly. In such cases, the earpiece often isn't faulty – fitting a new one can make no difference. Weird!

If this is what's happening, Tom, I'm really not sure if there's a fix. For in-warranty handsets with this fault, Apple typically just issues replacements. Maybe you could wedge something between the

earpiece and the front glass, creating the required pressure? It's probably worth a shot. Or if you're getting no sound at all from the earpiece, you could well be in luck by swapping it out. A new one should cost only about £1.50 (including delivery), and fitting instructions can be found at www.ifixit.com: bit.do/TyyB. It's a pretty easy task.

Of course, every iteration of the iPhone sells in colossal numbers, so it's understandable that a fair few will have problems. However, when the same faults keep cropping up – smashed screens, poor signal, dead microphones, temperamental earpieces, unresponsive mute and volume buttons – you have to question the competency of the designs and the quality of certain components.

▼ Sadly, earpiece problems on iPhones aren't uncommon [Photo shows an iPhone 5, courtesy of www.ifixit.com]



Crowdfunding Corner

Kickstarter isn't the only place you can find crowdfunded projects. Here are a pair that are only available on its most popular rival, Indiegogo

Axent Wear Cat Ear Headphones

If the internet proves one thing, it's that cats are popular. So popular, in fact, that at time of writing these cat ear-shaped headphones have already surpassed their modest \$250,000 goal by over a million dollars. It's not hard to see why.

They aren't just gimmicky decoration (though they are that as well). The ears themselves contain two small speakers, which can be switched on and off so that you can broadcast your music to those around you. The unit also contains a detachable microphone and strategically-placed LEDs in one of four colours so you can bring the cyberpunk aesthetic with you wherever you go.

The headphones are being produced for an estimated delivery date of April 2015, so there's not a huge amount of time to wait, and you can get a pair in black with red, blue, green or purple LEDs for the not unreasonable sum of \$150 (\$115 plus \$35 tax shipping). This guarantees you a first-run pair and a discount off the eventual retail price. If you have thousands to spend, you can even pay for custom unit colouring and even cycling LED colours!

URL: bit.ly/1vPlbTE

Funding Ends: Friday, 7th November 2014

The Core Wireless Speaker System

The problem with most wireless speakers is that you can only ever connect one device to one speaker. That's fine, until you move into another room, at which point you either have to move your phone and speaker or pair with a different one. The Core solves this problem.

The unit itself is a fine speaker – small and portable with smooth highs and lots of bass – but the killer feature is that you can connect up to nine of them, so you can create a wireless audio network throughout your house with no need to keep moving speakers or pairing devices. To achieve this, it runs its own wi-fi connection, so it's high-bandwidth and long-range, meaning you don't sacrifice convenience and quality.

There are tons of features – everything from NFC pairing to gesture control to analogue inputs – but for the price we're not surprised. You have to pay at least \$404 (\$389 plus \$25 shipping) for a single Core unit, though you can get a hefty discount by buying three in one go for \$1,023 (\$999 plus \$25 shipping). They're estimated to be ready in March 2015, and have already exceeded their initial funding goal of \$48,000 several times over: at time of writing it's funded up to \$800,000. If you want one, now's the time to buy – once in shops they'll retail for \$599 each!

URL: bit.ly/1oK90DE

Funding Ends: Sunday, 2nd November 2014



Disclaimer: Images shown may be prototypes and Micro Mart does not formally endorse or guarantee any of the projects listed. Back them at your own risk!

App Of The Week

Coffee Collection

Our dedication to the greatest drink ever

It's no secret that we thrive on coffee here at Micro Mart. That and sweets, chocolate, cake, games, cake, chocolate, pies and more cake. But coffee is king.

We rather like coffee, and regardless of whether it's a mocha-choco-lotta-latte or simply the kind of rich, blackest of black coffee that you could stand your spoon up in, you can guarantee that we'll be seen sipping away at it.

Therefore and maybe it's because we've had so much of the stuff this morning, we thought we'd put together a selection of coffee-related apps for you to pursue while sipping at your favourite brew. After all, it's a Monday here right now, and we're about as coffee fuelled as we can be.

Coffee Maker

Coffee Maker is a game for kids, so they can pretend to make mum and dad a coffee in the morning without the danger of using a real kettle or coffee machine.

With it, you can make a virtual coffee using a blend of beans and different ingredients, and then finish it off with a flourish of hazelnut syrup or something similar.

Coffee Wallpaper

There are loads of coffee-related wallpapers available for Android, but the ones created by HAnna are by far the best, we think.

With some cleverly shot images of the beans being ground or roasted, against

the backdrop of a pure white cup and with a wisp of steam rising from an earthenware mug, you can almost smell those delectable aromas.

