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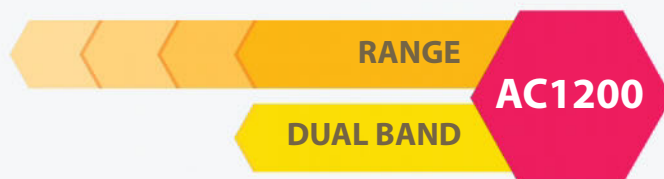
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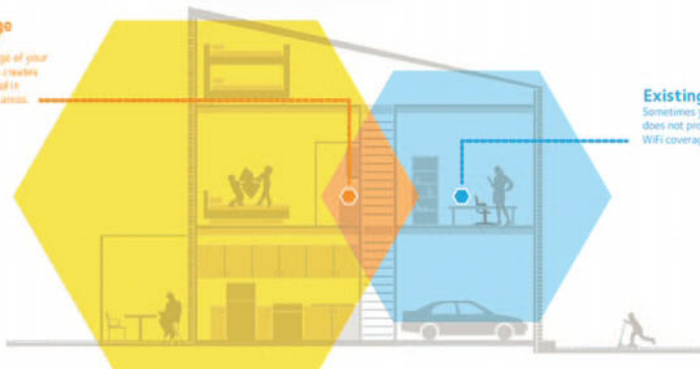
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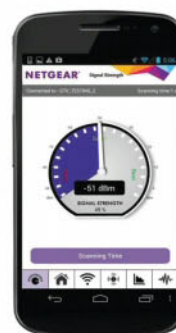
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## 60 Skype Translator

Douglas Adams' Babelfish concept – something that allows speakers of different languages to have their words translated in real time – has come to represent something of a holy grail in the computing world. Now, though, thanks to Skype and a number of other parties, it's getting closer to reality. It's not perfect but, as David Crookes has been finding, it's certainly impressive

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# What Is Your ISP

# Blocking?

The pressure on ISPs to enforce government policies is strong than ever. So what is yours blocking and why? **Simon** takes a look...





If you go back to the late 1990s, the choice of Internet service providers (ISPs) was little short of bewildering. Buoyed by the huge success of Freeserve, the first major provider to offer no monthly subscription charge, the bandwagon was chock-full of others trying to get in on the act. Daily newspapers, stores, technology companies: lots and lots of different organisations were falling over themselves to sign you up.

They were more straightforward times; the amount of data you could realistically download via a dial-up connection in a decent time (and without bankrupting yourself) meant factors such as piracy and copyright breaches were barely a twinkle in the Internet's eye. Granted, those working for big organisations with fixed lines could get decent speeds, and piracy was and has been a problem ever since the world wide web took hold – but still: this was technology, in its consumer form at least, that was very much in its infancy.

Then broadband technology became available, then it became widespread, then it became faster, then it became the norm. This was a fairly quick sequence of events too, and was one of the reasons that the entertainment industries panicked so much over the original high profile music file sharing system, Napster.

Napster, in its less legal guise, was allowing people to search

**“ Eventually Napster was shut down, but not before it seemed to change something in the psyche of many ”**

and download songs in less time than it took to listen to a track, at a time when that seemed high on impossible. Eventually the service was shut down, but not before it seemed to change something in the psyche of many end users. People had realised just how easy it was to download music, legally or illegally, and as speeds increased, movies followed. Now, it's not tricky to find sites that will allow you illegal access to movies, music, videogames... even this magazine, sadly.

### Whack-a-mole

Since the days of Napster, the legislative industry has been playing whack-a-mole, attempting to shut down sites, prevent access and generally understand geographic law structures, as sites located in one part of the world found themselves immune to the laws of another. Tactics had to change. And whilst eventually legal services such as iTunes would channel what Napster did into a legitimate platform of sorts (although it took an awful long time to get there), when it came to lawmakers, they were looking for a fresh way to enforce copyright law. Hence, the Internet service providers found themselves in the spotlight in the way that search engines previously had been.

In much the same way as any new business, the initial wide choice of ISPs soon whittled down. Some fell away, some were acquired, some merged, and some became bigger. From the huge choice of just over a decade ago, we're left with a handful of major ISPs in the UK: BT, TalkTalk, Virgin Media, PlusNet, Sky and EE. There are a few independents, but even they are in decline. The impressive Be, for instance, was swallowed up by Sky, and customers have now been switched over to

**Sorry, the web page you have requested is not available through Virgin Media.**

Virgin Media has received an order from the Courts requiring us to prevent access to this site in order to help protect against copyright infringement.

If you are a Virgin Media home broadband customer, for more information on why certain web pages are blocked, please click [here](#).

If you are a Virgin Media Business customer, or are trying to view this page through your company's internet connection, please click [here](#).



Sky accounts. Independents tend to be beholden to BT's infrastructure as well. In short, a small number of companies have a hold over the vast majority of our Internet connections. The main six have over 90% of the country's consumer broadband subscribers between them.

### The Attack

You may remember a few years' back that various copyright holders were being attacked from a number of sides for the threatening letters that were being sent by them to some end users. Many of these letters, and the subsequent reports, didn't make pretty reading; individuals were being threatened with large fines and jail time for illegally downloading copyrighted materials from the Internet.

This may have discouraged those concerned from continuing to do so, if they were indeed guilty, but the wider fallout was a PR disaster. If you wanted a stereotypical story of nasty big businesses threatening to take the small individual to the proverbial cleaners, then this was it.

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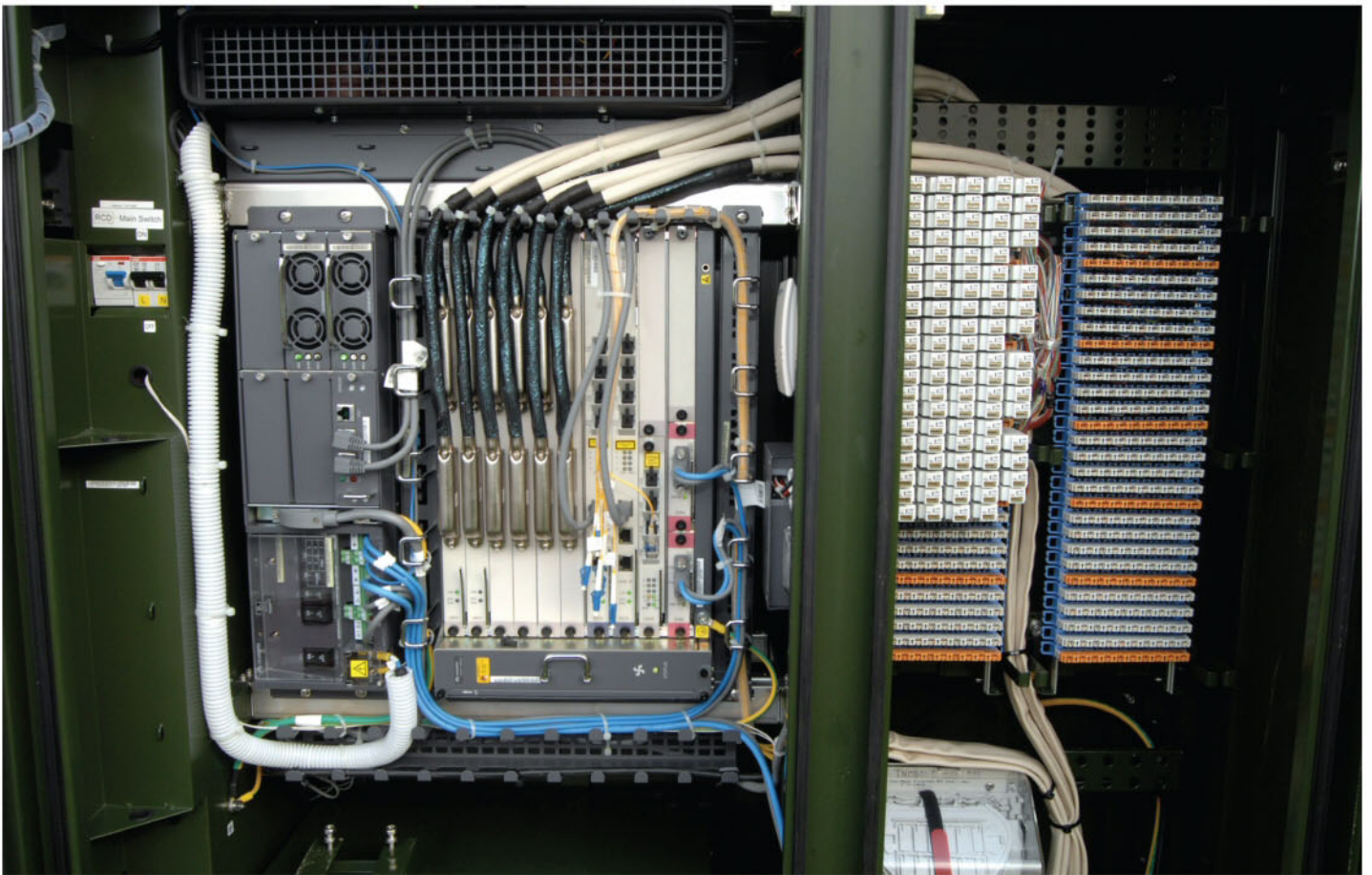
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Furthermore, and this was likely to have been just as prevalent in the thinking of the organisations concerned, these letters and threats were having no effect at all on piracy rates. The tactics were bringing lots of bad press, and no impact. Time for a change, then.

It was the decrease in the number of UK ISPs offered an opportunity, and it's one that copyright holders have grasped. With help from the British government (and various pieces of invariably rushed legislation), the onus of enforcement and policing has slightly changed over the last four years. Rather than targeting individual end users, the focus has switched to getting ISPs to shoulder some of the work involved in reducing piracy.

The first thrust of this came with the Digital Economy Act, that was brought into law back in 2010. This brought with it obligations for Internet service providers that, it would be fair to say they, weren't particularly pleased about. One such obligation is for an ISP to notify a customer if it gets a specific report that they have allegedly infringed copyright. It, in effect, had to do enforcement work, and send a warning letter. The original plan was for repeated offenders, who ignored multiple letters, to be cut off from the internet altogether, but such a stringent punishment struggled to stand up and were subsequently dropped. The difficulty of enforcing such a penalty was just one of the many cited reasons.

Instead, what have been wonderfully labelled as 'technical measures' have been brought into play. These measures are likely to mean slowing down internet connection or certain services (i.e. peer-to-peer downloads) at certain times. This was the first step towards blocking content that ISPs took, and further steps would not be far away.

It's fairly common knowledge that ISPs tend to slow down connections in peak times. 'Traffic shaping' is a harmless sounding phrase, which appears wonderfully reasonable until you realise that it's shorthand for significantly cutting the speed of someone's internet usually at peak periods of the day. So, if you're downloading lots of files at three in the morning, you're unlikely to notice. If it's eight at night? That's a different story. You can find out if your traffic is being 'shaped' by your ISP here: [broadband.mpi-sws.org/transparency/bttest.php](http://broadband.mpi-sws.org/transparency/bttest.php)

More recently though, one other ramification of the Digital Economy Act has been becoming more prevalent: the blocking of certain sites altogether by Internet service providers. Thus, if you put certain URLs into your web browser and try to load the page in question, you'll receive only an error message.

That error message varies from ISP to ISP. BT, for instance, just reports 'Site Blocked', whilst Virgin Media has a special pop-up that lets you know exactly who to blame (not Virgin Media, basically). The bottom line is the same: Internet service providers have been ordered to block certain sites, and have been left with little choice but to do so. You have zero choice in the matter.

### So What's Been Blocked?

This all begs questions as to just what's being blocked, why, and since when... So let's try to answer that first.

The current wave of blocked sites, interestingly, focus on copyrighted material rather than content you may expect, such as extreme adult websites. The list includes sites such as Torrentcrazy, EZTV, MP3Raid, 1337x, Megashare and Bitsnoop. The blocking of these sites started in earnest back in the summer of 2013, following a high court order targeted at the six main ISPs in the UK.



Said court order was sought by and granted to the British Phonographic Industry (BPI), and gave ISPs until 30th October 2013 to comply with it. This wasn't the first time that the BPI had sought to get a website blocked, its high-profile attempt to shut down access to The Pirate Bay (alongside assorted other sites) back in 2012 being the most notorious. To this day, The Pirate Bay remains an active site, however – albeit one unavailable directly to the vast majority of UK internet users. The further sites added in 2013 have now suffered the same fate too.

**“ If you block people doing things one way, they have a habit of finding a way round ”**

Notably, the list of sites that were blocked last year wasn't actually published; people only found out what they were by experience. This may seem a bit baffling, but the truth is that making a public announcement on matters like this can be like a proverbial red rag to some. While there's something of a statement of intent in revealing just what was blocked and why, you can see the logic: if you don't want someone to find a blocked site, then why even give its name away?

Either way, it didn't really matter. It soon became clear which sites they were – and inevitably, certain websites began to put together a list of which sites were blocked. The names mentioned earlier were firmly on it and remain the main tranche of blocked content.

These blockages haven't stopped access to the sites concerned entirely. Unsurprisingly, workarounds continue to be found – and the boxout on proxies goes into this in more detail – but officially the blocks remain firmly in place. It is expected that more sites will be added to it in due course, with no legal obligation on the part of the ISPs, it would seem, to tell you which sites are subject to action.



## Proxies

The history of the Internet is rife with examples of how, if you block people doing things one way, they have a habit of finding a way round. That's certainly proved to be the case with blocking websites.

Take, for instance, a site like The Pirate Bay (and we'd, as always, strongly caution against visiting it – not least because it's an easy way to get your computer infected with nasties, for a start), if you try and go through the main URLs to get to the site, you're going to find a message alerting you to the fact that the site has been blocked. However, some people have set up proxies allowing you to access the site. It's just a diversionary link to the same material, and inevitably, the race is well underway to block them – though it's proving impossible to do so at the pace they're being set up.

Proxies do, apparently, fall under the court orders that led to the blocking of the main websites in the first place.

## Porn Again

Given that ISPs have been shepherded into blocking access to material that potentially breaches copyright, what's interesting is the relatively liberal attitude they appear to be taking to internet pornography. If you use public wi-fi services now, you may have noticed that controls in recent years have become far more stringent, as many sites that veer on the side of innocence have been swept up as part of a larger scale blocking operation. There is some sense to the action, even appreciating the sites that have been unfairly caught in the net. After all, if you ran a coffee shop and offered wi-fi in it, it's hardly conducive to business to have a customer sat in full view investigating the more adult wares that the internet has to offer.

What about home internet services, though? Well, in the last year or two, the likes of *The Daily Mail* have led a loud and generally successful campaign to put adult content filters in place by default. In a more stringent version of what was being asked for, if you wanted to access adult material, you'd need to either go into the online control panel put in place by your ISP, or give it a call and ask for the content blocks to be lifted. That's not quite what's been implemented so far, but neither does it appear to have been completely dismissed.

Yet there's a proverbial elephant in the room here. Whilst no ISP would go on record and say so, each of them knows that pornography in particular – whether you agree with it or not – is one of the driving forces of their business. Many people use their web connection for adult material, and want to continue doing so. In truth, the vast majority are legally doing so as well: so is it right to mandate that they should, by default, be blocked from doing so?

Well, that nearly happened. What's happened instead, however, is that the government convinced ISPs to implement opt-in filtering systems as a matter of course, to help parents who want to block their children's access to inappropriate material. The first stage of that has now come into effect, with the biggest Internet service providers operating a policy whereby new subscribers are asked if they want to turn the filters on at the point of signing up. Also, by the end of the year, all existing customers will be asked whether they want to make use of the filters too, no matter how long they've been a customer of the ISP in question.

**“ ISPs will deploy technology at a network level meaning all traffic that comes through the central router will be subject to whatever choice is made ”**

This was all confirmed by Prime Minister David Cameron last July, in a speech to the NSPCC. Confirming that “the internet service providers and the search engine companies have a vital role to play”, Mr Cameron added that “quite simply we need the search engines to step up to the plate on this issue. We need a situation where you cannot have people searching for child abuse images and being aided in doing so. If people do try and search for these things, they are not only blocked, but there are clear and simple signs warning them that what they are trying to do is illegal”.

It wasn't just the search engines in his crosshairs, nor was it just illegal content that the PM wanted filtered. “In a really big step forward”, Mr Cameron announced, “all the ISPs have rewired their technology so that once your filters are installed they will cover any device connected to your home internet account; no more hassle of downloading filters for every device, just one click protection. One click to protect your whole home and to keep your children safe”.

As such, if people say yes to the filters, then ISPs will deploy technology at a network level meaning all traffic that comes through the central router, as you'd expect, will be subject to whatever choice is made.

So then: just what kind of take-up has there been thus far? Well, not very much at all. According to a new report from Ofcom, the overwhelming majority of new subscribers are turning their back on the filters. Of the four ISPs that currently offer the option to switch them on at point of subscription, three of them

### Port Blocking

It's not just certain websites that Internet service providers have been blocking their users' access too. In some instances, your ISP may be blocking a port or two as well.

Sky, on its broadband help pages, defines port blocking as “the restriction of internet services on certain ports. A port is a data connection that can be used by programs to exchange data directly, instead of going through a file or other temporary storage location”. It's not really in the interests of an ISP to block ports that you're likely to need, not least to cut down in technical support time. There have been instances, though, of port 25 being blocked – the default port for some people's outgoing SMTP mail server. If your ISP won't unblock the port in question, then you'll need to change the default port in your email client, in that particular instance.

Why would port 25 be blocked by an ISP in the first place? Well, some choose to do it simply because it cuts down on the amount of spam that goes through their networks. After all, the more things go through defaults, the easier they are to guess/predict/hijack. Further ports may be blocked for similar reasons, to combat malware.

If you're looking to check if there are any specific ports are blocked by your ISP, then try an online tool such as [www.canyouseeme.org](http://www.canyouseeme.org).



▲ Websites will be filtered at network level



have a negligible take-up rate. Virgin Media has the lowest, with 4% of new customers opting for the filters, against 5% for BT and 8% for Sky. The exception to the low take-up is TalkTalk: 36% of its new customers have taken the filters. Virgin's low take-up, it turns out, might be down to the fact that it only offered the service to around a third of its new customers, having introduced its filtering technology after its three main competitors.

The filters, incidentally, don't just apply to pornographic material. They also include material relating to taking drugs, self-harm and other subjects. It's an subject we cover in more detail elsewhere in the magazine this week.



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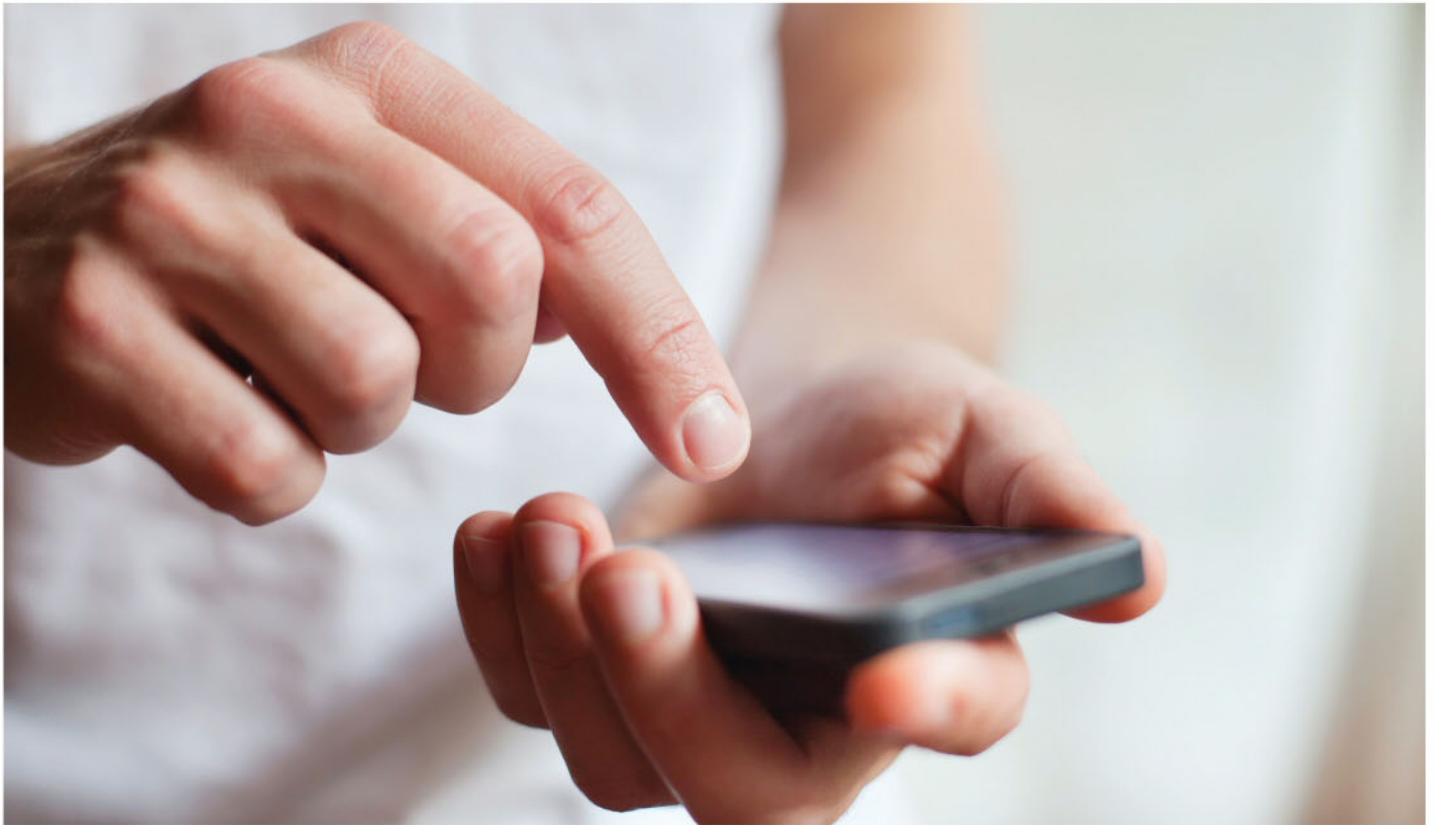
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## Mobile

The situation is the other way around when it comes to mobile networks. Appreciating that children and teenagers tend to have their own mobile phone, tablet computer, and enough knowledge to circumvent even the most knowing parent, the onus changes here slightly. As such, mobile operators have implemented adult filters on their phone networks automatically. This applies if using a 3G/4G dongle as well. To get around these filters, which prevent access to a relatively broad range of sites deemed offensive and/or harmful, you need to contact your phone operator and request they be switched off.

To switch them off, you need to provide proof of your age, too. So whilst you can generally switch the filters off via your operator's online control panel, you may need to input credit card details just to prove that you're of an age where you can view the material concerned.

## The Rights And Wrongs Of Blocking

It's fairly traditional for computer magazines to vehemently oppose content blocks, and anything that tends to clamp down on online civil liberties. However, there's clearly two sides to the argument here. The absence of web filters by default has undoubtedly led to youngsters getting access to content that most parents would prefer they wouldn't. Thus, whether you agree with the filtering system or not, it's hard to argue that parents shouldn't have access to simple-to-use tools that can impose some restrictions, should they so wish.

The problem, of course, is the number of sides of the argument, and the vested interest many of the parties concerned have in putting said argument across. Furthermore, it's frustratingly difficult for an end user to find out just what's been blocked and what hasn't. Without using third party tools and websites, you can't easily discover what websites you're not allowed to look at, and what ports you can't use. Blocking is going on, but it's going on by stealth.

Again, there's logic to that. For the vast majority of end users, what's been blocked and what isn't is hardly information at the top of their 'to know' list. As long as it doesn't impinge on day to day internet use, then most don't have a problem. But still: transparency is lacking here, and that's clearly an issue.

What's also an issue is that, from a legislative standpoint at least, it's the interests of copyright holders that appear to have taken precedence over most others. It seems that big media companies got the sites they wanted blocked dealt with ahead of others with perhaps even more questionable content. There's an issue of priority there.

As things stand, the block list looks comparably short. But there's a growing sense that this is a problem in its infancy, and one that's set to become more salient in the years ahead. And with the government under severe pressure from the tabloid press and big business, customers may just find their own wishes falling a little further down the list of priorities... [mm](#)

## Emergency Blocks

One of the clauses contained within the Digital Economy Act is for emergency blocking powers to be enacted. The cited example as to when this might be used goes back to the London riots of 2011. During said riots, people were using the likes of Facebook, Twitter and Blackberry Messaging services in order to quickly communicate with one another.

The measures introduced as part of the Act would allow, in theory, allow for emergency blocks being placed on such methods of communication. It's hard, in truth, to imagine a scenario in which this would happen - the outcry would be something to behold - but the very fact that it's potentially in the armoury is surely something to give pause for thought.



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# The Porn Supremacy?

**The take-up of network level filtering in the UK appears to be pretty laughable. John Moore wonders whether statistics can tell the full story, however...**

Last year, David Cameron announced that four of the UK's major ISPs (Virgin, TalkTalk, Sky and BT) would be implementing network-level filtering of online adult material. This so-called 'porn filter' (a slightly disingenuous label, that we'll come to later) has been, and still is, a hotly-debated topic. While many felt something needed to be done, others instinctively objected to any government censoring and predicted the 'overblocking' issues that appeared almost as soon as the filters were activated and still rumble on. Meanwhile, in the background, whole other bunches of us sighed and moaned that 'It'll never work', because frankly we're cynical and have formed a hardened belief that you can't stop people seeing what they want to see on the internet.



## The Best Laid Plans

Whatever your stance on the moral issues underpinning the debate, a recent Ofcom report appears to leave little doubt as to how well these filters have been received – the take up numbers go (in ascending order): Virgin Media (4%), BT (5%), Sky (8%) and TalkTalk (36%), which means that the vast majority of people offered the filters chose not to implement them. That's right: only one of the big four ISPs managed to get over 10% of its users to take up the filtering option. Well, that settles that, then: filters are dead, aren't they?

Well, probably not, despite there being little doubt that the report, 'Internet Service Providers: Network level filtering measures' (which you can read at [tinyurl.com/pnybpg5](http://tinyurl.com/pnybpg5)) has delivered a hammer blow to our PM's plans to clean up the internet and must be a personal kick in the teeth to a man who believes that "when it comes to the internet, in the balance between freedom and responsibility, we've neglected our responsibility to children."

## The Blueprint Or Blueprints

Let's be very specific about what ISPs were expected to do, just for the record... This is clearly laid out in section 1.3 of Ofcom's report and goes like this:

"all new customers, on setting up their new broadband service would receive a prompt inviting them to set up family-friendly filters and that, should customers not engage with this process by, for example, clicking next, that filters should be applied. Where the filters are in place, these will apply to all devices in the home, which connect to that internet connection and, in order to verify that the person setting the filters is aged 18 or over".

Such measures were required to be in place by December 2013, and it fell on ISPs to decide exactly how they wished to go about it. TalkTalk had been offering Homesafe, a service that complied with the eventual policy, since 2011. Sky and BT launched their versions (Broadband Shield and Parental Controls) in November and December 2013 respectively. Virgin Media eventually introduced its Web Safe scheme in February of this year, missing the government deadline.

This means that rather than there being one unified filter working across all four ISPs, we have four different spins on it. For example, BT and Sky both offer three 'levels' of filtering (BT uses 'Strict', 'Moderate' and 'Light', Sky a more cinematic 'PG', '13' and '18'), while the others only offer one. BT, Sky and TalkTalk provide categories that can be included or excluded from the filter (BT splits its filtering into 16 categories and allows some time-specific features to dictate when the filters are operational, Sky uses ten categories, while TalkTalk use nine – see the accompanying boxout for more details of these). Virgin, on the other hand, offers no customisation or categories. Which brings us to...

## We Need To Talk About Virgin

It would seem that Virgin Media was not exactly falling over itself to implement the government's plans. While it was praised for some of the accompanying content that eventually arrived alongside its Web Safe scheme (which can be found at [tinyurl.com/qzoaauk](http://tinyurl.com/qzoaauk)), the actual filtering system was a very different beast to those offered by others. Not only was it late to the party when it came to actually rolling out Web Safe, Virgin Media offers none of the customisation and shaping options provided by the other three systems. It's either 'take it, or leave it'. What's more, Virgin Media has since been forced to admit that only around a third of its new customers are actually being offered an 'unavoidable choice' (the terminology used by ISPs to describe the process of selecting filter options) as to whether or not they wish to apply the measures.

The problem, at least according to Virgin, comes from the fact that a visit from an engineer is required as part of its installation process in the vast majority of cases. It would seem, however, that in order to streamline their work, these engineers are bypassing the parental controls on behalf of the customer without explaining the options available to household decision makers. The company's own stats reckon that only around 35% of new users are being informed about the filters at all, which would go a long way to explaining why less than one in 20 of its new customers are taking them up. Virgin has promised to implement changes to its installation process in order to correct this situation.

Having said all that, Sky only managed an uptake of 8%, even though it complied with all the criteria and enlisted the help of Samuel L. Jackson and The Avengers as part of a high-profile advertising campaign to trumpet its 'Broadband Shield'... Geddit? Maybe it should have roped in Gregg Clark just to drive home the point.

## TalkTalk, Goody Goodies

One statistic does stick out from pack, though, and that's the 36% uptake reported by TalkTalk. We've spoken about its history of offering filters, but it's also far more pro-active in how it offers them: it employs a 'pre-ticked' range of options (effectively an implied consent, rather than a yes/no choice) to all those who sign up for an account or access their account information via its website. This change has added 16% to its take-up.

The Open Rights Group, though, has an interesting take on the TalkTalk 'anomaly' (we'll call it that, because that 36% does tend

“ Rather than there being one unified filter working across all four ISPs, we have four different spins on it ”

to stick out a little). While noting that the company's more mature filtering "could provide a glimpse of what filters will look like once the initial drive stabilises", it points out that this pre-ticking actually means – as opposed to Ofcom's positive spin on it – that over 65% of new TalkTalk customers have taken the time to turn off the measures. This is not lazily clicking the 'no' option: they've been forced to engage with the concept and have still decided against it.

Martin Daubney, writing in *The Telegraph*, noted that the disparity in take-up could indicate that ISPs, through their attitudes to such filtering, are "falling into categories" and differentiating themselves by how they apply the filters. He expands by positing that "TalkTalk – famously the first of the 'big four' providers to jump into bed with David Cameron when he waged war on porn last year – is becoming the concerned parent's choice: a safer, more wholesome ISP", while "At the other end of the scale, with a delicious irony, we can surmise that Virgin is attracting the most enthusiastic porn users."

While there may be more than a little bit of tongue-in-cheek mischief about that, there is many a true word spoken in jest. Virgin's tardiness in implementation must surely speak something about how the company thinks its customers feel on the matter.

Why Filter?

As a parent, talk of children accessing adult content online is instinctively frightening, and the emotive rhetoric can be quite disturbing. Of course we want to protect our children. Of course we don't want their childhood ruined. Of course we need to limit the internet... wait, what?

If you buy into stats like those expressed in the Authority for Television On Demand (ATVOD) report 'For Adults Only? Underage access to online porn' ([tinyurl.com/ktxnyna](http://tinyurl.com/ktxnyna)), it's no wonder we're concerned. The report asserts that kids as young as six are accessing material that none of us could legally buy in a UK sex shop, and show how such material is being supplied without question as a "loss leader" for website subscription services. This is not being illegally downloaded; it's just out there – and there's nothing that AVTOD can do about it, because despite having jurisdiction to bring action using EU legislation against UK-based sites, there's nothing it can do about those based outside the UK.

“ It is certainly the case that more people access porn than admit it ”

The report uses research undertaken by Nielsen Netview, using a similar sampling method to that used for calculating TV viewing figures, to flesh out its argument. The headline statistic is that it believes something in the region of 44,000 primary school age children (aged six to 11) in the UK visited an adult website during December 2013. Take the age range up to 16 and the number rises to 200,000; add another year, and you get close to half a million (473,000, to be scarily exact). As the statisticians start to break down those eye-watering numbers a little more, it only gets scarier for parents: one in every 20 UK visitors to a website supplying adult content is underage. And these numbers exclude "access through a smartphone, tablet or other device," which means that "the results are there likely to underestimate significantly the number of underage visits."

Ruth Evans, the chair of ATVOD, concludes that "Having considered the findings, we are more convinced than ever that the problem is serious and that government action is not only justified but urgently required, especially in relation to adult websites operated from outside the UK."

While it's hard to argue against those statistics, the report itself notes that caution should be used, as they do not meet minimum sample size standards. What's more, ATVOD is an organisation with a vested interest in greater regulation of online video – and a recent history of being seen as largely superfluous. The language of the report could be described as emotive too. The devil, as always, is in the detail.

So Why Are They Being Rejected?

It would be easy to look at the statistics and the way they are being spun by the mainstream press, and infer that the rejection of these filters is solely down to more people than would care to admit it wanting to view pornography online – or, worse, that adults are putting their wish to access porn before the safety of children. Either would be a hasty conclusion, though.

It is certainly the case that more people access porn than admit it, but while the filter take-up stats look damning, there is no

A Different Classification

As these tables taken from Ofcom's report shows, the four major ISPs involved in the UK adult content filtering scheme offer a range of classifications and categories for what users are prevented from accessing. While BT, Sky and TalkTalk allow users to opt out of any of the categories, Virgin only offers a take it or leave it approach.

