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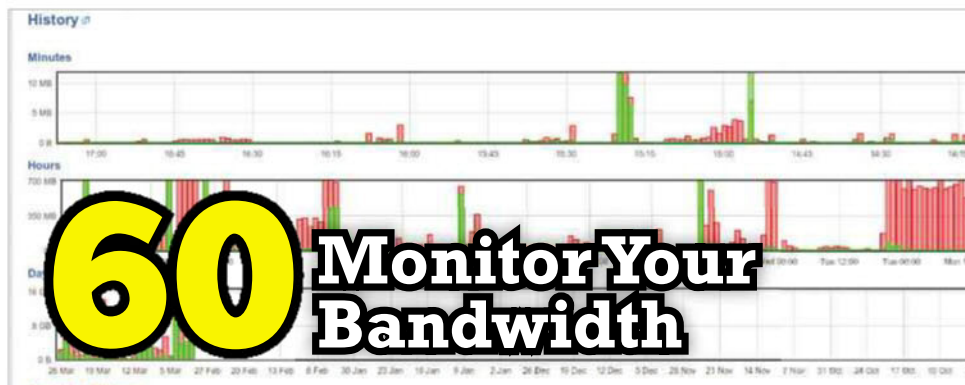
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# 48 Remote Access Software Tested



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## 60 Monitor Your Bandwidth

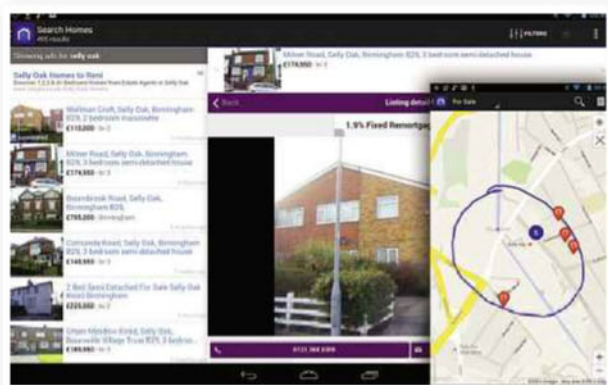
If you're on an unlimited internet service, then you may not care how much data you're using. However, if you have a monthly cap or are limited before a certain time of day (lest the dreaded 'traffic management' should kick in), then keeping track of your bandwidth is the answer. David Hayward explains what you need to so

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# Why Has Microsoft Bought Minecraft?

## (And What Happens Now?)

**Microsoft has just spent \$2.5bn on Mojang, a company that is effectively a single videogame. Why? Well, because it's a deal that goes far beyond gaming. Simon takes a look...**

**T**here's been no shortage of reports suggesting that Microsoft is a spent force, that the days of it dominating the marketplace are coming to an end, and that the once-world conquering firm is being outthought by nimbler competitors. In truth, there's something to that: Windows 8 seems to be fighting an uphill battle that it's showing little sign of winning, Apple and Android operating systems are in control of the portable operating system market and a resurgent Sony is landing heavy blows on Microsoft's Xbox One console. With Bill Gates and Steve Ballmer gone, it's proven a tricky time for Microsoft, and it's not always found it easy to redefine itself.

Yet, lest we forget, for all the negative talk, Microsoft is a cash-rich company – and it's a business that's getting richer. In the company's latest round of financials, published back in July, it was revealed that in one three month period, Microsoft brought in \$23.38bn in revenue. Of that, \$4.6bn was profit. In three months! That's record earnings (although not record profits) at a time when Microsoft is perceived to be in trouble; lots of companies would like to be in that much trouble.

Lob what brickbats you like at Microsoft, it will tend to its wounds with the \$15bn+ of profit it'll be making this year. To put that stupidly large number into perspective: a cash injection of that size into the UK economy could knock 4-5% off the income tax rate overnight.



What's more, Microsoft's earnings are broad. The PC market still accounts for a sizeable amount of its cash, and computers are still in demand (growing demand, of late). The Xbox One is doing decent numbers, whilst Microsoft is finally seeing some of the fruits of its decision to buy up Nokia and its Lumia phone range. Cloud service take-up is proving to be very lucrative as well.

Yet there's also a problem. Microsoft isn't world leading at too much any more, and that wasn't always the case. In particular, it's feeling the pinch in both mobile and gaming, and as such, it needed to do something about it. Time to go shopping, it would seem.

## Minecraft

By the time you read this, three weeks will have passed since Microsoft opened its petty cash jar, and found \$2.5bn lying around. It put that \$2.5bn to reasonable use too, buying up a company called Mojang. Many of you will have heard of it, some will have

“ Lest we forget, for all the negative talk, Microsoft is a cash-rich company – and it's a business that's getting richer ”

not. More of you, we'd wager, will be familiar with *Minecraft*, a game that's increasingly an addiction for many youngsters. Put simply, *Minecraft* is a modern phenomena – and Mojang's main product. From humble beginnings and entirely independent foundations, *Minecraft* has gone on to become one of the most played videogames on earth..

*Minecraft* was originally the brainchild of a man called Markus Persson, better known by his online handle of Notch. Persson came

up with the idea while working for other companies, wanting a game that took him back to the days of playing with LEGO, yet married up to a compelling videogame.

It took a game called *Dwarf Fortress* to ultimately bring Persson's idea into focus. Boasting a stylised (yet deliberately not cutting edge) graphical look, *Dwarf Fortress* focused on the game itself rather than making it look spangly. *Minecraft* would follow a similar ethos, with Persson quitting his job in 2009 in order to accelerate the development of what would become *Minecraft*. The first playable version appeared on May 17th 2009, but initial interest in *Minecraft* was tempered.

## The Official Microsoft Line

Microsoft, as you would expect from a corporate behemoth, put out a press release spouting its official take on the deal, as news of the Mojang purchase landed. The key corporate quotes from the release were as follows:

"Gaming is a top activity spanning devices, from PCs and consoles to tablets and mobile, with billions of hours spent each year," said Satya Nadella, CEO, Microsoft.

"*Minecraft* is more than a great game franchise – it is an open world platform, driven by a vibrant community we care deeply about, and rich with new opportunities for that community and for Microsoft."

"The '*Minecraft*' players have taken the game and turned it into something that surpassed all of our expectations. The acquisition by Microsoft brings a new chapter to the incredible story of '*Minecraft*,'" said Carl Manneh, CEO, Mojang. "As the founders move on to start new projects, we believe the high level of creativity from the community will continue the game's success far into the future."

It's the usual blurb, with all the right noises, thus far at least.







However, by the middle of 2010, *Minecraft* had been noticed. As Mojang, the company set up by Persson, recalls on its official history page, servers crashed in September 2010 due to the sheer number of people trying to sign up to play the game. Then came the YouTube videos of people's *Minecraft* projects (some of which are really quite staggering). Then came the awards. Then, in November 2011, the game got its first full official release. Also that year, tablet versions of *Minecraft*, for Android and iOS, were released, and the Xbox 360 version would follow in 2012. *Minecraft* was on its way to becoming a multi-platform phenomenon.

### Word Of Mouth

Interestingly, for a game in the modern era, *Minecraft* had become a sensation – not by way of it being subject to a massive marketing campaign (bluntly, when have you ever seen a *Minecraft* billboard?) but through sheer word of mouth. It now takes near residence in the top paid for app charts on Android and Apple's App Store, while the PC version continues to notch up huge numbers of downloads.

In 2012, *Minecraft* arrived on the Xbox 360. Microsoft claims (and, as is its way, it has the power to monitor such things) that its seen over two billion hours of gameplay attributed to the title on the console alone since then. Not for nothing is *Minecraft* comfortably one of the most popular games on the Xbox 360. PlayStation versions have rolled out too in more recent times. Everyone wants a slice of Mojang's creation.

In all, *Minecraft* has been downloaded over 100 million times, and it's one of the most popular videogames on the planet. Rumours had been circling for some time that Microsoft was interested in doing a deal with Mojang for the game, and all that gossip came to fruition on September 15th, 2014, when the deal was confirmed. One of the biggest independent success stories of recent times was really to become part of one of the biggest corporations on Earth.

### Minecraft 2?

Given that *Minecraft* is a game that evolves, it means that you only have to buy it once, and new downloads become available automatically, for no extra charge. It's hard to see that model continuing under the new corporate regime.

Firstly, more substantive updates may – and this is purely speculation on our part – attract a charge. We wouldn't be surprised if Microsoft took a leaf out of *The Sims'* book in that regard, although it won't want to kill a golden goose in the manner that EA has hammered *The Sims* over the years.

The biggest opportunity, though, is to begin work on a whole new *Minecraft* sequel, which will allow Microsoft to release a new version of the game and get people to stump up for it from scratch. That way, it could have two versions of *Minecraft* on the go as well, and this approach – appreciating it goes against the way that *Minecraft* has built its audience – may be the way Microsoft ultimately gets its money back. If, in fact, getting its money back is its key plan in this instance.

### Breaking News

The news of the acquisition first broke on Mojang's website, in an update post very much written in the company's style. Tellingly, given its new corporate bosses, it noted that "we can only share so much information right now," but the guts were this. Microsoft was paying \$2.5bn for Mojang, which covers *Minecraft*, and other upcoming Mojang projects such as *Scrolls*. With no disrespect intended, it wasn't the other projects that Microsoft got excited about. It was *Minecraft*.

Mojang's post noted that "there's no reason for the development, sales and support" of versions of the game across multiple formats



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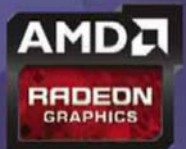
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to stop, and that “*Minecraft* will continue to evolve.” Immediate fears that, for instance, the PlayStation version would be canned as a consequence of the deal were thus dissipated.

The sting in the tail landed on the same day, however, when Markus Persson informed fans via his own website that he was “leaving Mojang.” His words were candid, and the reasons for his departure clear: while Persson had stepped away from *Minecraft* development a year or two back to concentrate on other projects, for many he had remained the face of *Minecraft* and was still taking the brunt of any gripes about the title despite becoming ever more distant from the management of the game.

He wrote that “I’ve become a symbol. I don’t want to be a symbol, responsible for something huge that I don’t understand, that I don’t want to work on, that keeps coming back to me. I’m not an entrepreneur. I’m not a CEO. I’m a nerdy computer programmer who likes to have opinions on Twitter.”

He signed off by saying “Thank you for turning *Minecraft* into what it has become, but there are too many of you, and I can’t be responsible for something this big. In one sense, it belongs to Microsoft now. In a much bigger sense, it’s belonged to all of you for a long time, and that will never change. It’s not about the money. It’s about my sanity.”

Barely within minutes of the deal being announced, the father of *Minecraft* was moving on, appreciating that his involvement had been limited in the year or two before. He wasn’t alone, either. Also quitting are two other key Mojang personnel, Carl Manneh and Jakob Porser. Important parts of the Mojang success story are moving on, as soon as the deal is formally tied up.

## The Fears

Within minutes of the news landing then, the huge *Minecraft* fanbase was in some degree of revolt. To say that the involvement of Microsoft didn’t go down well would be no understatement. There’s a good reason as to why this was the case; with many commentators citing the circumstances of Rare’s demise as a reason to be fearful.

The foundations of the company known as Rare lay in the 8-bit videogame publisher Ultimate Play The Game. A reclusive British outfit, led by Tim and Chris Stamper, Ultimate was responsible for a gaggle of early videogaming classics, such as *Sabre Wulf*, *Knight Lore* and *Jet-Pac*. Ultimate Play The Game later evolved into Rare Ltd., although it stayed firmly based in the Midlands.

Rare would become the most important developers for Nintendo outside of the Mario team during the 1990s. Rare games for the Super Nintendo and Nintendo 64 were richly praised, and deservedly so. *Donkey Kong Country*, *GoldenEye*, *Banjo-Kazooie* and *Perfect Dark* sold heavily, and were bestowed with awards at a

“ To say that the involvement of Microsoft didn’t go down well would be no understatement ”

time when Nintendo’s console business was under severe pressure. It would be no understatement to say that Rare helped Nintendo out of a major hole (as discussed in the recent book *Console Wars*, which charted the battle that Sega and Nintendo fought in the 1980s and 1990s).

It all changed in the early 2000s, though. Microsoft, having observed the transformation of Sony with its PlayStation console, wanted a piece of the action, and began pouring resources into its Xbox project. What it had learned from watching Sony and Nintendo over the years was that it’s the games that matter; software sells hardware.

As such, Microsoft needed a top class games developer or two on its assets book (harking back to when Sony bought Psygnosis





in the infancy of its PlayStation project). It thus took a trip to Leicestershire and, against reported competition from Activision, Microsoft forked out \$375m to buy up Rare in its entirety. Whilst the company would complete a few games for Nintendo's handheld consoles post-acquisition, it became to all intents and purposes an Xbox developer from that point on.