Coffee Recipes

Coffee Recipes offers you a vast array of step-by-step instructions and lists of ingredients needed to make coffees from around the world.

From an egg nog coffee, through to frosty mocha coffees, mint chocolate coffee or a spiced French coffee, there's plenty for you to try.

Indeed, after following a few recipes, we're now well and truly away with the fairies and tapping out ten thousand words a minute – none of which make any sense.

Coffeeman

As with Coffee Recipes, Coffeeman offers the user a true dedication to this wonderful drink.

In here you'll find the recipes and rituals associated with over 250 different coffees from around the globe. Plus there's advice on where to buy certain coffee beans, how to keep them, how to best serve them and how to best prepare your bean so it's at its full potential when offered to the drinker.

Coffee Finder

Finally, Coffee Finder is an app that will help you find the nearest coffee serving

Features At A Glance

- Coffee's magical powers were discovered by Ethiopian goat herders who saw the effects it had on their goats after eating the beans.
- Coffee can help you live longer (supposedly).
- Coffee contains important nutrients to help keep you healthy.
- Coffee increases your metabolism, so you're actually burning calories the more you drink (within reason).

establishment, most probably complete with hairy hipsters.

It's mainly US orientated, but there are UK maps in there, especially for central London. So the next time you feel the urge to partake in the drinking of this most special beverage and you're stuck for somewhere to go, check out Coffee Finder – or simply look on the app store for a more localised version.

Conclusion

This handful of coffee apps should be enough to get you going. Needless to say, there are more coffee-related apps than you can shake a fistful of beans at. Which you prefer is as individual as the drink itself. [mm](#)



▲ So good, you can almost smell it



▲ No matter what your tastes, you'll find a coffee app for you



▲ This is just teasing now

Logging Off

There's an old expression based on the fairy tale, 'killing the golden goose'. In essence this is destroying the possibility of future wealth with short term advantage, and in the world of technology it's a popular pastime. I've just deployed some call vetting technology to my home phone because there are companies out there who won't play by any cold calling rules. It generally works, and I can see that very many people will take this path, and then what will those companies do? Each call they make to a person who really doesn't

want to get it just accelerates us along the path to an era where we only talk to people we already know on the phone.

But it's not just them, it's other idiots who think they can have the world their way, and nobody will notice.

I read today an article talking about Middle-earth: Shadow of Mordor title, and how Warner Brothers probably went past the usual marketing and PR lines, and then good bit further.

As part of the build up to the release Warners PR machine kicked into high gear offering pre-release code to those willing to video blog about the game on YouTube. But these offers did come with some big strings attached, and if you didn't agree to them, you wouldn't be seeing this title early.

That contractual agreement includes the opening line 'Videos will promote positive sentiment about the game. Videos must not show bugs or glitches that may exist.' Really?

So you're looking for high praise here, not anything objective?

Some of the other requirements in this are just jaw dropping, asking the blogger to encourage the viewer to buy the game, go to the brand website, post supporting tweets and Facebook material, and 'build excitement'.

Oh, and the company has final say on if your video ever appears, and can ask for changes which you're obliged to make. Because, it seems you are part of the PR marketing effort, except you are working for free and have no self-will in this matter.

This is a very short term plan indeed, because it devalues pre-release and branded content so rapidly it's only a trick they can pull a few times. And, for those who go along with it, they'll be reminded forever more that they forgot to mention the really obvious bugs and shallow game play in some high profile game they covered.

But this isn't anything especially new, we've seen it before on gaming sites, where the first to review a title gave it high scores, and those who wouldn't pre-agree to those gave it mediocre or even low

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numbers. As

such when I want to know if a game is good or bad, I look at the spread and invariably read the one with the lowest score.

But the final irony of this story is that, according to people who have played Shadow of Mordor and aren't contractually obliged to say nice things tell me it's actually rather good. None of these strong-arm tactics were needed, and they're sending a very negative message about their confidence in their own product.

The publishers need to consider the longer term impact of their actions. As some are busy building such deep credibility chasms that it might never be feasible for them to fill them in.

Mark Pickavance

LAST WEEK'S CROSSWORD

Across: 7 Homo Sapiens, 8 Aperçu, 9 Audits, 10 Chevron, 12 Crore, 14 Frame, 16 Versace, 19 Twelve, 20 Tirade, 22 Rydberg Atom.

Down: 1 Chip, 2 Improv, 3 Pseudos, 4 Splat, 5 Header, 6 Esoteric, 11 Hardware, 13 Vertigo, 15 Melody, 17 Sprite, 18 Hewer, 21 Dump.