	BT	Sky	TalkTalk	Virgin Media
Pre-defined settings	Strict Moderate Light	PG 13 18	None (on or off with individual customisation)	None (on or off only)
Customisation options	All or any of 16 categories can be selected individually	All or any of 10 categories can be selected individually	All or any of 9 categories can be selected individually	No customisation possible

▲ Two of the four services offer different levels of filtering

Summary of the Categories				
2.6 This table summarises the different categories available.				
Content	BT	Sky	TalkTalk	Virgin
Alcohol	✓	X	✓	X
Crime, violence and hate	✓	✓	filter does not explicitly cover Crime	✓
Dating	✓	✓	✓	X
Drugs	✓	✓	✓	✓
File Sharing	✓	✓	✓	✓
Gambling	✓	X	✓	X
Games	✓	✓	✓	X
Hacking	✓	✓	✓	✓
Nudity	✓	X	X	X
Pornography	✓	✓	✓	✓
Sexual education	✓	X	X	X
Social networking	✓	✓	✓	X
Suicide and self-harm	✓	✓	✓	✓
Tobacco	✓	X	✓	X

▲ The four ISPs offer a range of categories types to express what they will filter

accompanying demographic information noting how many of the households rejecting these measures actually have children in them. Nor does Ofcom's report provide any information on how many of the households that rejected the ISP's network-level filtering use any alternative parental control measures (its own 2013 report on 'Children and Parents: Media Use and Attitudes' asserted that 43% of parents questioned had taken it upon themselves to employ some measure to limit what could be accessed by their children, which is certainly many more than are using network-level solutions). And it doesn't account for any existing customers of the services who had opted into using the filters, nor how many of the respective ISP's customers were employing any alternative filtering measures offered by themselves (all offer some sort of software-driven, device level option). Ofcom's report is actually pretty vague, despite throwing out some incendiary, headline-grabbing numbers.

I'd conclude that Ofcom's figures do serve one purpose: to highlight the difference in uptake of filters between TalkTalk



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▲ Not even Samuel L Jackson could convince the British public to opt into web filtering...

and the other three. Whether this is deliberate is debatable, but the way it's then been spun by the press, especially in the wake of reports like that of ATVOD, invites dangerous leaps of logic: that somehow the British public is making the 'wrong', 'selfish', choice or that the other three ISPs should aspire to reach TalkTalk's up-take number, and ape the measures it has taken to achieve it.

I'd put forward that there's another side to the rejection of filters, though: people don't trust the political class. I admit that, personally, my first reaction to the news last years was that it was a Trojan horse to get the filtering infrastructure set up and introduce the idea of mediated content. Subsequent stories of the range and extent of overblocking has done nothing to diminish my scepticism, frankly.

While all the spin on these statistics focuses on pornography and the protection of children, a look at the scope of these filters and what they consider to be 'adult content' shows that their reach is already far more wide ranging than just blocking videos of people having sex – and they appear to be blocking more than even their stated remit allows, which amplifies concerns. *Micro Mart* has covered some of the news stories that have arisen from the overzealous employment of filters since the turn of the year and how problematic things can be if you fall foul of them. We've also examined how any filtering methodology can be circumvented by anyone with a modicum of knowledge. Lots of people don't have that knowledge, though – and a site out of sight can quickly become a site out of mind.

Generally, however, the public appear to simply not like the cut of these filters' jib. For whatever reason – or more likely a few reasons – the public has smelt a rat here. I don't blame them, to be honest.

## Filtering And Balancing

The reason that this is such a fascinating subject is that there is no 'easy' answer, and all sides of the equation are making valid points. The word that sits at the centre of all this – 'safe' – is such an amorphous concept, it virtually invites an argument. We all want children to be safe, but what exactly does that mean? Does it mean that we want to block them from seeing pornography? Yes, certainly. Does it mean that we're happy that teenagers are being prevented from accessing information on sexual health

## What We Said Would Happen

In March 2013, Sarah Dobbs looked at the then-possibility of ISP filtering, and – rather eruditely, as is her way – concluded on behalf of the magazine that: "from our perspective, it's not really a technological issue at all but a social one. However, those tend to be even more difficult to solve, so expect to hear a lot more about web filtering over the next year or so, as the government continues to fight what's almost certainly a losing battle against pornography."

There is not a single word in that sentiment that we would want to change right now; it would indeed appear that the government and its current policy is destined to be on the losing side of this particular war – mainly because it's not being allowed to fight it due to people not wanting the filters in their current format. It will now be interesting to whether the coalition moves to strengthen the measures or backs away from the argument.

issues? Probably not. Do those of us old enough to view it legally want pornography filtered? Apparently, emphatically, not.

To some people, 'safe' may mean allowing teenagers to be brought up in a world of free information, the scope of which is not being dictated by a politician or corporation somewhere. Others may think of 'safe' as a world where parents don't hand over responsibility for what their children are doing online to a filter, but take a pro-active role in shaping their online experiences in an ever-changing world where porn is simply a fact of life.

We don't live in an ideal world. We live in a world where we're constantly trying to find balances that are comfortable, which is the process that's going on here at the moment. Things will probably find an equilibrium, but the balance is one that must be closely observed, as it's a delicate one that can easily tip. We'd bet you all have your own versions of 'safe', but that very few of them would look specifically like the products that Nominum, Symantec and Huawei are providing for the big four ISPs under duress from our coalition government at the moment. If they did, more of us would be using them. [mm](#)



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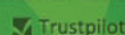


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# Everything You Always Wanted To Know About Cloud Backup \*

- \* including keeping your data private



**M**any people choose to back up their most valuable data to an external hard disk or perhaps a memory stick, but this plan is fundamentally flawed. If your home is destroyed by a meteor or simply burgled, it's likely the external storage will go the same way as your PC and other possessions – converted to smouldering ruins or carried off in a sack marked 'swag'.

Okay, so events like that are rare, but cloud storage provides an alternative (or additional) bullet-proof solution that's immune to them.

For those who don't know, 'the cloud' is tech speak for internet storage that's accessed via special apps you install on your PC or mobile device. On a PC the cloud storage apps usually create a magical folder, the contents of which are automatically (and invisibly) synced with the cloud storage whenever you add new files or modify existing ones. You can install the client app on other computers and, once logged in, your files will sync there too.

“ Because of the cost of cloud storage, difficult decisions sometimes need to be made ”

Alternatively, some dedicated cloud backup apps simply sync folders or types of file that you specify and scan periodically for changed files. Restoring data after a disaster is a matter of installing the app on a different computer and selecting the files or folders you wish to restore.

Cloud storage is undoubtedly one of the greatest innovations of recent years, but a persistent concern is privacy. After all, you're passing your files to a third party and have to trust they won't peek at them. You also have to believe they've put in place sufficient protection against hackers – and in our post-Snowden world, government agencies fall into this category.

There are various solutions to this problem, but it's a mistake to believe all cloud services are created equal. In you want true privacy and security, some thought needs to go into your choices, as we explain over the following pages.

## Basic Backup

The most fuss-free way of using cloud storage to back up your files is to simply work within the cloud storage folder, essentially turning it into your User folder. That is, when you create files, you should save them to the Dropbox or Google Drive folder or copy existing files there. Most desktop apps like Microsoft Office or Adobe Photoshop let you change the default save location, so saving a cloud copy of each file can become something you don't even think about.

This way, your files will automatically be backed up in the cloud, as will any changes you make to them, and restoring them in the event of disaster involves simply installing the cloud storage client app on a different computer and logging in, which will create a synced clone of the folder.

In addition to backup, the benefit of this approach is that you have instant access to your files anywhere there's an internet connection. Want to show somebody you've just met your holiday snaps that normally live on your PC? Well, now you can, and the major cloud services offer mobile apps to let you get at your files.

Dedicated cloud backup services take a different approach compared to basic cloud storage providers, in that their apps sit in the background and periodically back up certain folders or types of files, regardless of where they're stored. Setup is usually automatic, although if you don't use the usual User folders such as Music, Movies, My Pictures and so on, then you might need to delve into the settings to tell the app where to find your files.

Unlike with a backup disk attached to your PC, the goal of cloud storage and backup isn't to clone your entire system. If nothing else, that would be prohibitively expensive because cloud storage is charged by the gigabyte. Instead, the goal is to back up your personal data, such as pictures, music, office files and so on.

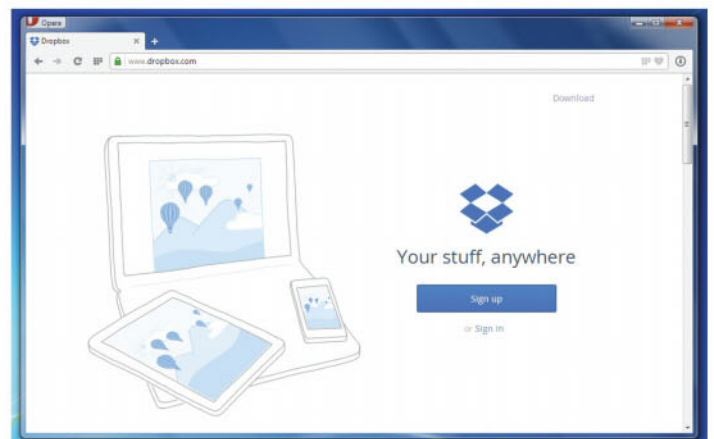
Because of the cost of cloud storage, difficult decisions sometimes need to be made. For example, it might be cheaper to burn your MP3 collection to DVD-R discs for backup than rely on cloud storage. Or you might simply choose not to bother backing up your multimedia collection. After all, if they're purchased through a service like iTunes or Google Play you'll probably be able to download them afresh, and for free, should disaster strike. Just look in the previous purchases section of each service.

If you do decide to back up large multimedia files, the initial backup could take a while to complete. Most home internet services in the UK are asynchronous, which means that the upload speed is significantly slower than the download speed. For example, my ADSL service downloads at around 16Mbps, but uploads are limited to around 800Kbps.

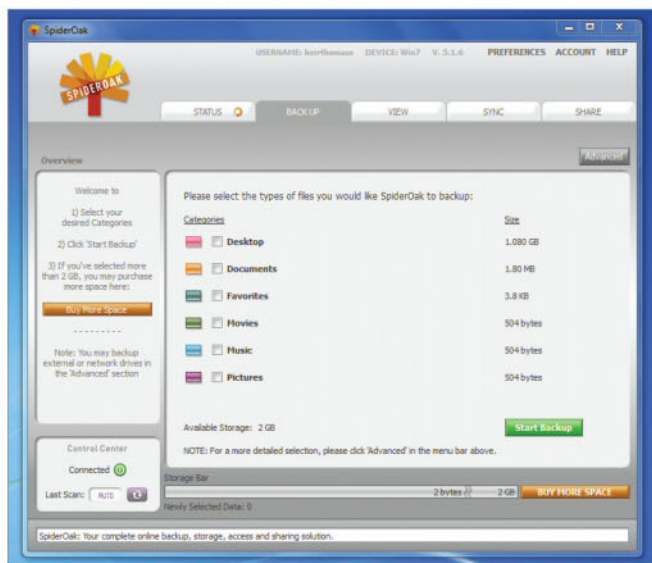
Whichever method you choose for backing up – cloud storage or dedicated cloud backup – privacy should be a prime concern, and that means understanding what types of encryption are provided by the cloud storage provider.

## Encrypted Backup

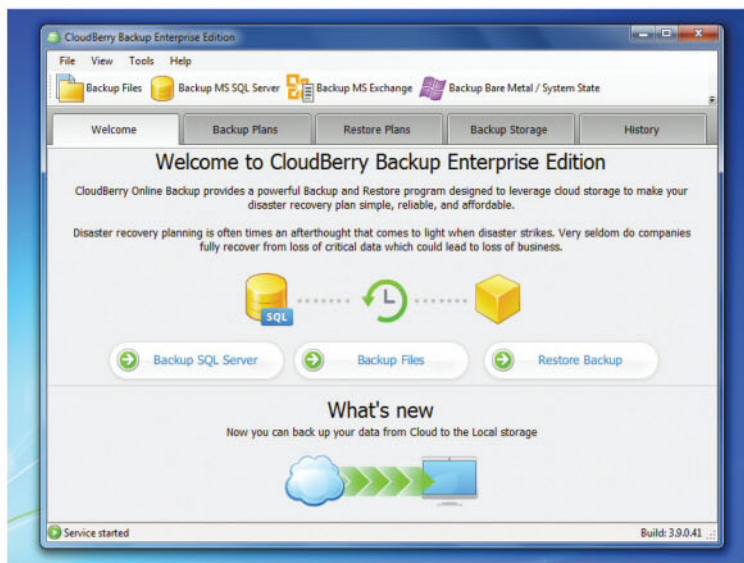
There are three basic ways cloud storage providers operate when it comes to security provisions. With the simplest approach, data is sent from your computer to the cloud server, where it's stored unencrypted. This has obvious security implications. Anybody with physical access to the cloud storage server computers could access your files, as could any hacker who gains unauthorised



▲ Like most cloud storage services, Dropbox encrypts your files on their servers but that doesn't protect your files from them



▲ Cloud backup apps like SpiderOak promise 'zero knowledge', meaning they simply can't view files you store with them



▲ A DIY approach with Amazon Glacier and CloudBerry Backup can remove you from the radar of hackers and provide even tighter security

access. Alternatively a rogue member of staff might look at your private data.

To remove these possibilities, the data might be stored encrypted on the cloud server. In fact, this is the approach used by most cloud storage and backup services. Unfortunately, the encryption is usually controlled by the cloud storage provider, so they can still access your files by simply decrypting them whenever they want. This level of encryption does present a brick wall to any hacker that somehow gains access to the server, though.

## “ A DIY approach to encrypted cloud backup can be significantly cheaper ”

The best form of cloud storage is where providers have a 'zero knowledge' policy, which is to say the encryption takes place on your computer before the files are uploaded. As such, the cloud storage provider is simply unable to access the files, and to them the files appear to be gibberish.

It's worth noting that no matter which of the three above approaches is used, the connection to the cloud backup service across the internet will always be encrypted with transport layer security (TLS), which is the same type of security used to protect <https://> websites such as online banking. In fact, when cloud services boast that they provide encryption, this is often what they're referring to, and it can be very misleading: this is encryption for the sake of data transfer and has no bearing on whether files are stored encrypted on the cloud storage servers.

However, if a zero-knowledge approach is clearly the best, why don't all cloud storage providers use it? The answer lies in convenience – for you as an end user and the cloud service provider itself.

One severe limitation of zero-knowledge cloud storage is that your account password becomes supremely important, because

it's used to create the encryption key that protects your files. If you forget the password, then your backed-up files are completely inaccessible to you or anybody else. Worst of all, people tend not to realise they've forgotten a password until they need to use it.

If the cloud backup service controls the encryption, then they're able to offer niceties such as password resets should you forget your login details and technical support whereby they can dig into your file collection to fix errors. Equally, if files are encrypted by the user before uploading, then they simply can't be shared with other users. Offering files for download from public web pages becomes impossible, as does collaborative working. These are key features of cloud services like Dropbox and Google Drive.

More importantly for cloud storage providers, keeping control of encryption allows space to be saved on the server by only storing one version of a file, regardless of how many users upload it. This is called deduplication. If users Bill, Chris and Mike upload the same MP3 file, then only one copy of the file is stored, even though all four users appear to have their own copy. If the MP3 file is individually encrypted by each user, then it's impossible for cloud service providers to know it's the same file, meaning much more storage space is used. This is why zero-knowledge cloud services tend to be more expensive.

## Zero Knowledge

For those who desire the best possible security, zero-knowledge encryption – sometimes referred to as personal encryption – appears to be the way to go. But even here there are caveats. Not all zero-knowledge services are the same.

An encryption key is needed for a file to be encrypted and subsequently decrypted, and this is usually stored as a file. Imagine a situation where this key file is stored only on your computer, where it's used to encrypt files for upload to the cloud backup service and for decrypting during any files you choose to restore. This sounds like the perfect solution, right? Nobody else will be able to ever decrypt your files, because they simply don't have the key.

Unfortunately, this is a dangerous setup, because if your hard disk fails, then the encryption key stored on it will also be lost. Once that's lost, there's no way to decrypt the cloud backup data.



# The Instant Guide

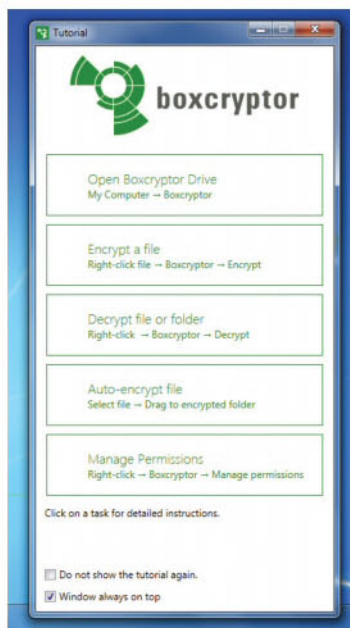
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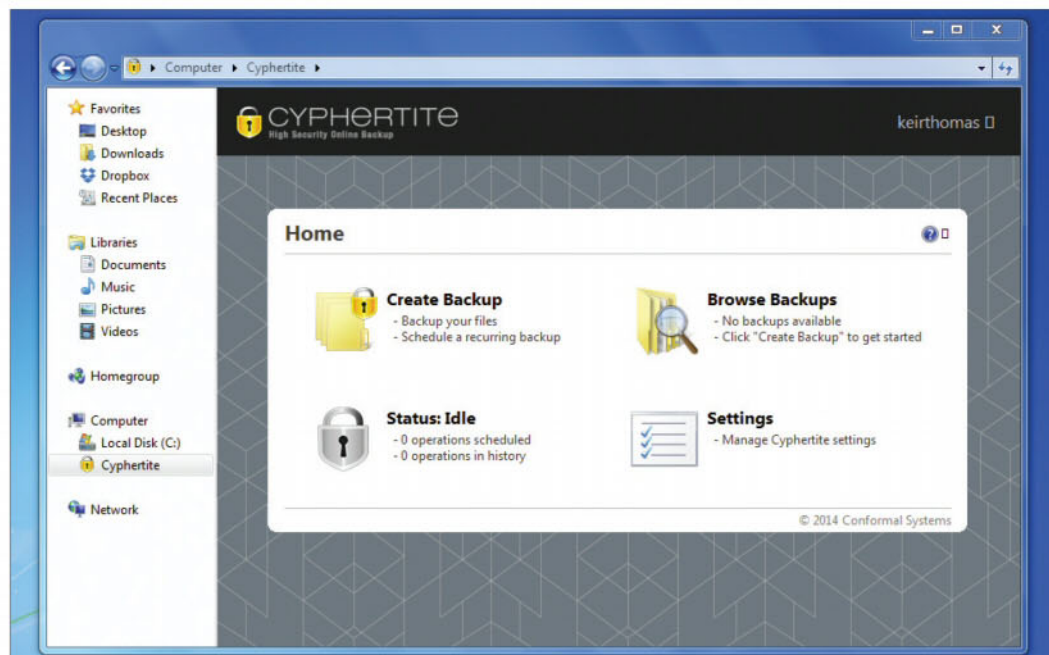
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▲ **BoxCryptor** provides a layer of uncrackable encryption to popular cloud storage services like Dropbox and Google Drive



▲ Some cloud backup services like Cyphertite let you take control of your all-important encryption key, so nobody can hack it

Because of this risk, most cloud services offering personal encryption use a 'secrets file', which contains the encryption key, alongside other authenticating data. This resides on your computer's hard disk and is itself encrypted using a password you supply. It's also uploaded to the cloud server, along with your data, so it can be restored in future and subsequently unlocked using your password, to allow the decryption of all your files.

Although sensible, this approach provides a point of weakness, because should a hacker get hold of the secrets file, they

To protect against the admittedly unlikely eventuality of hackers getting hold of the secrets file, a handful of cloud storage services provide the option of not uploading it, thus providing the best possible security. In this instance, you should back up the secrets file to something like a USB memory stick (or perhaps two or even three sticks, to prevent against loss). Some providers even advocate printing it out, so it can be re-inputted by hand, should the need arise – despite the fact it's usually several lines of user-unfriendly gibberish letters, numbers and symbols.

## “ Importantly for cloud storage providers, keeping control of encryption allows space to be saved ”

can attempt to brute force its password – something that's significantly easier than attempting to crack the actual encryption key. A brute force attack is where hackers try literally billions of guesses, generated automatically by a special program running on powerful computers (see the 21st Century Security feature in issue 1274 of Micro Mart).

Because of the way encryption works, brute force guessing an encryption password is time consuming, but it isn't impossible and gets a little easier with every faster model of CPU or GPU that's created.

You can make the hacker's job significantly harder by ensuring your cloud password is extremely strong – at least 20 characters long and random, including letters, numbers and symbols.

## Choosing A Provider

The table on page 28 provides an at-a-glance view of some major cloud services you might choose to go with. We've only included services that provide zero knowledge encryption, because we think that, in today's world, this is a necessity. Unfortunately, there aren't very many of these at present. Most offer free plans, so you can discover how the service works for you.

Most cloud providers not only back up files but store older versions of your files. In other words, if you tweak a photo, save your changes but decide you've made a mistake, you can use your cloud storage to retrieve an earlier version. Older versions are usually stored for a limited time, although some storage providers hold them indefinitely.

## Sync Yourself

A DIY approach to encrypted cloud backup can be significantly cheaper than services like Dropbox or Spideroak. The trick is to use online storage space that you 'rent' yourself, and use a dedicated client app on the PC to back up to it. The client encrypts files before uploading them.

While just about any online storage can be used for backup, such as FTP space provided as part of web hosting deals, many people rely on Amazon Glacier ([aws.amazon.com/glacier](http://aws.amazon.com/glacier)). This is extremely inexpensive bare-bones cloud storage designed for



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CrashPlan (www.code42.com/crashplan)	Backup	Optional*	WinXP and later, Mac OS X, Linux	iOS, Android, Windows Phone 7.5/8	30-day free trial; Unlimited storage for US\$59.99 per year/US\$114.99 for two years/US\$189.99 for four years
Cyphertite (www.cyphertite.com)	Backup	Yes	WinXP and later, Linux, BSD	N/A	15-day free trial; Unlimited storage for US\$5 per month/US\$50 per year/US\$95 for two years
Mega (mega.co.nz)	Cloud storage	Yes	WinXP and later, Mac OS X	iOS, Android, Blackberry; Firefox and Chrome extensions	50GB free; €99.99 for 500GB per year/€199.99 for 2TB per year/€299.99 for 4TB per year
Spideroak (spideroak.com)	Backup and cloud storage	Yes	WinXP and later, Mac OS, Linux	Android, iOS	2GB free; 100GB costs US\$10/month (US\$100/year), with US\$10 per month for each additional 100GB
Wuala (www.wuala.com)	Backup	Yes	WinXP and later, Mac OS X, Linux	iOS, Android	5GB costs €0.99 per month, 20GB costs €2.99 per month, 50GB costs €5.99 per month, 100GB costs €9.99 per month, more prices available at <a href="http://www.wuala.com/en/purchase/storage">www.wuala.com/en/purchase/storage</a>
* Configured via settings					

archiving files and is offered by Amazon as part of its wider Web Services product. With Glacier you pay for what you use, rather than via monthly or yearly subscription fees. Prices start from US\$0.01 per gigabyte of space, per month. However, retrieving data in the event of a disaster also has a cost attached, with the cost dropping significantly if you retrieve data slowly over several hours. See [goo.gl/bVc50J](http://goo.gl/bVc50J) for details.

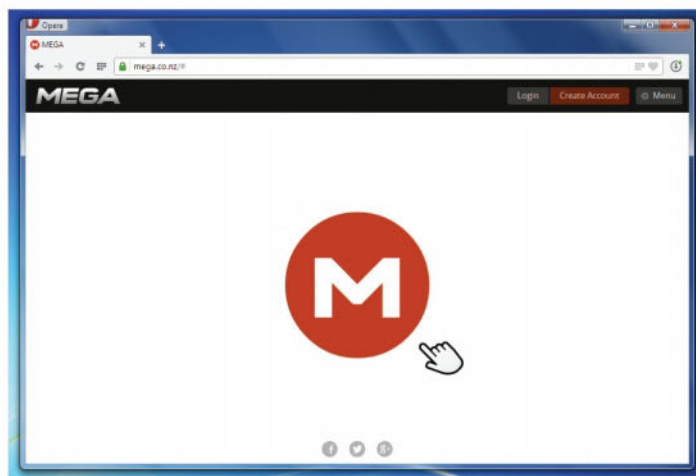
Files uploaded to Glacier are encrypted automatically and invisibly to the user, although this approach means Amazon holds the encryption key and can potentially access your data. Therefore, encrypting files before uploading is a necessity for full peace of mind.

## “ Most cloud providers not only back up files but store older versions of your files ”

Apps like CloudBerry Desktop Backup ([www.cloudberrylab.com/amazon-s3-cloud-desktop-backup.aspx](http://www.cloudberrylab.com/amazon-s3-cloud-desktop-backup.aspx)) cost \$29.99 and offer the same features as dedicated cloud backup apps, except they let you choose your destination, which can include Amazon Glacier. CloudBerry Desktop Backup also includes individual file encryption.

Before using apps like CloudBerry, you'll need to sign up for Glacier, which will involve handing over credit card details and being issued an Access Key ID and Secret Access Key, which you'll need to enter into the backup software.

A semi-DIY solution is to use any cloud storage service, regardless of whether it offers encryption, and encrypt files yourself before uploading using a third-party app like Boxcryptor (free from [www.boxcryptor.com](http://www.boxcryptor.com)), which will automatically and



▲ Mega offers a similar service to Dropbox, except it offers zero-knowledge encryption, so it can't snoop on your files

invisibly encrypt files by creating a new virtual folder that you use instead of the main cloud storage folder. The cloud backup service then takes care of uploading in the background as usual.

If you regularly use two of more computers, such as a desktop and laptop, then a third free potential solution is to use BitTorrent Sync ([www.bittorrent.com/sync](http://www.bittorrent.com/sync)). This works like Dropbox, in that the contents of a magical folder are automatically synced to other computers on which the software is installed, and on which a secret passphrase has been entered. However, BitTorrent Sync is purely peer-to-peer, which means syncing only occurs while both computers are up and running; there's no central cloud storage. However, if you have an old PC or laptop that you don't mind keeping running 24/7, then installing BitTorrent Sync on it, along with your everyday computers, makes for a very usable solution. A similar but slightly more hands-on technology is SparkleShare ([sparkleshare.org](http://sparkleshare.org)). [mm](#)



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# Your Letters

## Refurbished Woes

Your article in Issue 1318 struck a chord with me. Not exactly related to computers, as such, but a useful piece of tech equipment: the humble TomTom sat nav. I had reason to purchase a new device back in January. Having been pleased with my old, but sadly broken model, I chose to go the TomTom route again.

Their site had many different models but a refurbished Go Live 820 for a favourable price caught my eye. It all looked good, no smallprint to worry about and a reputable company, so I went ahead and purchased the device. So imagine my surprise when on an outing a couple of months after purchase a warning message appeared telling me my maps were 36 months old! That's three years by my reckoning.

I duly contacted their help e-mail, as none of the helpful Q&A pages mentioned this problem, a mail to which I received a very pleasant and quick response from a technician saying he was sorry but there wasn't anything he could do about it other than offer me an £8 voucher towards a map update.

Despite my protestations that the cost of new maps to TomTom would be minuscule, that I assumed refurbished equated to up-to-date, and that I hadn't expected that from a respectable company, that's all I was getting.

To add insult to injury the device now refuses to connect to the Internet through my PC to update the mapshare changes. But that is a different problem that has yet to be investigated.

**Graham Head**

## Code May Look Confusing...

I am a long-time subscriber, a retired computer systems analyst beginning my career with the IBM 1401 in 1964, so I have done a fair bit of coding in my time. And, although I've lived in the UK longer than any other country, I was born in Budapest, Hungary.

You may imagine what a laugh you gave me on page 20 of issue 1321 with your illustration stating "Code may look confusing to the uninitiated..." as most of it was in Hungarian!

What fun!

**Tibor Pollerman**

## Essence Of Micro Mart

10 years is quite a long time. About a week ago I thought it was time for me to 'distill' the essence of the *Micro Marts* that I have from the last 10 years or so: Today I finished this project

I used two types of storage: a "Really Useful" plastic box and a range of A4 folders for keeping core material. For me the whole point of this is to save space and get the most important articles together in an accessible form

I prioritized the key material into 11 folders and the rest (the "great unsorted" pile) went into the plastic box. I used a Stanley knife to cut out the pages that were needed and the rest of mag was then discarded.

The hard bit I suppose was working out the subject areas to be covered by the 'priority' folders. I ended up with these choices for the folders:

- 1) Core PC software
- 2) Computer Security
- 3) ZX Spectrum
- 4) Raspberry Pi

- 5) Learning Code
- 6) Web Design and Languages
- 7) Hardware basics
- 8) Hardware esoterics
- 9) Letters
- 10) Codecs audio and video
- 11) Lian Li cases

The rest, the "great unsorted" went in the plastic box for further 'distillation'. The old Morecambe and Wise joke about "playing all the right notes, but not necessarily in the right order" describes one area of difficulty: serialized articles (I think the maximum I saw was a series running across 12 issues marts) - I had all the magazines, but definitely not in the right order! So these had to go in the unsorted box.

Another difficulty was where I found two "key" articles in different subject areas that each started/ended on opposite sides of the same sheet of paper: for this a scanner would be needed to get copies of both sides of the page so that these articles could then separated from each other –

so until this was done these also had to be put in the unsorted pile. I actually appreciated the adverts where they occurred as they were often a helpful divider between some articles and thereby to minimize the scanning work needed.

Overall, I enjoyed it. Although the object was not to re read it, inevitably I was distracted by some of the articles so I did learn something! And, of course, there was always going to be the one great missing article that I remembered as being excellent and wanted to find again but could not now find ("sod's law" has to apply somewhere in a project like this). This did happen but was easily outweighed by the wealth of material that was also very good and waiting to be re-read: now it is all easily accessible and I have gained a useful easy reference for my main areas of interest.

The benefit of discarding and saving space is also significant. One example would be web

browsers: I only use one browser and am not likely to change. So all the "other browser stuff" was an easy one for the discard pile. And of course an awful lot of hardware articles were from the past. It is, of course, an exercise that everyone who tries it will do in their own unique way.

**Harry Deakin**

## GET IN TOUCH...

### By email

[letters@micromart.co.uk](mailto:letters@micromart.co.uk)

### By post

Micro Mart  
30 Cleveland Street  
London  
W1T 4JD

### Online

[forum.micromart.co.uk](http://forum.micromart.co.uk)



# Component Watch

**Gaming laptops are never cheap, but you can save a few quid if you look around**

It's summer, and that means only one thing: staying indoors with the curtains closed and the fan switched on. If you want to take your mind off the heat, why not look for a new gaming laptop that you can drag to the coolest room in the house? This week, we've found the best possible deals on a variety of gaming laptops so you can make sure the hottest weeks fly by.

## Deal 1: MSI GP70 Leopard

**RRP: £749.99 / Deal Price: £719.99**

It's about as cheap as gaming laptops come, but the MSI GP70 Leopard isn't a slouch, with an Intel Core i5-4200H clocked at 2.8GHz, 8GB of RAM, a 1TB hard drive and 17" full HD screen. Graphics are provided by the GeForce GT840M, putting it right up to date. Reviewers have criticised the battery life and keyboard, but if you want a machine for console-style gaming, it's up to the job.

**Where to get it:** Ebuyer – [bit.ly/1kkTe5o](http://bit.ly/1kkTe5o)



## Deal 2: Asus ROG G750JM

**RRP: £969.99 / Deal Price: £915.01**

This laptop from Asus's Republic of Gamers line is powered by an Intel Core i7-4700HQ clocked at 2.4GHz with 8GB of memory and the super-powerful GeForce GTX680M at its heart. With that sort of power, you can forgive Asus cutting corners slightly and only providing a 750GB hard drive. Still, it's one of Asus's slimmest laptops yet and packs in the company's own 'Trinity' technology, allowing it to support three displays at once.

**Where to get it:** CCL Online – [bit.ly/1k5BTwY](http://bit.ly/1k5BTwY)



## Deal 3: Gigabyte P27G V2-CF1

**RRP: £999.99 / Deal Price: £983.94**

Gigabyte's best sub-£1,000 gaming laptop carries within it an Intel Core i7-4810MQ clocked at 2.8GHz, 8GB of RAM, a 1TB

hard drive and a full HD 17.3" TFT screen. Graphics are provided by the Nvidia GeForce GTX860M, and its additional RAM slots support expansion up to 24GB. A unique tri-storage system means it has a RAID 0 configuration capacity up to 2TB. There's even a backlit keyboard for those night-time gaming sessions!

**Where to get it:** Eclipse Computers – [bit.ly/1kkTAJl](http://bit.ly/1kkTAJl)



## Deal 4: MSI GE70 2PE 052UK

**RRP: £1,299.99 / Deal Price: £1,059.00**

There's a huge discount on this version of the MSI GE70, which contains a Core i7-4710HQ clocked at 2.5GHz, 8GB of RAM and – yet again – a GeForce GTX860M graphics processor. The cost comes from its two-disk design, with an mSATA 128GB SSD complementing a 1TB HDD. MSI Cooler Boost 2 technology also cools 15% better than standard coolers, and the SteelSeries keyboard proves more than anything else that it's aimed at serious gamers.

**Where to get it:** CCL Online – [bit.ly/1rMWhFP](http://bit.ly/1rMWhFP)



## Deal 5: Asus G750JS

**RRP: £1,239.99 / Deal Price: £1,297.99**

If it's high-end you want, you can't go wrong with the Asus G750JS. At first it seems fairly standard, with an Intel Core i7-4700HQ clocked at 2.4GHz and 8GB of RAM, but it's also got a 1.5TB hard drive – more storage than any other laptop on this list – and an Nvidia GeForce GTX870M, which is the best GPU of any laptop on this list. Add in a built-in HD webcam and Blu-ray drive, and it's clear why this is the most expensive – and best – gaming laptop we found.

**Where to get it:** Ebuyer – [bit.ly/1pBmv7W](http://bit.ly/1pBmv7W)



# The perfect time to try the five-star TV Bed

Enjoy high-tech home entertainment in your bedroom with the most sophisticated TV Bed on the market, and find out how you can get an [exclusive 25% off with our Micro Mart reader offer](#)

---



## THE WORLD'S NUMBER ONE TV BED

Having a television in your bedroom is nothing new, but having a high-quality set built into your bed takes this everyday luxury to a whole new level.

No longer does a TV have to take up space on a chest of drawers or balance on a chair – with a TV Bed, you simply click a button and the television set glides up from the footboard of your bed, quiet and sleek.