Things were never the same, though. The first game Rare published for the Xbox was the underwhelming 2003 puzzle title *Grabbed By The Ghoulies*. Whilst it's a better title than its reputation suggests, *GoldenEye* it was not; nor was it what Microsoft paid \$375m for. Rare would release one more title for the original Xbox, *Conker: Live & Reloaded*.

It wasn't until the launch day of the Xbox 360 that Microsoft got something close to its money's worth. Two launch titles – *Perfect Dark Zero* and *Kameo: Elements Of Power* – were Rare games and *Viva Pinata*, which also made it to the PC, followed. The reviews were good, the sales not so much. The Rare spark seemed to have gone, and many pointed the finger at the Microsoft corporate culture as a reason why.

When Chris and Tim Stamper left the company in 2007, it was felt that a developer that previously had a two decade heritage had been swallowed up in five years by Microsoft, with only some of its less impressive games to show for it. The core of the Rare team, on the whole, is long gone – so it's easy to see why some *Minecraft* gamers fear history is about to repeat itself.

## Lessons

Microsoft is no fool. The amount it paid for Rare was a mere pinprick on its quarterly revenues, but the lessons had to be learned nevertheless. With *Minecraft*, it's seized on a growing game, that's come up via fan support. It's also helped that Phil Spencer, the head of Xbox, has already confirmed that "we plan to continue to make Minecraft available across platforms – including iOS, Android and PlayStation, in addition to Xbox and PC." There had been genuine and founded fears that Microsoft would seek to make *Minecraft*

## The Movie

Long before this deal was announced, Warner Bros. was circling a movie adaptation of *Minecraft*. This was off the back of the huge success of *The LEGO Movie* earlier in 2014, a film that has taken \$468m in worldwide cinemas and a good chunk more on home formats. That's no small change, and if a good *Minecraft* movie can be realised, then not only will Microsoft now get a slice of the movie pie, but it'll also have a huge big advert for its newest game. Expect talks between Warner Bros. and Microsoft to accelerate.

exclusive to its platforms – such as Xbox, Windows, Windows Phone and Surface – but that's doesn't appear to be the case. Not in the short to medium term, at least.

It's certainly feasible that Microsoft will continue with what it's done on the Xbox thus far though. Previously *Minecraft* releases have featured material exclusive to the Xbox 360, and as Microsoft continues to expand the game and tries to build a case for the Xbox One, that does make some sense. Still, that's a long way from being able to slap a £50 price tag on a box.

It's not absolutely clear what the main upside for Microsoft is in this deal. Markus Persson has gone, and *Minecraft* will remain available on the range of rival platforms that it already is. Furthermore, whilst it has lots of players, it's hardly a cashcow. Mojang reported takings of \$326m in 2013, and that's off the back of one game. If everyone went off *Minecraft* tomorrow, then all Microsoft will have to show for its investment is a hefty invoice, and presumably some nice offices. That's not going to happen of course, but still: whilst Microsoft has nominally bought Mojang, it's ultimately bought *Minecraft*. Everything else is just an extras package, and not necessarily an array of extras the firm is interested in.





Microsoft gets one big, juicy asset here – a big, juicy asset that it's had to pay nearly eight times its parent company's annual revenue to acquire. That stark fact speaks too to the changing face of games. The new generation of games consoles, if we can still call them that, has seen Sony, Microsoft and Nintendo all encourage customers to buy games as digital downloads. That's the path via which the vast majority of *Minecraft* sales have come. Furthermore, *Minecraft* reverses the usual model. Usually, games make their money in the first month or two, not unlike the way films seem to work now. However, *Minecraft* is making more money now than it did when it was first released. The trend is upwards, too.

## Beyond Gaming

In fact, *Minecraft* has become more than just a game. You can buy *Minecraft* books, toys and clothing. It's also finding its way into British schools, an area where Microsoft has heavily profited in the past. *Minecraft* is talked about in school playgrounds, is responsible for thousands of often-staggering YouTube videos showing details creations people have made in the games. Microsoft knows that owning *Minecraft* gets it fast access to one of the loudest audiences for videogames and games consoles. Whilst there's no obvious direct way for it to quickly get its money back, if it's savvy and willing to play the long game, \$2.5bn may yet seem shrewd.

At the moment, it just looks like an enormous risk (although, again, a risk contextualised by the fact that it doesn't even account for three months of profits). Microsoft is staying mum on its exact plans at the minute, although Phil Spencer posted on his Xbox blog that "the *Minecraft* community is passionate and diverse, ranging across all ages and demographics. We respect the brand and independent spirit that has made *Minecraft* great, and we'll carry on the tradition of innovation to move the franchise forward. Our investments in cloud, Xbox Live and mobile technology will enable players to benefit from richer and faster worlds, more powerful development tools, and more opportunities to connect with the *Minecraft* community."

So far so good, then. Rightly, many gamers have noted that there are companies with worst track records for swallowing up

## The Fate Of Scrolls

Even though the history of Mojang is dominated by *Minecraft*, the firm was working on other projects at the time of the Microsoft announcement. *Scrolls* has been the one the most talked about, and Mojang, on its website, dealt with the question as to what's happening with it. "We don't know yet," the post admitted. "We'll share any news as soon as we do."

*Scrolls* remains in development, a marriage of trading card games and board games, with the aim being to destroy your opponent's 'idols'. It's a different style of game to *Minecraft*, although it will share the idea of crafting, that's helped make *Minecraft* so hugely popular.

For the moment, the best thing to do with regards to *Scrolls* is to keep an eye on the project's website. That can be found at [www.scrolls.com](http://www.scrolls.com).

developers. A search for EA's many acquisitions serves as proof of that. It's likely that the acquisition will be rubber stamped before the year is out, and it's then we'll likely get a clearer idea of just what Microsoft's plans for *Minecraft* are. Our guess, in the short term at least, is more of the same.

## Why?

Microsoft has bought *Minecraft* for a myriad of small reasons, that add up to a bigger one. It's got one of the biggest names in videogaming which has a captive audience that devote tens of hours a week to it. It's got a growing game that works across the many platforms that Microsoft operates and a brand name that transcends mere gaming. Is that enough to warrant the outlay? More than likely, but even if it doesn't, Microsoft has spent big to position itself right in the middle of the collection of popular games right now. It's gambling that this will pay dividends for some time to come, but right now, the most talked about videogame on the planet is a Microsoft one. Given the troubles the firm has been having with its Xbox One console, that's not happened for a while... [mm](#)



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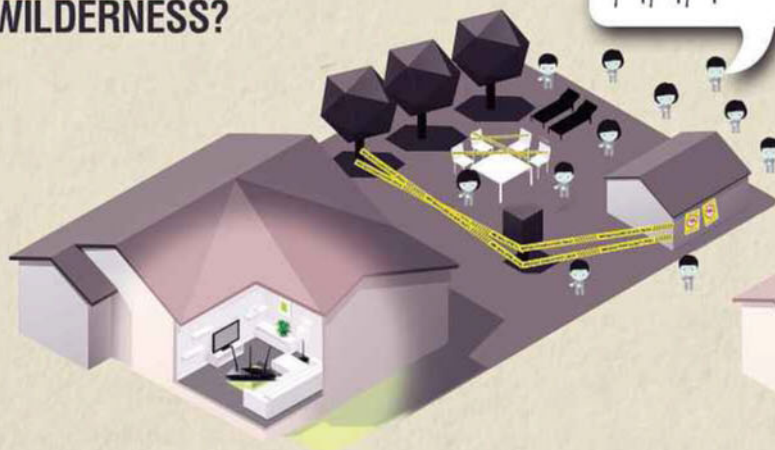
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# Keeping A Watchful Eye On Apple

It may be leakier than a sieve these days but Apple still has an element of surprise. As rival Android manufacturers try to chip away at its gloss, the new iPhones and Watch shows it still has considerable style, as **David Crookes** explains





A friend of mine still uses a Nokia 3310. It would be 'so last century' were it not for the fact that it was launched in 2000. He never touches its killer app, the game *Snake II*, and he doesn't really text much. But he makes phone calls and he scoffs when I whip out an iPhone and call up a map. "Look," he'll say, pointing to his car. "I have an A to Z in there."

He revels in the fact that he's a technophobe so the recent Apple reveals will have meant absolutely nothing to him. In fact, he views Apple with some scorn, deriding it for its ultra-cool aura, raising his eyebrows at the price and believing its emphasis on design is mere navel-gazing. He uses a PC at work, but he sees it as a tool. He wouldn't see the point in buying a Mac, believing it to be merely another example of the Cupertino company taking something that already exists and just giving it a nice package.

In some respects he's right. There's no doubt that Apple is quite adept at marketing. It may not have seemed that way over the past few weeks, with one disaster following another (some iCloud shenanigans saw many a celebrity nude picture find its way on to the internet, and millions of music lovers objected to suddenly finding a U2 album fostered upon them within iTunes) but, by and large, it's able to pull something special out of the bag or, at the very least, make it seem that way.

## “ For huge numbers of phone buyers, Apple is the only choice ”

And so it was that the announcement on 9th September 2014 caught the attention of millions around the world even though, on the face of it, there was nothing truly ground-breaking in CEO Tim Cook's speech. In unveiling the new iPhone and following it up with confirmation of the iWatch – or, more accurately, the Apple Watch – the company simply lifted the lid on a group of items that everyone believed were as inevitable as death and taxes, thanks to an equally killer combo of rumour and leaks.

Not that it matters much. The unveiling of a new iPhone may not have come as any surprise, but it still had a major impact on the technology industry. What the world got was not one but two iPhones, the iPhone 6 and the iPhone 6 Plus, and while neither have proven to be ground-breaking handsets since they were released into the public's sweaty mitts on 19th September, they've still managed to cause a major market upset.

It said much that as Apple fanboys lapped up the details, the company's rivals laughed. Both handsets have a larger screen than the iPhone 5/5S, which again came as no surprise, and Samsung was quick to remind Apple that its founder Steve Jobs had said in 2010, "No one is going to buy a big phone". HTC seemingly started with praise ("Bigger screen. Better Performance. Elegant Design"), before landing a sarcastic blow: "Welcome to the party. #iPhone6". But all of this only smacked of paranoia; for all of the advances made in the Android market, the technology industry still looks to Apple for its future markings, and the outpourings of snark seemed to underline that quite starkly.

One has to question whether Samsung and HTC were laughing come 12th September when the websites of telecommunication provider O2 and EE crashed under the sheer

### Tech Specs

#### iPhone 6

**Capacity:** 16GB, 64GB, 128GB.

**Dimensions:** 138.1mm x 67mm x 6.9mm.

**Weight:** 129 grams.

**Display:** 4.7" Retina HD display with LED backlight.

**Resolution:** 750x1334 at 326ppi.

**Chip:** A8 with 64-bit architecture and M8 motion co-processor.

**Camera:** Eight-megapixel, f/2.2 aperture, True Tone flash, auto image stabilisation.

**FaceTime Camera:** 1.2 megapixel with improved face detection.

**Video:** 1080p HD video recording (30fps or 60 fps) with slo-mo and time-lapse.

**Touch ID:** Fingerprint sensor.

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#### iPhone 6 Plus

**Capacity:** 16GB, 64GB, 128GB.

**Dimensions:** 158.1mm x 77.8mm x 7.1mm.

**Weight:** 172 grams.

**Display:** 5.5" Retina HD display with LED backlight.

**Resolution:** 1080x1920 at 401ppi.

**Chip:** A8 with 64-bit architecture and M8 motion co-processor.

**Camera:** 8-megapixel, f/2.2 aperture, True Tone flash, optical image stabilisation.

**FaceTime Camera:** 1.2 megapixel with improved face detection.

**Video:** 1080p HD video recording (30fps or 60 fps) with slo-mo and time-lapse.

**Touch ID:** Fingerprint sensor.

volume of people eager to pre-order an iPhone 6 or 6 Plus? Were they guffawing at those who spent hours on the phone trying to speak to an advisor? Were they snorting with glee when O2's public relations office was forced to spend the day dealing with irate customers trying to call up the iPhone 6 tariffs and, rather than decide to switch to Android, simply moved their custom to Three or Vodafone and continued with iOS?

For huge numbers of phone buyers, Apple is the only choice and, as brilliant and innovative as Android is, no other smartphone company seems to attract the same level of attention, nor the immense queues outside the door weeks before a product goes on sale. Yet rather than let their own offerings talk for themselves, the Android phone manufacturers began to chip away at Apple's moment in the spotlight as soon as captain Cook took to the stage. Even Nokia had a go, mocking Apple's voice-based digital assistant Siri (then again, ask Siri if you should buy a Nokia phone and it doesn't want to answer).