DISCLAIMER

The views expressed by contributors are not necessarily those of the publishers. Every care is taken to ensure that the contents of the magazine are accurate but the publishers cannot accept responsibility for errors. While reasonable care is taken when accepting advertisements, the publishers cannot accept any responsibility for any resulting unsatisfactory transactions. Here's an exciting bit of news: this week, we had meatloaf for dinner. Okay, that's not exciting at all, but it does sound a little like we had the charismatic singer and actor Meat Loaf over for an evening meal, instead of just consuming a loaf made from meat. Speaking of Mr Loaf, we checked out his official website (at least we think

it's his official website), meatloaf. net. It's rubbish. Just so you don't get a shock when you visit it (and why wouldn't you?), it looks like it was designed by a first-year design student in 1996 and comes complete with a very blurry, overstretched banner advertising the latest tour. Which ended in June – possibly this year, but who knows? This banner also features a picture of the man himself, looking more than a bit miffed. We assume this photo was taken just after he'd seen his website for the first time. Clearly he'd do anything for love, except perhaps getting a better web designer. Frankly, we're very disappointed: a man his presence and awesome batoutofhellishness deserves more. And if you're reading this Sir Loaf, that dinner invitation still stands.

THIS WEEK'S CROSSWORD

Across

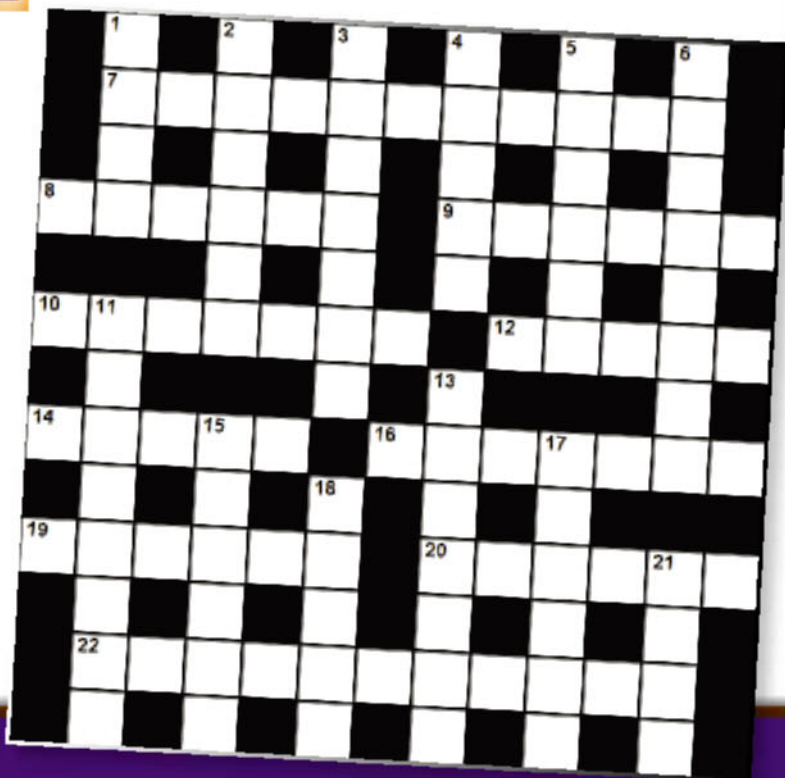
- 7 A solution that conducts electricity. (11)
8 Describe or draw roughly. (6)
9 Transmission of network packets in excess of the network's maximum transmission unit. (6)
10 A quantity on which a mathematical operation is performed. (7)
12 A sequence of words or characters written contiguously, such as into a group, by a computer and stored on a disk. (5)
14 Froth or foam. (5)
16 Using or expressed in more words than are needed. (7)
19 A human being whose body has been taken over by electromechanical devices. (6)
20 .ao TLD. (6)
22 The number that is represented as a one followed by 18 zeros. (11)

Down

- 1 The point of highest activity, quality or achievement. (4)
2 Someone who sends explicit

photographs or messages via their mobile phone. (6)

- 3 Making engraved plates and printing designs from them. (7)
4 When someone is being lazy. (according to the urban dictionary) (5)
5 An arbitrary sign that has acquired a conventional significance. (6)
6 Resources protecting your computer against potential attacks. (8)
11 Popular database and web coding combination. (8)
13 A software function or operation which occurs automatically unless the user specifies something else. (7)
15 Lack of foresight or intellectual insight. (6)
17 A correction to a software error in a computer program or system. (6)
18 An impure form of quartz consisting of banded chalcedony; often used as a gemstone. (5)
21 In communications, a wire connecting a terminal to a computer; also a unit of text. (4)



In Next Week's Micro Mart*

- How to salvage parts from your old PCs
- Can you still get rich by selling on eBay?
- The rise of the digital stylus
- Plus the usual mix of news, reviews and advice



* May be subject to change

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