Fully cabled, the TV Bed enables you to watch digital TV and DVDs, and links easily to the internet so you can watch what you like, when you like, with whoever you like.



## Great-looking and incredibly well made, the Azure ships with a high-quality TV for a great price

### STYLISH BED, STYLISH BEDROOM

As the television set rises, the power is switched on automatically. In its viewing position, the TV sits flush with the rest of the bed's footboard on its own platform, at a comfortable angle whether you're sitting or lying in bed. Once you're finished, one-button touch lets the TV glide back down, automatically switching off the power.

Whether the TV is in use or stored away, the top of the footboard is flat, so there are no ugly gaps. The TV Bed also holds the patent for the slimmest footboard (just 140mm at its deepest point). So unlike other products on the market, your bed looks elegant and sleek, just like the rest of the room. Easy-to-use cable management within the frame also ensures there are no messy wires showing.

There are four different models of TV Bed so you can find one to suit your style, including The Belmond's steel four-poster design. Simple and elegant, all four designs are available in a range of modern colours and a leather-hide finish.

### A PERSONAL TOUCH

Standard bed sizes from doubles to emperor beds are all included in the TV Bed range, and you can choose from a series of premium mattresses to suit your needs. Matching bedside drawers are also available.

For the truly personal touch, you can order a bespoke size or finish for your TV Bed and mattress. The handcrafted, UK-based production process allows for all kinds of made-to-order options – you can even order a colour, finish or cover for your bed to match your existing bedroom's décor.

### QUALITY IN THE DETAIL

Everything about the TV Bed is designed for you to get the best TV and the best bed. Every TV Bed is built with the latest Samsung 32-inch LED television, for lasting high performance. When you order, you have the option to upgrade the television to the latest 32-inch Samsung Smart TV with Wi-Fi. The television cabling is safely housed within the bed's frame and designed so it's easy to switch from watching TV to DVDs to playing games or even using the internet.

The TV Bed has all you need to keep you in touch with the latest home entertainment, day and night.



### A CUT ABOVE THE REST

Since the TV Bed company was founded in 2003, many other companies have started to produce similar products. However, the original TV Bed remains the best-selling range on the market, and for good reason. Based just north of London, the company makes its beds by hand in the UK, sourcing components from the best suppliers at home and abroad. For example, the motor is German engineered and the hatch hinges are precision-made in Austria to ensure the best glide-up, glide-down performance every time you want to watch TV. Along with high-quality wooden frames and upholstery accredited by the UK Leather Association Federation, it's details like these that have set the TV Bed apart from the rest of the market.

### EXPERT REVIEW



#### David Ludlow says 5/5 stars for the TV Bed

David Ludlow at [expertreviews.co.uk](http://expertreviews.co.uk) tested the Azure model in the TV Bed range, assessing it for its entertainment performance but also reviewing it as a key item of home furniture. "Great-looking and incredibly well made, the Azure ships with a high-quality TV for a great price."

### There couldn't be a better time to discover the luxury, ease and everyday pleasure of having a well made, hand-crafted TV Bed in your home

- As a Micro Mart reader you can now get 25% off the full price of your own TV Bed
- Prices start at £1,999, with FREE delivery and installation anywhere in the UK
- To find out more, simply go to [www.tvbed.com](http://www.tvbed.com) and quote **MMA962** when you order or call **01707 277777**



## Wikipedia Bans... US House Of Representatives!

## Picture This: Home Security From Swann

### Plug-and-Play wireless network camera

**W**ith 25 years experience of providing this kind of thing, Swann Security is all too happy to tell you of its latest security surveillance solution for homes.

The 720p SwannEye Plug & Play Wireless Network Camera promises to be quite the device, protecting your home "like never before". Affordable at £119 this wi-fi enabled, all-in-one IP camera and surveillance system promises to be a doddle to set up and can be used in conjunction with a smartphone or tablet – either iOS or Android – with a free download of the free SwannEye HD app.

The camera also happens to come with a built-in microphone so you can hear what's being said during the day and night, 24/7. Captured pictures and videos can be saved to a Micro SD card or mobile device and you'll be sent email notifications when any motion is detected. If this sounds your thing, why not have a look at [swann.com](http://swann.com).



## Latest Lumia Launched

### It's the most affordable Lumia yet

**M**icrosoft has unveiled the latest device in the Lumia range, the Lumia 530, trumpeting the fact that it's the most affordable Lumia around. Expected to retail at around €85 from August, it will be available in single-SIM and dual-SIM 3G variants and will house the Windows Phone 8.1 OS with features including one-swipe notifications from Action Center and the Word Flow keyboard.

Under the 4" LCD display lies a quad-core Qualcomm Snapdragon processor, 4GB on-board memory (expandable with SD cards up to 128GB) access to 15GB free cloud storage and a 5MP rear camera. Microsoft seemed keen to point us towards the included Creative Studio and Glam Me signature apps to help take voice-guided selfies and if you would like this phone, you can pick whichever changeable cover shell you like from bright orange, bright green, dark grey or white.

Watch out for this when it rolls out this month.





## Disruptive editing to blame

**T**he admin staff over at Wikipedia have laid down the law in the States, and in the process demonstrated that it's not afraid to stand up to anyone. Indeed, computers based within the US House of Representatives have been banned from making edits following what the organisation describes as "persistent disruptive editing".

Wikipedia has imposed a ten-day block due to anonymous changes made on various entries to politicians and businesses, alongside key

political events in America's history including the Kennedy assassination. Included in the edits were apparently changes to the biography of the former US defence secretary Donald Rumsfeld to read that he was an "alien lizard".

A staffer at the House has been quoted in the press as saying that the bans for all were down to the actions of "two or three" and, surprisingly, it's not the first time this embarrassing course of action has been taken against the House.



However real it may or may not be, we live in a nation that has prided itself on affording a good degree of freedom to its citizens. Increasingly, though, it seems those in power are intent on trampling over our rights.

Not only do the government seem to be able to spy on us as much as they please, we find ourselves in a time where the press is being shackled (perhaps justifiably) and where parts of the web are being blocked by ISPs as a legal requirement.

And in the case of pornography, ISPs now have to offer a blocking option to their customers. That's fair enough, but it seems those very same customers are simply not interested.

Certainly, porn is popular, but I reckon there's more to it than that. People don't want to live in a nanny state, and they don't want to be constantly told what they can and can't do.

Sadly, it seems the government are the only ones that don't understand that.

Until next time,

*Anthony*

Editor

# Xara Renews Designer Pro

## All-in-one creative tool promises the lot

**X**ara has updated its all-in-one creative suite – Designer Pro – to version X10, which promises to offer up a little bit of everything the creative types among you would need. It provides the tools for a wide range of graphic design tasks that would typically need a few separate programs to get the job done. That means illustration, photo editing, web graphics, advanced page layout and websites – all are looked after here.

The idea behind bunching all of this together is, as far as Xara is concerned, faster performance with no program switching, with generally higher productivity as a consequence. With support for multi-core processors, the provision of the likes of PANTONE, CMYK and colour separations, this revised program additionally offers Xara's innovative fresh publishing technique, Supersites, for publishing print documents with instant navigation and slick animations among transitions.

Throw in SmartShapes for another fresh way to draw attractive shapes on a document and the Photoshop plug-in PhotoLooks for

improving a photo's mood and look, and this promises to be the veritable jack-of-all-trades. This is going to cost you £249 or £79 for upgraders over at [www.xara.com/uk](http://www.xara.com/uk).



# Meanwhile... On The Internet...

Last week, we reported on a group on how a team from Carnegie Mellon University in the US had apparently found a method of de-anonymising users of the Tor network – the infamous protocol that forms the foundation of the so-called Dark Web – by using exploiting its node-based structure.

The exact details of the flaw found by researchers Alexander Volynkin and Michael McCord still haven't been revealed, since their proposed talk at the Las Vegas-based Black Hat 2014 security conference, entitled 'You Don't Have to be the NSA to Break Tor: De-anonymizing Users on a Budget', never happened due to an intervention from their employer's legal team. Nevertheless, in its efforts to try to counteract the supposed problem, the team behind Tor itself discovered an attack on the system that has been in operation for the last five months and may well have exposed the identity of thousands of its users ([tinyurl.com/Motl1323a](http://tinyurl.com/Motl1323a)).

A Tor security advisory published on 30th July ([tinyurl.com/Motl1323b](http://tinyurl.com/Motl1323b)) reported that the attack had been underway from February until July this year and that users of the network "should assume they were affected".

Rather unhelpfully, though, the message then goes on to add that: "it's still unclear what "affected" includes. We know the attack looked for users who fetched hidden service descriptors, but the attackers likely were not able to see any application-level traffic (e.g. what pages were loaded or even whether users visited the hidden service they looked up). The attack probably also tried to learn who published hidden service descriptors, which would allow the attackers to learn the location of that hidden service."

While the Tor coders reckon that the attack resembles what the Carnegie Mellon team was going to reveal as the weakness, they are far from certain that it was directly responsible for the breach, as they have had no direct contact or confirmation of details. At the bottom of the aforementioned security report is an 'open question' section, which amounts to a worrying footnote on the whole issue. It asserts that the Tor team "spent several months trying to extract information from the researchers who were going to give the Black Hat talk, and eventually we did get some hints... which is how we started looking for the attacks in the wild. They haven't answered our emails lately, so we don't know for sure." It later adds that the team "hope they \*were\* the ones doing the attacks, since otherwise it means somebody else". Tor really is beset on all sides at the moment, it would seem.

The House of Lords' Home Affairs, Health and Education EU Sub-Committee (which sounds like a barrel of laughs) waded into the whole Google/right to be forgotten argument by declaring the EU Court of Justice's ruling on the matter "unworkable, unreasonable, and wrong in principle" ([tinyurl.com/Motl1323g](http://tinyurl.com/Motl1323g)). They argued that the directive used to underpin the decision needs to be updated to "no longer include any provision on the lines of the Commission's 'right to be forgotten' or the European Parliament's 'right to erasure'" ([tinyurl.com/Motl1323i](http://tinyurl.com/Motl1323i)).

It's all fairly strongly worded stuff, although of course it's only a document that could potentially guide thinking on the matter, rather than a statement of policy. However, it does show that there's still a debate – no doubt being fuelled by lobbying from the likes of Google – on whether the ruling is a step too far.

On the same subject, Wikipedia's founder Jimmy Wales has once again waded into the debate, by commenting on the problems with allowing companies such as Google to be responsible for "censoring history". In a widely covered interview on Radio 4's Today program ([tinyurl.com/Motl1323j](http://tinyurl.com/Motl1323j)), he stated:

*"I would say the biggest problem we have is that the law seems to indicate Google needs to censor links to information that is clearly public – links to articles in legally published, truthful news stories... If we want to go down a path where we are going to be censoring history, there is no way we should leave a private company like Google in charge of making those decisions."*

His comments come in the wake of Google admitting that it had approved approximately half of over 90,000(!) requests to remove information it had received, amounting to around 300,000 pages ([tinyurl.com/Motl1323k](http://tinyurl.com/Motl1323k)).

The ongoing argument between Amazon and Hachette ([tinyurl.com/Motl1323c](http://tinyurl.com/Motl1323c)), the US's fourth largest publishing house, has done a lot to expose the kind of bargaining that goes on behind the scenes of big-league retail, just how nasty things can get and just how much influence the online retailer has in that industry these days (it controls about 50% of the market, apparently: [tinyurl.com/Motl1323d](http://tinyurl.com/Motl1323d)). Well, now some of the biggest writers in the industry have got together to

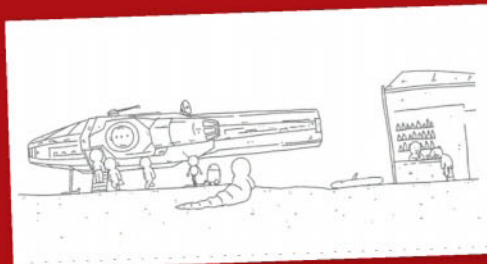
decry what's going on ([tinyurl.com/Motl1323e](http://tinyurl.com/Motl1323e)), describing the online giant as "thuggish" in its dealings, which has seen it delay deliveries of Hachette's books and taking away features like pre-ordering and one-click buying and removing discounts. Who's going to blink first is not clear, but we know who our money would be on (clue: the one that didn't flinch in the face of a massive campaign about its tax payment habits).

## Aaaaaaaaand Finally...

If, like us, you enjoy a good single-serving of Tumblr (Skatebush being our all time fave: [tinyurl.com/Motl1323f](http://tinyurl.com/Motl1323f)) we'd heartily recommend you pay a visit to [slugsolos.tumblr.com](http://slugsolos.tumblr.com)... The name says it all.

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

We've covered *Star Wars* in many way within these pages, from the glory of 8-bit *Star Wars* ([tinyurl.com/Motl1323m](http://tinyurl.com/Motl1323m)) to the viral-baiting JJ Abrams teasers for the new film. Indeed, we make no apologies for our fandom, nor our obsession with the sheer amount of *Star Wars*-related guff that makes its way onto the interwebs. This week, we're a little bit obsessed with an online vergence ([tinyurl.com/Motl1323n](http://tinyurl.com/Motl1323n)) that combines two great powers: a galaxy far, far away and the GIF. Sheer genius ([tinyurl.com/Motl1323l](http://tinyurl.com/Motl1323l)).





## Caption Competition

"How do you set up your Holme(s) page?"



This chap looks familiar. Let's see what you made of him, with a selection of this week's caption entries:

- **blacklion1725:** "Sherlock Holmes and the Case of the Missing Start Button."
- **Boris:** "Elementary OS – it's what I use."
- **John Davies:** "I've looked closely and it definitely says 'Microsoft, Dr Watson' So come on, old chap, how much did that cost them?"
- **EdP:** "Let's see – I need to pipe the search from Linux."
- **wyliecoyoteuk:** "Yahoo! Have decided to use a new search engine."
- **D-Dan:** "Yes, it has a keyboard. I can't use my pipe as a wand on this."
- **doctoryorkie:** "Expert called in to find the benefits of 'upgrading' to Windows 8."
- **doctoryorkie:** "The curious case of the copyright lapse?"
- **Think Tank:** "Hmmm, these estate agents are all crooks."
- **Dwynnehugh:** "Is this the only screen resolution that Windows 8 offers?"
- **Richard Bright:** "Sherlock tries to work out why Apple dropped him from OS X."

Thanks to everyone who entered, and well done to Boris for this little beauty: "How do you set up your Holme(s) page?"

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



# Amazon Posts Big Loss

## Recent investments blamed for financial troubles

Amazon has had its fair share of positive quarters in financial terms so news of an almighty loss of £74m comes as a little bit of a surprise.

This was for the second quarter of the year and the firm is forecasting further woes for the third with slowing sales predicted. It's this slow sales growth that has also left investors scared, causing a drop in US shares in after-hours trading.

The reason behind the loss is put down to Amazon's recent investments, including

the Fire Phone and its focus on its digital content business. The company confirmed that its decision to produce its own original TV shows will cost it \$100m in the third quarter of the year, too. Together with spending on its delivery systems, these investments would appear to be costing the firm a pretty penny.

Where does this leave Amazon, then? In the longer term, the firm is obviously planning on all of this investment paying off. In the short term, those investors are a little spooked.

# Lenovo Rivals Google Glass

## Adds power device for longer life

Chinese computing giant Lenovo is going after Google in an attempt to rival the firm's infamous Google Glass offering.

We have not yet been provided a name for the device as yet, but we do know that it aims to better Google's product by putting aside the problem of poor battery life with the addition of a separate power device worn around the neck.

Alongside this interesting announcement is its want to encourage third parties to make devices based on Lenovo's platform, with a view to attempting to make headway in the 'Internet of Things' with devices talking to each other.

We wouldn't be hugely surprised to see other companies similarly going after Glass before long but this is an interesting first stab from one of its competitors.

## Snippets!

### Contactless Goes Underground

Transport for London has let slip that contactless payments will be accepted on trains, tubes and trams from 16th September.

The entire London Underground network will be covered by this, as will the Docklands Light Railway, London Overground and tram services. Uses of contactless payments will be registered on your bank statements and, clearly, the idea of being able to travel around London armed with merely your phone is really rather appealing.

### London 2020 5G Pledge

Boris Johnson, the mayor of our fine capital, has announced that Londoners and visitors will be able to access 5G mobile connectivity by the year 2020. The reporting of his words came courtesy of certain quarters of the national press and Johnson was quoted as saying "London is earning a reputation for being the tech capital of Europe and that is why we need to ensure every Londoner is able to access the very best digital connectivity."

### OneNote On Fire

Microsoft's OneNote for Android application can now be used by owners of the Kindle Fire or Fire phone as the note-taking app has been made available via the Amazon AppStore for Android.

Microsoft updated us on its decision via its blog and has also stated that there will be regular updates for the application, which will be a free download.

# LEGO Art Service Calls On Kickstarter

### Convert photos into LEGO

**B**rick-a-Pic is an interesting little service that has taken to Kickstarter to ask for a little bit of help.

The service essentially lets you convert photos into LEGO artworks by simply uploading an image that the company will then receive and send you back a brick mosaic piece of

art using the exact bricks from LEGO's colour range. It's then down to you to put the artwork together using the accompanying guide.

By making the process easier, thanks to its piece of software converting images to the right-sized pixels for the job in hand and then working out exactly how many bricks you'll need,

you can order a range of sizes, from 16 x 16 pixels to a custom mosaic coming with up to 5,000 bricks.

At the moment, the service is asking for Kickstarter peeps to help it gain \$50,000 in funding in order to buy a load of bricks to make this project a reality. In the meantime, head to **brickapic.com** to have a play.

# PSN Problems Lead To Another Payout For Sony

### Latest in hack case to benefit US users

**T**he continuing legal case regarding the hacking of the PlayStation Network back in 2011 is still costing the tech giant bundles of cash. This time it's Sony users in the United States who are going to benefit.

Another settlement has been agreed in a class action lawsuit brought against the company with Sony ordered to offer \$15m worth of digital goodies in compensation to US users affected by the hack. This amounts to a choice

of a PS3 or PSP game or three months of free subscription to PlayStation Plus for each of them. Hang on, doesn't all this sound familiar? Well, if that doesn't, then how about the choice of games on offer: *Dead Nation*, *LittleBigPlanet* or *inFamous*. This is all very *deja-vu*.

Oddly, the settlement hasn't yet been approved by a judge and won't be until... 1 May 2015! Wow, by that time those games on offer will seem practically ancient.



# Community Corner

## Announcements and other stuff

**T**his is the part of the magazine that belongs to you. If you'd like to send us a picture of your messy computer desk or a photo of you holding Micro Mart on holiday or in a strange place, this is where we'll print it. And should you fancy sending us pictures of cats reading MM... well, let's just say we won't be displeased. Email us at [letters@micromart.co.uk](mailto:letters@micromart.co.uk) or get in touch via the forum.

**MM Forum:** Head to [forum.micromart.co.uk](http://forum.micromart.co.uk) for discussions about all things PC, networking, OS, mobile, and tech related.

**MM Folding Team:** With a home on the forum, the Micro Mart folding team is a productive part of Stanford University's distributed computing project. To find out more about folding, and to put your spare GPU or CPU cycles to good use, head to [tinyurl.com/MMFolds](http://tinyurl.com/MMFolds), say hi and help us fold!



The Micro Mart community forums are powered by InstantForum.NET the leading ASP.NET discussion forum platform from InstantASP. Learn more at [www.instantasp.co.uk](http://www.instantasp.co.uk)

# Bose Sues Beats

## Headphones-maker on the attack

**B**eats – a recent Apple acquisition, and maker of trendy headphones – has found itself on the wrong end of a lawsuit from rival audio device manufacturer Bose, which feels that the new-kid-on-the-block has infringed patents relating to its noise-cancelling technology.

The lawsuit has come about as Bose is claiming that

it has lost sales to Beats because of said infringements. By all accounts, the patents are those covering Bose's active noise reduction ranging over a nine-year period – with its legal team claiming Bose originally developed the technology in question for the US Air Force, before bringing it to the public way back in 2000.

# Apple Emails Yosemite Beta Testers

## Latest OS X build put out to a million

**A**pple has begun the process of emailing the million-or-so people that signed up to test the beta version of the Mac OS X Yosemite build.

The big Apple has released software to its Beta Program site, so if you're one of the ones who signed up then you ought to have received your own notification by now – along with your very own Mac App Store redemption code. If you are going to take advantage of this, please back things up as this is in beta, after all.

What can you expect? See-through toolbars and windows and better icons as part of a fresh iOS-ish design, along with supposed improvement in interconnectivity with other Apple devices. Enjoy.



# Microsoft Enters Sharks Cove

## Raspberry Pi rival... at several times the price

**W**hy let others have all the fun, eh? Microsoft has decided to have its say in the single-board computer market by launching its Intel Atom-based Sharks Cove board intended for developers working on tablets and mobile devices.

The cost is significantly more than the Raspberry Pi (\$299) but you do get Intel HD graphics and a 1.33GHz Intel Atom

Z3735G chip with 2M Cache, plus a full-size HDMI connector, Mini Display connector, USB 2.0 and micro-USB ports, and Ethernet or wi-fi through USB. While developers are the main draw, enthusiasts with a bit of cash may be keen too. With a Windows 8.1 image included alongside the relevant utilities to apply it to the board, this could yet appeal. For more info, swim over to the Sharks Cove site at [www.sharkscove.org](http://www.sharkscove.org).

## Toshiba Stor.E. Canvio Desktop 2TB

Toshiba offers two-tone storage at a more competitive price

### DETAILS

- Price: £60 inc. VAT
- Manufacturer: Toshiba
- Website: [tinyurl.com/naop8c4](http://tinyurl.com/naop8c4)
- Product Code: HDWC120EW3J1
- Required Spec: Windows XP or newer, OS X (Tiger or better), 1x USB 3.0 or USB 2.0



When I last reviewed one of Toshiba's Stor.E Canvio drives I wasn't very complimentary about the cost. It didn't seem to compare well against what Western Digital and Seagate were offering in the same market with similar specifications. While that situation's improved, what hasn't changed is the oddly chocolate box appearance of the Canvio Desktop – an angled assembly of black and white halves. I wasn't really keen on this before, though I notice that Toshiba have accommodated those who feel the same by also producing this unit in all black.

This is a sealed drive, so I can only guess that the 2TB drive inside is made by Toshiba (probably a desktop unit like the PA4292E-1HL0). What's mildly amusing is that, if that's the case, the bare mechanism

costs £10 more than the same technology packaged in white and black plastic.

Looking at what others are doing in this sector, about £60 for 2TB seems to be the going rate. Where this product possibly edges the others is

in the software bundle, the excellent NTI Backup Now EZ, a product that costs £15 retail if you choose to buy it. What this offers is sequential scheduled backups that can secure your files, cloud storage, data areas or the entire system for a bare metal restore by making the Canvio bootable. It might not be equivalent to the most sophisticated backup solutions – it doesn't offer live file capture, for a start – but the competitors don't offer securing a complete system with their applications.

What it also does well is perform. In testing, it delivered excellent read and write numbers of 154MB/s and 144 MB/s respectively. There

are quicker solutions that use multiple drives or hybrid storage, but the Canvio Desktop 2TB is quick compared with most desktop drive enclosures.

If I've got a complaint about this unit, it's the weight. Obviously Toshiba don't want anyone confusing this with one of their mobile storage products as it weighs in at a hefty 1.4kg, at least half a kilogram more than the Seagate 2TB Expansion Desktop Drive.

Toshiba also decided not to grace this design with a power switch, something most people would normally expect to see on a desktop drive. The drive's on-board power management doesn't appear to be able to tell if the PC is running on or not, unless it's been shut down at the PSU.

For those who just want an externally connected USB 3.0 drive the Toshiba Stor.E. Canvio Desktop 2TB is a perfectly acceptable solution. If the 2TB in the review model isn't enough capacity for you, Toshiba also make 3TB, 4TB and 5TB models, along with a cheaper 1TB option if you don't need 2TB.

**mm Mark Pickavance**

**An inexpensive external drive that's perfect for system backups**

### Specifications

**Interface:** USB 3.0 (USB 2.0 compatible)

**Colour:** black/white

**Capacity:** 2TB

**File System:** NTFS (MS Windows). The drive can be re-formatted to HFS+ file system for full Mac compatibility

**Power:** AC Power adapter cable. Input: 100-240V, 650MA. Output: 12V - 2A (EU/UK exchangeable plug head)

**Dimensions:** 129 (L) x 42 (W) x 167 (H) mm

**Backup Software:** NTI Backup Now EZ





# TRENDNet HD Wireless Day/Night Cloud Camera

TRENDnet reduces the cost of monitoring your home in HD quality

## DETAILS

- Price: £70
- Manufacturer: TRENDnet
- Website: [www.trendnet.com](http://www.trendnet.com)
- Required Spec: Windows, Web interface via IE 9, Firefox 13, Safari 4, Chrome 24 or better. iOS or Android for App



**P**ersonal surveillance has become big business. People want to keep an eye on their homes, even when they're not there. The TRENDnet TV-IP7621C or HD Wireless Day/Night Cloud Camera is aimed squarely at that market, providing a relatively low cost yet good quality solution.

In many respects it is the smaller brother of the TV-IP8621C PZT camera that I covered recently, though with less features and correspondingly lower price tag. What you get in this package is a fixed focus camera connectable by either Ethernet or wi-fi with a wall/ceiling mount.

It can capture stills and video in up to 720p resolution in H.264 at 30fps, and it can do it in light or complete darkness using an infrared night vision mode.

Compared with the TV-IP8621C the range of the infrared illumination is reduced, at just five metres, though that's enough to easily cover an entrance.

There are two ways you can operate the camera; manual and automatic. In the manual mode you can access the camera remotely using a PC, iOS or Android device, and then select to record to either Network Attached Storage, or a card placed in the MicroSD slot (up to 32GB). Alternatively, you can set the camera into a motion sensitive mode where when it detects movement it generates the accompanying recordings automatically for you.

What's a little disappointing is that while TRENDnet makes much of this being a 'Cloud Camera', I fail to see where the cloud is involved much at all. Yes, you can access it from a mobile device, but that's a function of the internet, surely. If TRENDnet provided cloud storage for your recordings, or allowed you to dump them on to Google Drive, Dropbox or similar, then that would truly be 'cloud' functionality. Unless I missed something major, it doesn't do any of that as a matter of course. If you've got your own NAS box then probably that distinction isn't critical, but it's worth accepting that the cloud in this context is one you've provided.

I'm also rather bemused that this camera doesn't support power over Ethernet and the potential to reduce cabling to a single line for power and data. TRENDnet do make PoE switches, adapters and cameras, though I presume they want to keep their PoE camera range entirely separate.

The strengths of this product are that it comes with TRENDnetVIEW Pro software that allows you to access up to 32 cameras from a single app. With this you can set up a simple security suite covering multiple locations on a single PC. Though, its overkill for the typical home user with a couple of cameras.

This camera itself isn't anything spectacular, but it does a job – admirably, for the money.

**mm Mark Pickavance**

*An effective means to low cost home surveillance*

## Key Features

- Easy remote camera viewing with free TRENDnet Cloud service
- High Definition 720p HD resolution
- Night vision up to 5m (16ft)
- Motion and sound detection video clips via email
- Record video to a Micro SD card or network storage
- Two way audio
- Free mobile app



# TRENDnet AC1750 Dual Band Wireless Router

Mark tests a budget router for those who want cheap AC connections.

## DETAILS

- Price: £75 (Dabs)
- Manufacturer: TRENDnet
- Website: [www.trendnet.com](http://www.trendnet.com)
- Required Spec: Cable Broadband Service
- Model No. TEW-812DRV (Version v2.xR)

I'll be direct and say that this TRENDnet router doesn't have the quality finish or construction you might see from an Asus, Belkin or Netgear. Don't let appearances fool you, though, because this is an 802.11ac class router that can match many more expensive devices for wireless specification.

The business end of this box is two popular Broadcom wireless chips; the BCM4360 and BCM4331, which support 1.3Gbps 802.11AC and 450Mbps 802.11n respectively, and are controlled by a Broadcom MCM 4706 600MHz CPU. If that wasn't enough Broadcom, it also provides a four port PCM53125 Gigabit switch, enabling the router to be the true heart of any home network.

In terms of the wireless offering, it's a dual band setup with enclosed antenna that includes the unusual feature of allowing four different SIDs for both 2.4- and 5GHz channels. That could be useful, and so could the single USB 3.0 port that's tucked away on the rear of the router.

The USB port accepts FAT32 and NTFS formatted drives, and shares them using a basic Samba and FTP protocols. Though it didn't like some of mine, for no obvious reason.

While it does provide some useful access control and security features, overall list of things missing from the TEW-812DRV is somewhat lengthy. TRENDnet didn't bother to include any Access Point or AC Bridge modes, and it doesn't support TurboQAM on the 802.11n connection.

At one point I also thought that it had no WPS button, but it actually just inconveniently small and well hidden.

In terms of performance, it all depends how you're connecting and how close you are to the router. I used a 802.11ac bridge to connect (in theory giving me the optimal situation). At close range the TEW-812DRV is comparable with many branded routers – managing nearly 400Mbps in AC mode.

It doesn't inspire is when you devices further away, though, as the enclosed antenna reduces transfer to less than half that amount at

distances greater than 15m. This marked drop-off in performance over range also affected 802.11n connections.

Also, the low spec of the CPU made the single USB 3.0 port pointless at that spec, as it couldn't support much faster than USB 2.0 levels of speed. I used a Lexar Jumpdrive S33 32GB as the drive, and it I've tested it on a PC with 105MB/s reading and 35MB/s writing. Shared from the router I could only write at 4.8Mb/s and read at 15.1MB/s.

These issues make the TEW-812DRV is a slightly disappointing solution that delivers 802.11ac, but relatively little else to recommend it. You can add some features if you use DD-WRT open source firmware on it, as it's compatible, but that's not something I'd recommend the non-technical experiment with.

If you want something to stream HD video to devices in the same room then this will do



that, but I wouldn't assume the same range as a branded router is likely to offer.

**mm Mark Pickavance**

**A cheap AC1750 router, that comes with caveats**





# Otone Accento

Music on the go has never sounded so good

## DETAILS

- Price: £30
- Manufacturer: Otone Audio
- Website: [goo.gl/WhJi30](http://goo.gl/WhJi30)
- Required Spec: Spare USB port/USB charger, 3.5mm audio port, SD card (optional)

**P**ortable battery powered speakers often leave a lot to be desired in terms of both the level of audio they produce and the actual lifespan of the battery. You'll often come across the scenario of an individual or group of people struggling to listen to the tinny warbling emitted from portable speaker, while firing a worrying glance at the dwindling power levels. However, that doesn't always have to be the case.

The Ontone Audio Accento is an exception to the rule in this case. Here we have an extremely portable device that measures just 137 x 57 x 38mm and weighs in at a paltry 200g yet offers an exceptional level of sound through a pair of 40mm full range 3W speakers. The lithium-ion rechargeable battery, when fully charged, can dish out up to ten hours of continual use according to the manufacturer – and take just an hour to recharge via mini-USB.

In terms of connectivity, you get the standard 3.5mm stereo audio jack as well as mini-USB, but also Otone have cleverly included a Micro SD card slot with support for cards up to 32GB. The design of the Accento is surprisingly good, too – and of a higher quality than the price of the unit would first suggest. It's an oval shape, with the speaker grill covering the front of the device, with a



polished aluminium logo in the centre. Along the top there are three slightly raised buttons for power/play/pause, volume up/skip forward and volume down/skip back, together with a single LED to signify the specific function and battery charge. One side houses the mini-USB port while the opposite has the 3.5mm audio jack, and the Micro SD card slot is located in a recessed area at the bottom of the speaker.

There's also a slide-out stand on the back of the speaker that, although strong enough to hold the speaker in an upright angle, is a little stiff to move without applying significant force.

Its operation is very simple. By pressing the power button for a couple of seconds the speaker will power up and once hooked up to a phone, tablet, MP3 player, laptop or PC via the 3.5mm jack will start to play whatever's being outputted by

the controlling device. If an SD card is fitted, the contents stored will start to playback – and when connected to a PC can act as a removable device to transfer music to and from the speaker. The default audio input, though, is the 3.5mm jack, which provides startlingly good sound. Volume can be increased significantly with little distortion in the playback, and, while lower frequency levels aren't as good as a speaker with a dedicated bass, its generally adequate to allow for good all-round audio. The battery life was also appreciated. In our tests the speaker managed to keep playing for a total of around eight hours, which is well within expectations – even after a charge of just over an hour.

We were suitably impressed with this tiny, portable speaker. Otone Audio has done an exceptional job. There are also different designs and styles that can be applied to different models of the Accento – a Union Jack flag version, for example.

If you're in need of a really good portable speaker, then you won't go far wrong with the Otone Accento.

**mm David Hayward**

**An extremely capable portable speaker at a very reasonable price**



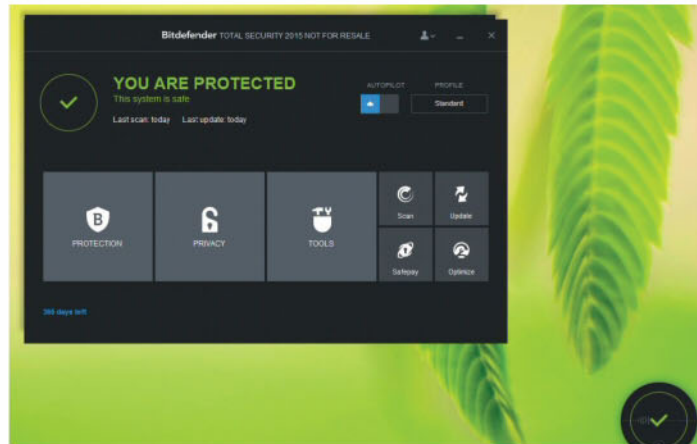


# Bitdefender Total Security 2015

Bitdefender wants to keep you safe, and does...