But it seems all these companies were only pandering to their own audiences, trying to keep them onside. For while reaction to the iPhone 6 and iPhone 6 Plus may have been lukewarm among technology reporters and analysts – leading to an immediate 1.3% drop in Apple's share price – Apple has proven to have a fan base that is as fanatical as those who follow a football team. As the level of pre-orders and the size of the queues come 19th September showed, they stay loyal to the brand, for better or worse. Snark is the weapon of last resort in such an instance, and it does Samsung et al few favours.





So what are those loyal Apple buyers getting this time around? For a start, they have a new look to their handsets: a “precision unibody enclosure of anodised aluminium that conforms seamlessly with the shaped glass of the display”, as Apple pointed out in its gushing press release. They also have screens that, at 4.7 inches for the iPhone 6 and 5.5 inches for the 6 Plus, are much larger than the 4-inch display of the 5/5S/5C. This makes them less easy to operate one-handed (although double-tap the home button, and the screen magically drops down so that it’s closer to the thumb) and it also makes them more likely to slip from your grasp and bop you in the face if you’re operating one while lying down in bed – few hands can wrap around these beasts, unlike the good old iPhone 3GS, which nowadays seems very elf-like.

But there’s still a nagging doubt that all Apple has done is catch up with the strides made in the Android market. The new iPhones may be beautiful and thin (“the thinnest ever”), but Android users are right to point out that very little is new. Just as my friend would say, “Make calls? Pah, I can do that with this old thing”, Android users can very easily dismiss Apple fanboy excitement over the likes of near field communication by explaining it has been a staple for many an Android handset for a couple of years. Even the allowance for

third-party swipe keyboards thanks to iOS 8 is nothing new: Android users have loved this amazing ability for some time.

So while the larger screens of the iPhone 6/6 Plus allow for a higher resolution (750 x 1334 and 1080 x 1920), that’s no better than the high-end Android phones, even if the Retina

“ One of Android’s selling points has been whipped away ”

display, at 326ppi, is pin-sharp (the Samsung Galaxy S5 rolls in at 432ppi). The 6/6Plus has a new A8 processor, which is an improvement on the A7 of the iPhone 5, but the Snapdragon 801 chip of many Android phones clocks in at 2.5GHz, whereas A8 is 1.4GHz (that said, the A7 has proved to be efficient and faster than the Galaxy S5, so the A8 should come out on top). The 6/6Plus may have an f/2.2 aperture lens, image stabilisation and speedier autofocus, but its 8MP camera is half that of





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many an Android snapper, and there's no clear runaway when making comparisons, with the HTC One (m8) proving to be a cool operator with its Ultrapixel, noise-reducing design.

And still, for all of this, Apple looks to have rattled Android phone manufacturers. They will be looking closely at the M8 motion co-processor that gathers motion data from the accelerometer, gyroscope and compass, and the new barometer, which senses air pressure to provide relative elevation. And they'll be wondering why this is big news, given some of their handsets already have a barometer. The M8 allows the new Health app to access motion data, which can monitor a user's fitness levels, and Samsung is also keen on boosting user health and has its own feature-set.

Rivals may feel the pinch of the faster frame rates of the iPhone 6 – up to 60fps for 1080p video and 240fps for slow motion. And there's continuous autofocus and time-lapse video. The front-facing camera is more flattering too, given that it captures more than 80% more light than before. But by drawing attention to the fact that Android phones have long had larger screens, Samsung, HTC and the rest of the Android crew are trying to belittle Apple's about-turn in the full knowledge that one of Android's selling points has been whipped away. With Apple pretty much on a par, they have their work to cut out to move forward again, and you get the feeling that the social media sizzling with which they tried to give bite Apple was borne from frustration.

It fails to accept that even though Apple has shown a true lack of innovation in playing catch-up in this instance, everything it has done has been correct. If the market is moving towards

ever larger screens, then it would be trite of Apple not to follow. And, of course, Apple still has the 5S and 5C on sale with their smaller screens and less powerful processors, creating an iPhone family catering for all screen sizes and prices. The latest Apple iPhones help to cement Apple's very powerful position in the smartphone market. It already has a 28.1% share of the UK market against Android's 60.6%, and that's pretty damn strong when you consider the sheer number of companies involved in the latter. Don't believe us? The analysts agree too.

"Apple is taking the fight to Samsung, delivering a big screen experience to muscle in on the Korean manufacturer's lucrative

**“ There's a still a nagging doubt that all Apple has done is catch up ”**

bite of the phablet market," says Ernest Doku, tech expert at uSwitch.com. "A refined camera puts the iPhone's snapping credentials back in competition with the trigger happy Nokia Lumia 830 just launched at IFA in Berlin."

Apple has also managed to crack one of the biggest bugbears of the iPhone 5 series – battery life. "Apple's on to a poll winner [with this]. Our research shows that 89% of Brits are more likely to buy a smartphone with long battery life." It's like a last-minute equaliser in a Champion's League final.

## **Eight Debate**

What makes Apple even more of an attractive proposition this time out, though, is iOS 8 which was rolled out on 17th September, two days before the 6/6 Plus was available for pick-up. Manufacturers of Android handsets are envious of the fact that Apple has a level of control and dominance when it comes to software that they themselves lack, which is why Samsung has threatened to abandon Android in the long-term and go with an OS of its own. The fact Apple makes its own operating system right now and does not allow any other company to license it ensures it will continue to have a unique selling point over its rivals.

It also means that Android phone manufacturers have to compete on two fronts when it comes to the iPhone. 'Internally',

## **Supply And Demand**

It didn't take long for stories of sell-outs to surface. Within a couple of days of the iPhone 6 and 6 Plus going on general sale, customers were being told to expect to delays.

Those who wanted an iPhone 6 Plus have been forced to wait between three and four weeks for deliveries. And the iPhone 6 has slipped to seven to ten business days.

Things are worse for Chinese customers, though. The South China Morning Post said delaying the sale of iPhone 6s in Asia had encouraged fakes – although it would take a very good imitator to be able to put together the kind of technology that exists in high-end smartphones these days.





so to speak, the Android market is a highly competitive arena, which centres mainly on hardware, given that no matter which handset they go for, Google's smartphone operating system is largely ubiquitous. So the battle to offer better cameras, improved sound, faster processors and enhanced screen resolution is crucial in persuading consumers to go with one Android handset over another. In competing with Apple, though, Android handset manufacturers have to win on both hardware and software. With iOS 8 being the biggest leap forward for the OS since it was invented, Apple is looking like a winner in this field, despite Android, with killer features such as Google Now, remaining a very attractive proposition.

Indeed, it may well be that the biggest iPhone 6 innovation is not the larger screen or better camera but something Google has wanted to succeed in for some time: payments. On 9th September, Apple introduced Apple Pay. Again it was a catch-up move (Google launched a similar payment system in 2011) but it is widely accepted that Apple, in signing up many top US companies, will have the clout to be able to make mobile-phone-enabled payments mainstream. The new payment system allows an iPhone 6 or 6 Plus to be held up to a generic card reader and, with a finger on the TouchID button for verification, make a payment via the NFC chip. Apple is about to open a new battleground and make itself even richer in the process.

Apple Pay makes life so much easier. Credit cards can be added by merely taking a photo of them, and payments can be suspended if the phone is lost. MasterCard, Visa and American Express have signed up to the service, and it will work with the Watch when it's finally released in 2015. As always, Apple is proving that it can popularise a gadget or feature. Just as it created a tablet market when it released the iPad years after Microsoft's first doomed foray into this technology, so it stands to make cold hard cash obsolete in what could be a relatively short space of time.

## Why You Should Find Time For Apple Watch

**Good choice:** The Apple Watch Sport pictured here has toughened Ion-X glass and colourful bands, but it's only one of three 'collections', the others being the standard Apple Watch in stainless steel and the Apple Watch Edition, which comes in 18-carat gold with high-end luxury bracelets.

**Easy navigation:** The Digital Crown doesn't let you wind up the watch; it performs an even more useful task. It lets you to scroll and zoom the screen, and it also allows for better navigation, all without having to obscure the screen by slapping your pinky on it.

**Touch screen:** The sensitive screen understands the difference between a tap and a press, and this will be used to perform various functions such as selecting certain apps from the home screen. But if you've always fancied being Michael Knight in *Knight Rider*, you'll love Siri integration.

**Apps:** As you can see there will be many apps including Maps, Calendar, Weather, Mail and Music. Wearers will be able to take phone calls from their phone (the Apple Watch must be paired with an iPhone at all times) and read and react to messages.

**Time teller:** The Apple Watch not only tells the time; it makes sure that it's accurate too by constantly checking the global time standard.

**Fit bug:** The watch has sensors on the back, which detect your heart rate and keep a check on your physical activity, helping you to leave a much healthier lifestyle.

**Different straps:** There are lots of different straps to choose from, so you can ensure it's a stylish addition on your wrist. There are two different sizes too. This model is 42mm high, but there's a smaller 38mm one.

"The Apple Pay functionality of the iPhone 6 is a powerful signal from a brand like Apple and demonstrates that major hardware providers see huge potential in facilitating secure mobile payments," says Eric Van der Kleij, head of Level 39, a new space for financial technology start-ups, which has opened in Canary Wharf. "If the iPhone 6 can entice more users to make payments using their mobile devices, this will help set standards and expectations for the industry and should provide Apple with a healthy slice of the 'secure mobile payments' market."

## Watching Closely

Apple will also be seeking a healthy bite of the smartwatch market when its much awaited Apple Watch is released early next year. Like the new iPhones, everyone had known the wearable Apple gadget was coming, so when Cook uttered the phrase "One more thing" and sparked a lengthy and loud series of delighted yelps, it was less a surprising moment to savour and more relief (possibly from the endless coverage surrounding what had been dubbed both iWatch and iTime over a great many months).





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### Five Top Features Of The iPhone 6 And 6 Plus

The new iPhone 6 boasts a larger 4.7" screen, which at first glance is very noticeable for adding an extra row of app icons. The iPhone 6 Plus is 5.5". The flexible display of both handsets means apps adjust to fit.

It looks great too, with a metal back that perfectly meets the glass front. By going back to curved sides, it's less achy and cutting when held, making for a comfortable grip that harks back to the iPhone 3G.

With 1334 x 750 resolution on the iPhone 6 and 1920 x 1080 on the 6 Plus, the multi-touch display is vivid and sharp and it has a great viewing angle.

Both handsets feature the A8 chip. Its 64-bit architecture is faster than the previous A7 chip of the iPhone 5S and a definite improvement on the A6 chip of the 5C.

The front-facing FaceTime HD camera lets in 81% more light and it has improved face detection. It also has a burst mode, which can snap ten pics per second. The back iSight camera is also improved and can capture 1080p HD at 60fps.

been able to use the time (no pun extended) to assess how the smartwatch market was going, seeing the rather unattractive hulks of technology sitting on users' wrists and surmising that a lack of style was holding back the wearable market.

With the Watch, Apple has pulled something special out of the bag, reacting to pressure that has been self-imposed to a great degree thanks to early leaks, which suggested it was

**“ By the time it was revealed, the entire world, it seemed, had a good idea of what the smartwatch would do ”**

By the time it was revealed, the entire world, it seemed, had a good idea of what the smartwatch would do and roughly what it would look like, so it was really a case of confirming a few things and giving people a good glimpse. One of the things the rumour mill got dead right was the style. The Watch looks stunning, which no doubt helped to make it a welcome announcement (and on a personal note, I watched the keynote with my wife who had already warned me against buying a smartwatch: “You have five watches already and you don't wear any of them.” Within a minute she wanted one herself).

Apple Watch will allow users to send and receive messages, answer calls and send their own heartbeat. It will work with a suite of health and fitness apps, and it will use a digital crown to allow the wearer to scroll, zoom and navigate. It will come in three guises – standard, sport and special edition – and it will boast an enclosure crafted from custom alloys of polished or black stainless steel, space grey or silver anodised aluminium and 18-carat rose or yellow gold. There will be a range of snazzy straps and 11 built-in watch faces.

If people had been in any doubt that smartwatches would take off, they are surely being dispelled right now. Perhaps Apple has

going to produce a watch. That served to create a wearable market well before the company was able to make an impact of its own. But Apple has come up trumps, more than beating rival technology such as Samsung's Galaxy Gear, which launched in September 2013, and even outclassing the better-looking Samsung Gear 2, which was released in April 2014, just seven months later.

For Apple has no doubt turned an annoyance (the rogue leaks and rumours) into an advantage (the ability to watch and learn from the market produced by those leaks). The company has gone all out to ensure the Watch becomes a style icon by employing some of the best names in fashion. In doing so, Apple has produced an impressive piece of kit which appeals to Generation i and yet forsakes the i moniker in a bold bid to be more widely accepted by the fashion-conscious buyers it hopes to attract.