## DETAILS

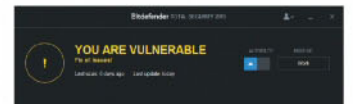
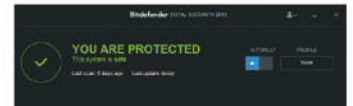
- Price: £60 (one-year, three PCs)
- Manufacturer: Bitdefender
- Website: [goo.gl/TW8gQI](http://goo.gl/TW8gQI)
- Required Spec: XP+, 1.6GHz CPU, 1GB RAM, internet connection for MyBitdefender and remote access



▲ The Total Security 2015 dashboard and widget are simple, but very effective



▲ The Bitdefender Dragon-Wolf keeps getting better



▲ The notifications via the dash and widget keep you informed through the colour scheme and symbols

Bitdefender has a long history of keeping our computers and the information stored within them safe from the nefarious attempts of others who would rather see havoc reign supreme. Its anti-virus engine is superb, and its anti-malware, anti-phishing and anti-everything else, to my mind, without a doubt the best in the world. So how can the company improve on this?

Bitdefender Total Security 2015 is the answer to that question – and, where TS2014 left off, this version takes the baton and sprints ahead of the competition by several lengths. It still offers the highest levels of protection via Bitdefender's Anti-virus Control, its proactive, dynamic detection technology, a two-way firewall and cloud technology based anti-spam, and offers safer online banking via the Safepay function and MyBitdefender cloud access areas. What's more there are also enhanced levels of privacy, with better parental control, including Facebook restrictions, device anti-theft, personal data filter, file encryption and file shredding, and of course anti-phishing measures.

However, where other AV technologies offer the same suite of security Bitdefender does so with an impressive list of added incentives. For example, there's

a much improved level of social media protection that filters messages and posts to scan for fraud and e-threats. There's also a higher level of PC optimisation – dubbed Bitdefender Photon – that greatly improves the speed of the security engine so there's less visible signs of resource consumption or system slowdowns. The One Click Optimiser will tune your system with a disk, registry and privacy clean up, and the new Startup Optimiser can noticeably enhance system boot time by managing startup.

Other new features of note include Bitdefender Profiles, where an Autopilot mode will recognise the task you're performing on the PC and change the profile to prevent

other programs or apps from interrupting you or causing the system to slow down. There's also the Quick Vulnerability Scanner, which automatically warns of any outdated software, missing Windows security patches and unsafe system settings.

TS2015 provides you with a simple animated circular desktop widget, with a green band and tick for a system that check out fine, and red with a warning should the engine detect something untoward. A smaller section at the bottom of the widget informs you of any system messages, and clicking on the widget will launch the newly designed dashboard, which again is simple but allows access to all of TS2015's features with a single click.

It's all blindingly fast, and thanks to the new optimising technologies you can safely leave it to keep an ever-watchful eye on your system without fear of it getting in the way. You no longer have to worry about forgetting to set it Game mode prior to launching Steam, or the annoying pop up regarding some recently updated software mid-way through a movie, or presentation.

Clearly there are many benefits to having Bitdefender Total Security 2015, but the most obvious and the one that really deserves attention is the near perfect anti-virus protection. With TS2015 there's a peace of mind that you simply won't get from any free security product.

**mm David Hayward**

**A terrific security product**





# K7 Total Security

This is a reasonably priced security suite, but how does it compare to rivals?  
Roland Waddilove test drives the latest version

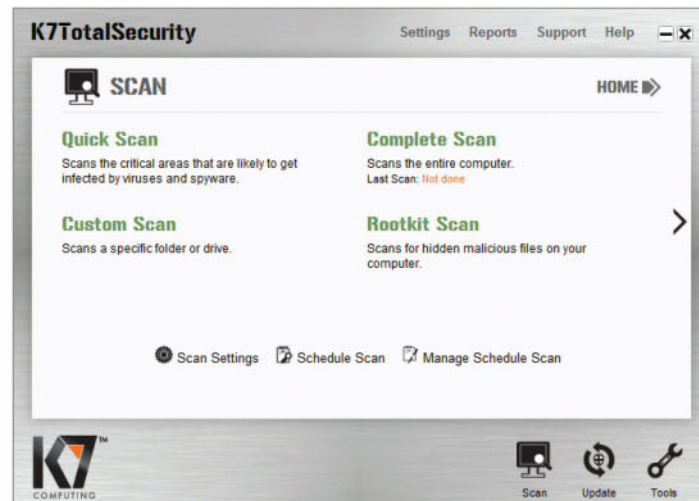
## DETAILS

- Price: £40
- Manufacturer: K7 Computing
- Website: [k7computing.co.uk](http://k7computing.co.uk)
- Required spec: Windows XP SP 2(32-bit), 7, 8 (32/64-bit), 1GB RAM, 1GHz processor, 350MB disk space.

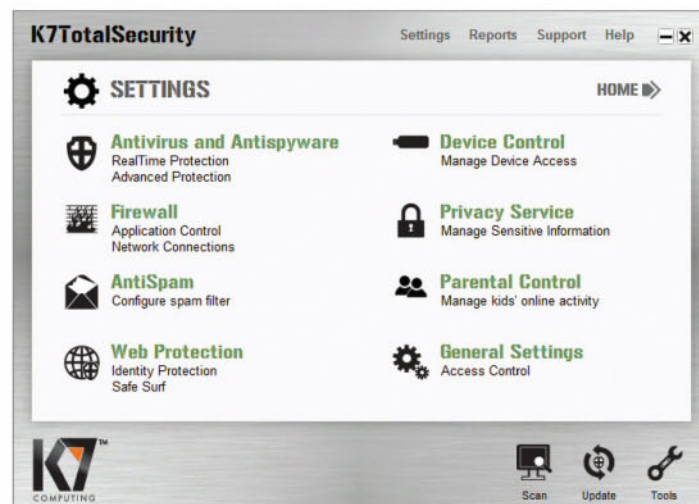
**K**7 Computing has been around for over 20 years and specialises in security software. The company is based in India and, while it may be well known over there, it isn't a household name over here. The main products that are of interest to most PC users are K7 Antivirus Plus basic malware protection, K7 Total Security (which adds extras like a firewall) and K7 Ultimate Security (with disk backup facilities). It is the mid-range product, K7 Total Security that is on test here.

The program window has a brushed metal skin and a very simple text-based interface. It doesn't use any fancy graphics and it is straightforward and easy to use, although this does make it a little unexciting compared to some other security products.

There are options to perform a quick scan, complete scan, custom scan or rootkit scan. A quick scan is very quick indeed, but this is because it doesn't scan as many files as rival products in quick scan mode. This doesn't inspire confidence and it should scan more files than it does. Custom scans let you decide what folders to check and there is always the option of a complete scan.



▲ The home screen provides quick access to the malware scanning facilities



▲ Additional tools like parental controls and anti spam are useful to some users

Websites like AV-Test have over 17,000 malware samples and report that K7 Total Security blocks 98% ([bit.ly/1pmsro0](http://bit.ly/1pmsro0)), which isn't perfect, but is reasonably good. My own tests produced odd results, though. After saving some attachments to dodgy email spam, Avast! Free and Malwarebytes Anti Malware deleted them because they contained malware. K7 Total Security deleted some, but left

others saying they were clean. To be fair though, Trend Micro Housecall said they were okay too. It looked like both K7 and Trend Micro were wrong, which doesn't inspire confidence..

The software provides all the usual facilities and there is real-time scanning, email scanning, a behaviour monitor, browser protection and so on. All these features can be configured with simple on/off switches that make it really easy to configure

the software and see what is and isn't protected.

Total Security is a step up from Antivirus Plus and among the extras that you get are a firewall. Windows firewall is too hard to configure and third party ones, such as this are much simpler. It monitors both incoming and outgoing traffic and you can see a list of programs that have accessed the internet and allow or revoke permission. Rules can be created too. If you use email software on the PC, there is a useful anti-spam module, and if you have children that use the computer, there are parental controls that enable you to limit what they can do. Some additional tools are provided – such as a secure eraser to delete files, Internet Explorer cache cleaning, and internet and Windows temporary files cleaner.

K7 Total Security is okay, but not outstanding in any area. The price is less than Bitdefender Total Security, but Bitdefender a markedly better product.

**mm Roland Waddilove**

**A simple interface and a reasonable range of features make this an adequate, but dull security suite.**



# BlueAnt Pump HD Sportsbuds

A set of sportsbuds designed for those who push themselves to the limit

## DETAILS

- Price: £109
- Manufacturer: BlueAnt
- Website: [goo.gl/Td7ItM](http://goo.gl/Td7ItM)
- Required Spec: USB port for charging, Bluetooth 3.0 compatible device for pairing

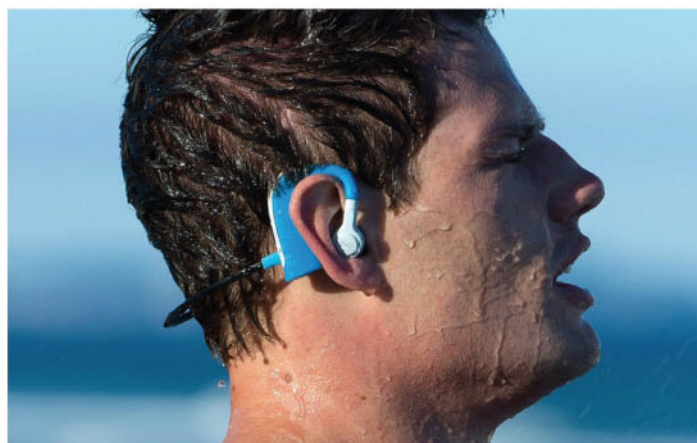
The mobile app world has become obsessed with keeping us fit via all manner of running, swimming, skipping, boxing, and weight training workouts. Even future designs of the iPhone are expected to be geared toward becoming more focused on our health through the addition of many sensors.

To compliment this new wave of workout and fitness then, you're going to need a set of headphones that can keep up with you while you run, climb, leap about – and even swim. Normal headphones or sportsbuds won't be able to stand up to the rigours of a workout; they'll either fall off your ear, or will be ruined in a matter of hours. However, there is a solution.

The new Pump HD Sportsbuds from BlueAnt are as rugged as the training you put your body through. The customised 12.5mm driver enclosures are made from Kevlar and Teflon, with a powerful neodymium voice coil sealed in a speaker that's fully waterproofed. The entire ear piece is encased in a rubberised finish that's designed to completely block sweat, rain and the occasional spill from a bottle of water. However, thanks to the military grade components involved here, you can actually use the Pump HD Sportsbuds in up to a metre



▲ The Pump HD Sportsbuds are both waterproof and hard as hell



▲ They keep out the sweat, rain and water, and can be rinsed off after the workout

of water – since the Bluetooth signal can't penetrate water very well – for up to thirty minutes.

Under normal operations, not swimming, the play time after a two hour charge is around eight hours, with a standby time of two weeks. The Pump HD uses Bluetooth 3.0, so it's compatible with older Bluetooth devices and phones, and is paired by simply holding down the Play button for around five seconds.

The custom tuned drivers are designed to produce the best possible audio for someone who is obviously working hard. The high and mid-range frequencies are pretty good, although there was some distortion when the volume was raised and the

bass seemed a little too heavy by default. A slight adjustment on the phones we used soon resolved the bass issue, though, and after it proved to be enough to listen to without becoming too painful.

The design of the Pump HD is excellent. Apart from the sweat and water proofing technology used, the buds are comfortable and form a noise cancelling seal in the ear so you can concentrate on the audio. Possibly due to the rubberised coating, they are also very comfortable over the ear, even after a couple of hours of wear. Usually, sportsbuds tend to irritate the outer ear after a while, and especially when

you're all sweaty; the Pump HD though is noticeably far easier to wear, plus you can rinse them down under a tap after your workout as well.

The only downside we noticed was when the buds weren't fitted correctly – they can slip if you make a sudden movement. When this happens, and it's not too often thankfully, the sound deteriorates considerably until you take a second or two to put them back in place. You would have to be doing a pretty extreme sport to have the buds slip mind you, Free Running or something we imagine. Under normal circumstances, (just running, say, or in the gym) then there's little chance of a slip and the sound will remain good throughout.

In conclusion then, the Pump HD Sportsbuds are an extremely good and well-designed set of buds – though they're not cheap. The Bluetooth worked flawlessly, and the waterproofing, sweat resistant and rugged design is far better than any other sports related ear wear we've tested. The audio could be better, but in all honesty they're more than enough to workout with.

**mm David Hayward**

**Train in confidence and as hard as you like, the Pump HD can keep up**





# X-Plane 10 Global 64-bit

Come fly with me...

## DETAILS

- Price: £45
- Manufacturer: Laminar Research
- Website: [goo.gl/Vl7nqf](http://goo.gl/Vl7nqf)
- Required Spec: Dual core 3GHz CPU+, 4GB RAM+, 2GB Graphics, XP+, Mac OS X, Ubuntu 12.04 LTS or equivalent

For the best part of twenty years the developers at Laminar Research have offered the world one of the most intensively realistic flight simulators: the *X-Plane* series. With the demise of *Microsoft Flight*, though, there was something of a gap in the market for a decent flight sim that can be appreciated by both enthusiasts and amateurs alike – a gap *X-Plane*'s free, open source, community driven competitor *FlightGear* filled nicely. It does an admirable job of it, too – but for those who required= a little more from a flight sim in terms of as impressive visuals, accurate aircraft sounds and the hyper-realistic flight dynamics, *X-Plane* is the weapon of choice.

Naturally, having access to this level of simulation doesn't come cheap, and many would argue that £45 is a little too much to pay for something that merely looks prettier than *FlightGear*, and who can blame them?

*X-Plane*, though, is far more than just jaw-dropping scenery. It's a powerful and comprehensive flight training simulation that the home user can enjoy without having to step into the cockpit themselves. This is really as



▲ Taking off from Norwich airport in the Space Shuttle. That doesn't happen every day



▲ The level of detail, not just graphical, is immense

good as it gets, and thanks to its enhanced blade element theory, used to produce the accurate flight dynamics model, *X-Plane* absorbs the user in the sort of aeronautics that only a true flight simulator advocate can appreciate. In real terms, that means that behind the scenes we have the blade element calculating every variable: forces, mass, gravity, acceleration, weather patterns, air pressure, wind velocities and other environmental concerns; this way it's not purely down the aeronautic engineer's data manual on a specific plane, but rather the ever fluctuating conditions that directly affect a plane when in motion.

As with all good flight simulators the environment can be altered to suit your needs, though. If you simply want to enjoy the scenery of Seattle while flying a Cessna, with a few clicks of the mouse you can. Similarly, if you fancy taking off from Norwich airport in an X-15 Experimental Plane, or even the Space Shuttle, then why the devil not. The world truly is your oyster. At least to some degree it is, anyway.

While taking off from Heathrow in a Lockheed F-117A Nighthawk sounds too good an opportunity to pass on, there are some issues which could affect your desire to do so. Despite having access

to the continental DLC maps, the UK remains exceedingly sparse. We weren't expecting accurate Google Map quality data here, but something a little more than hot air balloons and an expanse of water, or gently rolling hills wouldn't go amiss.

Another issue we have is the stability of *X-Plane*. There are times when, for some unknown reason, the land disappears and is replaced with the sky, also buildings come and go as they please and the cockpit instrumentation panel even has its fair share of graphical wobbles. Visuals aside, we also had *X-Plane* crash out on us a number of times. Either back to the desktop, or back to the runway while in mid-flight.

Having said that though, *X-Plane* remains an immensely impressive flight simulation – not a game – and one that you could easily clock many hours of flight time on. To really appreciate it, though, you'll need a good working knowledge of aeronautics, and a sense of adventure.

**mm David Hayward**

**An incredible flight simulator, but expensive and with a few issues**



# GROUP TEST

## Gaming Mice

Many of us are quite happy with a standard mouse when it comes to gaming. However, some of you will scoff at such an idea and instead opt for one of the more glamorous and specifically designed peripherals.

With that in mind, David Hayward sat down and played a bunch of games with six mice (not at the same time), to see which perform the best and which will improve his gaming skills.

## Gaming Mice

### Razer Naga Expert MMO Gaming Mouse

#### DETAILS

- Price: ~£70
- Manufacturer: Razer
- Website: [goo.gl/gC0kZD](http://goo.gl/gC0kZD)
- Required spec: Spare USB port, Windows XP or later/Mac OS X for Synapse software

**T**he range of Razer Naga Gaming Mice feature some pretty impressive options for the serious gamer. Whether it's an fast-paced FPS or a more sedate quest through the immense open gaming worlds of a modern RPG, Razer has a mouse that's geared for you.

This is its Naga Expert MMO product, and with it you'll no doubt come up trumps while dishing out whatever it is you do while on your favourite MMO.

The list of features on this particular mouse are long and incorporate a wealth of concepts that you would never have thought possible on the humble mouse. However, the first and most eye-catching feature is the 12 button thumb grid located to one side (left or right, depending on which version you have).

Here we have a 12 mechanical switch button arrangement, with a concave design so it fits neatly in the contours of the hand while allowing each individual button to stand out in a fashion that doesn't have you looking down every few seconds or during those moments where taking your eyes off the screen mean certain doom. Naturally, each of these buttons can be custom programmed to accommodate the game in question through the MMO Configurator utility that accompanies the mouse,

which will allow you to set a range of macros based on the specific profile you detail.

As well as being able to program the 12 buttons on the side, you can also program the standard left and right mouse buttons, the wheel and two additional centre buttons. In total, that makes 17 buttons that can be configured for your game. Overkill? Not really. After testing the Naga Expert out on a few MMOs, we really began to appreciate its abilities and found ourselves reacting faster to any given situation than when using a traditional setup.

Getting to grips with the extra keys does take some effort, but thanks to the mechanical key setup offering a wonderful tactile feedback and the high accuracy of the mouse in general, with its 8200dpi laser, all thoughts of it being unwieldy are soon banished.

Aside from the impressive button arrangement, the Naga also features a 7ft braided USB cable, tilt and click scrollwheel, and 200-inches per second acceleration. Plus it emits a green LED glow through the wheel, the Razer logo on the palm rest and through the buttons. There are also several interchangeable side panels, which can widen the grip and add a more curvaceous (for a mouse, that is) outline.

Using the Razer Synapse 2.0 software also means that, aside from configuring the mouse for umpteen gaming profiles, you can save your configuration setting to the Razer Cloud and essentially take your gaming profiles with you as you travel with your Razer hardware. For most of us that means very little, but for those who compete regularly, either professionally or with friends in a LAN party, the advantage you have by owning Razer kit is yours no matter where you play.

Admittedly, all this engineering is going to set you back the best part of £75, but considering what you get for that £75, it's not that bad. Yes, it is overkill for someone who only plays the occasional platformer, but for those who live online gaming, this is a weapon for a high-level MMO warrior.



▲ The Razer Naga with its mini-keyboard along the side

# Roccat Kone Pure Military Edition

## DETAILS

- Price: £60
- Manufacturer: Roccat
- Website: [goo.gl/MdrsmM](http://goo.gl/MdrsmM)
- Required spec: Spare USB port, Windows Vista or later and internet connection for software installation

**R**occat has already proved itself on the gaming peripheral battle ground with its Ryos MK Pro Gaming Keyboard, which won our gaming keyboard group test some weeks ago. This time, though, we're looking at its newest range of gaming mice, in particular the Kone Pure series.

The Kone Pure is a series of immensely impressive gaming mice. The base edition, the Kone Pure, has enough features to make even the most cynical of mouse connoisseurs salivate. The rest of the range, from the Kone Pure Color, Kone Military and Kone Optical all offer a little something different either in terms of design or some special feature.

The Kone Pure Military Edition is the mouse we have on test in this instance – in Camo Charge green we might add. It's a cleverly designed mouse, with ample width for a comfortable feel, an impressive 5000dpi optical sensor, 1ms response time, 1000Hz polling rate, 30G acceleration and 1.8 metre braided USB cable.

On top of that little lot you also get a 72MHz Turbo Core V2 32-bit ARM processor with 576KB of memory. The processor is used to compute the various functions of the



▲ The Roccat Kone Pure Military Edition is the ideal gaming mouse

mouse as fast as possible, which decreases any lag or wait time between profile switching or when having to alter the mouse buttons during intense gaming. The

as well as multimedia or advanced browser functions.

The design is rather splendid, with a glowing LED Roccat logo on the rear of the palm rest, which can

“ You're getting a superb gaming mouse with plenty of capability ”

576KB of memory may not sound like much, but it's enough to store a huge set of user configured macros.

By default there are nine possible button assignments across the seven available buttons (counting the wheel up and down). However, these can be doubled with the use of the Roccat Easy-Shift + technology. If you install the Roccat Kone driver, the possibility to increase the number of macros and button assignments doubles once more and can be configured for game specific functions

be configured to illuminate in 16.8 million colours. The available designs in the Military range (Camo Charge, Desert Strike and Naval Storm) are all equally stunning, but they're also free from any distracting extras that could be hit or pressed during gaming. It's ergonomically styled and fits in the hand well without having to alter your grip to accommodate any side installed features.

We found the Roccat Kone Pure to be an extremely easy mouse to get used to. Even without the drivers installed,



▲ It performs magnificently and feels perfect under the hand

its functionality was superb, and it glided effortlessly across the surface of our desk. In game, it was truly terrific and very accurate, while on the desktop for normal day-to-day duties it functioned well enough and even added a little something extra thanks to the button assignments.

For the reasonable price of a tad over £60, you're getting a superb gaming mouse with plenty of capability, minus the extreme additions that are so often added for effect on gaming mice. All in all, an excellent choice of mouse for the gamer.





## Gaming Mice

# SteelSeries Sensei Wireless Laser Mouse

### DETAILS

- Price: £130
- Manufacturer: SteelSeries
- Website: [goo.gl/OqE44z](http://goo.gl/OqE44z)
- Required spec: Spare USB port, Windows XP or later for software

**T**o many gamers, the thought of a wireless gaming mouse sends shudders down their spines. They'll sit there in gaming tournaments quietly tittering away at the person who brought a wireless mouse to a professional gaming session. However, the SteelSeries Sensei is a wireless mouse that may well end that particular stigma.

This, according to SteelSeries, is a tournament grade mouse that uses the latest in wireless technology. This mouse promises a 1000Hz polling rate, 1ms response time, a 30-million click switch button lifespan and 50 to 8200dpi. The Pixart ADNS 9800 laser is extremely accurate and offers 30g acceleration, as well as 150 inches per second speeds.

Additionally, there are eight programmable buttons, a 16.8 million colour illuminated logo



▲ *It's rather expensive for what you get*

and an impressive 16-hour battery life. The design also has a non-slip, almost rubbery textured feel to it and it sits nicely in the hand while it travels across the desktop.

The charging pad, which also acts as the mouse wireless receiver, plugs into an available USB port, and when not in use, you simply drop the mouse into the cradle. The charge time when docked with the charging pad takes roughly four hours, when charging from a fully drained battery, but the battery life of the mouse, even with the full colour LED logo active, lasted for several four-hour long gaming sessions without any sign of loss of connectivity or lag.

In terms of design, it's quite sparse, but at the same time, it doesn't overcomplicate with unnecessary additions. It's quite a heavy mouse, weighing in at something like 120g, but that's not a bad thing, as it feels sturdy enough to take a beating. In short, it's a good mouse to wield while gaming.

The SteelSeries Engine 3 software that accompanies the

Sensei allows you to further customise the various macros, adjust the sensitivity and to store your configuration on the SteelSeries cloud, which unfortunately will require you to install the software on every computer you use – if you travel with the mouse to gaming sessions.

While the software is generally good, we did find it to be a little too unstable. Quite frequently it froze or closed without any explanation, and there were even times where the configuration wasn't saved or applied to mouse. In addition to these gripes, there was also a lack of any pre-configured gaming macros to apply. With the Roccat or Razer software, there's a wealth of pre-configured and stored macros to help you out, but with the SteelSeries Engine 3 it appears you have to start from scratch with every game you play.

The SteelSeries Sensei, though, is a pretty good gaming peripheral, considering it's wireless. The obvious advantage of freedom from wires is a draw for some

gamers (those on gaming laptops, for example), but it's still not quite as good as a cabled mouse is.

It did well enough in the tests, and there wasn't any perceivable lag, but for around £129 you could buy the Roccat Kone Pure and still have change for several games to play it on, so in that respect, it's not really worth the cost.

Overall, it was good but not brilliant. However, if you are desperately in need of a wireless gaming mouse and money is no object, then the SteelSeries Sensei will no doubt be top of your wish list.



▲ *A wireless gaming mouse with performance in spades*



# Razer Taipan

## DETAILS

- Price: £65
- Manufacturer: Razer
- Website: [goo.gl/SR0amk](http://goo.gl/SR0amk)
- Required spec: Spare USB port, Windows XP or later/Mac OS X for Synapse software



▲ The Razer Taipan is quite a narrow mouse, ideal for smaller hands



▲ Unfortunately, it's a little too narrow for us

This is the second entry from Razer, which has once more used its arcane knowledge of all things gaming and come up with an ambidextrous mouse for the fast paced gamer.

The Razer Taipan is a mouse that has been developed to offer the gamer the best possible weapon in their arsenal, and it shows, as the feature set speaks for itself. For example, the 8200dpi 4G dual-sensor laser is all about precision tracking, movement and getting there fast. The speed this mouse can be customised to is pretty astounding, and while it may be too fast for normal desktop duties, in the game world it can mean the difference between winning or losing.

Likewise, the symmetrical design, although primarily making the mouse usable for both right and left-handed gamers, is comfortable and grants easy access to the two configurable buttons placed on either side. It's also quite narrow, for gamers who prefer a more fingertip grip, and the weight is evenly distributed throughout the design, which helps the mouse glide effortlessly across the surface of a desk at 200-inches per second.

There are nine programmable buttons, which can be mapped accordingly to the game you're playing and saved as separate profiles

via the Razer Synapse 2.0 software. The selling factor here is that you can then sync your saved profiles with the Synapse Cloud and effectively have the same configuration available as you move from one internet connected machine to the next. There are other benefits that the

that doesn't mean the rest of us can't enjoy what it has to offer, but there are a few niggles that tend to creep through after some use.

The first is the narrow footprint; although engineered to near perfection, we found it a little too narrow for our liking. Whether our hands are

“ The Razer Taipan is an impressive mouse, that much is clear ”

combination of the Taipan and Synapse offer, such as Surface Calibration – a feature that allows the sensor to record the colour, type and topography of the desktop, thus making the mouse more responsive.

Additionally, there's even a 32-bit ARM processor housed in the Taipan, enabling it to be more than just another peripheral, and placing it well and truly into the extreme gaming category. And as for looks, its matt-black finish, glowing green LED backlights and lengthy braided USB cable make for a very stylish product.

It's clear, then, that this is a mouse with the competition gamer in mind. However,

bigger than most or we're used to wider mice we're not overly sure, but suffice to say, our mouse hand did feel a little cramped after a short while. The second aspect is the speed, which although can be tamed to a certain degree, does make normal desktop duties a tad difficult, especially when you lose the mouse pointer, and the slightest flinch can make it tear across the screen at a terrific pace.

That said, the speed issue can be addressed, and getting used to a narrower grip is something you'll have to live with if you want to compete with the better gaming mice. It's a small sacrifice

to make, and in all fairness once you enter the game and are suitably 'zoned out' you probably barely notice any form of discomfort.

The Razer Taipan is an impressive mouse, that much is clear, but it's a gaming mouse through and through and may not feel as good on the desktop as in the game. It's also a little expensive for a mouse of this type. Nevertheless, as far as gaming weapons go, this is certainly one to consider.



## Gaming Mice

# Thermaltake TT eSports Level 10 M Hybrid

### DETAILS

- Price: £89.99
- Manufacturer: Thermaltake
- Website: [goo.gl/2HILSH](http://goo.gl/2HILSH)
- Required spec: Spare USB port, Windows XP or later/Mac OS X for software installation

There's an old advertising law, which states that should any product be attached to a car manufacturer, then it must by definition be the most amazing product ever conceived. Take the Acer laptops that were designed by Ferrari or Porsche or whoever, for example. While generally good, they weren't brilliant, but they were an excuse for the manufacturer to hike up the price somewhat just by mentioning the designer name.

The Thermaltake TT eSports Level 10 M Hybrid gaming mouse is more than just a mouthful of a product, it was designed by the BMW Group Design Works lab, so it must be good. Right?

Aside from looking like one of RoboCop's appendages, the Level 10 M is actually quite a versatile mouse that offers the gamer the best of both the wired and wireless worlds. The Hybrid part is of course referring to the fact that it can be plugged into a handy USB port via the 1.8 metre braided cable, or you can opt for wireless connectivity, thanks to the 5.8G technology, which we're told is far better than the standard 2.4G wireless technology normally associated with wireless products.

Beyond the hybrid side of things, this mouse offers an 8200dpi sensor, 128KB

▲ The Thermaltake TT eSports Level 10 M Hybrid – as designed by BMW no less

of memory for storing game macros, seven active buttons, 11 macro keys, five gaming profiles and an impressive lighting effect that can be static or set to pulse in many pleasing ways.

Additionally, the design allows for an Air-Through Ventilation system that will keep your hand cool during intense gaming sessions. And you can adjust the angle and height of the mouse body according to your personal tastes.

This really is a highly engineered device, but it's extreme to the point where it's a little useless. After spending a good half hour adjusting the mechanics of the mouse to suit our needs, we discovered that it's not actually all that comfortable, which then leads to more adjusting, then more and so on. In fact you could easily spend more time adjusting the mouse rather than using it.

The accompanying software allows you adjust the sensor side of the mouse, the dpi and so on, as well the colour

of the lighting arrangements across the five separate gaming profiles. Needless to say, it's as effective as anything Roccat offers, although perhaps not as deep as the Razer Synapse suite in terms of the configurations and settings.

During our tests, we found this mouse to be a good all-round performer, either in wireless or wired modes. The wireless battery life lasted more than long enough for our gaming tastes – well over 12 hours of accumulated time. And the battery recharge from nil took around four hours to fully charged, in which time it could be used in wired mode.

The comfort wasn't great, as we've already discussed, but the unusual and futuristic design will undoubtedly appeal to many. Plus the draw of the BMW-engineered specification will lure in a certain crowd of buyers.

Overall, the Thermaltake TT eSports Level 10 M Hybrid was an okay gaming mouse. It certainly offers lots to the



▲ It's a pretty uncomfortable mouse. Let's hope the cars are better

avid or professional gamer in the way of the adjustments, macros and gaming profiles. But it's too uncomfortable for our tastes and, if we're honest here, is the futuristic design absolutely necessary?





# Mad Catz MMO 7 Gaming Mouse

## DETAILS

- Price: £75
- Manufacturer: Mad Catz/Cyborg
- Website: [goo.gl/E18Fi0](http://goo.gl/E18Fi0)
- Required spec: Spare USB port, Windows XP or later/Mac OS X for software installation

If the previous Thermaltake Level 10 Hybrid mouse looked like it belonged to Robocop, then the collection of Mad Catz Cyborg gaming mice will undoubtedly be something Batman would be seen toying with in the depths of the Batcave.

If it's extreme design specifications you're after, then Mad Catz products never fail to deliver. And the MMO 7 is without a doubt the most extreme mouse we've ever tested.

Despite looking like it's about to transform into a mini robot, the MMO 7 offers the gamer a wide variety of enhancements to help them achieve better scores and more looting while playing their favourite MMO. For example, there are 90 programmable in-game macros, through the use of the 15 programmable buttons, three position MMO mode switch and two position MMO shift buttons. There are side buttons for up, down, left and right, and a 6400dpi dual laser sensor with a six metre per second, 50g acceleration. The 1.8 metre braided USB cable is coloured to match the design of the mouse, and there are 16.8 million LED colours to choose from and configure for any of the modes you customise.

The design is quite remarkable, and like the Thermaltake, it can be adjusted to suit the user through length, grip style



*The Mad Catz MMO 7 looks more like Batman's tumbler than a computing peripheral*



and hand size. Unlike the Thermaltake, though, the Mad Catz MMO 7 was really very comfortable, even in its default out-of-the-box position. The soft, rubbery body feels nice under the hand and offers plenty of grip, but there are also 'pinkie' grips so you can comfortably rest your little finger while in use.

To add to the design features, the MMO 7 is a sturdy and well-balanced mouse to begin with, but thanks to the unique weight system, you can add five 6g weights to a section under the palm rest or remove them, to improve the feel of the device.

Getting the perfect feel means you'll improve the performance of the mouse while gaming, and with it being suited to your specifications, you'll be able to transport the MMO 7 around with you to gaming events.

It actually turned out to be quite an effective mouse during our tests. The software, the Mad Catz ST (Smart Technology) Programming Suite, was very intuitive and allowed us to easily apply a macro to the games we played, as well as allowing us to create or edit our own depending on the game and way in which he held the mouse.

While the Mad Catz MMO 7 left us feeling like we'd used something from the future, we did again have to question the extreme design, especially when a more conventional mouse can offer just as much performance in-game. Obviously we're being a little harsh here, but neither the Thermaltake or the Mad Catz will be marked down because of their looks; it's just that the out-of-this-world designs seem rather clichéd these days.

Saying that, though, this was an extremely comfortable mouse and has everything you could possibly need to get the most from your gaming.





### Roccat Kone Pure Military Edition

Although on paper the specifications of the Roccat Kone Pure Military are less than the competition, we think it's a winner due to the right balance of features, price and feel.

It's a fantastic mouse, whether it's for gaming or normal desktop use. It was remarkably easy to get used to and performed magnificently.



### Razer Naga Expert MMO Gaming Mouse

The battle for Highly Commended was quite close. The Naga, Taipan and Mad Catz MMO 7 are all equally balanced in many different ways. However, we feel the Razer Naga was the overall better mouse for the job.

In all honesty, all the mice tested were pretty good and each offered something a little different. In the end, it's what best suits you and your gaming needs that counts.

## How We Tested

Each mouse was painstakingly tested with a variety of games: *Assassin's Creed 4: Black Flag*, *DC Universe Online*, *Loadout* and *Watch Dogs*. The various macros were tested, along with any adjustable features or balances.

	Razer Naga	Roccat Kone Pure Military	SteelSeries Sensei Wireless	Razer Taipan	Thermaltake TT eSports Level 10 M Hybrid	Mad Catz MMO 7
Price	£70	£60	£130	£65	£89.99	£75
Dimensions	119 x 75 x 43mm	120 x 70 x 38mm	129 x 69 x 41mm	124 x 63 x 36mm	147 x 68 x 39mm	190 x 115 x 85mm
Weight	135g	90g	120g	95g	186g	110g
No Of Buttons	17	7	8	9	7	15
No Of Macros	19	18	8	9	9	90
LED Lighting?	Green LED	16.8 million LED	16.8 million LED	Green LED	16.8 million LED	16.8 million LED
Dpi	8200	5000	8200	8200	8200	6400



# Tech Origins

## Inkjet Printer

### David Briddock describes the early days of the inkjet printer

**T**he search for a modern alternative to the dot matrix printer was driven by the huge revenue potential, yet the technical challenges posed were not to be underestimated.

#### First Attempts

The aim was to deliver an affordable technology that made noisy and unreliable dot matrix printers obsolete, while delivering high-quality printouts.

Over at IBM, engineers had devised a continuous inkjet printing process, where electrically charged droplets coated the page with ink very quickly. However, it required lots of ink and never caught on with consumers (though the technique is still used today for industrial labelling and mail address printing), so a different approach was needed.

#### A New Idea

The light-bulb moment came about, as so often happens, by chance from work in a seemingly unrelated area – in this case the development thin-film technology for integrated circuits.

While testing the response of a thin silicon-based film to electrical stimulation, engineers noticed when the medium was superheated droplets of fluid lying under the film were expelled, and a new idea was born.

However, a good idea isn't the same as a working product, so while early examples of inkjet technology appeared in the 1970s, it took researchers over a decade to achieve flawless ink flow from printer to page and find solutions to problems such as print heads clogging up with dried ink.

#### Early Products

By the 1980s, Canon and Hewlett Packard had begun to overcome these design challenges. Hewlett Packard's 1984 ThinkJet printer featured a 12-nozzle, 96dpi (dots-per-inch) print head, and in 1985 Canon introduced a similar product called the BJ-80.

The ThinkJet printer was, in its day, quite a ground-breaking product. Yet despite good progress, they still suffered with problems such as clogged print heads, which then needed replacement, so the research labs continued to innovate.

#### HP DeskJet

Hewlett Packard's next product was the far more capable DeskJet printer, with its continuous plain-paper printing and much higher print quality.

One critical innovation was the creation of an inexpensive, disposable print head built into the ink cartridge itself. A disposable print head helped guarantee a consistently high

level of print quality throughout the lifetime of the printer.

However, with substantial research bills to pay, these initial products were far from the affordable devices we enjoy today. At its 1988 launch, the first DeskJet printer cost \$1,000, although by 1993, buoyant sales allowed prices to fall to a more palatable \$365.

#### Epson

Epson's first inkjet printer product, the SQ-200, was little more than an attempt to play catchup. But determined to become a major player, Epson poured money and resources into its research and development programme.

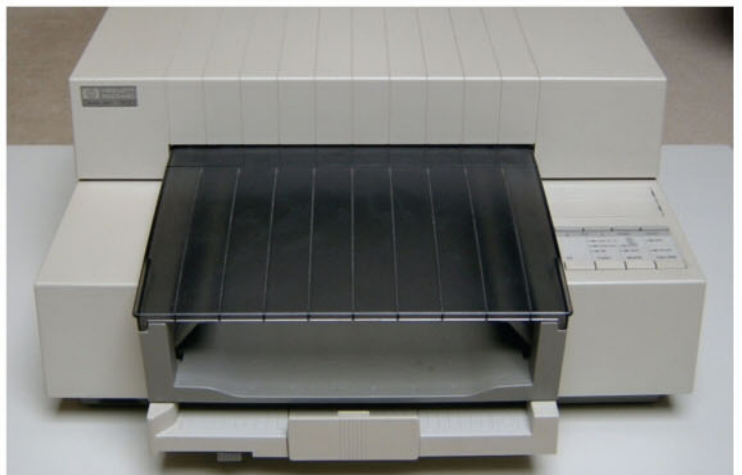
The result was a stream of innovations: the impressive Epson Stylus Colour (a 720dpi colour inkjet), the Epson Stylus Photo (the first inkjet photo printer), and the first CD label printer.

#### Ink

Ink technology soaks up a large percentage of printer R&D investment. To work effectively, printer ink has to be fast-drying yet resistant to clogging, plus deliver vibrant, realistic colour tones that don't fade over time. Therefore, it's no surprise ink is an expensive item, yet when you realise the manufacturers' own brand ink typically cost far more than vintage champagne, it does make you wonder. [mm](#)



▲ Hewlett Packard DeskJet



▲ Epson Stylus Colour



# How-to Basics

## Saving The World From Home

### Spare a CPU cycle, make the world a better place

**T**he title of this week's how-to may sound somewhat grandiose, but it is possible to help humanity in many ways in just 15 minutes of spare time.

Saving the world is a tall order that even the Justice League and The Avengers struggle with, so what chance do we mere mortals have? Well, for starters we're real people and not cartoons, and secondly you have one of the most powerful tools in human history at your disposal: your computer.

#### Where To Start?

There are many ways in which to save the world. You could be helping out wildlife, either local or on a more global scale. You could be trying to save a hospital department from closing down or adding

yours to the millions of voices against racism, poverty, injustice or corruption throughout the globe. Each and every thing you do to help out society as a whole or just within the small community you live in can make a significant impact for future generations; it's something that's very close to our hearts and which we firmly believe in.

Thankfully, with the computer in front of you and the power of the internet at your fingertips, remarkable things can take place that could just tip the balance in favour of a better world.

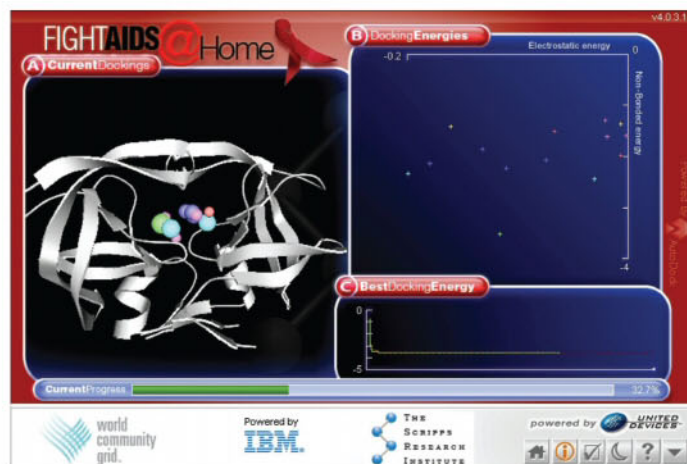
#### E-Petitions

E-petitions are a more modern way to get your voice heard in the halls of power. You may feel like a very tiny cog in a

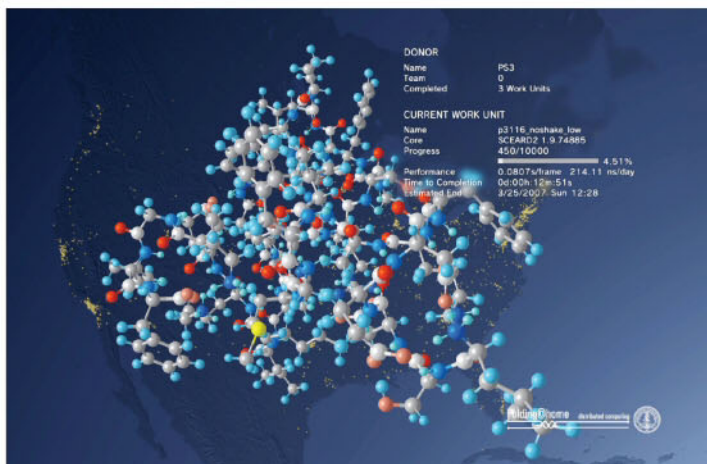
very large and slow moving machine, but through the power of the e-petition you could send a message to those who are currently – \*cough\* – attempting, to govern our country.

Start by heading to **[epetitions.direct.gov.uk/petitions](http://epetitions.direct.gov.uk/petitions)**, for a full list of the 5,829 (at the time of writing) petitions that are currently open.

There's a wide range of issues covered here, from ending the conflict in Palestine, Millie's Trust and Do Not Ban The Niqab, through to retraining and improving the A595 from Barrow-in-Furness to Sellafeld. So as you see, there are issues that affect pretty much everyone from the local community right up to the core services of the entire country.



▲ Using your spare CPU cycles to help stopping AIDS



▲ Folding@Home on the PS3



▲ *With Quantum Cures you can help towards finding a cure*

Signing your chosen e-petition couldn't be easier. Simply find the one you want to put your voice to, click on the title, and you're taken to the details page for that particular petition. In here you'll see the current number of signatures, who it was who originally created the e-petition and the date and time that the e-petition will be closing. Along with that lot, there's also a brief summary of the e-petition (some petitions have pages and pages of text accredited to them) and finally a nice big purple coloured 'Sign this petition' button for you to click.

Click the button and you'll be taken to the details page, where you'll be asked to enter your name, email, address and required to tick the terms and conditions box. All that's needed from you after that is to click the sign button at the bottom of the page, and you'll have successfully added your say to the e-petition.

## Distributed Computing

Distributed Computing is a system of computers, from around the world, which are configured via customised software in order to utilise CPU and memory bandwidth for a common goal.

For example, say a laboratory somewhere in the world is trying to find a cure for a disease but they require some large computing and number crunching data in order to achieve the cure. Rather than buying limited computing time from their campus servers, they can instead create an item of software that the internet faring public can download to their machines. This will take work modules from the laboratory and use the spare CPU cycles on their PC to crunch some of the data.

Over time, the numbers of the public machines with the software installed on grows to the point where millions of computers are doing the number crunching, with the results being sent back to the main laboratory for analysis.

In the end, the lab has the data it needs and is one step closer to finding that elusive cure, and it's all down to the spare CPU cycles we didn't even know we had floating around in our systems.

## Folding@Home

One of the more popular of these distributed computing resources is the ever impressive Folding@Home, for which there's even a Micro Mart team (check the Micro Mart Forum for more information). Folding@Home helps Stanford University scientists to find the cure for the likes of Alzheimer's, Huntington's and Parkinson's, as well as many cancers. To find out more, go to [folding.stanford.edu](http://folding.stanford.edu) and join in.

## Quantum Cures

Quantum Cures seeks to use your donated spare computer cycles to help design drug molecules that will prevent or even

## More Suggestions

On top of the suggestions we made in the main body of the article, here are a few other distributed computing programs that could help save our world:

**Stardust@Home:** Help analyse cometary dust for a better understanding of what the universe is made of.

**SETI@Home:** The Search for Extraterrestrial Intelligence continues.

**Climateprediction.net:** Help crunch climate prediction models for better protection of people.

**HelpDefeat Cancer Project:** Need we say more?

**LHC@Home:** Help study long-term data from the Large Hadron Collider.

**Spinhenge@home:** Help calculate spin dynamics of new molecular structures to fight tumours.

cure orphan, rare and often neglected diseases. New therapies in congenital toxoplasmosis, Hodgkin lymphoma, isolated spina bifida and many others can be achieved by simply running the program in the background while you work. Pop on over to [quantumcures.org](http://quantumcures.org) for more details.

## Malaria Control

According to WHO, there were about 219 million cases of malaria in 2010, with an estimated 789,000 deaths, many of whom (estimated: 482,000) were children under the age of five. By visiting [malariacontrol.net](http://malariacontrol.net), you can download the software that will help to try to work out the best methods of prevention for controlling the disease.

## The Quake Catcher Network

The quake catcher network is a network of computers across the internet that, through sensor information, can better predict and analyse earthquake data from all over the world. The goal is to build a better earthquake detection system and early warning system for schools, hospitals and communities that are affected by earthquakes and earthquake hazards, such as tsunamis.

To see if you can help the research, pay a visit to [qcn.stanford.edu](http://qcn.stanford.edu) and read the information pages.

## FightAIDS@home

There's very little we need say regarding the spread of AIDS and the hold it has in many countries. Just ten years ago there were an estimated 60 million people in the world that are infected with HIV, with AIDS claiming the lives of over three million people, many of whom were under the age of fifteen. In fact, it is estimated that nearly 7,000 people contract HIV every day.

If you want to try to help reduce these numbers for future generations, then pay a visit to [fightaidsathome.scripps.edu](http://fightaidsathome.scripps.edu) and read the 'How your PC can help' page.

## Conclusion

Unfortunately, we don't have the space to mention every 'save the world one step at a time' venture here. Suffice to say, though, there are plenty, and they range from finding cures to helping out with environmental data to searching for signs of intelligent alien life.

Somewhere out there, you'll find something that's close to your heart and which will hopefully go a little way to making this world a better place to live in. [mm](#)

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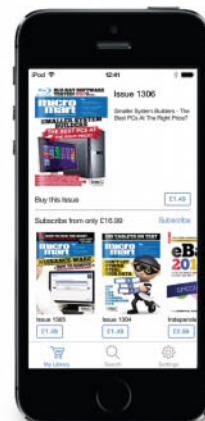
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# Pardon?

## Why Language Learning Could Become Obsolete

**Imagine having a Babel fish in your ear, translating any foreign language into English. Skype Translator is not doing that, says David Crookes, but it will achieve the next best thing**

Anyone who has ever tried to make a phone call to someone who does not speak the same language will understand the inherent frustration and difficulties. Amid the pauses caused by trying to figure the best way to put a point across, many resort to the British way of talking – slowly and loudly – before realising that it just doesn't work. In an office full of people, interacting with speakers of a different language can be rather embarrassing. And if you do finally get your point across, you then have to figure what the other person is saying in return.

It can be so stressful that most people try to avoid such situations, but in the near future it would seem that we will not have to. Later this year, Skype is getting ready to launch the beta version of Skype Translator, rolling it out on a limited basis for owners of Windows 8 machines. It will auto-translate multilingual voice calls in near real-time, so you'll be able to chat merrily away in English or whatever else is your native tongue and feel secure knowing the other person is hearing you in perfect German, Spanish, French or any other number of languages that Skype Translator will support. It is, say experts, one giant step towards the Universal Translator so beloved in *Star Trek*. It's also pretty damn nifty.

The idea that we will, very soon, be able to get around language barriers, not by learning a new lingo but by having a computer do all the hard work for us, is as practical as it is mind-blowing. Let's face it, a GCSE in languages isn't getting us too far, and there's a world of fascinating people we'd love to talk to but can't given that we only truly know the terms for classroom objects, how to get directions to the toilet and the best way of getting a refreshing beer into our warm mitts.

Our general ignorance of other languages is holding us back. The world is getting increasingly smaller, and today, successful businesses compete in a global market, with ideas shared across countries. An explosion in migration over the past few decades has created multilingual societies, which bring their own language needs. But with the language barrier as erect as it has ever been, the ability to at least make a phone call that can be understood is a great step forward.

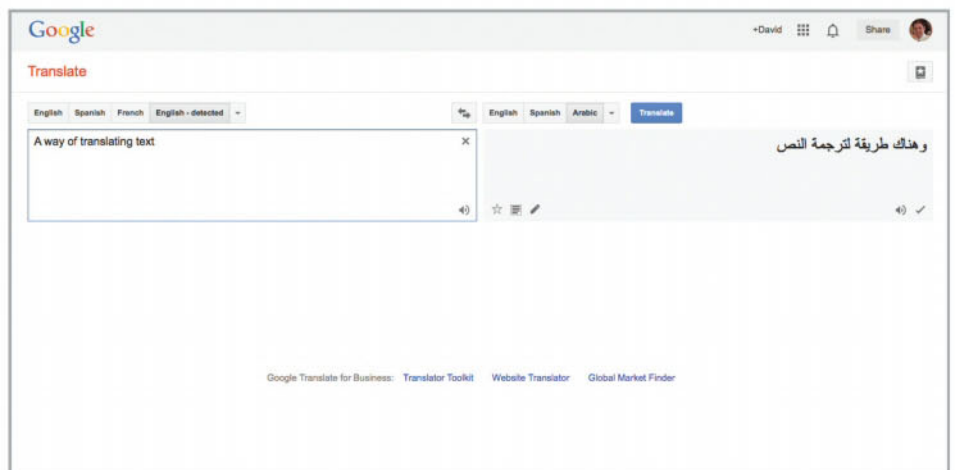
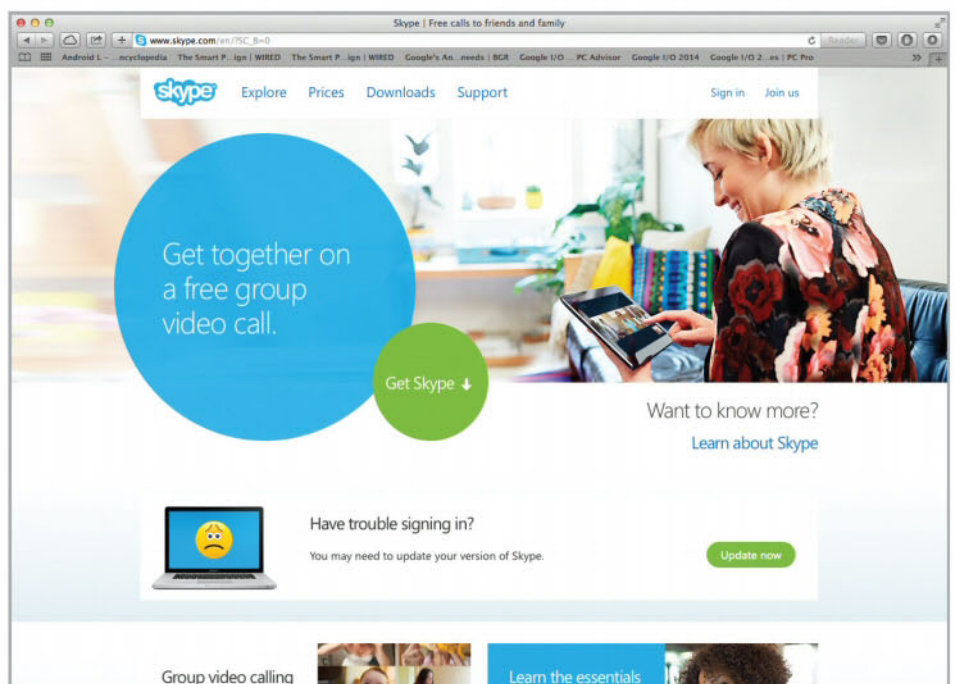
Skype is not the only company to recognise this. Translator is one of a few services that have already been launched

or look set to be launched in the very near future. Each of them is striving to achieve real-time translation. One, Call Interpreter by a company called Lexifone, charges £6-an-hour. It works by calling an access number and dialling the person you want to speak to. As you chat in your own language, the speech is converted into another. The other person is then able to fully understand what is being said. Not to be outdone, Google also has plans of its own. It will turn Google Translate into a real-time offering. Its vice

president of Android, Hugo Barra, says it hopes to perfect such a product over the coming years).

Elsewhere, the Japanese telecommunications provider NTT DoCoMo launched Translator Phone in 2012, and it has proven to be rather popular so far. Spokeswoman Hiroko Shimoyama says it is working very well. "If a caller uses the application and starts talking in English on the phone, the other person hears the talk in Japanese within seconds," she explains, as well as saying

“ Microsoft Research has poured copious amounts of money into researching machine translation ”







## “ Bilingual speakers can outperform monolinguals in editing irrelevant information ”

it makes great use of cloud technology for voice recognition, translation and voice synthesising.

However, Skype Translator has the potential to make the biggest impact, given it has more than 300 million users across the world and a third of the international call market. By offering a simple way for instant translation to take place within calls, Skype will surely seize the market, leaving rivals such as Apple's FaceTime in its wake. "It is early

days," says Gurdeep Pall, corporate vice president of Skype. "But the *Star Trek* vision for a Universal Translator isn't a galaxy away, and its potential is every bit as exciting."

For Skype, this is the culmination of around a decade of hard work. Microsoft Research has poured copious amounts of money into researching machine translation, and when Microsoft bought Skype for \$8.5bn (£5.2bn) in May 2011, it gave it the ideal platform for putting

the studies to good use. On the surface, users should see little latency and there's visual feedback so that users can help to improve the system. Underneath the hood, Skype Translator uses a process called 'deep learning', which is based on computerised neural networks rather than the writing of explicit rules. Together they act as an artificial brain, able to learn the complex features of speech. The more data it has to work with, the more accurate it becomes. The knowledge it picks up for one language can also be transferred to another. In learning Spanish, for instance, it will become better at German. It's truly pioneering stuff.

Microsoft's CEO, Satya Nadella, showed exactly what it can do in a talk in Rancho Palos Verdes, California, earlier this year. Pall was invited on stage to demonstrate the technology for the first time publicly. Pall spoke in English, and Microsoft employee Diana Helnricks spoke German. They were able to fluently communicate, and Microsoft said in a lengthy article on its website on the subject (which you can read at [tinyurl.com/mmskypeA](http://tinyurl.com/mmskypeA)) it has managed to deliver something usable, something that will "fit the voices and utterances of many different users and the nuances of different languages." It was, the article said, once considered a "nearly impossible task."

It is certainly far removed from the machine translation process first discussed by American scientist Warren Weaver in 1949. Although Weaver spotted the potential of having computers interpret language, his approach was syntactic and rule-governed; deep learning would have been an alien concept. His thinking sparked much research in machine translation, though, and it prompted the US government to put cash into such projects in 1954. Studies stalled until the 1990s due to the large number of human translators already deemed to be doing the job rather well, but over the past decade or so, the situation changed.

The wars in Iraq and Afghanistan showed a distinct lack of military, diplomatic and intelligence personnel conversant in languages such as Arabic, Dari, Pashto and Urdu. Machine translation was seen as part of the solution to this. It led, in 2007, to the creation of IBM's speech-to-speech translation software, which was introduced by US forces in Iraq to help them communicate more effectively with the Iraqi police, military forces and civilians, but it also showed that the

## The Japanese Way

We caught up with Hiroko Shimoyama, spokeswoman for NTT DoCoMo, which launched 'real-time' audio translation for its phone customers in Japan in 2012.

**Micro Mart:** What has been the biggest challenge for this kind of technology?

**Hiroko Shimoyama:** The biggest challenge has been to apply machine translation technology that is already available for web-text technology to phone-based communications. DoCoMo has been making a strong effort through trial and error to develop such a user interface for enhanced mobile experiences.

**MM:** How does Translator Phone (Hanashite Hon'yaku) work?

**HS:** The service uses cloud technology for voice recognition, translation and voice synthesising. It achieves high-level data processing, regardless of the handset's specs, by using network resources for voice recognition, translation and voice synthesising. The quality of communication is highly natural, because just before hearing the translation, the listener hears the speaker's para-linguistic nuances, such as intonation and tone of voice, as in a normal voice call.

**MM:** Does your app encapsulate voice tone, nuance and rhythm to avoid any potential misunderstanding?

**HS:** Translator Phone is capable of translating colloquial language. For instance, in colloquial Japanese, the subject of the sentence often is omitted. Translator Phone automatically adds the inferred subject as required in the target language. While it would be desirable to offer translations that also reflect the speaker's feelings by analysing tone, nuance and rhythm, such capabilities have yet to be fully realised by anything available in the global market. Nevertheless, the listener can grasp the speaker's feelings by listening to the tone and other vocal nuances of the person's native speech, prior to hearing the translation.

**MM:** Would your app work for dozens of languages, and does it respond to the speaker, continuously learning?

**HS:** Translator Phone's performance improves as it learns from past conversations and logs. We cannot disclose the details of how this works.

**MM:** What could this do for the world?

**HS:** Translator Phone translations will help overcome communication barriers between speakers of different languages. By enabling people to communicate in their respective mother tongues, Translator Phone will enrich cross-cultural communication and enable people to learn more about other cultures and ways of thinking.



## “ The rise of machine translation is likely to save a lot of money ”

supply of human translators could not, for the first time, keep up with the demand. Coupled with a general desire to explore machine translation, we are in a position that could only have been dreamed of just two decades ago. "What we're

seeing is greater demand for translation," says Guillaume Charhon, the CEO of Smart Mobile Software, which makes the Voice Translator app for smartphones. "Globalisation and low cost calls around the world is the root cause of this."

The rise of machine translation is likely to save a lot of money. The police forces in England and Wales spent £40 million on translators over three years, and councils also splash a lot of cash on telephone interpretation. Bolton Council, for instance, serves a good number of Urdu, Gujarati and eastern European speakers, and it spends £20,000 a year speaking to them via interpreters on the phone. It's watching "with interest" to see how Skype Translator develops. "We will be keen to see how it can help local authorities with the demand for translation services," says councillor Ebrahim Adia, executive cabinet member for regeneration and resources.

There are some who worry that machine translation will make us lazy and even less inclined to learn another language, though. Certainly, technology like Skype Translator could have repercussions. Psychology professor Judith Kroll of Penn State University found bilingual speakers can outperform monolinguals in editing irrelevant information. Machine translation could even change the way we speak. "The art of language could slowly diminish as everything would be broken down to a 'basic' language," says Martijn van der Spek, founder of Sparkling Apps, which creates the Apple iPhone app Voice To Voice. "We already see this in our Chinese translations."



Indications are, however, that Skype will do rather well. Launched worldwide, Skype Translator should be as close to perfection as you could possibly get at the moment – although it will be launched as a beta product. Dr Jeff Allen, an advisor in computer-generated translation for business software company SAP, saw the technology running as early as 2010, and it ran pretty well back then. Microsoft's research team were running an early demonstration of the technology, having worked on it for a number of years. "The English-German demo I saw was so good even then that those who were there wanted to buy it," he says. "It was a little stilted at that point, but it showed that it was able to handle fairly rapid speech. A lot of the effectiveness was dependent on the person talking, but since then Microsoft will have carried out a lot more data collection. The system Skype will launch later this year will be very advanced, I would suspect."

It would have to be advanced, though. Machine translation requires some very tricky procedures to be followed.

## How The Internet Has Revolutionised Machine Translation

It is difficult to create real-time speech translation software, which is why, despite the number of applications, only a few providers are behind the technology. The apps rely on processes developed by Google, Nuance, Microsoft and AT&T, and their approaches are different. "Google and Microsoft 'learn' from the spoken text, using a neural network. Nuance (like used in Apple's Siri) doesn't do this yet," says Martijn van der Spek, founder of Sparkling Apps.

The internet has played a big part in the advances made with machine translation. Given the voice has to be recognised well and converted into text, then parsed by a translator engine, there is a need for large databases and a lot of processing power. "The translations have got better over the years, but some language combinations still face issues," says Van Der Spek. The result has to be spoken out using the appropriate language and dialect. Since all of this has to be done well and extremely fast, Van Der Spek says fast mobile internet connections help, because the best processing is done in the cloud.

Charhon says speech translation is composed of three parts. "You have speech-to-text, text translation and text-to-speech," he explains. "The first part is the hardest, as it usually requires training from the software to get used to the user's voice. But all of these three parts have been mastered for several

years. Most of the projects are now aggregating multiple technologies to make a unique product."

Charhon's Voice Translator has been downloaded more than a million times, which shows just how much demand there is for technology of this type, and Charhon is certainly quick to spot the potential. "The internet is the information connectivity layer," he says. "But if you know only your native language, you can only access a tiny part of the information available. Translation services help to remove this language barrier. Mutual understanding between different cultures usually begins by the knowledge of each other, and it allows for information exchange." Extending this to telephone calls would, therefore, be a natural extension.

What Skype appears to be doing is working on the accuracy of machine translation, an area Alexander Marktl, CEO of Sonico Mobile, which makes the iTranslate for Mac app, says has been lagging behind voice recognition. "The accuracy of voice recognition is improving way faster than the accuracy of machine translation," he says. "This is because every voice recognition request generates new training data – so voice plus actual recognition – which is not the case for translation. You need to get the training data, the actual translations, from somewhere else. But that's also a reason why only very big companies like Google and Microsoft can really afford to build a machine translation engine based on the statistical approach."

Marktl says his biggest problem with speech-to-speech translation is that you have not only one but two areas with accuracy problems. "Voice Recognition depends on the dialect, the accent,





## The Linguistic Issues

Professor David Crystal, an expert in linguistics and author, tells us the possible impact machine translation could have on language.

**Micro Mart:** What problems become apparent from a language point-of-view when trying to create real-time speech translation technology?

**David Crystal:** The main issues are accents (particularly if they are broad), the speech rate, background noise and proper names, which require an encyclopedic dimension to be introduced.

**MM:** Is there more to language than just the stringing of words together?

**DC:** A huge amount more. The prosody is one aspect, but idioms, metaphorical expression and discourse features, such as when to say please and when not, which differs among languages, are current big weaknesses. Cultural awareness and stylistic appropriateness (the levels of formality) are also an issue.

**MM:** Can you give us an example?

**DC:** Yes. Imagine translating 'It was like Clapham Junction in there today!' It can be handled in principle,

once the relevant linguistic analysis is done, but the machine would need to know that Clapham Junction in this sentence means busy. We are a long way from achieving that level of sophistication, even for the most well-studied languages.

**MM:** How long will it take to get to that stage?

**DC:** Perhaps the next several years, but I would say decades. And remember, there are some 6,000 languages in the world, many of which have had very little study. We are centuries away from a Babel fish.

**MM:** Would this make us approach language in a very different way, perhaps making us lazier?

**DC:** No, because there are two forces driving language. One is the need for intelligibility, which this software is addressing. The other is the need to express identity, which is why we have different languages, dialects and accents.

**MM:** Could such programs lead to a change in language?

**DC:** It's possible. Errors can cause language change, as the phenomenon of popular etymology (for example, sparrow-grass for asparagus) illustrates. But they account for only a tiny fraction of change.

written versus oral language, the fact you speak slightly different to when you write. It has to take into account background noise levels and many other factors. The accuracy of machine translation also depends on various factors. Both combined are really the problem, which is the reason why you sometimes see really funny results, no matter how sophisticated the technology."

The problem, he says, can be solved, in part, with more training data. Machine translation is complicated, because you not only have one language, but thousands upon thousands of possible language pair combinations. The more information inputted into the system, the greater chance of accuracy.

It shows the mountain Skype and Microsoft have had to climb. "We're at the beginning," says Dr Allen. "Language is not binary, and it's forever inventing new ways of saying things." But now we are here, close to the summit. As the years roll by, the technology will get better and better, and the systems, to be truly effective, will learn any new sayings and methods of speech. Businesses will find such systems very useful, and it shouldn't lead to mass redundancies for human interpreters either. Skype Translator will fulfil a need that would otherwise never be addressed in a lot of cases. Many a time an office worker has tried to speak



to someone who doesn't understand English, only to give up; it would never occur to them to hire a human interpreter for that moment. 'Real Time' machine translators would allow the conversation to take place.

Dr Allen agrees. "There will still be a need for professional interpreters to work in the legal and medical professions, for diplomacy and conferences," Dr Allen continues. He

also says computers will inevitably make mistakes that could lead to terrible misunderstanding in certain areas. A political joke, translated incorrectly, could be disastrous. But Skype Translator and the other machine translation services are certainly going to make communication between different languages more commonplace and far less stressful. That can only be a good thing. **mm**

# BitTorrent

## Not Just For Pirates

**BitTorrent isn't always home to illegal downloads, and there are legal uses, as Aaron finds out...**

**T**he simple mention of the word 'BitTorrent' will usually make you think of nefarious downloading of movies, games and music, among other things, and that's undeniably the most common use for the file sharing system. The widespread use of the technology to share ill-gotten gains with millions of other users around the world has become synonymous with online piracy, but this isn't totally fair, and BitTorrent is also used by many for totally legal purposes.

Although dwarfed by the slew of sites that offer listings for pirate downloads, there are some resources of files that aren't skirting the legalities of software and media acquisition, and BitTorrent is actually one of the best advances in internet technology that can help both companies and end users. Let's take a look at the technology, its origins and, more importantly, how you and others can and do make use of it without breaking the law.

### Origins

Depending on your age and computer exposure, you may or may not remember a time before file sharing, and the early days of P2P (peer to peer) transactions. Before the kinds of downloading options we have today, people were limited to simple, single-point downloads, where you grabbed a file from its singular location on a file server. These downloads could take a very long time depending on the size. This was partly due to the slower internet speeds back then, but also because the file was situated in one location. This made for various problems. First and foremost, you could only download the file as fast as the source location could send it. If the host of the file was using a slow connection, it didn't matter how fast your connection was; you had to wait for the slower server to upload it to you.

This speed was further limited by internet traffic and how many other users were downloading the same file. The more people there were downloading the file, the slower the speed. And if either side suffered from connection problems, the file was gone, and you'd have to attempt a download from scratch.

This was tempered to some degree by the arrival of download managers. These programs would manage file downloads for you, preserving your in-progress download, should it stop for any reason, so you could carry on again from where it left off. This didn't really

help with speed, however, and many download managers were notorious for security flaws and malware.

### Arrival Of P2P

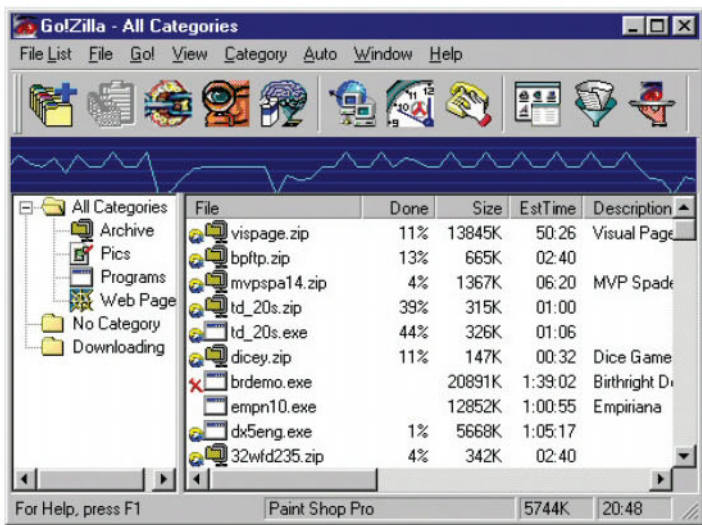
The limitations of downloads were beginning to show, and as larger files became more readily available and the growth of the warez scene and pirate movies became unstoppable, the internet was suffering. People were tired of slow, often corrupted or broken downloads, and so the first wave of P2P file sharing services arrived. Perhaps the most famous early example of these is Napster. Arriving in 1999, Napster was a music-sharing service that connected users together in order to share music files. It served as an agent, of sorts, which took a user's search and located another Napster user with the requested file. The two users were connected directly, and the file sharing was started.