“Where so many have failed, Apple may have just proved that wearable tech can be both fully functional and aesthetically pleasing,” says Stephen Ebbett, global director of gadget insurer Protect Your Bubble. Apple, it would appear, is still going to take quite a bit of beating. [mm](#)



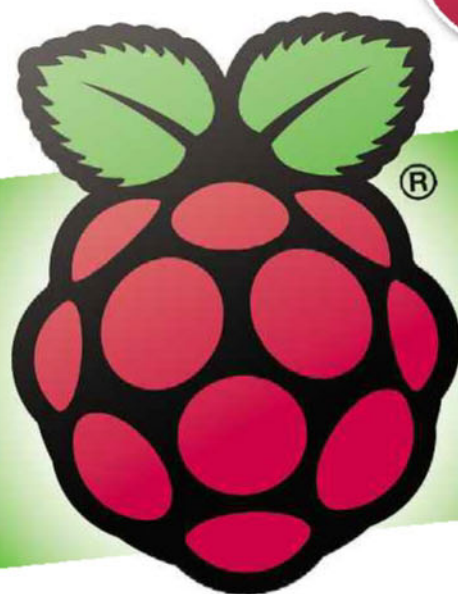
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# The Best Money Can Buy: Monitors

This week, we gaze into the screens of some extravagant PC monitors...



▲ ThinkVision LT3053p

Welcome to another week's rundown of some PC hardware options that'll cost you a pretty penny. We've spent a few weeks looking at various components of the PC, including CPUs, graphics cards, hard disks and audio cards. All of these are essential components for the inside of a PC, but along with a keyboard and mouse, which we've also covered, you'll need something to actually see what's going on. Enter the monitor.

Monitors are a prime example of a piece of PC hardware that really can benefit from some extra cash. Although there are better options than ever before when it comes to budget options, spending more money on a monitor often ensures a genuinely better display that lower-end models simply can't deliver. However, there's a little more money and a lot more money, which is the price bracket we're exploring with this series.

Here we're going to look at some monitors that don't exactly fit into the normal household budget, but instead cater for those who really want to get the best display they can, for home as well as professional use. If you've spent a long time saving up for that cutting-edge monitor, what can you expect to find? Let's have a look.

**Product: Lenovo ThinkVision LT3053p**

**Price: £1,750**

IBM's Lenovo range isn't just limited to PCs but also encompasses displays. The ThinkVision LT3053p is an expensive example. This is a 30" LED model that has a native resolution of 2560 x 1600. It features a 6ms response time, 1000:1-3000000:1 dynamic contrast ratio, and 350 cd/m2 brightness.

Like a lot of cutting-edge professional monitors, this covers 99% of the Adobe colour gamut, and it has a colour depth of 1.07 billion colours. Colour calibrators are included for fine tuning, and it embraces green standards, with an energy efficient build.



▲ Asus PQ321QE



▲ NEC MultiSync PA302



Interestingly, the unit also includes a built-in KVM switch, allowing the control of multiple PCs from one monitor via a switch. This is always useful in a business environment, but also in the home if you have more than one PC, such as a main system and a media server.

**Product: Asus PQ321QE**

**Price: £1,660**

This rather sleek and sexy display comes from Asus, and it's a 31.5" 4K LED screen that's capable of some of the sharpest and downright most impressive clarity you'll see. Supporting a mammoth 3840 x 2160, this screen has 140 pixels per inch and is, thanks to the 4K resolution, capable of delivering four times the resolution of most other HD monitors.

The actual panel is an anti-glare, indium gallium zinc oxide model, which supports smaller transistors. This allows for smaller pixels than standard screens, and the 176° viewing angle rounds off a very impressive display. Basic specifications include a 0.182mm pixel pitch, 350 cd/m2 brightness, 800:1 dynamic contrast and an 8ms response time.

**Product: NEC MultiSync PA302**

**Price: £1,650**

This 30" LED display from NEC isn't a 4K display, but it is a very capable HD monitor nonetheless. When it comes to colour reproduction, it's very impressive, and NEC claims that the unit's GB-R LED backlight provides over 99% of the Adobe RGB colour space, and it consumes around 45% less power than other, similar display backlights.

Core specifications of the PA302 include a 0.25mm pixel pitch, 340 cd/m2 brightness, 1000:1 contrast ratio, 7ms response time and support for 1.07 billion colours. The native resolution is 2560 x 1600, and inputs include DVI-D, DisplayPort, mini DisplayPort and HDMI.

**Product: Dell UltraSharp UP3214Q**

**Price: £1,530**

This is a 32.5" 4K LED display from Dell, and it has a native resolution of 3840 x 2160, with high performance HD clarity and high pixel density. This all translates into a display that offer a very good image, with a great response. It's also interesting to note the monitor's green credentials. It's made from BFR and PVC-free materials, arsenic-free glass and a mercury-free LED panel. In fact, the chassis itself is 25% recycled.

When it comes to actual performance, it's impressive, with a 0.182 pixel pitch, 350cd/m2 brightness, 1000:1 - 2000000:1 dynamic contrast and an 8ms response time. Inputs feature DisplayPort, mini DisplayPort and HDMI, and there's a 6-in-1 card reader fitted too.

**Product: iiyama ProLite T3234MCS**

**Price: £1,460**

The iiyama ProLite T3234MCS is a touch-screen display that features an edge-to-edge glass chassis and great colour reproduction, along with a wide viewing angle. The screen is 32" and has a native resolution of 1920 x 1080, with full 1080p HD. It features multi-touch input and has a rugged construction.

It features a colour depth of 16.7 million, 3000:1 contrast ratio, 315 cd/m2 brightness ratio and a 6.5ms response time. It's a pricey display option, but if you want to make the most of Windows 8's touch interface, then this is a great monitor to use, if you have the cash to spare.

**Product: Eizo ColorEdge CG277**

**Price: £1,550**

Producing some of the most desired, top-end professional monitors around, Eizo knows a thing or two about display quality, and this is one of the best models on the market. The 27" display has a native resolution of 2560 x 1440, which is graced by a BG-R LED backlight that covers 99% of the Adobe RGB colour space. This is accompanied by an integrated



▲ Dell UltraSharp UP3214Q



▲ iiyama ProLite T3234MCS



▲ Eizo ColorEdge CG277



▲ Samsung S27B971D



colourimeter that can dynamically adjust the monitor's calibration in order to retain its initial settings, reducing degradation in performance.

Although this isn't a new 4K monster, there's really not much to complain about, as this is one of the best displays you can get. It may be designed for the professional user and for high-end tasks like illustration and video editing, but regardless of your use for the monitor, this is pretty much guaranteed to deliver a great picture.

**Product: Samsung S27B971D**

**Price: £1,200**

The Samsung S27B971D is a 27" LED display with a native resolution of 2560 x 1440. It features plane-to-plane switching (PLS), which gives it a superior viewing angle, and a speedy 5ms response rate, accompanied by a 1000:1 contrast ratio and 300 cd/m2 brightness. The unit has built-in speakers and includes DVI, HDMI and DisplayPort.

In terms of display quality, this is a real winner, with some of the best blacks and whites we've seen, and the fast response time makes it useful for pretty much any task, from daily internet and business use to creative pursuits, gaming and media.

**Product: BenQ PG2401PT**

**Price: £1,130**

BenQ's PG2401PT is a 24.1" 1920 x 1200 display with a 16:10 aspect ratio and a 6ms response rate. The backlight is a GB-R LED model, so it produces some excellent quality visual clarity with 8-bit performance that approaches the better 10-bit level.

The whole display can also be rotated by 90 degrees, making it useful for traditional landscape tasks, as well as a portrait orientation for reading and some artistic uses.

**Product: Apple Thunderbolt**

**Price: £800**

It's a few years old now, but Apple's 27-inch Thunderbolt is a superb monitor for Apple owners. It's a 2560 x 1440 unit with a 16:9 aspect ratio, and it incorporates a built-in FaceTime HD camera. Specs include 1000:1 contrast ratio, 12ms response time and a 375 cd/m2 brightness. It boasts a maximum colour limit of 16.7 million.

This makes for a decent display, but one of the best features of the Thunderbolt is the connectivity. The monitor includes a fully functional hub that houses three USB 2.0 and a FireWire port, gigabit Ethernet, Thunderbolt port and a Kensington security slot. Of course, it all comes housed in the usual clean and crisp Apple design.

**Product: Philips Brilliance 298P4QJEB**

**Price: Around £350**

This is an ultra-widescreen monitor from Philips. Unlike most widescreen monitors that come in at either 16:9 or even 16:10, this monitor has an aspect ratio of 21:9. This makes for a very wide display, but it retains the height of a 1080p display. This leads to an odd native resolution of 2560 x 1440, but it does mean you've got more screen space than you probably know what to do with.

As with many monitors with such unique features, this is another one aimed at professional users, but for multi-tasking it's a superb option, and if you already use a dual-screen setup, this could be a good alternative. Having your internet browser, mail client, YouTube and other items all open at once won't be a problem.

The core specifications are a little lacking when compared to more expensive, smaller screen options. The response time is a massive 14ms, and the brightness is only 300 cd/m2. However, with a screen this big, with such a wide display, it's likely that it won't matter all that much, as many won't be using it for movies or gaming. [mm](#)



▲ BenQ PG2401PT



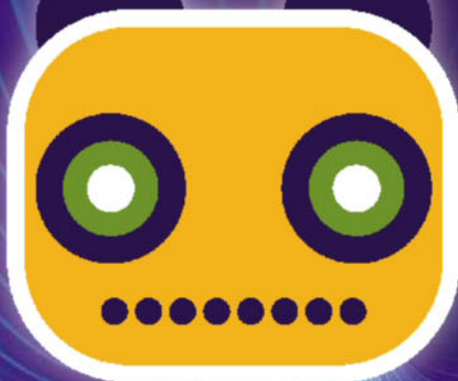
▲ Apple 27 inch Thunderbolt



▲ Philips Brilliance 298P4QJEB



What's going on with **Doctor Who & Torchwood**?  
Is the **Transformers** film rubbish?  
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# Your Letters

## My Korean Experience

I thought I'd write in as I took the gamble recently on an imported 2560x1440 monitor from Korea and wanted to share my experiences. Specifically, it was a QNIX QX2710 that caught my attention. This was apparently 'overclockable' to 120Hz, and had low input lag (due to only having dual DVI input). Unfortunately, at the time I made my choice, I was not aware of the distinction between the earlier Samsung PLS panel and the later 'True10 panels', so I opted for the Qnix QX2710 Multi True10 (Matte). This is not overclockable (without dropping frames), has higher input lag and uses an "AU Optronics AHVA panel, the same as used in the BenQ BL2710PT" ([tinyurl.com/lfoynlp](http://tinyurl.com/lfoynlp)). On the plus side, it has a scalar and has multi input.

The main concern when ordering one of these panels, usually from ebay (although other vendors are available) is that these monitors are essentially rejects. I know *Micro Mart* ran a feature recently on this (or similar). In this instance, I was advised the panel may suffer backlight bleed and up to three dead/stuck pixels. I decided to take the plunge anyway.

I read some excellent forum threads on overclockers.net and felt assured I was taking a calculated gamble. I ordered my panel and the anxiety began. Most people seemed to do okay; some had some DOA's and some had some frankly unacceptable monitors delivered, however. My anxiety increased when I began

to realise that I would have to pay VAT, UPS costs and possible custom import tax when the monitor reached these shores. After more Googling and forum reading, I discovered that this was the case. In the case of UPS they processed the package up to my door and charged me on the doorstep. Thankfully, I'd done my reading and had cash in the house. I paid approximately £45 in VAT and UPS charges on the doorstep. If others are considering buying a monitor from outside the EU they need to factor this in. My monitor cost me approx \$200 (I was lucky). I've heard sellers of these panels may mark the package at about that price to reduce import costs but I couldn't comment on the legality of this.

Delivery was impossibly quick. From my order on the saturday (was picked up by the seller on Monday), it was here on Wednesday afternoon. It was very well packaged monitor and everything seemed okay. I advise having a spare kettle lead or a European plug converter ready, as you'll not get the appropriate power adaptors out of the box.

I feared the worst regarding the backlight bleed (BLB) and dead pixels, however, it seemed fine. The BLB is a little apparent in the bottom right of the screen. I decided that I'd apply the "tape fix" (see the excellent overclockers forum thread), as I needed to disassemble the monitor anyway to remove the 'stubby' stand so I could VESA mount it (without it hanging down and looking daft).

I followed all instructions, except I found I didn't need to detach the LCD screen entirely. Removing the bracket allowed me to tape its edges and replace it. This may allay a few fears of those worried about the method,

I removed the stubby stand as the last act and reassembled the monitor. It is now proudly mounted in my living room and I'm using it now.