Now, we all know what became of Napster's initial release, with the high-profile legal battle involving the band Metallica, but even though Napster was brought down (in its then current state), its legacy carried on. Other file sharing services continued to surface, with the most popular being LimeWire. The prevalence of music file sharing during the early 2000s was so great that it led to a radical change in the music industry, resulting in the dominance of the digital music market we have today, and the massive popularity of iTunes and streaming services like Spotify, but that's another story.

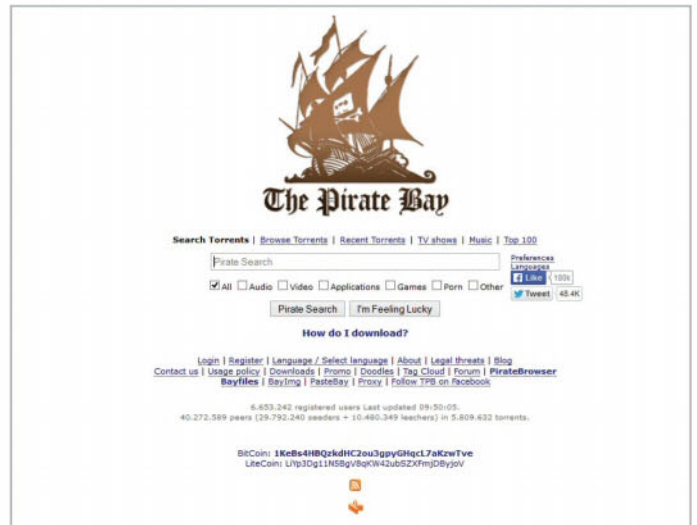
### BitTorrent

File sharing was a more efficient and reliable way of grabbing data, but it was still limited – something programmer Bram Cohen was tired of. In order to combat the growing difficulty in downloading large files, he set about creating a new method, one that would speed up downloads by changing the basics of how downloading worked. He theorised that downloading one file from numerous sources at the same time would eliminate the sluggishness people were suffering from. He then created the BitTorrent file sharing protocol, along with the first BitTorrent client, and released them in 2001.

Instead of simply downloading a file from a single location, BitTorrent would instead grab files from multiple sources at the same time, grabbing different chunks of the data from different sources. This method ensured a faster download speed. Even if the individual uploaders had slow connections, all of them combined would still make for a faster download than a single source. And it worked. Cohen had to take steps to tempt people to use the service, including using pornography to lure in the first public users to test the service, but the rest is history.



▲ Before file sharing as we know it now, programs like Go!Zilla were very popular



▲ The Pirate Bay is one of the most famous and controversial BitTorrent trackers



▲ Blizzard Software uses BitTorrent for its game downloads

The service became popular, and it sky-rocketed when the search engine for the protocol emerged that allowed users to actively search for available torrents. When infamous engines like The Pirate Bay went live, BitTorrent's dominance was assured. In fact, according to reports (which do vary, so any results are vague at best), BitTorrent is now responsible for around 30-50% of all internet traffic and up to 70-80% of all global P2P traffic. That's a lot of downloading, and although a good deal is less than legal, it's not all to be frowned on.

## Good Guy torrent

BitTorrent is used for other purposes than to distribute and share pirate content, and the idea behind the technology is perfect for legitimate usage, especially for those who need to distribute large files and content that would simply be too unwieldy for traditional download methods.

One area where the technology is often used is the games industry. Publishers and developers who wish to distribute their games online find BitTorrent is by far the most useful method, and it ensures that potential players can download an entire game in a fraction of the time it would take via a standard download. As the file is being distributed via BitTorrent, it also means that files are not located in a single location, which can bottleneck downloads; the community shares it instead. This is especially useful for companies that wish to distribute free-to-play titles.

## Bad Image

Even the most ardent BitTorrent user, even those that only use the technology for perfectly legitimate means, can't argue with the fact the file-sharing protocol has a dodgy reputation – so much so that many ISPs actively block BitTorrent traffic even though there are many legitimate uses for it.

The Pirate Bay has been the target of legal battles, with the owners of the torrent tracker receiving \$3.5 million in fines each, charged with accessory to crime against copyright law. The whole thing was big news, and even those that don't use or even know what BitTorrent is became familiar with it via The Pirate Bay's legal woes. This led to an even wider belief that the technology is only used for illegal activities.

Big name publishers like Blizzard routinely use BitTorrent to distribute titles. The company's Blizzard Downloader is a combination of HTTP and BitTorrent, and it's used by gamers to download the firm's titles. *World of Warcraft*, for example, is currently around 25GB in size. That's a ridiculously large download for a standard HTTP file, so BitTorrent is perfect.

An area where BitTorrent is used extensively is to download TV shows. It allows viewers to watch hit shows like *Game of Thrones* with little delay between the initial US screening and overseas plays. It's still frowned on, but even this area is venturing into legal uses.

TV show *Fly or Die* has become the first to use the new BitTorrent bundle system. This grants the show creators access to information on BitTorrent activity so they can see exactly who is watching the show. Previously, this would be difficult to obtain from illegitimate downloads.

BitTorrent is also used extensively within business and government. It was revealed that social media giant Facebook uses the technology internally to move around large files – a task the protocol is perfectly suited to. Likewise, the UK government has used BitTorrent to distribute large files to the public. In 2010, data sheets showing public spending were made available via BitTorrent, as it was deemed the best and most effective way to disseminate the figures to the masses.



In 2006, Nasa also used BitTorrent in its Visible Earth project. This was a large-scale image library of Earth created using satellite images. The image total was around 3GB, which was quite the size in 2006, so BitTorrent was picked for the distribution.

Legal use for BitTorrent isn't all about business and file downloading, though, and it can even be used privately for your own purposes. BitTorrent Sync is a tool that allows people to use the technology to synchronise their own data across multiple systems and locations. You may already use services like Dropbox to do this, but unlike this, BitTorrent Sync doesn't place your data in a single location on a server. Instead, all files are synchronised between multiple computers, making it even more secure and useful.

## Legal BitTorrent Sites

Of course, despite the many, varied uses for BitTorrent, downloading files online will always be the most popular use for the technology. As we've already said, though, this doesn't simply mean illegal downloads, and there are plenty of legal torrent sites online that offer downloads for perfectly legitimate BitTorrent content. To finish up, here are just a few of these sites for your BitTorrent downloading pleasure.

### Archive.org

#### archive.org/details/BitTorrent

The Internet Archive has a very large library of torrent files, including ebooks, music and videos, and its collection is growing all the

time. It's a huge repository of information, and there's a mammoth collection of free, legal downloads for you to sift through.

### BitTorrent Bundle

#### bundles.BitTorrent.com

BitTorrent Bundle is a unique torrent site that makes music available online with a collaboration between BitTorrent and the artists. Bundles can be paid for and downloaded, and it's not limited to music alone but can also include other media, such as video, text and even software.

### Bt.etree.org

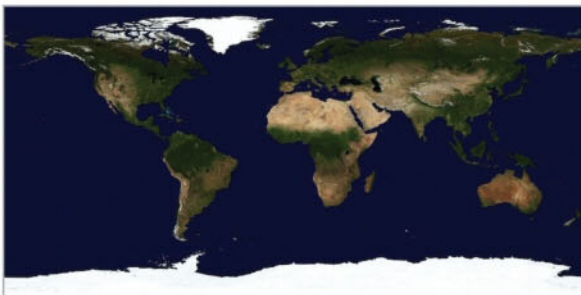
#### bt.etree.org

This is a community-led site that focuses on the legal sharing of live concerts of 'trade friendly' artists. It's used by many as a way to spread the word of new bands and live acts, and it has a huge collection of torrents you can search through, with a filter for various artists.

### Fanatics for Classics

#### www.fanatics4classics.com/gut/gutdownload.html

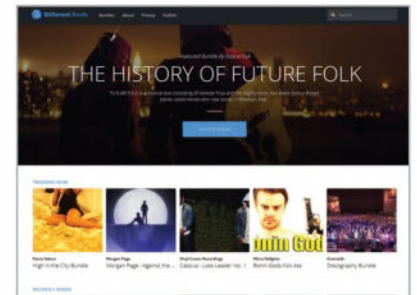
Project Gutenberg is a site that makes copyright-free ebooks available for people to download. Fanatics for Classics takes these and makes them available via torrent files for easy access. There are a handful of categories, such as history and poetry, and the torrents also support the Amazon Kindle.



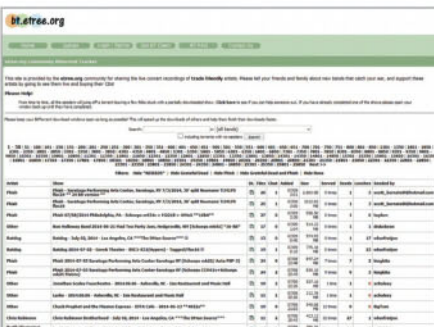
▲ NASA's 'Blue Marble', or Visible Earth project used BitTorrent



▲ Archive.org



▲ BitTorrent Bundle



▲ Bt.etree.org



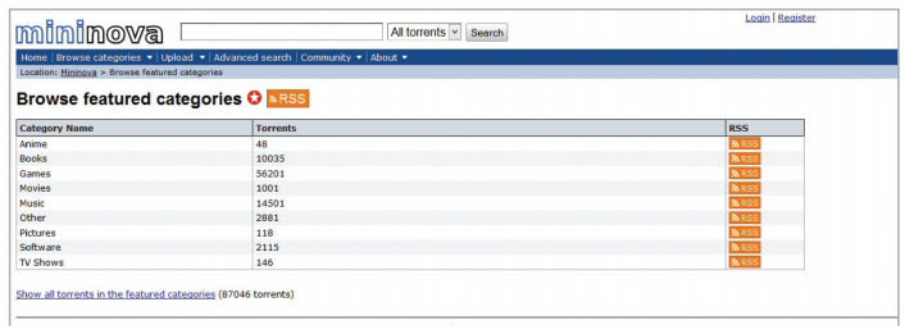
▲ FrostClick



▲ Legit Torrents



▲ Linux Tracker



▲ Mininova Featured



▲ Public Domain Torrents



▲ Vodo



▲ The Vuze Blog

## FrostClick

[www.frostclick.com/wp](http://www.frostclick.com/wp)

This is a great site that features various types of torrent, including music, video, games and software. Content comes under the Creative Commons licence, and each section is split into sub-categories, so you can find specifics like rock music, platform games and sci-fi movies with no problems.

## Gameupdates.org

[www.gameupdates.org](http://www.gameupdates.org)

Over the years, updates and patches for games have become larger and larger, not to mention more frequent, and finding the latest updates can be difficult for some titles. What's more, if a game is very popular, servers can become clogged and download speeds can suffer. Gameupdates.org is an answer to this, and it lists torrents for game patches and updates, with a searchable database of links. Very useful.

## Legit Torrents

[www.legittorrents.info](http://www.legittorrents.info)

The title of this site says it all, really. Legit Torrents offers just that: 100% free media torrents and a searchable listing. It's a very simple, fast site, although the simplicity can make finding things difficult, unless you know exactly what you're looking for.

## Linux Tracker

[linuxtracker.org](http://linuxtracker.org)

A very popular use for BitTorrent is to find and download Linux distros. These can be large, so the protocol is perfect for grabbing the various flavours of the OS. Linux Tracker is one of the best BitTorrent trackers for these Linux torrents, and it lists a large range of Linux versions, along with featured flavours of the day.

## Mininova (legal)

[www.mininova.org/featured/cat](http://www.mininova.org/featured/cat)

Along with The Pirate Bay, Mininova is one of the most famous (or infamous depending on your standpoint) BitTorrent sites around. It offers a massive collection of illegal content, but it also has a section of legal torrents in its featured section. This is noteworthy, as the larger network served by the tracker can make these download very fast – more so than the smaller, totally legal sites. Just stay away from the copyrighted content, of course.

## Public Domain Torrents

[www.publicdomaintorrents.info](http://www.publicdomaintorrents.info)

This site hosts a sizeable number of public domain movie files, with downloads in DivX, PDA, PSP and iPod formats. The

## Overseas Legality

In most countries, downloading copyrighted material is illegal, be it music, movies, games or anything else. However, this doesn't apply in all places. Perhaps most notable is Switzerland. Here, the government clearly states downloading copyrighted material is perfectly legal for personal use. As long as users don't use the content for commercial or business, they're fine. Companies can't even pursue legal action against casual uploaders. Needless to say, this decision isn't popular with many in media, and the country is seen as a haven for copyright pirates by some.

movie are, of course, not your usual selection of Hollywood blockbusters but instead classic movies that have become situated in the public domain, royalty free. There are some gems to be found here, if you look hard enough.

## Vodo

[vodo.net/farout](http://vodo.net/farout)

If you're a fan of independent movies and other indie content, Vodo is a good site to visit. It's made up of people from all over the world who find and share content via the tracker, and you can download it all using your favourite torrent client. The site hosts movies, games and other indie content.

## The Vuze Blog

[blog.vuze.com/category/torrents-2](http://blog.vuze.com/category/torrents-2)

One of the more popular torrent clients is Vuze, and this is a blog that focuses on some of the best free torrents around. The difference here is that the blog-style of the site actually looks at each download, giving you more information about the media and spotlighting certain artists. Worth a flick through.

## Guilt-free Downloading

So, despite popular belief, BitTorrent isn't all about illegal downloads and copyright infringing. If you wish, you can find and acquire a whole host of totally legal content for free, with fast downloads and the ability to share this content with others. Not only does this benefit you if you like said content; it can often help the individual artists, such as up-and-coming bands or movie makers, as BitTorrent is a great conduit for getting material to the masses. So, yes, although it's used primarily for illegitimate means, there's more to BitTorrent than piracy. Have a look online and see for yourself. [mm](#)



# Weather Apps For Android

Like to talk about the weather? There's an app for that, says **Keir Thomas**, who looks at six useful examples

It's quite literally the case that weather is all around us, so it's no surprise that weather is also a human obsession. Whether we're going to get wet or get a suntan is something we simply need to know and the weather app category is one of the most crowded within any app store.

Below we take a look at six of the best weather apps, and as usual all are free of charge and all are available from the Google Play store. We tested on a tablet and phone running Android 4.3 Jelly Bean, which remains the most popular version of Android in use today.

## Met Office

The government-funded Met Office is the beginning and end of weather information for the British so it's no surprise to find an app bearing their name within Google Play. It's an official app too, although created by third party developers.

This is primarily a phone app, however. It works on tablets but insists on switching to portrait orientation and the text and icons are disproportionately small to the extent they're hard to read/tap. We're not sure whether this happens by accident or by design, but on both phone and tablet screens an awful lot of screen real estate is wasted by large photographs that shows at a glance what the current weather

conditions are like. The actual forecast and current conditions data appears in a small strip beneath, occupying between a third and a quarter of the screen depending on your device's aspect ratio and resolution. This seems very silly compared to the other apps here.

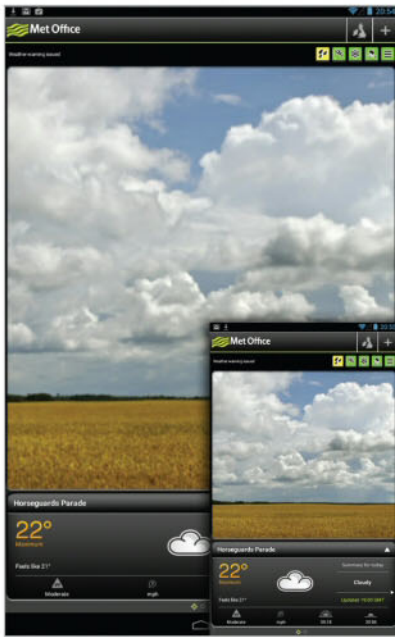
At the top of the home screen are five icons indicating weather warnings. If these are coloured green then you've nothing to worry about, but if they're coloured yellow or red then it's time to batten down the hatches – or at least carry an umbrella. Tapping these icons shows a curiously low resolution, almost hand-drawn map of the UK with the troublesome area overlaid. You can zoom in but only to your own area, and then you only zoom into the same low-resolution poor quality map. Tapping the menu icon on this screen shows a write-up of the warning.

Even if no weather warnings appear, tapping the icons will still show the map and let you see if warnings are in place for other parts of the country.

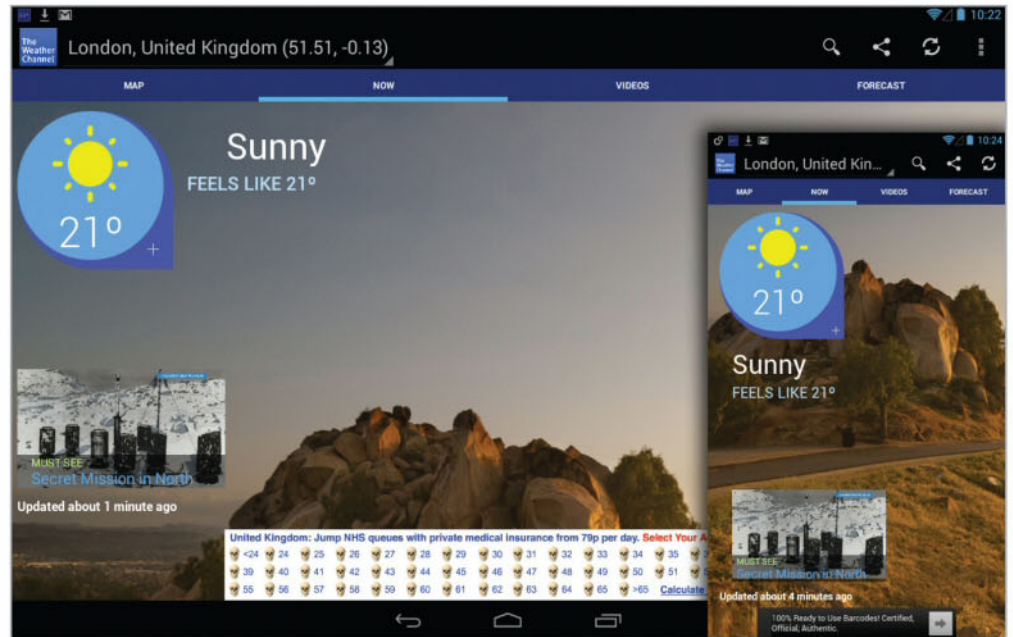
Also listed on the home screen is the UV factor, wind speed, and sunrise/sunset times.

Tapping the forecast expands it to show forecasts for the upcoming five days, and tapping any day reveals a more detailed forecast split into two/three hourly intervals, with the two-hour data available





▲ The Met Office provides a perfectly good forecast app, but poor design amongst other things indicates an opportunity has been missed



▲ The Weather Channel provides smooth design coupled with great functionality and a mass of meteorological data

only for upcoming days for obvious reasons. Tapping the right-facing arrow on any of these intervals then shows more figures for UV factor, wind speed, gust speed, visibility, chance of precipitation, and humidity.

Forecasts for the entire British Isles can be viewed by tapping the map icon at the top right of the home screen. This displays what appears to be a Google-provided map overlaid with various kinds of data that you can switch between: cloud radar/satellite, standard meteorological symbols, temperature map, wind speeds, and – uniquely for a weather app – isobars.

There's a lot to like here, but ultimately those hoping for a peek into the world of the Met Office are going to be disappointed. This is a basic weather app that just happens to be produced by one of the world leaders when it comes to weather data. It also looks pretty ugly.

## The Weather Channel

If ever we needed proof that humans are fascinated by rain and sunshine, The Weather Channel provides it. Although its UK venture was terminated some time ago, in the US The Weather Channel provides 24-hour entertainment – a kind of low-brow National Geographic without the animals.

This needs to be bourn in mind with this app, which has the dual purpose of providing weather forecasts and also providing access to Weather Channel video reports, including a specific “United Kingdom weather outlook” video showing the weather two days ahead but which entirely ignores Northern Ireland. In fact, it's merely a computer-generated map showing forecasts for major cities without any narration (imagine the kind of thing you see in hotel rooms as part of the concierge TV service).

But back to the app itself. It works equally well on both tablet and phone and the same basic design is used in each case – across the top of the screen are four headings that provide access to a weather map, a “Now” view of current conditions, the aforementioned Weather Channel videos, and forecasts. The app defaults to the Now view and shows an icon displaying the current conditions. Tapping the plus button on the icon neatly expands it to show more data, such as temperature highs and lows, wind speed, visibility, humidity, dew

point, and sunrise/sunset times. Also on the Now screen are link(s) to interesting Weather Channel videos, and filling the background is an image seemingly chosen at random – our forecast for London has a background image we guess is of the Australian outback or perhaps one of the drier parts of America. Ultimately the choice of image makes no difference to the functionality of the app, but compare and contrast to Yahoo Weather's approach, which is also reviewed here.

The map view shows a Google map of your locality, and you can add other, non-local areas to the sidebar for quick access. Tapping the map then opens it in a separate map view where you can overlay data for storms, floods, “winter” (snow?), temperature change, wind

“ If ever we needed proof that humans are fascinated by rain and sunshine, The Weather Channel provides it ”

speed, sea water temperature, and much more. In fact, in terms of presenting data to the user, The Weather Channel app wins hands down, shaming even our own native Met Office app.

Weather forecasts are provided for ten days ahead and on tablets this data is presented in a cool carrousel-style arrangement where you can tap and drag right and left to move between days. On a phone the same type of display is shown, but this time you drag up and down, rather than left and right.

There's a lot to like in this app, which is smooth and looks great. The amount of data it packs in surprised us and for amateur meteorologists there probably isn't a better app around. The app is supported by ads, and they're as intrusive as ever with no paid upgrade to remove them, but this is one rare example where we'd say we can live with it.



▲ The Yahoo Weather app combines beautiful design with basic but effective functionality and is highly recommended



▲ The BBC Weather app combines simplicity with elegance to make for a genuinely useful at-a-glance tool

## Yahoo Weather

Here at Micro Mart we're becoming increasingly big fans of the all new Yahoo. They're producing some high-quality apps that combine excellent user interface design with genuinely usability. This app is a flag leader for that approach, but we were disappointed to find that, as is so often the case in the world of Android apps, there's no dedicated tablet mode – the app treats the tablet as a large phone, forcing you to hold it in portrait mode. Still, at least it works, and while the text might be small, it isn't unreadable.

Cleverly, Yahoo Weather uses background images drawn from one of Yahoo's other businesses – Flickr. Because photos are increasingly geotagged nowadays, this means the Yahoo Weather app can provide high-quality (and conveniently free of charge) images for virtually anywhere you go in the world. This doesn't always work well – a visit to Urmston in Manchester (home of the Dinnerladies sitcom) showed a picture of Urmston train station platform. That's wasn't pretty.

The app works incredibly simply. By default you're shown the current conditions, including temperature, summary statement of the weather ("Mostly sunny"), and temperature highs and lows. Dragging up then reveals more data, starting with a forecast for that day, along with summary forecasts for upcoming days. Here you can switch between five and 10 day forecasts, with 10 day deactivated because it clutters up the display. The Yahoo developers really did think of everything.

Dragging up some more reveals a more detailed current conditions view, showing "feels like" temperature, humidity levels, visibility, and UV index. Keep dragging and you'll find a Google map, which if tapped opens to fill the screen and shows either cloud, temperature map or wind speed overlays. Curiously, when viewing a map you can successfully switch to landscape orientation to see more detail, but in general the app is locked to portrait orientation.

Other data includes wind speeds and air pressure (measured in mBar), and precipitation statistics for the morning, afternoon, evening and night of the current day. Also shown via a pretty little animation are the sunrise/sunset times, and also the moon phase.

Other locations can be added to the app so you can track the weather where you aren't yet present (an upcoming holiday

destination, for example). Dragging left and right on the main home screen switches between them.

There's little to criticise with this app. The feeling of luxury that comes from a well-designed app can't be beaten, and this is one of the best we've seen.

## BBC Weather

The British Broadcasting Corporation holds a place in the hearts of most British people and it's the definitive source we turn to for information. This official weather app plays on this a little by using the familiar iconography of TV weather maps that most of us are exposed to every day although perhaps surprisingly the app doesn't key into any other BBC media – it doesn't provide access to video or audio forecasts, for example.

It's an app designed to feel equally at home on a tablet or phone, and the main display is similar in both cases: a summary of the current weather appears at the left, and along the bottom are shown forecasts for upcoming days. Tapping these then fills the screen with forecasts for those days, including switching not only the main weather icon but also the background image – on a rainy day the background shows grey clouds, for example.

Regardless of whether you're looking at the current day's summary for a forecast, tapping the screen switches to a more detailed forecast showing – in the case of today or tomorrow – hourly progress displays showing maximum temperatures and wind speeds. Tapping any of these then digs down into yet more detail, showing the projected level of humidity and visibility, as well as the air pressure (measured in hPa) and wind speed.

Rather cleverly the app lets you split some areas into smaller chunks. Most apps give just one weather forecast for central London, for example, but the BBC Weather app lets you choose from forecasts for Charing Cross, Chelsea Embankment, Covent Garden, St James's, Soho and South Bank.

In addition to local weather you can tap the magnifying glass to search for areas and this isn't limited to UK locations. Once searched for these areas are stored for future use, and swiping up or down on the screen will reveal them.



▲ *AccuWeather takes a dashboard approach to displaying huge amounts of data about the upcoming weather*

Screenshots of what you're seeing can be shared in the usual way via Android's default sharing mechanism, which provides access to most compatible apps as well as allowing sharing via Dropbox, Google Drive, Bluetooth, email, and so on.

And perhaps surprisingly, that's about all you get with this app, but that's not a complaint. For simply checking the weather in the simplest way possible, in order to know whether to carry an umbrella or wear show shoes, the BBC app simply can't be beat. To top it all, we shouldn't forget that the data comes direct from the Met Office. Put simply, the BBC Weather app is the BBC at its best in the digital age.

## AccuWeather

Most apps here aim to present summaries and in-depth forecasts upon request, but AccuWeather takes the dashboard approach – when the app starts you're shown Now, Hourly, and Daily columns on a tablet, while on a phone these columns can be revealed by dragging left. Just about every bit of data you might require is displayed: UV index, humidity, visibility, dew point, air pressure, wind direction/speed and gust speed. You'll also see a "RealFeel™" figure, which is how AccuWeather refers to the "feels like" temperature (and this is app that seems to love trademarked phrases). Above the Hourly and Daily columns are graphs that show projected temperature rises and falls, although tapping these does nothing, such as zooming in, so you may have to squint a little if you're using a phone.

Keep dragging left and even more columns appear, including Maps, Videos, and News. Maps opens a Google map of where you are and you can overlay this with either radar or satellite cloud cover, and tapping the play button on the console shows a handy animation of radar or satellite data for the few hours up until the current minute. This way you can literally make your own forecasts by watching to see if clouds are heading for your location.

The videos are non-UK based, with the "national" weather forecast covering only the USA, but a Europe forecast at least includes the British Isles (London, Glasgow and Dublin are picked out), and you can find out what the weather's like in Spain if you're due there soon. The News stories deal mainly with extreme weather events around the world.

There are other areas of the app that aren't much use if you live in the UK, such as the MinuteCast weather forecasts that aim to tell you the upcoming weather minute by minute, down to an accuracy of street level – but only if you live in the US or Canada. You also won't get push weather warnings outside of the US.

That said, this is probably the best app out there for weather geeks. Combined with the Met Office app, that provides some



▲ *With little internationalisation for locations outside the US, Weather Bug isn't as useful as it could be but has some neat features*

local data missing here (such as isobars), you really can prepare your own forecasts.

## Weather Bug

The biggest boast of this app is that it takes its data from the Citizen Weather Observer Program (CWOP), which is a project started in the US, but that has since spread worldwide. It aims to use a network of individuals to collect and share weather data. Our knowledge of meteorology is lacking to the extent that we don't know whether using the CWOP is a good or bad thing, but several high level universities are involved in the project, and if nothing else using CWOP data might mean that Weather Bug provides a different perspective on the forecast compared to other apps, which mostly rely on data from the Met Office through direct or indirect routes.

The app is designed to work equally well on tablets as well as phones, and running across the top of the screen are four headings: Now, 10 Day, Hourly, and Details. Now shows the current weather, including precipitation projections, dew point, humidity, pressure, and sunrise/sunset times. Weather alerts appear here too, courtesy of a Know Before tab that appears should you be due sudden and dangerous weather.

The ten day forecast shows upcoming days and tapping any of them shows a detailed summary forecast. As you might expect, the Hourly forecast shows weather for the coming hours, again with precipitation likelihood, humidity, dew point, and wind speed data.

The Details view essentially lets you tune straight into the data provided by the CWOP station nearest you.

Listed at the right of the main screen on a tablet or beneath on a phone are various extreme weather stories. You can drag through these to view them, and tap once to read them. Perhaps unsurprisingly, most of the stories relate to north America, from where this app originates.

Tapping the menu icon reveals some other hidden yet interesting tools, such as a lifestyle forecast that shows forecasts geared around activities like sports or having a barbecue. We're not quite sure if this is a gimmick or not – rain is rain, and will spoil a barbecue as much as it will spoil a nature walk – but you might want to take a look for yourself.

From the menu you can also view weather cams, as well as traffic cams, and switch to a Google map showing cloud radar. When we tested the cams only one was from the UK (in East Anglia), and no traffic cams were available.

Weather bug suffers from a lack of regionalisation, but weather geeks might want to check it out if only to get access to that CWOP data. [mm](#)



# PC Tip Of The Week

## Fix Windows 8.1 Boot Problems

### David Hayward loses his cool with Microsoft's latest OS...

**M**y copy of Windows 8.1, installed on an SSD with a further 2TB data drive in my shiny games and main work PC, was working perfectly. It booted extraordinarily quickly, it was responsive, and I could play any game available on it. Then I booted it up one day after an update and received this message: "Reboot and selected a proper boot device."

Needless to say, I smiled and rebooted. Nothing. I tried again, still nothing. I went into the BIOS and tinkered with the boot order. I booted a Linux install on a stick and confirmed that the system SSD was still working. It was, but still no boot joy.

By now I was foaming about the mouth and issuing forth many obscenities toward Microsoft and all of its evil machinations. Repairing the drive via the Windows 8 disc didn't work, and attempting to retrieve a system image recovery failed too – it was something I was meaning to get around to doing, honest.

Anyway, I soon found a fix through various Technet channels and animal sacrifices. It turns out that the Boot Configuration Data was corrupt, which can happen to a fast drive (an SSD) after it has been interrogated by an update and not written to correctly.

### How I Fixed It

Being the calm and patient chap everyone knows me to be, I booted with the Windows 8 disc once more and chose the Command Prompt option from the Advanced Options menu.

In here and once I got to the command prompt, I felt I was in familiar territory, despite it being a shadow of its former self. I then entered the following four commands:

```
bootrec /fixmbr  
bootrec /fixboot
```

```
bootrec /scanos  
bootrec /rebuildbcd
```

Under normal circumstances, this should fix the problem. However, my setup was still misbehaving, so something a little more drastic was needed.

I rebooted the machine to confirm whether it worked or not, which it didn't. Then I returned to the Windows 8 disc and back to the Command Prompt via the Advanced Options menu. From here, I entered:

```
bcdedit
```

What this does is list the boot configuration data, and the key entries to look for are: Windows Boot Manager (the Device item should be set to unknown) and Windows Boot Loader (the Device and OS Device items should also be set as unknown).

If they're not or they're pointing to another drive, then entering these three commands should do the trick:

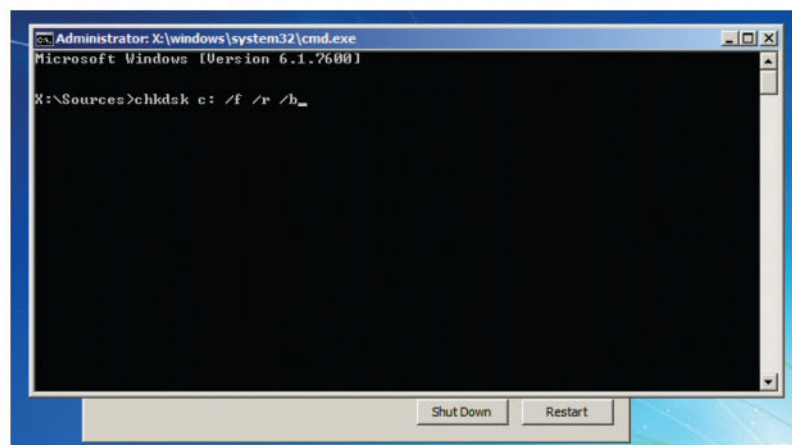
```
bcdedit /set {default} device partition=c:  
bcdedit /set {default} osdevice partition=c:  
bcdedit /set {bootmgr} device partition=c:
```

Hit enter after each and reboot the machine. With luck you should now be back in Windows 8.1.

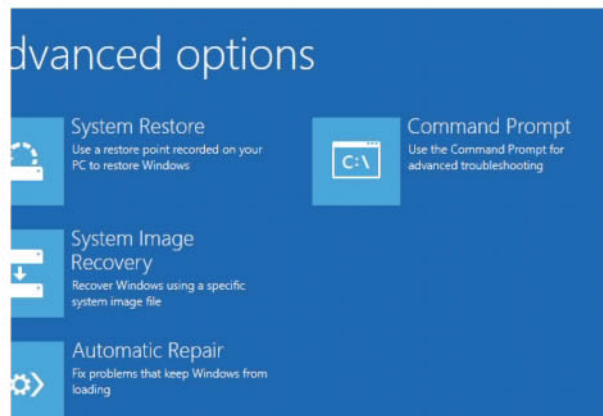
### Conclusion

So what's the moral of this story then? In my case it was simple. I backed everything up and made sure I had a valid system backup routine in place, then created another backup area for my valuable documents.