I found the initial experience very, very bright. I reduced the brightness and it's much more tolerable. I intend to refine this over the coming weeks – there are plenty of IPC profiles on the forum to try. I feel that the colours in day-to-day use do feel a little washed out. I've got some wallpapers where the colour detail is so stark and beautiful and yet you login to facebook and the blue is washy. I don't know where the fault lies. The monitor is obviously capable of striking colours.

Onto gaming and 1440 output. I was hoping my R9 290 would be delivered today but it didn't arrive (the product from Korea got here sooner than a UK delivery!), so my gaming experience was tempered.

I fired up *Bioshock Infinite* and set all settings to normal on 2560 x 1440. It was beautiful. A bit sticky here and there, but perfectly playable on a controller. Which brings me to my next point. TFT central report that this monitor has an input lag of 22ms on average. I worried about this but as a reformed consoler this is absolutely not an issue. I fired up *Batman Arkham City* with all

settings on high and played as I would. *CS:GO* may be another matter, but I'm a single player campaign kinda guy.

I was only able to get 30FPS with my 7850 in both games but it's wonderful. I took a huge gamble and sweated over it every step of the way, particularly when disassembling the monitor, but barring one little bit of BLB, I couldn't be happier. My only regret is that perhaps I should have got the Samsung PLS version of the monitor.

If any other readers are considering taking the plunge, all I'd say is: I did and it worked great for me. Please read the forums, be aware of the customs cost and don't be afraid to roll your sleeves up and resolve and issues yourself.

**Andrew Kaar**

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# Component Watch

**Adding wi-fi to a PC has never been easier or more affordable**

**N**ow that wireless N is cheap, affordable and, indeed, starting to be replaced by wireless AC, there's no excuse to be stuck on an old, slow standard like wireless G. If you belong to that group of holdouts, the first step is to buy yourself a wireless N adaptor. They come in all shapes, sizes and price brackets, so we've looked for the best deals on adaptor hardware and brought them right to you. No more excuses!

**Deal 1: Buffalo AirStation Wireless-N150 Nano**  
**RRP: £9.99 / Deal Price: £7.79**

You'll struggle to find a cheaper, more compact wireless adaptor than this one. Using an N150 (half-speed!) internal micro-antenna, the AirStation Nano turns any USB port into a wireless network adaptor. Even though it's small and slow by wireless N standards, it's almost three times faster than a wireless G connection. And it's backwards compatible with wireless B and G, so you don't have to change your other hardware. Not bad for less than a tenner!

**Where to get it:** CCL Online – [bit.ly/Z9DAAw](http://bit.ly/Z9DAAw)



**Deal 2: TP-Link TL-WN822N**  
**RRP: £19.99 / Deal Price: £12.99**

It's only a little more expensive, but the TP-Link TL-WN822N has full wireless N300 support and an impressively compact foldable antenna, which allows it to make high-speed, reliable connections with all the convenience and compatibility any networker could want. You also get a 1.5 metre USB extension cable in the box so you can position the adaptor for maximum coverage. Ideal for both desktop and notebook users!

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



**Deal 3: Linksys AE3000**  
**RRP: £26.99 / Deal Price: £23.00**

The Linksys AE3000 is even faster than most adaptors, supporting multi-band wireless N450 speeds thanks to its 3x3 MIMO antenna array, which also gives it optimal coverage and reliability. You can run it at 2.4GHz or 5GHz to minimise interference, and the package even includes a USB cradle to allow for flexible yet secure placement while in use. Ideal for networks where high speeds and rock-solid connections are the priority.

**Where to get it:** Ebayer – [bit.ly/1ym5jO0](http://bit.ly/1ym5jO0)



**Deal 4: Belkin N750**  
**RRP: £59.99 / Deal Price: £34.49**

Featuring an unusual fold-up design, the Belkin N750 wireless adaptor costs a lot at full price, but its age means it can be picked up for a bargain. Still, it's not like wireless N has changed since it was made, and that means you can expect dual-band triple-stream connections of up to 750Mbps. With a name like Belkin behind it, you know it's got to be good, which makes this discount all the sweeter.

**Where to get it:** Ebayer – [bit.ly/XN8bSQ](http://bit.ly/XN8bSQ)



**Deal 5: Asus EA-N66**  
**RRP: £79.99 / Deal Price: £66.10**

It might seem expensive, but the EA-N66 from Asus isn't just a wireless N450 adaptor; it's also a wireless bridge and wi-fi range extender. Thrive the functionality, all packed into an incredibly unusual and stylish exterior. It's not just for show, though; the orthogonal antenna also gives the best wi-fi coverage possible. What's not to like?

**Where to get it:** CCL Online – [bit.ly/1paK6No](http://bit.ly/1paK6No)







# Minecraft To Map Out British Museum

# Ellison Steps Down

**Oracle head still holds influence**

**T**he boss of Oracle, Larry Ellison, has announced that he's stepping aside as the firm's chief executive after having been in charge for an amazing 37 years. Worry not for him, though. He will still play a big part in Oracle's future as chairman and chief technology officer while filling his sizeable boots are Messrs Mark Hurd and Safra Catz who will become co-chief executives. Formed way back in 1977, Oracle faces some challenges in the near future to turn around a bigger profit than it has managed of late.

Will a personnel change really change all that much?

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# Auto-encryption From Google And Apple

**Latest OSes will protect your data by default**

**T**he next mobile OS to come out of the Google stable, Android L, will encrypt your data by default, following in the footsteps of Apple's iOS8 software release.

Providing this level of functionality is nothing new, but bringing it by default is – and perhaps the likes of the recent iCloud breaches have brought users' privacy needs into sharper focus. We're all for protecting customer's privacy, of course, although how well this encryption will work out of the box remains to be seen.

Staying with iOS8 for a moment, are you one of the many people complaining over download times and performance issues? If you are, we feel for you and while Apple will no doubt be releasing some updates to the OS any time soon it's annoying having to go through these sorts of problems time and time again. Early adopters are often the losers on this front. Carry on.



## And why not?

**R**ight now, *Minecraft* is really quite the phenomenon – and it's arguably more newsworthy than ever. Microsoft recently bought the Mojang, the company behind the game, for a mighty \$2.5bn – and now it's announced a plan to recreate London's British Museum, with all of its exhibits intact, in full within the realms of its blocky virtual world.

Part of its Museum of the Future scheme, it's far from the first real-life thing to be recreated in the game. It's also likely to be far from the last. It's still exciting though, if this is your sort of thing, and the museum is currently in the process of recruiting members of the public to help with its "construction".

So, hey, if you're interested get in touch with the museum.



In Mark Pickavance's look this week at products that no one wanted or wants, Microsoft gets a couple of mentions. In spite of its many successes, this comes as little surprise, because it has made more than its fair share of odd decisions over the years.

The purchase of Mojang, though, isn't quite as easy to label. On one hand, \$2.5 billion is clearly a huge amount of money to hand over for a company with really only one product of note. On the other hand, that product is *Minecraft*, a game that has made millions and which has even expanded into physical merchandise in recent times.

The question, really, is whether the game will stay popular long enough for Microsoft to ever make back what it paid for the firm. Or perhaps it's waiting for Mojang to strike gold with a future title.

I honestly don't know how this will turn out for Microsoft in the long run, but I will say this: I'm not optimistic.

Until next time...

*Anthony*

Editor

# Microsoft Pulls Plug On Xbox One

## In China, anyway

**M**ore Microsoft news now, and it's not entirely good news at that. It would seem that Microsoft decided to cancel the launch of its Xbox One console in China just two days before it was due to land in the Far East.

At the time of writing, we have no idea of the reason behind this decision or indeed an alternative date on which the launch will actually take place – assuming it will. Having already waited 14 years for a ban on foreign consoles to be lifted, Chinese consumers are now faced with having to wait even longer still.

In a statement, Microsoft said, "Despite strong and steady

progress, we are going to need a bit more time to deliver the best experiences possible for our fans in China" while also noting that a release would take place before

the year is out. As for anyone who pre-ordered the console, they can expect an "added bonus" as and when they do receive their next-gen device.





# Meanwhile... On The Internet...

If, like us, you've spent the last couple of weeks sighing and getting a little bit depressed about the goings on in the GamerGate and Fappening happenings, then you probably shouldn't watch *What It's Like To Be A Woman On The Internet* ([tinyurl.com/Motl1331a](http://tinyurl.com/Motl1331a)), it'll just make it worse. Trust us on this. Seriously, squirming and pausing this video half-way through to bang your head on the table is absolutely the right reaction.

Nor should you pay much attention to all the furore surrounding YouTube prankster Sam Pepper's 'bottom pinch' stunt ([tinyurl.com/Motl1331b](http://tinyurl.com/Motl1331b)), or the spotlight it's shone on some questionable choices he appears to have made in his relationships with women in the past ([tinyurl.com/Motl1331c](http://tinyurl.com/Motl1331c)). Sigh.

You may not like Taylor Swift's newer poppy music. You may have hated her previous pop-country tunes too – but Taylor Swift probably doesn't care because (apart from being a very rich lady, we presume) Taylor Swift is, apparently, cooler than us all. This is somewhat borne out by her extensive working knowledge of obscure Tumblr memes... Fair enough ([tinyurl.com/Motl1331d](http://tinyurl.com/Motl1331d)).

Anyone remember those *Just For Laughs* shows that were a long-running staple of late night Channel 4 programming in the 90s? Yeah? Well, those shows were all put together to showcase the talents of the performers at the Montreal-based comedy extravaganza of the same name, a festival that has one of the best URLs of all time ([www.hahaha.com](http://www.hahaha.com)), is the biggest event of its type in the world, and is currently taking place for the 21st time as we write this.

Anyway, while we could bore you with tales of *Just For Laughs* being responsible for introducing us to the comedy genius that was Bill Hicks, and just how influential he was on 16 year old us back then, we'll instead just point you the *Just For Laughs* YouTube channel, which has recently started uploading a whole host on classic clips. These short web

A couple of weeks back, we covered the story of the photographer David Slater and his battle with Wikipedia over the now famous 'Monkey Selfie' picture taken using his equipment by a Crested Black Macaque Monkey, and which he (wrongly, as it would turn out) claimed to own the copyright for ([tinyurl.com/Motl1331k](http://tinyurl.com/Motl1331k)).

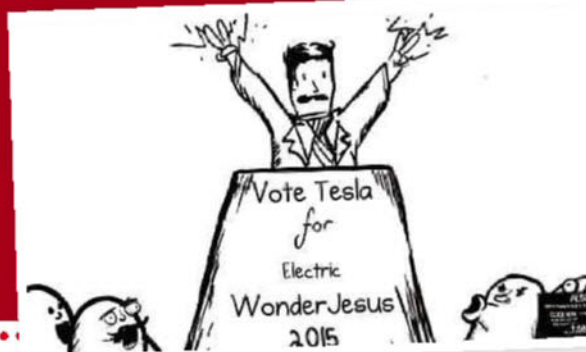
Well, if you at any point thought that Slater was being a bit precious, and it was 'just a photo', an article in *Ars Technica* this week brings home just what a time-consuming battle photographers are having protecting their work, and thus their income, in the web era ([tinyurl.com/Motl1331l](http://tinyurl.com/Motl1331l)). Interestingly, the man behind the lens and the article, Alex Wild ([tinyurl.com/Motl1331m](http://tinyurl.com/Motl1331m)) avoids blaming infringements directly for loss of income, saying he simple sees copyright law as being broken by its interaction with the internet - basically because most of the infringers he's chasing a commercial concerns that would probably be outraged if their services were used in a similar way, and he now sends around five take down notices out every day. It's a fascinating article that takes an alternative look at the problems of copyright... There are no answers, but that's not really surprising.

videos feature such well known comedy talents as Hicks, Louis CK, David Chappelle, Tracey Morgan and a very young Jon Stewart doing stand-up before they became superstars ([tinyurl.com/Motl1331e](http://tinyurl.com/Motl1331e)).

For our money, Hicks – who sadly passed away in 1994 – was the best of them all, though he never became the out-and-out superstar back then that he would have been in the cable-and-internet-driven comedy community of today. This is a real shame, but thankfully we'll always have his very, very NSFW *Relentless* show from 1991 to remember him by ([tinyurl.com/Motl1331f](http://tinyurl.com/Motl1331f)). Hicks reveled in the fact that he was far-from-perfect as a human being. His comedic timing, though? Flawless.

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

If you have a freakishly good memory, or a big pile of old *Micro Marts* around the house (those wobbly tables don't unwobble themselves, we know...) you may know of Meanwhile...s appreciation of, and interest in, Nikola Tesla – you may even remember us mentioning that there was a IndieGoGo campaign a while back, dedicated to buying the Tesla's old lab ([tinyurl.com/Motl1331n](http://tinyurl.com/Motl1331n)) lead by Matthew Inman of online comic *The Oatmeal* ([theoatmeal.com](http://theoatmeal.com)). Following the success of that, Inman and his accomplices have since gone on to formulate a plan to turn Wardencliff into a museum showcasing the great man's work – and, bouyed by a \$1m donation from Tesla Motors' Elon Musk, the team are getting very close to its goal. In order to drum up further support, Inman has created an animated video (using his highly recognisable drawing style) for a charming little ditty about the Serbian inventor by singer/songwriter Sarah Donner called *Nikola Tesla Dood* ([tinyurl.com/Motl1331o](http://tinyurl.com/Motl1331o)). So, you can share that with your friends to offer support, buy one of the Inman-designed T-shirts to support the campaign, or even have your name on a brick that will eventually be part of the project ([tinyurl.com/Motl1331p](http://tinyurl.com/Motl1331p)).



## Aaaaaaaaand Finally...

John Malkovich will see that photo of you holding the sun between your fingers, and the one of you trying to push the leaning tower of Pisa back into place, and raise you a whole armful of playful, beautifully shot recreations of the most famous photos ever to be developed ([tinyurl.com/Motl1331g](http://tinyurl.com/Motl1331g)). They're quite, quite brilliant... and a pretty accurate idea of what a coffee table photography book would look like if that freaky Malkovich

feedback loop bit out of *Being John Malkovich* was real ([tinyurl.com/Motl1331h](http://tinyurl.com/Motl1331h)).

Oh, and did you hear the one about the lady who claims to have three breasts ([tinyurl.com/Motl1331j](http://tinyurl.com/Motl1331j))? It's an absolute doozy. Weird.



## Caption Competition

"iPlayer"



The musical gentleman you see above these words was the subject of our caption competition a couple of weeks back; here are some of the best you came up with...

- **dudeofblokes:** "Move over iTunes, I'll play mytunes."
- **Frank Everett:** "Using Skype is much better than standing under her balcony on a wet evening to serenade her."
- **Thomas Turnbull:** "Trust me to pick a tune for a password when I was drunk, now I can't remember it."
- **wyliecoyoteuk:** "Are you sure this is what a search string should look like?"
- **wyliecoyoteuk:** "Rafael decided to busk from home today."
- **JayCeeDee:** "Skype-ing a practise session didn't go as well as Brian had hoped."
- **dudeofblokes:** "First passwords, then pin codes, followed by captcha and now guitar chords just to log in."
- **JayCeeDee:** "Playing along to *Air Guitar17 - Gods of Rock* on an acoustic just didn't cut it."
- **JayCeeDee:** "Carlos knew he had to sing for his supper, - but breakfast too!?"
- **doctoryorkie:** "Bitcoin busker."
- **The Duke:** "Is there nowhere safe from U2 at the moment?"
- **wyliecoyoteuk:** "In search of the lost (pyjama) chord."
- **pesukarhu:** "I just wanted to enter some strings"

Yet, despite all these great contributions, the winner was submitted by forum regular 'Pesukarhu', which Google leads us to believe is the Finnish word for Raccoon – and in turn leads us to declare "iPlayer" number one with a 'Rocket'. Boom!

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).



# US Chap Convicted Of Bitcoin Scam

**\$40m fine handed down. Wow**

**B**eware falling foul of the legal system in America. A federal judge in Texas has charged local man, Tendon Shavers, of orchestrating a Bitcoin-based Ponzi scheme, raising over 700,000 Bitcoins in investments which caused investor losses of the best part of \$150m.

It turns out that Shavers' Bitcoin Savings and Trust was bunkum, a total scam, and with the Securities and Exchange Commission having filed against the fella, he's now been brought to justice and been ordered to pay up \$40m for his troubles.

A big price to pay then for a big scam. Shame on Shavers, or something like that.

# EE And Vodafone Come To Phones4u's Rescue

**Irony not lost on anyone**

**W**ith Phones4u having fallen away, a demise blamed on EE and Vodafone's refusal to renew contracts with the company, it's somewhat ironic that those same companies have since bought around 200 of its former stores.

Vodafone has bought over 140 stores, offering 900 employees jobs while EE has bought 58 stores with 359 jobs saved. At the time, Phones4u boss criticised the network operators for bringing

the firm down. "Today is a very sad day for our customers and our staff. If the mobile network operators decline to supply us, we do not have a business. A good company making profits of over £100m, employing thousands of decent people has been forced into administration."

Some of those employees now have a chance to be a bit happier about things should they find their positions saved but the whole affair smacks as yet another sad high street story.



## Snippets!

### Big Home Depot Hack

The latest in a long line of hacking cases, America's Home Depot company has recently confirmed that hackers broke into its systems and have compromised the details of, wait for it, 56 million customers' card details. Oh dear. Hackers used malware to get around its security systems and, while they have apparently not managed to steal debit card PIN numbers, the consequences of this are dire enough as it is. Home Depot has promised to rid its systems of the malware and no customers will be liable for any fraudulent charges to cards.

### Toshiba To Axe 900

In its bid to restructure its PC business, Toshiba is to cut 900 jobs so that it can focus on selling systems to businesses and move away from the consumer market. The firm needs to make profits on a regular basis, and obviously feels that this is the way forward in that regard. In order to do this, it's going to be expanding its workstations and tablet PC ranges this year, while it's also going to not depend on the PC market quite so much going forward.

### Smartwatch Warning

With smartwatches now becoming more popular, or at least featuring in the technology news pages on an increasingly regular basis, the UK Department for Transport has taken the step of warning motorists about driving while using one.

Any accidents caused by distracted drivers will mean severe penalties, while further options are being looked at to act as a deterrent. The fine for using a mobile phone while driving was increased last year to £100 and presumably Smartwatch misuse would fall within a similar category.

# Alibaba Raises World's Biggest IPO

**\$25bn raised for Chinese company**

**W**e brought you some news of this a while back and now that the dust has settled on Alibaba's much-talked about initial public offering (IPO) on America's New York Stock Exchange, it's been revealed that it was the world's largest ever, at a gigantic \$25bn.

Demand for Alibaba stock was understandably rampant as investors the world over wanted a slice of the action and the company's share

price surged by a massive 38% when it debuted on the exchange on 19th September. Interestingly, the previous largest IPO was also held by a Chinese company, the Agricultural Bank of China Ltd.

Yahoo!'s own shareholders were also rather pleased as its own stake in Alibaba is significant enough to have

had a positive knock-on effect them, although some have since jumped ship to invest in Alibaba directly so it could mean a rocky ride for Yahoo! over the coming weeks and months.

And here we are, scrabbling around our pockets for some loose change to buy some chocolate. Humph.



# US Restaurant Wants Worst Rating

**Uses Yelp as PR tool**

**F**or most companies, the sight of a negative review on site Yelp is likely to cause a degree of annoyance and upset. For San Francisco's Botto Bistro, the approach is somewhat different to the rest.

The restaurant has decided to try to become the worst-reviewed restaurant on the site and is offering 25% off for anyone sticking it with a one-star review. Why? Well, the owner has decided to openly mock the site's review system, which has come under fire in the past

for asking for money from businesses for a better placement. It's worth noting that a San Francisco court has rejected a couple of cases alleging illegal behaviour, but the accusations are still out there.

It's quite a strange protest, but it has led to some rather comedic posts as it happens – head to Yelp yourself to see. It's also once again brought to light some alleged malpractices of review sites such as Yelp. So, job done.



# High-Def Security Device From Swann

## Remote viewing via mobile devices

**S**wann Security has revealed its latest security camera devices, the SwannCloud Plug & Play and SwannCloud HD Pan & Tilt security cameras. Packed out with features for 24/7 home security, both record and save 720p HD video and 1280 x 720 HD images and include memory card slots (microDS for the Plug & Play and SD for the Pan & Tilt) for easy transfer to computers and other devices.

Recorded content can also be saved directly to a smartphone or tablet via the SwannCloud app if that's your thing while the Pan & Tilt camera can also be remotely controlled via the app.

Additionally, both include infrared LEDs for better night-time picture and video quality and built-in microphones. Costing £150 for the Pan & Tilt model and £120 for the Plug & Play device (pictured here), head to [swann.com](http://swann.com) for more detail.



# Dell: Desktops Aren't Dead

## ARM chips on the cards?

**I**f you thought that desktop computers are living on borrowed time, you may find yourself in a row with Michael Dell as the chief executive is quite happy to maintain desktops as an important part of the Dell business.

He made the comments during a keynote speech at the firm's Solutions Summit in Brussels, noting that "Some companies have been getting out of the PC business, saying the PC business was dead. We absolutely believe in the PC business." Fact is that for Dell a huge chunk of its desktop PCs are sold to businesses, keeping this market very much alive, although Dell

wants consumers to know it's there for them too.

Interestingly, Dell also suggested that the company would consider using ARM chips in its servers going forward, which may not have gone down well at its partner Intel.



# Colossus Veterans Return

## Celebration marks computer centre's 70th anniversary

**I**t's always great to hear from the National Museum of Computing, and this is particularly nice news. Veterans of the Colossus computer have visited Bletchley Park to take in the 70th anniversary of the world's first purpose-built computer centre.

Bletchley's Block H was built way back in 1944 to house the Colossus computers that played a vital role in the Second World War and it's home today to the Museum and its Colossus Rebuild

project. In celebrating the anniversary, eight veterans and relatives of those who helped to decode ciphers for the war effort were in attendance and saw a prototype project to recreate a virtual 1940s Block H, while also helping to fill in some blanks as to how the building looked. The Museum is now looking for funding make the prototype a reality.

Technology is too often viewed as alien to older citizens so well done to the Museum bods for making sure this celebration happened.





## Kobo Aura H20

Michael has been catching up on his reading with a new product.

### DETAILS

- Price: £140
- Manufacturer: Kobo
- Website: [www.kobo.com](http://www.kobo.com)
- Required Spec: n.a.

New from Kobo is a product that comes with the claims of being the world's first premium waterproof E-Ink Reader. The Aura H20 is IP67 certified, meaning it can be immersed in 1m of water for up to 30 minutes, so it should be more than capable seeing off splashes. This, of course, means it does not matter whether you are enjoying a riverside picnic, frolicking at the beach or relaxing in a bath, your ebooks can come with you.

With dimensions of 129 x 179 x 9.7mm and weighing 233g, the Aura H20 can be slipped into a pocket or bag without causing an unsightly bulge, too. Powered by a 1GHz processor, the Aura's 6.8" Carta E-Ink HD touch screen gives you 265dpi at a resolution of 1430 x 1080, and is encased in a compressed rubber material that features a single button flush to the top right of the unit. This is the power button, which can put the ereader in sleep or shut down mode depending upon whether you apply a short or long press.

Located at the bottom of the ereader is a concealed compartment holding connections for a micro-SD card, micro USB port and a 3.5mm jack socket for headphone use. The H20 provides 4GB of storage natively, which can be further supplemented via this micro-SD slots up to



“ Whether frolicking at the beach or relaxing in a bath, your ebooks can come ”

32GB. The flap concealing this compartment needs to be closed to ensure the ereader is waterproofed, however.

The size of the Aura H20 is such that it can be held in one hand while a touch of a finger is enough to move between pages and select options that include opting for one of the 10 fonts with adjustable sizes, line spacing and margins using

slider bars. You can also adjust the ComfortLight feature that has its own slider bar to set the screen's brightness in different lighting conditions.

The Aura H20's Home screen displays your current choice of reading matter plus recommendations for future reading and links to your library, the Kobo bookstore and extras. The books in

your library can be organised individually or grouped in collections. The Extras section contains stats regarding your reading habits, a dictionary plus 'awards' to encourage you to read more.

Not only can you purchase books direct from the Kobo bookstore, with its catalogue of over four million titles, you can also visit one of the Kobo establishments in certain WH Smiths stores. You can also purchase books from other locations as long as the reading material is in one of the formats supported. Kobo ereaders can handle EPUB, EPUB3 and Adobe DRM formats, meaning you can also access ebooks on loan from various public libraries.

As well as its various digital reading options, the Aura H20 features Chess and Sudoku games plus a Sketch app and a web browser. These extra items are tucked away in a Beta Features section available from the main Settings menu. Maybe because of the Beta designation, the web browser, while generally quick, struggled to cope with scrolling graphics displayed on pages.

**mm Michael Fereday**

*A well designed ereader for fans of an aquatic life style*





# Vodafone Smart 4 Mini

The entry level Android phone just got even cheaper

## DETAILS

- Price: £40
- Manufacturer: Vodafone
- Website: [shop.vodafone.co.uk](http://shop.vodafone.co.uk)

**V**odafone has a track record of having its own phones made and branded for it, and the Smart 4 Mini is the very latest. Having covered the Smart 4 Power the other week I was expecting this to just be a smaller version, but it's actually something subtly different.