Oh, and I wiped Windows 8.1 and installed Windows 7!



▲ The Advanced Options where you'll find the Command Prompt



▲ After this lot, I was ready to install DOS 6.22 and Windows 3.11 again

# The Things That Frustrate Us About... Google Maps

**Sarah just wants to know where she's going, but Google Maps keeps getting in the way**

It's never been harder to get lost: if you don't have a dedicated satnav in your car, you've probably got a smartphone that'll give you guided step-by-step directions to any destination you like. The launch of Google Maps made everything easy. You can look up a route, plus alternate routes and even use StreetView to make sure you know exactly what every junction along the way will look like, so you know exactly what to expect – except, of course, like everything brilliant on the internet, it's constantly getting tweaked and updated, with useful features removed or hidden and new annoying things brought in. The latest relaunch of Google Maps is built of almost pure frustration. Here are some of the most annoying things:

## Nrgh! Too Much Stuff

The new Google Maps interface is meant to be cleaner and easier to use, but it just seems like a mess. Search for a place, and you end up with a drop-down taking up half the screen with info you didn't ask for, and the Explore button in the bottom right takes up a chunk of the bottom of the screen with photos and other junk.

Useful things that used to be easy to find, like the traffic layer, are now hidden within other sections.

**Fix it:** This is just a case of getting used to the new stuff; you probably don't need to see live traffic unless you're making a journey, so it makes a certain amount of sense to slot it into the Directions card, which means you'll probably find it when you need it. All the pop-up overlays that obscure the map can be closed down – either by clicking on an arrow or by clicking on the map again – but it's annoying that you have to take an extra step to see what you came for (i.e. the actual bloody map).

## Argh! Awkward StreetView

When StreetView was first announced, everyone hated it because it seemed like a massive invasion of privacy. Actually, it turned out to be really useful and pretty cool, because it allows you to look around places you might never visit, like Antarctica or the Colosseum. But with the new updates, it's not so easy to use. The map window has been made smaller, so it's hard to navigate around, and there are so many

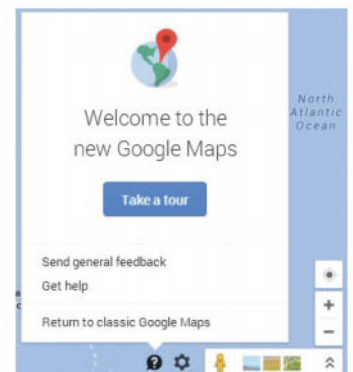
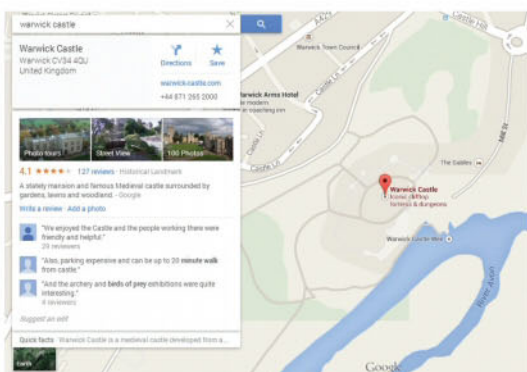
still photographs included it's easy to click away from the StreetView image and end up stuck in a useless picture.

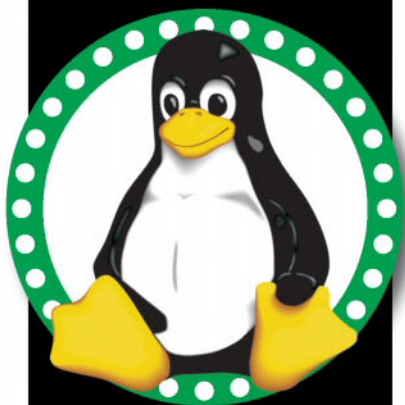
**Fix it:** You just have to be a bit careful where you click and be really precise when first dropping the StreetView chap onto the map. Or be prepared to switch back and forth between Maps and StreetView loads of times. Yeah, this is just irritating.

## Sigh! The Old One Was Better

Maybe it's just a case of letting the new Google Maps bed in. Maybe we ought to just spend some time with it, try to get used to its quirks and foibles and ignore the nagging feeling that the old one wasn't broke and Google shouldn't have tried to fix it. Maybe it'll turn out to be better in the end? Even though it's just really annoying right now?

**Fix it:** If you're the impatient type, though, you can just switch back to the old style Google Maps by clicking on the '?' at the bottom of the screen, then clicking on 'Return to classic Google Maps.' Ahhh. That's better.





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

## Linux Games Galore

### Gog opens its doors to Linux

In March of this year, the digital games distributor GOG.com revealed that it would be including support for Linux games via its site. Earlier in the week, it went ahead with that statement, and earlier than expected it unleashed around 50 games with support for Ubuntu and other flavours, including Linux Mint.

However, all did not go as planned. A five-minute glitch during the promotion of the Linux games accidentally made a large selection of them free. The result was that a thousand or so games slipped through the glitch before GOG was informed and the mistake was rectified. Fair play to GOG, though; it did email the users who got the free games and informed them that they could keep the games, with the following message:

"Hello

Thank you for your honesty. Yesterday, due to a small glitch on our end, you and a bunch of other lucky people ended up getting games from the Linux Launch promo for

free. Don't worry, though, as it's totally cool with us and you may keep them. Yes, we will not be removing these titles from your account, and we do hope you will enjoy them! :)

Of course, if you prefer, like some of our community members, we can always remove them your shelf – just let us know replying to this email. Again, there's no problem if you want to keep them :)

Your GOG.com Team"

### What's On There?

At the moment, there are 50 titles, but more will inevitably be added over the course of the coming months. For now, we have:

Anomaly Warzone Earth  
Ascendant  
Bionic Dues  
Blake Stone: Aliens of Gold  
Blake Stone: Planet Strike!  
Bloodnet  
Braveland  
CLARC  
Darklands!  
Darwinia  
Defcon

Don't Starve + DLC  
Dragonsphere  
Duke Nukem 3D: Atomic Edition  
FlatOut  
FlatOut 2  
Fragile Allegiance!  
Gemini Rue  
Gods Will Be Watching  
Hammerwatch  
Hocus Pocus  
Kentucky Route Zero  
The Last Federation  
Legend of Grimrock  
Lilil Divil  
Long Live the Queen  
MouseCraft  
Multiwinia  
Normality  
Pinball Gold Pack  
Pinball World  
Pirates! Gold Plus  
Realms of the Haunting  
Rex Nebular and the Cosmic  
Gender Bender  
Rise of the Triad: Dark War  
Shattered Haven  
The Shivah HD  
Sid Meier's Colonization  
Sid Meier's Covert Action  
Sir, You Are Being Hunted  
Slipstream 5000  
Space Pirates and Zombies  
Spacechem  
Stargunner!  
SteamWorld Dig  
Super Hexagon  
Surgeon Simulator 2013  
Sword of the Samurai  
Teslagrad  
Unrest:Special Edition  
Uplink  
VVVVVV

Many of these games are new to Linux, and many are old favourites back with a new lease of life.

Either way, well done, GOG, and long live Linux gaming!



◀ Linux games on GOG, and plenty of them too



# Amiga News

## More from the Amiga sector with Sven Harvey

### 30 Years

The 30th anniversary of the release of the first of the Commodore Amiga computers is now less than 12 months away, with what we now refer to as the Amiga 1000 first being launched in the USA on 23rd June 1985.

With the date now approaching, a team of Amiga enthusiasts in the USA have announced a 30th anniversary event that will be taking place at the Computer History Museum in Mountain View, California.

There are not many details available, except it will be taking place on 25th and 26th June 2015, but you can find out more online at [amiga30.com](http://amiga30.com).

### MCC Commodore Edition

I was made aware recently of a new piece of hardware referred to as the Multiple Classic Computer (MCC).

An entry-level version of the hardware referred to as the MCC-TV has been released in a special Commodore edition, which uses the good old composite and two audio connectors to plug into your TV.

As the Commodore edition, it includes both C64 Forever and the value version of Amiga Forever to give the officially licensed OS software files (as well as the usually included games and demos), which allow the included Amiga 500 and C64 cores with the reconfigurable computer to work.

Tech specs include:

- Reconfigurable hardware core, including main CPU, graphic engine, sound engine and interfaces.
- Integrated SDR memory 16MB.
- Integrated non-volatile memory 1MB for different classic computer platform realisation, programs and

games (enable up to 150 and more games in a closed system).

- Support of USB joypad.
- AV-Video output.
- Micro-SD card interface for external programs.

Currently only available via an eBay USA account with a USA power adaptor, work is afoot to sort a UK distributor, so watch this space.

### Hollywood Player

After many years of being put back, Airsoft Softwar has made the Hollywood player available for all platforms that the Hollywood development platform runs on. This means that Hollywood projects can now be run hosted, as applets, in the player on each platform rather than each program having to be compiled as an executable (and thus being a larger file).

Hollywood is a multimedia-centric programming language and creator program that essentially acts as an abstract multimedia program/application layer across several platforms.

The main Hollywood program and now Hollywood Player runs on all the following platforms/devices: 680x0-based AmigaOS 3.x machines, PowerPC Amiga OS 4.x machines, ARM-based Android devices, x86 based AROS machines, x86 and PowerPC--ased Linux machines, x86 and PowerPC based Macs, PowerPC-based MorphOS machines, 680x0/PowerPC-based WarpOS systems and x86 PCs running Windows.

The Hollywood player is, as you would expect, a free download from the portal at [www.hollywood-mal.com](http://www.hollywood-mal.com), where you can also find out about Hollywood and Hollywood Designer too.



▲ The Computer History Museum in California, USA will be hosting a 30th anniversary of the Amiga event

### Amiga Game Rebirth

Another old title that came to the Amiga initially has had a rebirth on other platforms. The 20th Anniversary Edition of *Another World* has been available for a little while on iOS but recently came to the active PlayStation formats (PS3, PS4 and PS Vita) in the form of a crossbuy package, where you pay once for it on all three platforms. A very accurate conversion, the game also offers optional upgraded graphics, sound and music. You can find it on the PlayStation store at [goo.gl/7rmLTL](http://goo.gl/7rmLTL).



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



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

## Generation L Leap

**Ian McGurren offers up his Nexus 7 2013 to the gods of Google for a taste of the latest**

**B**y now, Android L has made itself known to the world, and this time Google has taken a leaf out of the likes of Microsoft and Apple's books and given the public at large an opportunity to get an early glimpse of the new OS before release. To do this, you'll need either a Nexus 5 or a Nexus 7 2013 – though it's probably not a good idea to install a beta operating system on your main Android device. That is, unless you have a mobile column to write...

### Installation

The instructions and downloads required for the Android L preview are all on Google's developer preview site ([developer.android.com/preview](http://developer.android.com/preview)) and, at first glance, are straightforward. To be fair to Google, many will follow these instructions and have no issues at all, but this was not the case for me. As those of you whom read my columns may know, I'm no stranger to ROM flashing and, on unfortunate occasions, unbricking; so the simple instructions here gave me no cause for concern. Sadly, though, the first attempt ended in boot hanging, as did the second, even when pushing the ROM contents manually via ADB. A third attempt even wiped the recovery partition. Eventually, employing the use of the excellent Unified Android Toolkit yielded a full boot, albeit one taking an initial ten minutes. The moral of the story is this: only undertake this if you know how to get back out of it, otherwise you may have a nice new mini chopping board instead.

### In Use

Thankfully, in use, Android L is quite pleasant. At first glance, bar the new wallpaper and the slightly different lock screen, you'll wonder what the difference is. The first time you'll encounter a major change is likely to be with notifications, whether with the new Now-like bars that drop down in an iOS way or the drop-down bar that initially hides the quick buttons that require a second drag to reveal.

The next major UI changes you may see will probably be the settings and the application switcher. Settings has a far more attractive, lighter layout that is confusing at first but soon becomes clear and friendly. Changing your Home launcher is now handled here and in a simple manner. Switching apps takes on a rolodex-like look, with each app layered on top of the next in a card stack. In use, it is akin to the old Apple Coverflow UI, but in practice it works in much the same way as before.

The gallery application has also had a big update, adding a ton of interesting filters and styles, all tweakable. While there's nothing you won't have seen in the hundreds of 70s filter apps already available, they are fun to play with and can add a special something to a drab snapshot.

While Android L doesn't have a huge leap visually, it's under the hood where the changes have been most apparent. L is the first version of the OS to drop the old Dalvik runtime, instead moving over fully to ART. In practice, this means instead of compiling the app each time

it's run (Dalvik), it precompiles on installation and launches far quicker (ART). ART is actually an option in KitKat, but running it in that will highlight the problem with L too: a few apps have not been compiled to work with ART. They will eventually, of course, but bare this is in mind if you want to switch now. L is pretty snappy with ART, though, and on a pre-release build, it's a good sign of things to come.

The other big leap with L is Project Volta, Google's attempt to squeeze more life from the batteries powering Android devices. Part of this saving comes from ART itself or the lack of Dalvik's on-the-fly compilation, as well as analysis of what is stored ready to go and what requires waking the device's cores for. In practice, I have found it has been longer between charges, though difficult to quantify. Others have given ranges of 25-35% more power, which on a preview build, is impressive.

### Worth It?

Is the Android L preview worth your time (and possible pain)? If you're versed in the ways of the ROM and have a spare Nexus 5 or 7 2013, then sure, why not. Just be prepared to lose everything on it and maybe a few hours. Is it worth using your daily device for this, though? No. There are signs of sluggishness here and there, ART still isn't fully supported, and nothing is yet certified to work correctly with it. However, come October or November, Android L, 4.5, 5 or whatever it's christened, may just be worth getting a little excited over.

# Blitz Remix

Shaun gives another round-up of the retro scene

Games developer and 6502 guru Jason Kelk of Cosine ([cosine.org.uk](http://cosine.org.uk)) has released *Lunar Blitz RX* for the Commodore 64.

*Lunar Blitz RX* is based on the classic game *Blitz*, which was released in 1981 by Commodore for the famous unexpanded VIC-20. It's a simple reaction game in which one is piloting an aeroplane that must basically flatten a cityscape by dropping bombs on each neatly aligned building within a static 2D screen.

Unfortunately, only one bomb may be dropped at a time, meaning that you may not target another tower until the last explosive has fallen to the ground. Once this task is completed and all of the dwellings have been erased, you may land your plane. Then another challenging location will appear for you to flatten.

Jason's *Lunar Blitz RX* follows this formula exactly but adds much more colour to proceedings, as well as a bit more speed (as the VIC version was programmed in BASIC as I recall). The other difference, as you may have guessed, is that it's themed around a city on Earth's satellite. If you like this sort of reaction/arcade-styled game, then see the aforementioned website to get all the information you need, including the files. Or you may prefer the popular Commodore Scene Database (CSDb) for your releases, with this title available from [csdb.dk/release/?id=132064](http://csdb.dk/release/?id=132064).

You may notice that one of Jason's shoot-'em-ups has appeared recently on the CSDb, *Warflame RX*, which has been given the 'crack' treatment by Laxity, as this version has built-in cheats.

*Warflame RX* is a 2D horizontally scrolling shoot-



▲ Jason Kelk's interpretation of the classic *Blitz*: *Lunar Blitz RX* for the Commodore 64

'em-up in which you control a well-armoured vessel in order to obliterate the oncoming alien scum that head your way. Jason is a well-known fan of this genre, as well as a good developer of this sort of game. Download *Warflame RX* from [csdb.dk/release/?id=132070](http://csdb.dk/release/?id=132070).

## Cat rescue

Peter Van Der Woude has released a simple arcade-styled puzzle game for the unexpanded Commodore VIC-20, which does exactly what the title of this production suggests: *Get the Cat*.

In what could have been a magazine type-in, the task is simple to rescue a feline familiar

aloft a tree. Blocks fall from the sky, which must be avoided, but will make steps up to get the cat. The character may only manoeuvre up one brick at a time, so getting trapped between two that are two or more higher than the level you're on is game over. After completing the first level, one brick (or more) is carried that may be placed anywhere in play as an extra step, which may prove useful if in a tight spot.

The simplistic graphics are quite quaint, and the game features uncomplicated and well-placed sound effects. *Get the Cat* is archived on Peter's Google Drive account at [tinyurl.com/Get-The-Cat-VIC20](http://tinyurl.com/Get-The-Cat-VIC20).

## Another Blast

Richard Bayliss has put a preview of *X-Force* out on YouTube. This game will be a 2D sideways scrolling shoot-'em-up for the Commodore 64 with all of the typical 'blast the aliens' action that one could possibly need.

This production is inspired by Hewson Consultant's *Subterranea*, developed by Hugh Binns and released under the Rack It label in 1988.

*X-Force* tells the story of an explorer who gets jailed in an underground lair on a planet called Darx. After escaping this dank prison, a X-Force Super Fighter class spacecraft is found; the game then is to guide this ship to safely, taking out as many of the attacking forces as possible. To see this game in action, head over to [youtu.be/ogsGiz-mWCU](http://youtu.be/ogsGiz-mWCU).



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

## BioWare's Body Horror?

Could BioWare be about to unveil a survival horror game? A new teaser trailer, dubbed *Nightmare*, certainly hints as much

This week, Ryan ponders the identity of a new horror game teased by BioWare, and checks in on the progress of *Firefly Online*...

### Plug & Play

It takes a certain amount of faith to spend several years in medical college, only to leave and set up a fledgling games studio, but that's precisely what Ray Muzyka and Greg Zeschuk did back in 1995. The good doctors are now best known as the founders of BioWare, among the most respected developers currently active; with such games as *Baldur's Gate*, *Dragon Age* and *Mass Effect* among their key titles, BioWare's track record speaks for itself.

Things have changed a great deal for BioWare's staff in recent years – its founders retired in 2012, leaving the studio under the ownership of EA. It's now headed up by Matthew Bromberg, and under his leadership, BioWare's currently working on an as-yet unnamed *Mass Effect* sequel, and a similarly unspecified *Star Wars* game.

What we weren't expecting, however, was for the studio – previously best known for its action RPGs – to suddenly branch out into the survival horror genre. However, if we're interpreting a recent teaser trailer correctly, this is precisely the direction BioWare's newest title is going.

On the 24th July, games journalists and other industry types were sent an ominous email

which read, "The time is near... they are watching. Your power is rising. You've been chosen."

Then, at midnight, a live-action trailer appeared online ([youtu.be/32bLpcBoxT8](#)), which promptly assaulted the viewer with a series of nightmarish images and sounds: a hooded figure running down a dark, cluttered alleyway, glancing back at something off-camera. A René Magritte-like shot of a man in a black suit, sitting in an opulent living room, his head obscured by thick black smoke emanating from his ice-white collar. The same hooded figure, struggling to open a car door, only to see that his doppelganger is already sitting inside, staring back at him. What can it all mean?

For now, BioWare isn't saying – at the time of writing, the game's title hasn't even been announced yet – and a visit to a website ([www.youve-been-chosen.com](#)) doesn't reveal much either. Only the words, "Cologne, Germany" hint at more details to come: this is the venue for the annual Gamescom conference, so it's pretty certain there'll be further announcements later this month.

There's some speculation that BioWare's nightmarish project might be the rumoured collaboration between the studio and Failbetter Games,

the UK team behind the online adventures *Fallen London* and *Sunless Sea*. Whether this is true or not, it certainly looks as though BioWare's exploring some refreshingly different territory with this new project. A survival horror game with the freedom of choice of *Mass Effect*? Yes please, BioWare.

### Online

*Firefly's* the kind of cult TV show that, had it been cancelled by Fox in 2014 (rather than in 2002), would have probably been snapped up by a company like Netflix, or at least turned into a web series. Unfortunately, time was never on *Firefly's* side, and Joss Whedon's sci-fi adventure was axed after just out after just 11 episodes had reached TV screens. The series' fans remained unusually devoted, though, which explains why, more than a decade later, it's getting its own MMO in the shape of *Firefly Online*.

To coincide with the San Diego Comic Con in late July, developer Sparkplug Games unveiled the first trailer for the game ([youtu.be/8y98otfH9X8](#)), which will be a space exploration sim where players customise their own ship and blast off for their own *Firefly*-inspired adventures, which involves gathering your crew, completing missions and trading





▲ The series may be long since cancelled, but Joss Whedon's *Firefly* universe will survive in a forthcoming MMO featuring the original cast

items. The trailer's largely given over to a procession of wide-eyed Browncoats, each describing how they'd tailor their chosen ship, but the big reveal comes at the end: series star Nathan Fillion, who played rough-and-ready hero Malcolm 'Mal' Reynolds will be making appearances in the game, along with the rest of *Firefly*'s original cast, including Alan Tudyk, who the developer says will be playing "multiple roles".

This will certainly give *Firefly Online* an air of authenticity, especially with the returning cast being joined by some remarkably familiar ship designs – among them the *Kepler*, a new ship created by Tim Earls, the designer of the craft from the original

series. Cast and ships aside, though, what of the game itself? Given that *Firefly Online*'s a browser game created in Unity, it's fair to say that it won't be as sharp-looking as something like *Star Citizen*, and if you're looking for a sheer scale, you might be better off waiting for something like *No Man's Sky* or *Elite Dangerous* – according to Sparkplug, *Firefly Online* will have 200 worlds to explore, which is a far cry from the procedurally generated galaxies of those other games. Then again, *Firefly Online* will be taking a more story-led approach to space trading, rather than a purely open-ended sandbox, so if Sparkplug can make the narrative aspect of the

game right, *Firefly Online* is likely to be a must-have title for fans looking to return to the universe Joss Whedon created over a decade ago.

Updates on the game's progress will be found at [keepflying.com](http://keepflying.com).

## Incoming

The summer months are a bit of a drought for major new games, which then quickly gives way to a tidal wave of releases by autumn. This year's no exception, with the release of *Assassin's Creed: Unity* now mere weeks away. *Unity* relocates the stalk-and-slash franchise to Revolution-era Paris, a city whose grime and stunning architecture have been lovingly replicated with more fidelity than ever. Behind the graphics, there's a new, improved control system, which will apparently make for

smoother rooftop running antics and more involving combat.

*Unity*'s powered by Ubisoft's new Anvil engine, and as you can see in the latest trailer ([youtu.be/Y5tBpPxdZGs](http://youtu.be/Y5tBpPxdZGs)), the results appear stunning from a technical standpoint. The developer's rightly proud of what it's created: a replica of 18th-century Paris that is so detailed that its most famous landmark, Notre Dame Cathedral, took a year to build all by itself. The most exciting part of this shiny new engine, though, is the addition of a cooperative mode where four players can join together as a quartet of stealthy assassins. Smoother graphics aside, elements like this could bring freshness to Ubisoft's well-established franchise.

*Assassin's Creed: Unity* is out on the 28th October.



▲ With Notre Dame taking a year to construct by itself, *Assassin's Creed: Unity* is clearly the most detailed and ambitious game in the series so far. We hope it's a good as it looks



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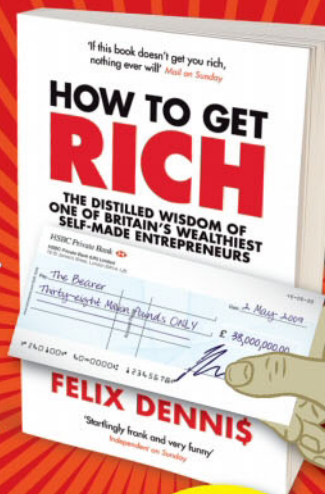
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£5.10	£11.90	£23.80	£13.10	£26.20
£6.80	£13.60	£27.20	£14.80	£29.60
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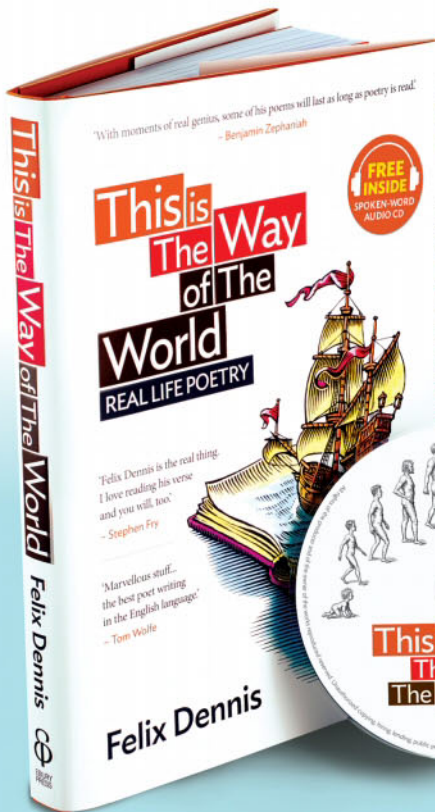


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XFX Radeon HD 6870. 1GB GDDR5. Original packaging, never overclocked. £75 plus £6.95 pp. Tel: Simon Hardwicke (01536) 724334 Email: simon.hardwicke1@ntlworld.com

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Tel: Alan (01258) 446500 Email: alan@asandco.co.uk

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Nvidia Geforce GTX 670 2GB. Made by MSI O/C model. Not overclocked. VGC. £110 plus postage.

Tel: Tim Stirland (01623) 624509 Email: tim.stirland@btinternet.com

4 Belkin Master Cube Surge protectors. Not only mains but telephone line protection too. Three were used for a short time, one is brand new. The part number is F9T110ukCW. £15 inc p&p.

Tel: Alan (01258) 446500 Email: alan@asandco.co.uk

1 TB SATA drive 3.5 inch, formatted ready for use. I can load genuine XP Professional from Microsoft with genuine Certificate of Authenticity for an extra £10. Refurbished. £35 + £3 p&p.

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Dell OptiPlex 745 (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. £60 plus £10 for delivery.

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Intel Core i3 3220 3.30GHz processor. Pulled from working PC due to upgrade. Will be provided in anti static packaging. £50.

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Two laptop hard drives, formatted and ready to go. 100GB, 2.5 inch and 120GB and 2.5 inch. The smaller is a WD1000BEVS. The other, Toshiba mk 1255GSX. £35 with free postage. Email: medicineman@ntlworld.com

Gateway MT6220G Laptop. 15.4 inch screen. 200GB HDD 2GB memory. Dual core CPU. Excellent condition, wireless superb, £129.95. Tracked post, £7.50. Please ask any questions. Email: medicineman@ntlworld.com

MSI KT4AV-L Socket A motherboard + Athlon 2200 CPU + 1GB DDR memory. 1 X AGP slot, 6 X PCI slots, 3 X DDR DIMM slots. Excellent condition, £25 + P/P.

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Dell Ultra small form factor GX620. Pentium D 2.8 /512/80 CD includes AC adaptor. Fantastic small machine that is very powerful ONLY £25 plus £8 for p&p. I can upgrade the memory and hard drive for an extra cost. You will need to load the drivers yourself. Refurbished.  
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11 Quality Peach compatible sealed CLI-8 cartridges. Yellow (3), magenta (2), cyan (2), black (2), PGI-5 black (2).  
 Won't fit new printer. £11 plus £3 postage.  
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E6300 CPU with stock cooler. Fully working, available due to upgrade. £10 plus £3 postage.  
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Intel Core i3 3220 3.30GHz processor. Pulled from working PC due to upgrade. Will be provided in anti-static packaging. £50.  
*Tel: Mark Sullivan (01142) 745864 Email: mark.sullivan34@aol.co.uk*

PC for sale. Athlon Dual Core 3Mhz CPU, cooler, Asus M3A board, 2GB DDR2, Nvidia GT8600 500MB, 750W PSU, XPSP3, Sony 17" Monitor, £150.  
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Gateway MT6220G Laptop. Core 2 CPU 2 GB memory, 100GB HDD, excellent 15.4 inch WXGA screen hinges. Excellent condition, excellent battery lasting 2 and a half hours. Wireless. £129.  
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Toshiba L350-169 17 inch screen laptop. 2 GHZ Core 2 processor, 120GB HDD, 4GB memory, Windows Vista. Excellent condition, lightly used. £170 post free, email me any questions.  
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*Tel: Tim (01892) 689054 Email: wryrat@hotmail.com*

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*Tel: John O'Regan (01525) 862933 Email: t2o@greenbee.net*

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*Tel: JG Moorhead (01606) 852461 Email: moorhead373@btinternet.com*

3 x Devolo dLAN Highspeed II adapters (used, working, unboxed). CD containing software utilities and documentation. £17 collection in Oldham or £20 posted to UK.  
*Tel: Ken Vickers (01616) 78 6139 Email: mail2luz3y-gym@yahoo.co.uk*

Linksys WMP54G Wireless PCI card. £8 collection in Oldham or £11 posted to UK.  
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USB printer cables, assorted. Blue see-through with silver tips, black with gold tips. 1.8m, £1.00 each. IDE cables, grey, £1.00 for 2. Some round, black and colours £2.00 each.  
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Mini-Usb Finger Optical Laser Mouse. Attaches to your finger and has two side buttons. Great replacement for standard mouse. £10 p&p included.  
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Akai Apc40 MIDI Controller. As new, in full working order with software, paperwork, etc in original carton. £240 ovno Delivery £6  
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*Tel: (07710) 348638 Email pat4cars@aol.com*

HP DC-7100 S.F.F. P4/3000 H.T, 80 GIG Hard drive, 1.5 GIGS RAM, CD-RW, Gigabit network, on board sound, front USB, £45.  
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*Tel: Wayne Deeley 07748170828 wdizz55@gmail.com*

Toshiba laptop. SP 6100I, complete except no HDD, unable to boot, charger. Windows 2000 installed. Wi-fi. RAM, DVD all present, good screen. Buyer collects. Spares or repair £15.  
*Tel: Keith Turner (07799) 041618*

Desktop computer. With Intel Core 2 Duo E7200, 2.53 GHz, 2 GB RAM, 75 GB HD, DVD/CD-RW, keyboard, mouse, 17" monitor. £ 120 plus delivery (free in London).  
*Tel: Mr. Mahra (02075) 610584 Email: xasan68@hotmail.com*

Sapphire HD6670 Ultimate graphics card. 1GB, passive, boxed, new. £55 inc post.  
*Tel: Mick Young (02072) 321695 Email: mick.young@o2.co.uk*

Blackmagic Design Intensity Pro video editing card. Boxed, new. £100 inc post.  
*Tel: Mick Young (02072) 321695 Email: mick.young@o2.co.uk*

Hitachi Deskstar T7K250 HD T722525DLA380 250 GB hard drive. Internal, 7200 RPM, 3.5". Used only for storage, taken from working PC, no bad sectors. £20, price includes P & P.  
*Tel: (01202) 826057 Email: geoffandcynth@themailspot.com*

NAS Two Bay Server. Zyxel 221. Complete with 2x Samsung 1TB hard drives, installed. All new, not been used. Ready to go. Price includes courier delivery. £200  
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*Tel: Paul Brogden (07545) 496002 Email: paul-brogden2007@hotmail.co.uk*

Apple iMac G4 for sale. 2004, 1.25GHZ G4 processor, 17 inch screen, 1.25GB RAM, 75GB hard drive, OS 10.4, DVD SuperDrive. Comes with keyboard, mouse, and speakers. £150 or nearest offer.  
*Tel: Paul Brogden (07545) 496002 Email: paul-brogden2007@hotmail.co.uk*

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Dell Inspiron 1525 laptop. Spares or repair £65. Has faulty screen and cracked bezel otherwise perfect working order. Works with external monitor. New PSU & battery. No hard drive. Email for full details. Tel: Kevin Cozens (01792) 581036 Email: kevin\_cozens64@hotmail.com

HP Slimline (S3150) computer. NVIDIA graphics, Intel core2, 2GB RAM, 250GB HDD built-in freeview card with remote KBD, mouse WIFI, MS office 2007 home. £120 including postage. Tel: (01324) 562722

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**Trying to breathe life back into an old machine? Why not submit a wanted ad to MicroMartClassifiedAdverts@gmail.com and see if any of the thousands of computer enthusiasts who read the magazine each week have what you're looking for?**

**Wanted: Fully working mainboard for AMD socket AM3/AM2+, DDR2, micro-ATX size.** Email: Brian bmorgant@yahoo.co.uk

**Wanted: Factory system restore disc for a Dell Inspiron 1750.** Tel: Darren Day (07707) 556193 Email: ddshaggy@btinternet.com

**Wanted: 4GB (2 x 2GB) of Corsair DDR2 RAM.** 800Mhz XMS2-6400. Must be in good working condition. Tel: (01928) 733808 Email: wilsal9@aol.com

**Wanted: One Series Printer HP DESKJET 610c** in good working order. One servicing manual (Not Users Instruction Manual) for the HP DESKJET 610c Printer. Old Zip Discs. Tel: (01214) 777691

**Wanted: A socket LGA 775 motherboard to enable me to build a computer for a local Royal British Legion member.** He's able to pay for a 2nd hand board as long as it's not too expensive. I've got the other components. Tel: Ken Driver (01890) 820295

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**Wanted: 2 sticks of 2GB - PC2-4200 (533MHz) desktop memory, 2 of 1GB.** To complete a computer for a disabled ex-serviceman who has little money. Any other donations of bits & pieces of computers would be most welcome as I put together units for hard up ex-service people. Free of charge. Tel: Ken Driver (01890) 820295 Email: ken@braxton.plus.com

**WANTED: Foxconn H61MXL-K I/O backplate.** Please state price & postage cost. Tel: Steve Wilson (01617) 939906 Email: sb.wilson1@ntlworld.com

**Wanted: Texas Instruments Laptop Power Supply Cable.** Mine has failed and without it, I cannot use or charge batteries. Have complete working system with all software. Tel: (01525) 288072 Email: jauung2@btinternet.com

**Wanted: DDR2 800mhz, 4GB. 2x2GB.** Tel: (07817) 861011

**Wanted: The Pet Companion.** Has anyone a copy of the 1981 book "The Pet Companion"? This book collected the first 12 issues of Microcomputer Printout Magazine. Will pay £20 for a copy. Email: Thomas Turnbull turnbull50@sky.com

**Wanted: A fully working and proven Compaq (HP) DC7600 PSU.** HP part number is 462434-001. Also a Compaq (HP) DC7900 PSU. HP part number is 379294-001 381023-001. Both must be 365 watt, not 240 watt versions. Must also be correct fit for SFF, not tower, CMT or USFF models. Thank you. Tel: Mr Earl (07872) 495140

**Wanted: Motherboard with 3GB CPU or higher wanted.** Must have AGP interface. Tel: (07817) 861011 Email: medicineman@ntlworld.com

**Wanted: SDRAM laptop modules.** Either PC100 or PC133 for elderly Dell Latitude CPT C Series Laptop. Wanted x2 SDRAM modules up to 254 MB for Dimms A + B (Non Parity). Email: cjevans@fsmail.net

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Trend Micro Titanium Maximum Security 2014. Genuine licence key directly to email. 3 devices for 1 year, for smartphones, PC, and Mac. £6.50 incl delivery. Tel: 0203 519 7628 Email sales@bitsmith.it

Windows Vista Business edition disc and certificate of authenticity. New and 100% genuine. Only £15 including postage and packing. Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

Microsoft Office Professional 2007. In original wallet with original licence Code. £100. Price Includes P&P. Tel: Carole Walker (07551) 293083 Email: omen-data@gmail.com

## Software Wanted

**Wanted: LG GSA 2164 D software disc to replace broken original.** Tel: Glen Fremantle (01387) 248976 Email: bldamsys@yahoo.co.uk

**Wanted: Nero 9 reloaded for Windows 7.** £80 given. Tel: (01629) 732623

**Wanted: SmartDisk HD250 Installation CD.** Novice Linux CDs with instruction manuals reasonable prices will be paid. Tel: Alun (01525) 288972 Email: jauung2@btinternet.com

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Contact Aaron by email at:  
aaron@micromart.co.uk

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*

## Absent Edits

I edit my screensaver pictures using Picasa, but the computer I use died on me last week. I managed to copy my pictures from the old hard drive using a caddy, but when I restored them on a replacement computer, all the changes I had made in Picasa had been lost; it was as if I just had the pictures before they had been edited.

I guess I should have exported my pictures as a backup every week, but at least I could access my original files, which were selected copies from my main backup.

Is there some way I can restore these changes, by maybe putting the old hard drive in another working computer and ignoring the need to register with Microsoft for the first 30 days?

**Andrew**

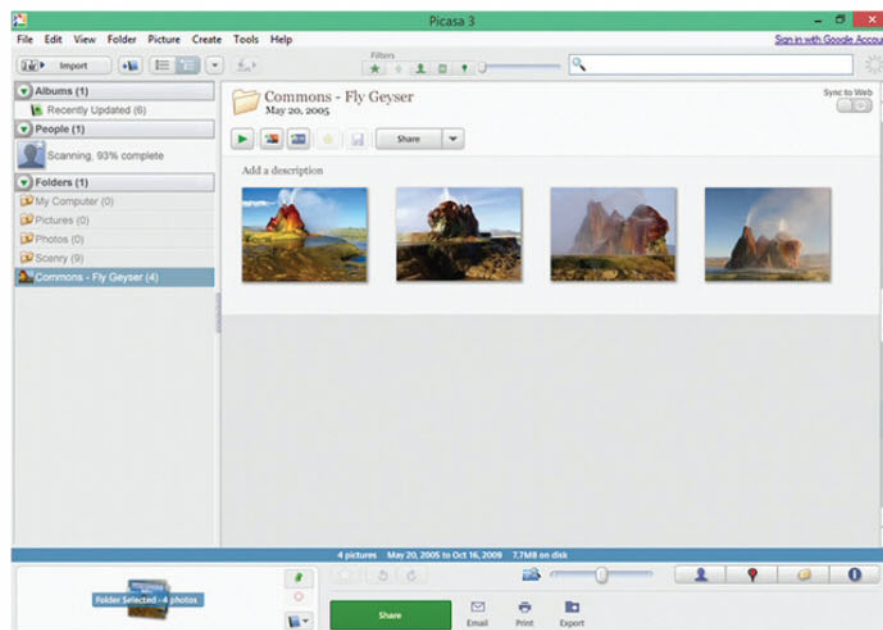
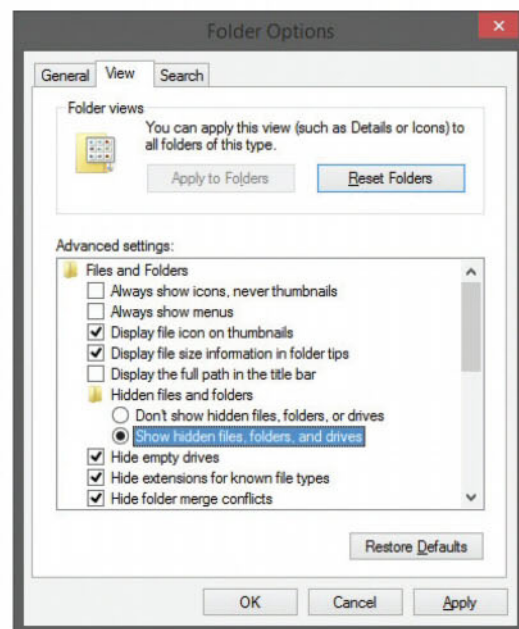
*I don't think you need to worry about issues with Windows here, Andrew; you just need to remember where you saved your edited images. This is because, by design, Picasa doesn't actually make any changes to your original photos. These are kept intact and in their original state, either in the original source location or moved to a folder called '.picasaoriginals'. The former of these methods is used when you select Export > Save a Copy (or Export > Save As), while original photos are moved to the picasaoriginals folder if you select Save to Disk or Save.*

*So somewhere on your old hard disk, you should be able to find the edited images, and you should be able to copy them to your new machine. As you already have a caddy for the drive, simply plug this back into the new PC and do a search for the images you want. If you can't remember their names, try searching for specific file types instead, such as .jpg or .png (use the \* wild card, such as '\*.jpg'). You'll find*

*them on there somewhere, as long as there's no damage to the hard disk as a result of the problems your old PC had, of course.*

*If any readers have the opposite problem and need to locate their original images within the picasaoriginals folder, you may have trouble doing so, as this is a system hidden folder, so won't show up unless you change Windows' folder settings first. To do this, in Explorer, click View and select Options. Go to View, and in the list select the option to 'Show hidden files, folders and drives'. If you're using an older version of Windows than 8, you'll need to click Tools > Folder Options to get to the settings you need.*

▼ **Picasa's original image folder is hidden, so you'll need to reveal it if you want to access your source images**



◀ **Picasa doesn't overwrite original images and always saves a new, edited copy**



## Minty Printy

I am having a problem installing drivers for a Pixa MG6350 Printer in Linux Mint 17 Qiana 14.04 LTS. At present, I am on Mint 16 trusty and have no problems with my printer, but I want to go to Mint 17 mainly because it's an LTS version long life and is, as far as I am concerned, stable.

When I go to the Canon UK website and select Pixa Printer MG 6350 and then select Linux, I am presented with a list of files, of which there are two .deb files – one for Scangear and one for Cnijfilter printer. Each file has a common and a driver for both 32- and 64-bit. These were loaded on the Mint 16 version and work perfectly (64-bit).

The problem arises when I try to install these drivers onto Mint 17.

- The Cnijfilter common 64-bit loads okay.
- The Cnijfilter driver 64-bit loads okay.
- The Scangear common 64-bit loads okay.
- The Scangear driver 64-bit starts, but then shows:

- Error: Dependency is not satisfiable: libtiff4.

I have looked on forums but cannot find anything to resolve my problem. I was hoping you may be able to suggest something. I am not a newbie, but this is beyond the limit of my knowledge.

My system: M5A88-M motherboard, 64-bit 3GHz AMD CPU. 4x 250GB SSDs in front mounted caddies, each on separate SATA connections individually switched from the front panel, so all work can be done from the front of cabinet, giving me a choice at any time of four systems.

Thanks for a great mag, which I look forward to every Thursday and read cover to cover in M&S with my Latte, usually taking till dinner time!

**John**

## Flicker

My new Windows 8 PC seems to have developed a fault, just over a year after I bought it, so my warranty is out of action. Why does this always happen?

When I boot up, Windows seems to behave normally until the screen starts to flicker on and off for no apparent reason shortly after I get to the desktop. This happens constantly, and it continues to do this until the system is shut down. It doesn't matter if I run a program or stay in Windows, it keeps happening.

I did try running the computer in Safe Mode, and when I did this, the problem didn't occur. I was able to use the PC normally – as normal as Safe Mode allows, anyway. When I booted back up as normal, the problem returned.

I'm really not sure what's going on, and I'd really appreciate any guidance you can offer. As I thought it may be important, I should say that my PC is a budget system and it has on-board graphics, which I've always ensured is up to date. The problem only started to happen recently, and it was perfectly fine before.

**Ed**

Given that your problem here is with the display, which functions without a hitch when you run in Safe Mode, I think it's fair to say that the root of your trouble here lies with your graphics card's drivers.

When you run Safe Mode, Windows doesn't load the majority of your usual start-up applications and drivers, including many graphics

Index of [ftp://ftp.us.debian.org/debian/pool/main/t/tiff3/](http://ftp.us.debian.org/debian/pool/main/t/tiff3/)

Up to higher level directory

Name	Size	Last Modified
libtiff4-dev_3.9.6-11_amd64.deb	330 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_armel.deb	317 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_armhf.deb	303 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_i386.deb	331 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_ja64.deb	414 KB	27/01/2013 00:00:00
libtiff4-dev_3.9.6-11_kfreebsd-amd64.deb	324 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_kfreebsd-i386.deb	310 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_mips.deb	333 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_mipsel.deb	333 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_powerpc.deb	322 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_s390.deb	339 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_s390x.deb	344 KB	26/01/2013 00:00:00
libtiff4-dev_3.9.6-11_sparc.deb	330 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_amd64.deb	196 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_armel.deb	187 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_armhf.deb	175 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_i386.deb	196 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_ja64.deb	272 KB	27/01/2013 00:00:00
libtiff4_3.9.6-11_kfreebsd-amd64.deb	196 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_kfreebsd-i386.deb	196 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_mips.deb	190 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_mipsel.deb	190 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_powerpc.deb	197 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_s390.deb	208 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_s390x.deb	209 KB	26/01/2013 00:00:00
libtiff4_3.9.6-11_sparc.deb	186 KB	26/01/2013 00:00:00
libtiff4oc2_3.9.6-11_amd64.deb	62 KB	26/01/2013 00:00:00
libtiff4oc2_3.9.6-11_armel.deb	62 KB	26/01/2013 00:00:00
libtiff4oc2_3.9.6-11_armhf.deb	62 KB	26/01/2013 00:00:00

▲ There's always a useful resource online for missing files

I suspect your problem here isn't an issue with your printer or even Linux Mint. Instead, it looks like you're simply missing a file that the printer driver installer needs. In this case, the missing file, which the software is dependant on, is libtiff4. As this file seemingly isn't present on your system, the installer can't continue. To fix it, all you need to do is locate the missing file.

Luckily, this isn't too difficult, and I've tracked down the file you need. You can find this in the Debian repository at [ftp.us.debian.org/debian/pool/main/t/tiff3/](http://ftp.us.debian.org/debian/pool/main/t/tiff3/). Here you'll find various versions of the file, and you'll be able to find the version you need for your system. Once this is installed, you can then attempt to install the printer, which should be set up correctly.

drivers. As these don't load and Windows uses its own generic display driver, it would certainly seem as though you have a problem driver installed. This is further backed up by the fact you state the system did used to work, and that you always make sure your GPU drivers are up to date. I would say a recent display driver update has caused this problem.

So what can you do? Well, the obvious course of action is to uninstall the existing graphics driver and reinstall a new one. You could then reinstall the new driver, in case the previous install went awry for some reason. I'd also download a fresh copy, just in case.

If you've installed numerous drivers, and you just want to use an older, working driver but aren't sure which one worked, uninstall the driver and use whatever version you have that came with the system, then upgrade it step by step.



# ASK JASON



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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*

## Half-Baked Hardware

My Compaq Presario CQ60 laptop (model CQ60-215DX) gets rather hot, even after I've taken it apart and cleaned it. Windows 7 operates much more stably, though, since I've delved into the advanced power settings and lowered the minimum and maximum CPU states below 100%.<sup>\*</sup> However, no matter what percentages I choose, the Athlon X2 QL-62 runs only at 1GHz, half the full 2GHz. If I set the numbers to, say, 80%, shouldn't the speed be 1.6GHz?

Ian, Outlook.com

*Sadly not, Ian. Windows can only make use of a CPU's 'p-states'. These are speed and voltage settings hard-wired into a CPU as part of its power-saving infrastructure. On AMD mobile chips, they're a feature of PowerNow! (on desktop chips it's dubbed Cool'n'Quiet). Many CPUs have numerous p-states, but budget CPUs typically have fewer, and the mobile Athlon X2s are cut-down Turion X2s.*

*In a nutshell, your QL-62 has only two p-states. The higher p-state runs the chip at 100% (10 × 200MHz, or 2GHz), while the lower one runs it at 50% (5 × 200MHz, or 1GHz). That's it, I'm afraid. If you drop the Windows power settings below 100%, you'll always get the lower p-state – 50% (1GHz) – even if you choose 99% or 1%.*

*If the QL-62 at 1GHz doesn't offer enough grunt (it'll probably be fine for general use, especially as it's dual-core), have a crack with AMD's OverDrive utility: [bit.do/LaiZ](http://bit.do/LaiZ).<sup>†</sup> This*

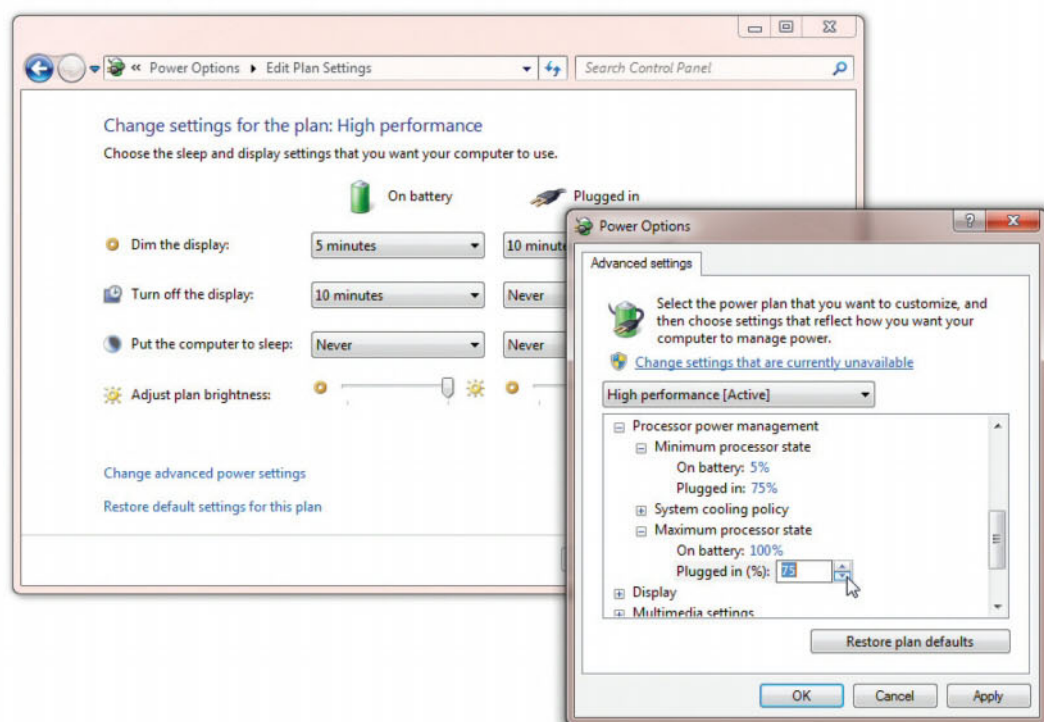
*allows all manner of CPU adjustments, and you can set speed limits irrespective of what p-states a CPU possesses. At least that used to be the case. I confess I've not played with OverDrive in a while, and it's possible your old Athlon may no longer be supported. The only laptop at my disposal as I gaze out over the Atlantic (surely the Bristol Channel qualifies?) is one packing a Core 2 Duo.*

**“It's possible your old Athlon may no longer be supported”**

<sup>\*</sup> For anyone else hunting for these settings, get yourself into Control Panel, click 'System and Security', select Power Options, click 'Change plan settings' for the currently highlighted plan, select 'Change advanced power settings', then expand 'Processor power management'. That's for Windows 7, though the process for Windows 8.x isn't much different.

<sup>†</sup> Another, similar tool is RMClock: [bit.do/Land](http://bit.do/Land). I've not used that in some time, either.

▼ Windows' own power-saving features can cap a CPU's speed, but to achieve the best results a third-party tool might be required





## Throw Away The Key

I've just bought a Microsoft Wedge Bluetooth keyboard to use with my Nokia Lumia 1320 Windows 8 phone. However, the two devices won't pair. The keyboard works great with an HTC Android phone and also with an iPad Air. Am I missing something? I think Nokia sells a keyboard that relies on a downloadable app, but I can't find that app in the Windows Phone Store. Do I need it, or has Microsoft genuinely made a keyboard that doesn't work with what are essentially its own phones?

**Joseph Gough, Sky**

*The problem doesn't lie with the keyboard, Joseph. Nor does it lie with the Nokia, at least not in terms of hardware. The problem lies with Windows Phone.*

*Bluetooth works via 'profiles', which are effectively drivers that determine what type of devices can interact with each other. All phones and many car stereos, for example, support HFP – the hands-free profile – so that you can make and take calls whilst driving.*

*Bluetooth keyboards use the HID profile – human-interface device. The Wedge supports this, but Windows Phone doesn't, not even in version 8.1 (which has just started rolling out). Pairing is a two-way street – the required profile has to be present on both devices. It's not just the Wedge that won't pair with your Lumia 1320 (or with any other Lumia) – Bluetooth keyboards of any description are out of the picture full-stop.*

*Microsoft is very crafty about this. Witness the Wedge's product page: [bit.do/KXDT](http://bit.do/KXDT). 'The new, ultra-slim Wedge Mobile Keyboard was designed for Windows 7 and Windows 8 tablet users who are constantly on the go. (It also works with iPad and Android devices.)' No mention of Windows Phone – guilty by omission. The supported Bluetooth profiles in Windows Phone 8 and 8.1 are listed at [bit.do/KXFv](http://bit.do/KXFv). For Windows Phone 7, see [bit.do/KXFv](http://bit.do/KXFv).*

*It's ridiculous, of course. Microsoft could add an HID profile to Windows Phone in a second. The lack of one is deliberate, not an oversight. Despite pre-loading Office Mobile on Lumia phones, Microsoft is basically saying that if you want to use a keyboard, you have to buy an overpriced Surface tablet or a PC. Phones are mere playthings.*

*The more things change, the more they stay the same. This is the Microsoft we all know and love – sorry, know and loathe. Product segmentation like this is a decade out-of-date and will do nothing except ensure ever more users fall into the embracing arms of Android and the suffocating arms of iOS.*

▼ **Why doesn't Microsoft's lovely but pricey Wedge keyboard pair with its own (Nokia's) phones?**



## Grey Screen Of Death?

For my birthday last year I was given a Tesco Hudl tablet. It's been terrific, but earlier today the screen went completely grey while I was using Facebook. The tablet won't switch off. I've plugged in the charger but not even the battery icon appears. Sooner or later I suppose the battery will drain. Is there anything I can do? Is the problem terminal? I'm a little alarmed to realise I'm lost without my Hudl – it's like I've had my right arm cut off!

**Hayley Savage, Nottinghamshire**

*The Hudl carries a one-year warranty, Hayley, so you're still covered. The purchase receipt would be handy, but Tesco tends to be quite accommodating, so the staff at your local shop may simply replace the tablet with no questions asked.\**

*I don't think a swap-out will actually be necessary, however. You may well have sussed this already, but once the battery dies and the tablet switches off, connect the charger, wait a few minutes for the battery to gain a bit of juice, then fire the tablet up as normal. It'll probably work.*

*If it doesn't, leave the charger in anyway. Even if nothing appears on the screen (though you'll likely see the familiar blanket of grey), the battery probably \*is\* charging. Now, unusually, the Hudl has a reset button. I've seen such a thing on a few Chinese tablets, but it's uncommon on Western models. You'll find it near the rear left-hand corner, close to the volume rocker. It's a tiny hole. Take hold of a pin or paperclip and poke it in. Keep it there for a second or two. The Hudl should power down, though this may not be obvious if there's no life on the screen.*

*Is the reset button merely a means of powering the Hudl off when it freezes? Or does it actually reset something? I don't know. Either way, Hayley, holding in the power button should now see the tablet starting up as usual. The reset won't wipe any of your data – don't worry about that. Most likely some app or Android update was what sent the device into a tizzy.*

*As a warning to users of other tablets, don't assume that any similar hole on the back is necessarily a reset button. It's more likely to be a microphone. You don't want to be poking a pin into that! If in doubt, refer*

*to the manual – you may need to search online for one – or seek advice in online forums ([forum.micromart.co.uk](http://forum.micromart.co.uk) would be a good start).*

*\* Especially if the device has a printed serial number (rather than one merely in firmware, which won't be accessible). The date of manufacture can be established from that. I don't have a Hudl to hand – I'm on holiday in sunny Somerset! – and can't remember one way or t'other.*

▼ **Lock-ups on the Hudl aren't common but neither are they rare, so it's helpful that Tesco (or Archos or Wistron) has included a reset button**



# Crowdfunding Corner

Two more interesting projects you may want to invest in...

## Console OS

The Android operating system from Google has revolutionised smartphone and tablet usage, and even appeared on larger devices, like nettops and convertible laptops. It hasn't ever been applied to desktop systems, though. Until now, that is.

Console OS is a reworked version of Android which has been remastered for the desktop. It offers free upgrades for life, and comes with new features such as InstaSwitch and WindowFlinger – which are designed to make it compete with Windows by adding traditional desktop features not found on mobile devices.

That said, the software supports multi-touch displays, so if you want to turn your desktop into a fully-functional oversized Android device, there's no problem doing just that. You don't need a touch-screen, though: mouse support is one of the features they've added to make it work on a desktop.

Users can install Android directly onto their hard drive or run it portably, off a USB stick. The installer can even automatically set itself up as a dual boot with Windows! This means you have the ability to run Android apps and games alongside a normal Windows installation. Simple!

The first 10,000 backers get a copy of ConsoleOS for just \$10, with lifetime upgrades. There are still over 5,000 copies left at time of writing, but if they run out you can still get it for \$25. It's already passed its goal, so production will be starting no matter what you do!

**URL:** [tinyurl.com/nwsqvff](http://tinyurl.com/nwsqvff)

**Funding Ends:** Monday, August 11th 2014

## SSSSSpeaker

Portable Bluetooth speakers tend to share one of two qualities: they're either big and heavy, or small and tinny. If you want a truly portable speaker that sounds great, you're pretty much eoot of luck. However, this is a familiar square that the SSSSSpeaker is now trying to circle.

Made from brightly coloured silicone, the SSSSSpeaker is designed to look as good as it puports to sound. The fascinating design, which allows you to control the volume of the music by changing the actual size and position of the speaker, utilises a collapsible silicon cone – which also ensures that it takes up as little space as possible while in transit. The choice of material means it should be pretty hard to damage while remaining incredibly light. A single charge of the SSSSSpeaker should provide around five hours of use.

At this stage it's hard to say whether the sound is truly superior to any other portable speaker, but the design is impressive and the outlook seems promising. It's less than \$10,000 away from a \$30,000 goal at time of writing, which means it's probably going to make it – but if you want to give it a little push of your own, why not back it yourself?

An early bird reward tier of \$16 gets you a wired version of the speaker in one of a variety of colours (usual price \$19). Unfortunately the early bird version of the wireless speaker has already sold out, but you can still get it for a reasonable \$26. Pay \$39 and you can customise your own with engravings and custom colouring! We hope it works out.

**URL:** [tinyurl.com/qx4dzwd](http://tinyurl.com/qx4dzwd)

**Funding Ends:** Friday, August 8th 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

# ConSoul

## Get your DOS game on with this week's app

It's no secret that I have something of a soft spot for all things retro, especially gaming, so I was really happy to once more play a few early PC era games on my tablet recently.

Normally, we wouldn't put an app in App of the Week that was significantly flawed, but this app was something rather wonderful, and we think that with a little more development behind it, it'll be one the best apps we've ever loaded onto our mobile devices.

### ConSoul

ConSoul is an app that will emulate an early PC using a new x86 PC emulator. Naturally, emulating a PC is a little bit of a struggle for an ARM device, especially one with limited resources at hand, but ConSoul does a pretty decent job of it.

Aside from the base emulation, the app also comes with the FreeDOS operating system and a smattering of games in the form of *Duke Nukem*, *Commander Keen 1* and *Prince of Persia*. These alone, in my book, are more than

enough of an incentive to install and try the app out.

### How Does It Work?

Admittedly, this is an app that could do with a little more work behind the scenes. There are a number of problems, but these can be resolved if anyone reading this has the knowhow.

For one, it's rather slow at times. In fact, it's incredibly slow when the action heats up in game. Also, there's no sound, which is another bugbear.

Aside from these obvious flaws, there's something very wonderful about playing PoP on the tablet – the PC version too, not some remake. There are some more DOS games on the way according to the developer, but when these will eventually arrive is uncertain. And it's also uncertain if the developer himself is actually continuing with the ConSoul project any more, as there doesn't seem to have been any significant movement for quite some time.

If that's the case, then could some clever coder out there take up the mantle

and give us PC DOS gamers some more and better working examples of our early computer gaming youth?

### Conclusion

Okay, so ConSoul has its problems, and it's not quite as well defined as it could be. But look beyond the negatives and instead enjoy some classic *Commander Keen*.

It's a good app and a good idea. Indeed, it's flawed, and there are times when it becomes quite slow, so take what you want from it and use it to simply enjoy a few older games. Otherwise, get your coding hats on and come up with the goods yourself. We'll be right behind if you do.

### Features At A Glance

- Free.
- Commander Keen!
- Prince of Persia!
- Duke Nukem 1!



▲ Duke Nukem! Awesome!



▲ Command Keen! Awesome!



▲ Prince of Persia! Awesome!

# Logging Off

**T**here comes a time in most people's lives where they need to let something go, like their support of a diabolical bad football player or a childhood pastime. The tech industry, however, grasps on to concepts with such absurd stubbornness that it make the inseparable Mr Bean and Teddy seem conventional. As if the underline this, I've just received a promotion for a flash drive where the read speed is proclaimed as 28MB/s or 187x! The first part makes some sense, MB/s I can relate to, but what's the 187x factor about?

What is this drive 187 times quicker than? Well, that would be a 1x speed CD-ROM, an entirely different technology from a totally different era. It's actually referencing a device that modern computers haven't featured for more than a decade, and we'd wager that some potential customers won't even recall what came before the DVD – so telling people that the drive speed is 187x makes as much sense as quoting the price of gold in Roman denarius or having a car speedometer calibrated to leagues per hour.

I can't recall exactly how slow a 1x CD-ROM was, because even before they released the very earliest devices they'd speeded them up to at least 2x, I recall. And that was nearly 20 years ago.

Potentially, a person still using optical media might see 40x in relation to CDs, 8X in relation to DVDs and 6x Blu-ray, with no apparent correlation between those multiplication factors or the respective speeds of reading or writing. What makes the whole thing entirely laughable is that optical drives actually rotate at different speeds depending where on the disc they are accessing, so the idea of having a linear transfer rate for data (not audio) was silly from the outset.

So why do it? It's like nobody can come up with a better solution, so instead some people continue to use a statistic they know makes no sense whatsoever, because the numbers look good for marketing purposes. If that's acceptable, then perhaps I should start describing myself as a German Papiermark multi-trillionaire or that my weight is approximately 160,000 bees.

If I filled out my tax return specifying by earnings in Rai Stones from the Micronesia Island of Yap, I'm sure someone would make some pathetic complaint – though possibly not as much of a complaint as if I tried to pay my tax with giant stones or with a cheque tattooed to the hide of a Holstein-Friesian cow called Bluebell.

This fact hints at the answer to my complaint: we simply shouldn't accept the use of meaningless ratings.

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When I next get a product that is rated in CD-ROM speeds, I may well feel inclined to use cubits to define its height, length and width. Then I'll quote its weight in solar masses, and its speed in terminal velocity when dropped from a balloon. It makes almost as much sense as a 1x CD-ROM, and will entertain someone with the inclination to go and convert it into the metric equivalents.

Anyway, I must conclude this Logging Off at this point, because I've got to another Scrabble box of letters to type before my 72 pennyweights of wax candle burns out or about four microcenturies goes by.



Mark Pickavance

## LAST WEEK'S CROSSWORD

**Across:** 7 Heptahedron, 8 Uplink, 9 Unlock, 10 Pi-Meson, 12 Demos, 14 Ennui, 16 Replica, 19 Averse, 20 Thrice, 22 Troposphere.

**Down:** 1 DHCP, 2 Sprite, 3 Jackpot, 4 Venus, 5 Grille, 6 Anechoic, 11 Innovate, 13 Red Tape, 15 Uproot, 17 Lurker, 18 Xenon, 21 Clef.

### 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. We've been watching some of the Commonwealth Games on the telly recently, and we've come to the conclusion that it's far too hot for all that running around. What those athletes really need to do is to sit down in the shade somewhere and eat some ice cream. After all, it's the taking part that counts and not the

winning, so why not just say we've all won and start taking it easy? And if you really must run around, then why not do it virtually by joining us in *Elder Scrolls Online*? To be honest, we could do with a bit of help, because giant monsters and mean people with big, pointy swords keep killing our character. On the plus side, clicking a few mouse buttons and tapping away at a keyboard isn't all that physically strenuous, so we're not really feeling the heat as much as we might. Plus it gives us more energy to do really important things, like making great big chocolate cakes. And eating great big chocolate cakes. Not to mention all the work we do every week to bring this mag to you. It's a hard life, for sure.

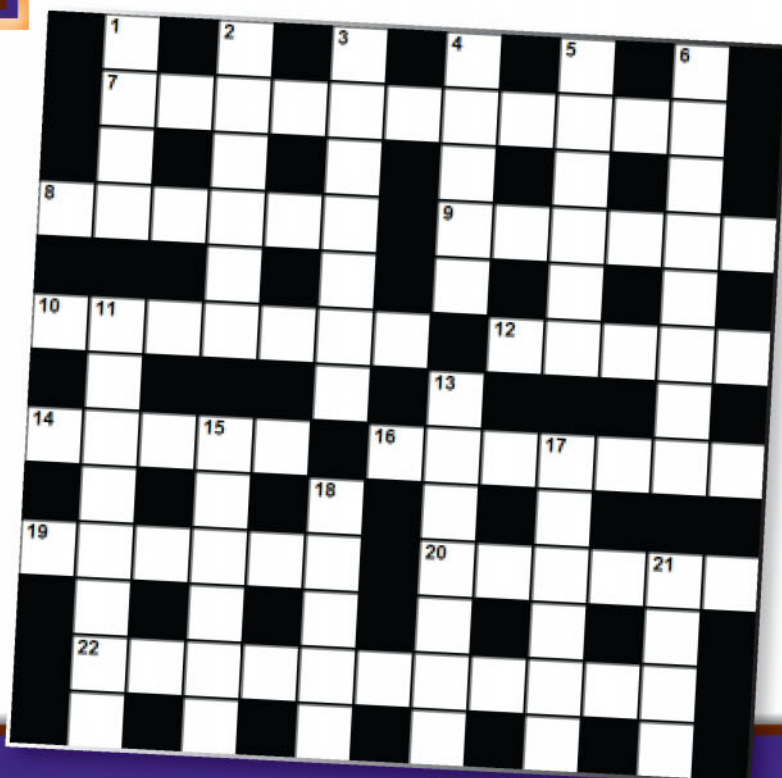
## THIS WEEK'S CROSSWORD

### Across

- 7 Something designed in such a way that it's unlikely to become obsolete. (6-5)  
 8 Act or speak as a short-notice replacement for someone. (4-2)  
 9 The part of a telephone on which the receiver rests when not in use. (6)  
 10 Embeds a Perl interpreter into an Apache web server. (3,4)  
 12 Have the same opinion about something; concur. (5)  
 14 Any distracting or deceptive manoeuvre. (5)  
 16 To change a chess pawn for a better piece by advancing it to the eighth row. (7)  
 19 Directions in which opinions and technologies tend to move over time. (6)  
 20 Bring to the latest state of technology or information. (6)  
 22 Nouns formed as inflections of verbs and partly sharing their constructions. (6,5)

### Down

- 1 An electronic picture of a person's face made from composite photographs of facial features, created by a computer programme. (1-3)  
 2 A type of transformer used to increase the secondary voltage relative to the primary voltage. (4-2)  
 3 A type of computer that uses ternary logic instead of the more common binary logic. (7)  
 4 An arbitrarily fixed date that is the point in time relative to which information as coordinates of a celestial body is recorded. (5)  
 5 The creator of *Minecraft*. (6)  
 6 Having an abundant supply of money or possessions of value. (8)  
 11 According to Microsoft it's the one place for everything in your life. (8)  
 13 An inexpensive programmable single-board microcontroller, intended to make the application of interactive objects or environments more accessible. (7)  
 15 Relating to or based on the number nine. (6)  
 17 An intervening substance through which signals can travel as a means for communication. (6)  
 18 An analytic or interpretive literary composition. (5)  
 21 The official news agency of the former Soviet Union. (4)



# **In Next Week's Issue\***

» **The best motherboards you can buy**

» **Diagnosing network problems**

» **Do we really need multi-core processors?**

» **Plus app tests, hardware reviews and more**

**\* May be subject to change**



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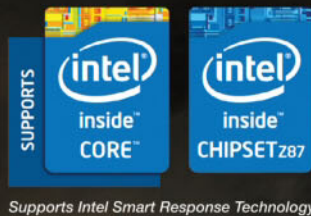
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