For just £40, I wasn't expecting much, but in places the Smart 4 Mini isn't awful. Built around the dual-core 1.3GHz MTK6572 by Mediatek, this is an uncomplicated Jellybean (4.2.2) platform with 512MB of RAM and 4GB of internal storage. That last number is a bit of a kicker, offering just 1.9GB of space for your data and apps, but it does have a MicroSD card slot to address part of that issue. The rest of the hardware is basic. There's a modest 4" WVGA 480 x 800 pixels 230ppi display that's reasonably sharp and bright, even if the colours are somewhat muted. Phone operations are strictly 2G/3G with 802.11n class wi-fi to support data transfers that aren't tarified. Surprisingly it does have Bluetooth 4.0 and even an FM radio.

However, Where cheaper phones usually suffer is in peripheral items like the camera, and the Smart 4 Mini is no exception. The rear camera has a just a 3.15MP resolution, and can only manage video recording in VGA 480p resolution with a



very odd frame rate of 33fps. There's no flash and, even given good lighting conditions, the results are distinctly grainy. Those expecting a selfie snapper on the front will be disappointed as there isn't one.

The construction feels to this reviewer like one of the entry level Lumia phones, as they've used a smooth impact resistant back to similar effect. It's all a bit chunky by modern

standards, and the amount of border around the display also shouts 'old school' design.

All these things said, if you need an easy to use device that gives you access to the Google services, and won't cause your insurance premiums to rise if it gets lost or damaged on holiday, then this is it. Though that comment assumes you're a Vodafone customer, as the phone is firmly locked to its



network. Where I wouldn't deploy this is as a first phone for a youngster, because they'll fill the default storage almost as soon as they're given it. What's more, hours looking at such a small screen could be detrimental to their eyesight.

The best things about this phone is that it's based on old enough hardware that it pre-dates some of the rather silly ideas phone makers have had since. It uses a normal sized SIM, not one that requires a microscope to work with, and the battery is removable and therefore replaceable. I just wish, like the Smart 4 Power, that it wasn't hobbled it with less than 2GB of user storage, because that's a cost saving too far.

For those Vodafone customers who need as backup phone, the price is right, and the Smart 4 Mini will serve a purpose.

**mm Mark Pickavance**

**A cheap Android Smartphone that's short of storage**





# LG G3 by Vodafone



Apple hasn't got the only big phone in town, nor the best possibly

## DETAILS

- Price: Free with a £34.50 a month two-year contract
- Manufacturer: LG
- Website: [shop.vodafone.co.uk](http://shop.vodafone.co.uk)

Apple has been taking many news headlines recently with its iPhone 6 launch, but this has unfortunately masked that there are some exceptional Smartphones by other brands around that might be even better. I've always had somewhat mixed feelings about LG as a phone maker, having owned the very average KU990 Viewty at one point. However, whatever it was doing back in 2007, today it's making remarkable gear like the new G3.

From the moment you pick up this phone it sells the notion that it's something special indeed. The smoothly curved metal back is lovely to handle,

and isn't adulterated with any edge buttons, at all. That's the first culture shock; phones with edge mounted controls may be the norm, the G3 doesn't do that. It has one single on/off/power button in the centre of

the back, while everything else is software adjustable.

Much was made of the bigger display on the iPhone 6 but, compared with the G3's 5.5" panel it is second rate. This is a True HD-IPS screen featuring a breath-taking 1440 x 2560 pixels (a 532dpi pixel density), and covered by a capacitive panel and Corning Gorilla Glass 3.

This superb resolution allows the G3 to tread on the toes of bigger 'phablet' models, while avoiding becoming too big for a pocket. It also allows for extensive font scaling options for anyone with impaired eyesight, or who likes to work with documents on their phone.

With such a good display LG needed to make the rest of the G3 as impressive, and it certainly tried. The CPU is a snappy quad-core 2.5GHz Krait 400 (Snapdragon 801) ably supported by an Adreno 330 GPU. The review model had 2GB of RAM and 16GB of flash storage, which can be augmented with a 128GB capable MicroSD card slot.

For those who like ticked boxes it also has 802.11ac wi-fi, Bluetooth 4.0, a Li-Ion 3000mAh battery (500+ hours on standby), wireless charging, USB OTG, Dolby mobile sound, 4G LTE, NFC, Infrared, FM Radio with RDS, a replaceable battery and it runs Android OS, v4.4.2 (KitKat).



## Key Specifications

**Chipset:** Qualcomm Snapdragon 801 (up to 2.5GHz Quad-Core)

**Display:** 5.5" Quad HD IPS (2560 x 1440, 538ppi)

**Memory:** 16/32GB eMMC ROM, 2/3GB DDR3 RAM / micro-SD slot (128GB max)

**Camera:** Rear 13.0MP with OIS+ and Laser Auto Focus / Front 2.1MP

**Battery:** 3,000mAh (removable)

**Operating System:** Android 4.4.2 KitKat

**Size:** 146.3 x 74.6 x 8.9mm

**Weight:** 149g

**Network:** 4G / LTE / HSPA+ 21 Mbps (3G)

**Connectivity:** Wi-Fi 802.11 a/b/g/n/ac, Bluetooth Smart Ready (Apt-X), NFC, SlimPort, A-GPS/Glonass, USB 2.0

**Colour:** Metallic Black, Silk White, Shine Gold, Moon Violet, Burgundy Red

**Other:** Smart Keyboard, Smart Notice, Knock Code, Guest Mode, etc.





The stand-out feature for this writer (other than the screen) is the 13MP rear camera, which has an autofocus system that's both phase detection and laser based and optical image stabilisation. It takes wonderfully sharp and well saturated images even in relatively low light conditions, or even at night.

Vodafone, for its part in this exercise, has exhibited restraint in what extras it's added to the

stock OS app collection, and with this amount of default storage the impact is negligible.

Like Samsung and HTC, LG have decided to twist the Launcher in distinctive, but hardly groundbreaking, ways that you can easily ignore if they don't feel natural. My only complaint is the Smart Notice system, which insists on trying to help you all the time when you first use the

“ The moment you pick up this phone it sells the notion that it's something special ”



phone. It repeatedly bugs you in a Clippy-like manner, to view presentations that explain the new features of the phone, and we had great difficulty getting rid of these without jumping through each hoop. Really, LG needs to include a 'I've used an Android phone before' button, because we all don't want our hands held so tightly.

In terms of the hardware, the only fault – if you can call it that – is that the speakers aren't very loud. They're certainly not on par those on the HTC One M8. As I don't generally subject others to my musical taste, I don't really see that as an issue. Beyond that point, the G3 is a superb piece of equipment that shows exactly what LG can do when they really puts it mind to it.

For those interested in taking the G3 through Vodafone, it's offering it as a 'free' phone for as little as £34.50 a month on a 24 month contract (600 mins,

unlimited texts, 500MB of data). Given the forces massed behind Google's Android ecosystem – in the form of the HTC One M8, Samsung Galaxy 5, Motorola X, Sony Xperia Z2 and now this excellent LG G3 – Apple could have a real uphill struggle in the next year.

**mm Mark Pickavance**

**An Android Smartphone with a stunning design and specification**







# Klipsch Status

Are you after a pair of the better headphones money can buy? David may have found some...

## DETAILS

- Price: £199
- Manufacturer: Klipsch
- Website: [goo.gl/wEwfhj](http://goo.gl/wEwfhj)
- Required Spec: 3.5mm audio jack

**K**lipsch – ‘Keepers of the Sound’, as its slogan states – have brought out some exceedingly good quality headphones over the last year or two. The Image One Bluetooth over ear headphones (as a prime example) were of exceptional quality, while still being at the forefront of connective and audio technology.

Now we have the Status, a set of over ear headphones crafted from the highest grade materials and advertising the fact that you’ve purchased a gift from the gods. In a sense though, they’re not far wrong. The enclosure is an excellent blend of tough, resistant plastic holding a supple, cushioned leather headband and ear pods. There’s professional grade memory foam added to aid the comfort of the wearer, and the ear pods themselves move within their mounts on the headband to adjust for maximum ergonomics. The result is a more efficient seal around the ear and near perfect noise cancellation.

In terms of the audio output, the 40mm dynamic Neodymium drivers deliver a good level of bass without it becoming overbearing, and an extraordinarily clear treble with a pristine balance and powerful mid-range. There’s no perceivable distortion, and the snug grip of the cup around the ear fills your surroundings with a precision that’s hard to match through the 16Hz-23KHz frequency range these headphones are capable of.



Even the three button mic on the second pair of cables has the same glittery effect.

These headphones are a cut above the rest when it comes to design and looks. Thankfully they’re not all beautification and no substance; with the volume turned up and the ear pods snugly in place, the sound produced is simply amazing – to the point where you can easily lose yourself in the music being played through them. Such a superb kit comes with a hefty price; the better part of £199 in fact. What you get for that, is nothing short of amazing.

For the audiophile with a sense of style, the Klipsch Status represent an excellent choice. For everyone else, these are quite simply one of the best set of headphones we’ve ever tested.

**mm David Hayward**

“ These headphones are a cut above the rest when it comes to design and looks ”

These are expensive headphones, there’s no getting away from that. The quality aspires to match its price tag, though, and you would expect a certain level of pomp when it comes to the presentation too – and Klipsch doesn’t disappoint. The packaging alone is a thing of beauty, with sectioned foam areas holding the two cloth braided, Klipsch logo embossed cables – one with a three button mic and remote attached – and in-flight dual 3.5mm jack connector along with an added 6.35mm stereo adapter. The headphones themselves come in a soft, padded foam bag, in

which they fold up for handy storage when travelling.

The design of the Status is, as you would expect based on the price and quality, really very good. Although, we did find them to be a little too snug for those wearers whose heads were larger than the average. They weren’t uncomfortable, but they felt tighter than the aforementioned Image One model we tested earlier in the year.

The Status comes in two colours: a polished black version that’s very sleek looking, and a white glossy version that has some sort of sparkly glitter-like substance under coating, which really stands out in bright light.

**Absolutely superb quality throughout with incredible audio output**





# Western Digital My Passport Wireless 1TB

Western Digital launches a drive that photographers might well adore

## DETAILS

- Price: £138
- Manufacturer: Western Digital
- Website: [www.wdc.com](http://www.wdc.com)
- Required Spec: Windows Vista/7/8 or Mac OS X Snow Leopard or better. Browsers: IE 8.0, Safari 5.0, Firefox 21 or Google Chrome 27 or higher

At first glance, the Western Digital My Passport Wireless looks remarkably like the Seagate Wireless Plus that we reviewed a few months back: a portable hard drive that you can connect by USB 3.0. Our review model is 1TB, but 2TB and a 500GB models are also available – and, as a bonus, it can also create its own wi-fi hotspot to share the contents to mobile devices.

Considering these similarities, the price reductions Seagate's offering has benefitted from since its launch makes Western Digital's Passport Wireless look more expensive, so recommending it as really depends on whether it can do anything to justify that additional cost. Happily, it has a few tricks up its plastic sleeves that could make it worth it.



The critical one is its built-in SD card slot, that allows you to use the capacity of the drive as a dump for images or video capture. When I first looked at this design I was curious as to how you activate this feature, as there is no 'upload' button. A deeper investigation revealed that you can set the drive to automatically upload images, and even delete the SD contents once they're secured. That last part sounds scary to me, as I'd want to see them on the drive for myself before I'd let them disappear from the SD card.

The way this device works with the wi-fi is also different to the Seagate unit, in that it offers you an additional option if you have a Wireless access point nearby. The direct connection works like you might imagine, allowing devices treat it as an access point. On Android and iOS devices you need to use the Western Digital My Cloud application to then see the media on the drive, and you can also download a Dashboard tool on the PC to do the same.

If you are at home, or near a public access wi-fi network, you can get the My Passport Wireless to join that structure, and then be accessible as a server to other connected devices. We're not sure we'd be keen on doing that with a publically accessible network, but at home it certainly makes life easier. The drive will work off its own rechargeable batteries for tests just over five hours, though exactly how long will depend on how many devices (up to eight) are accessing it. That seems a little short, though you could easily extend that if you've got mains or USB power handy.

Western Digital provides a USB power adapter, though the cable that attaches is isn't the phone Micro USB, but of the USB 3.0 Micro-B plug variety. As the power pack is only delivering 2A, I wondered why they'd done this until it dawned on me that the phone Micro-B cables only support USB 2.0.

While the hardware gets a general thumbs up, but I can't say the same about the web

interface and My Cloud apps. They seem to be all over the place, and not very easy for those who aren't technical to follow. The very limited documentation you get in the box isn't much help, some of the subtle aspects only really become clear after further investigation of the PDF manual.

The My Passport Wireless is better than the Seagate offering in many respects, but you do pay for the privilege and it doesn't have a long battery life.

**mm Mark Pickavance**

**A mobile wireless storage device with a short battery life**





# Magix Music Maker 2015 Premium

You want to create your own music? This will get the job done

## DETAILS

- Price: £90
- Manufacturer: Magix
- Website: [www.magix.com](http://www.magix.com)
- Required Spec: Windows Vista, 7, 8, 8.1 2GHz processor or higher, 1GB RAM, 7.5GB free hard disk space, Graphics card

**E**lectronic music is more prevalent today than it's ever been, where practically every track you listen to includes a beat and structure created in the studio, and for the most part without any, (or perhaps I'd better say many) musicians. If you've ever thought of having a go at this yourself, then Magix Music Studio 2015 will be something of a revelation, because it's effectively a comprehensive and complete recording studio. It comes with thousands of sound loops, a range of software instruments and best of all can operate them (by yourself), all on a single PC.

It's always been a powerful system but this latest version includes new analogue synths, a drum machine and two new Vita Solo Instruments: a Celtic

Harp and World Flutes. If you're looking for something more specific, there are even more Solo instruments available to purchase from the Magix website. Or you can create your own using the Vita Sampler that's included by loading in your own sound samples. This is done by simply dragging the relevant files from an explorer window and dropping them onto the dialogue box.

The workspace layout is similar to a video editor, where the individual clips are placed on tracks that, when mixed together, form the production. Each track can contain an instrument arrangement, or sound loop, which can be played and repeated following the pattern laid down by the on screen objects. While it might sound complicated, in practice it's simply a matter choosing the sound you want, and then dragging it into the track position on the screen, the idea being to build up the arrangement piece by piece. You can copy and paste clips, or whole tracks – and editing things like volume, fade-in/out etc. is simply a matter of dragging the relevant on screen controls.

As you might expect from Magix, the package includes

a range of new content. New Soundpools containing over 3000 different clips and loops based on different genres (Hip Hop, Trap, Reggae, Techno, Rock Pop, Chillout, and House) are available alongside four premium Soundpools: Drum & Bass, Metal, Funk and Movie Score. Incidentally, this version is optimised for touch-screen monitors so, if you have one, it's much easier to interact with the program.

As you can see this program is packed with features; this also makes it quite complex, so to get the best from it you'll need to invest a fair amount of time learning the controls and practicing. The effort is rewarded, though, experienced users can create some very impressive tracks with it – and if you have a MIDI instrument the possibilities are virtually endless. That's not an essential element by the way, but (for me) it is a far more intuitive method of composing.

This version also supports 5.1 surround sound mixing. Using the dedicated editor you can assign surround spacing to each individual track. While not immediately obvious, the difference it can make to a performance when played

through a surround sound system is pleasantly surprising.

To sweeten the deal, Magix includes the complete Music Studio 2015 package with this latest version of Music Maker (a product that normally retails for £49). So you get two for the price of one; if you read my earlier review of the Music Studio, you'll know just how powerful that product is. If this Premium version is more than you want to spend, the standard version is just £60. It has a fewer features, but still includes the complete Music Studio 2015 product.

Finally Magix has developed a free Music Maker app for Android and Windows 8 devices, so you can jam session on the go. Any music created can also be transferred to your PC for further editing if you wish.

**mm Joe Lavery**

**A worthwhile update that now includes the Music Studio 2015 as well**



▲ Initially quite intimidating, but not as complicated as it looks



▲ The Vita Sampler works well with a touch-screen



# Ergotech VersaStand for iPad

Tired of the tablet balancing act? Use this instead

## DETAILS

- Price: £52
- Manufacturer: Ergotech
- Website: [goo.gl/yb300E](http://goo.gl/yb300E)
- Required Spec: iPad 2, 3 or 4. With universal attachment, any 6" wide tablet up to 8" wide

Tablets are here to stay and, rather than them being just check-your-Facebook-status toys, more are now being used as fully fledged workstations in the place of laptops or netbooks. This presents an ergonomic problem for those who work in such a way, though. Although you can work well by attaching a Bluetooth keyboard and mouse, positioning a tablet comfortably can be a literal pain in the neck.

The Ergotech VersaStand is an iPad-accommodating desk stand for versions 2, 3 and 4 of Apple's device. It's a very simple construction made from a combination of plastic and aluminium that allows the user to place their iPad in a rubberised hard case and fix it to a free standing desktop frame.

The frame's lightweight and multi-hinged to allow for flexibility when positioning, and several rubber pads along the bottom of the frame stop it from sliding around. Furthermore, the hinged design allows the frame to be folded near flat (slightly over an inch thick) for easy transport, a fact emphasised by packaging the frame inside a cloth bag with a VersaStand logo.

All you need to do is unfold the frame, slot the iPad into the VersaStand cover, and fit the rear of the cover to the circular pinch grip attachment on the top of the



▲ The frame and case can be removed with the pinch grip clip on the rear



▲ The frame can be folded flat, and carried with the included cloth bag



▲ You can angle the iPad for maximum comfort without any loss of stability

frame. The result is a secure and more ergonomic way to display the screen of the iPad. The frame can be raised, lowered or angled to best suit the user. Once the case is clipped into place, the device can then be tilted and set

to portrait or landscape mode. This gives you more stability than most free standing frames, and allows you to use the iPad for work as well as watching video.

In addition to this, there's also a separately available universal

attachment that fixes to the frame with the pinch grip and can fit any tablets from 6" width up to 8", with a maximum weight of around half a kilogram.

The VersaStand is certainly a handy product. Although we don't necessarily work on a tablet, there's often one next to us to help with testing and reviewing apps. With the VersaStand, it can now be left in the frame and angled toward or away from us when in use, and it minimises the chances of it being left dangling precariously off the edge of a desk or carelessly discarded on a chair. Plus you can still have it angled toward you when the iPad is being powered up, and you're not left wishing you had three hands to balance the iPad while using the PC mouse and keyboard.

On the whole we think the VersaStand for iPad (and the universal mount, which we also had to test) are both great additions for someone who works on a tablet or requires a more angled and elevated view of the screen – following a recipe is a good example – while keeping the tablet itself away from potential hazards and harm.

**mm David Hayward**

**A simple solution produced with style and to good effect**





# GROUP TEST

## Remote Access

Diagnosing a computer problem over the phone can be a living nightmare for the home technician or helpdesk operative. There are times when you simply can't talk the user through the problem, and due to them being at the other end of the building, city, country or planet, getting behind their screen isn't an option.

Therefore, remote access is the solution, and we have six examples on test for you here...

## Remote Access

### TightVNC

#### DETAILS

- Price: Free
- Manufacturer: TightVNC Group
- Website: [goo.gl/mLy6Ui](http://goo.gl/mLy6Ui)
- Required spec: Windows XP or later, Linux, 256MB RAM

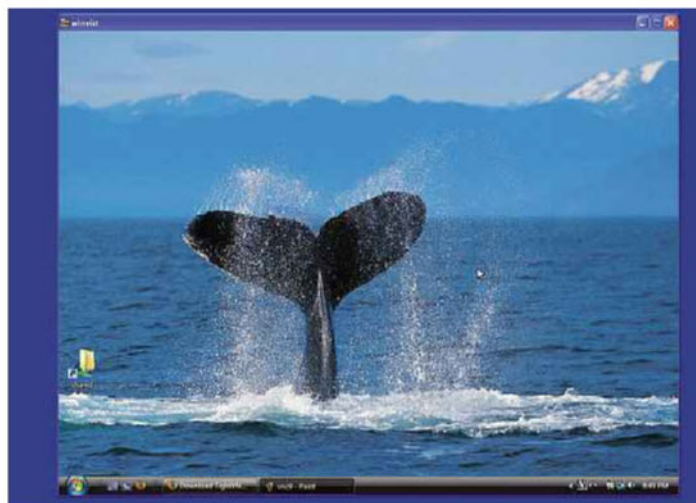
**T**ightVNC has been doing the rounds on the internet since as early as 2001. It's a free, open-source remote desktop program that utilises the virtual network computing's remote framebuffer protocol, hence the VNC part, to offer 'tight' encoding of the data packets sent across the protocol – and there's the Tight part.

Now on version 2.7.10, released June last year, TightVNC is often the first stop product for anyone wanting a simple remote connection between Windows and Linux machines. For the most part it's fast, easy to use, easy to configure and has a decent enough file transfer feature.

The TightVNC project may appear to have stalled, since the last update was over a year ago now, but that's not the case. Instead, the TightVNC team have been busy beaver away at other equally useful services such as Remote Ripple 2.0, a VNC-compatible client for Android, and TightProjector, a product that can broadcast your desktop across a local network.

Despite all that praise, though, and the continuing efforts of the project team to keep the software up to date, TightVNC does have some problems that have plagued it since its inception all those years ago.

First off, the traffic sent to and from each computer is unencrypted and hence very insecure. The VNC passwords used to connect with are secured with a DES-encrypted challenge



▲ TightVNC is one of the easiest remote access products available

and response system, with the password limited to eight characters and DES key length of 56-bits. This, of course, isn't an ideal encryption setup, and for the most part isn't recommended for a company that's transferring confidential data from one site to another. Even TightVNC itself recommends using an SSH server and tunnelling a VNC connection through that.

Secondly, TightVNC is a notorious resource hog. Where ease of use is commendable, and we've done this ourselves in the past, installing and using TightVNC on a system with limited resources such as a Raspberry Pi can have a dramatic effect on the overall system responsiveness. This in turn can affect the stability of the system you're connected to, the one running the server portion of the software, especially if the system in question is experiencing difficulties in the first place – by this we're assuming that TightVNC is being used in a support fashion.

This can also affect how third-party programs are run. Past experience has shown that although a seemingly good connection is made, even across a reasonably fast LAN, the

graphical output of a third-party program can often be blanked out by TightVNC ignoring or not being able to handle the application window properly.

However, TightVNC offers good functionality to the basic user and those who simply wish to have a permanent, albeit insecure, remote desktop connection to another computer. And if you use it in conjunction with the TightVNC Java Viewer, you'll be able to connect to more than just Windows and Linux machines, and you'll probably have a better experience, since you'll need an older version of TightVNC for connection to Linux or older copies of Windows.

On the whole, TightVNC is a reasonably good application. It's certainly not the best, but for what most people use it for, it's more than good enough.





# DameWare Remote Support

## DETAILS

- Price: From £224 per user licence
- Manufacturer: SolarWinds/DameWare
- Website: [goo.gl/rbl6uB](http://goo.gl/rbl6uB)
- Required spec: Windows XP SP2 or later, Mac, 1GB RAM

**D**ameWare is more of a commercial package rather than something home users will be familiar with, but that's not to say it can't be used by home enthusiasts.

DameWare started off as DameWare NT Utilities until it was merged with SolarWinds under its systems management line of products for support to companies as well government bodies. This alone means that DameWare is more of a helpdesk support tool, ideally suited for cross company or multi-site connections where security is vital and problems can be dealt with in a timely and inexpensive fashion.

DameWare Remote Support is certainly secure enough, with four different authentication methods, which are integrated within the operating system security protocols. There's a proprietary challenge and response authentication method, Windows challenge and response at the OS level, encrypted Windows logon at the OS level and an optional Smart Card Login authentication method. On top of these, DameWare Remote Support uses Microsoft's built-in Cryptographic Service Providers, and CryptoAPI's to provide a 256-bit AES encryption key. Also, there's support for 3DES, triple DES



▲ DameWare prides itself on security and data encryption



▲ It does require a really good PC to get the best results, though

192-bit encryption and a further 128-bit RC4 encryption key. Needless to say, your connection isn't likely to get hacked any time soon, which is why DameWare products are used by government institutions.

Beyond the super-secure methods of encryption and connections, actually using DameWare Remote Support can be something of a tricky business at times. Speaking from experience, DameWare Remote Support is one of the greatest consumers of system resources we've ever come across. Where connecting between two reasonably

powerful and modern machines seems to provide an otherwise good experience, lesser powered PCs tend to feel like wading through treacle. And considering most companies can't afford to fully kit out their offices with the latest high-end PCs, this comes as a bit of an administrative pain for those who need to support the technology.

Generally, DRS is a good product. The connection uses the maximum bandwidth available to provide as good a connection as possible, which means you'll get a better, more fluid experience. And where the previously

reviewed TightVNC tends to fail on displaying advanced application windowed content, DRS does an admirable job. We've even managed to have a game of *Crysis* working across two sites some years ago. However, as we mentioned, the drain on system resources is significant.

Finally, one more thing to consider is the pricing. Where TightVNC and a few others we're mentioning in this group are free – up to a certain point – DameWare Remote Support isn't. The price of a single user licence is 285 (£224), but the overall cost per user reduces the more user licences you buy, with 15 or more users costing 220 (£173). Obviously if you have a thousand computers in your company, then this will certainly add up, but DameWare, or rather Solarwinds, is contactable to arrange a site licence or equivalent.

DRS is a continually evolving service that is more than capable of delivering a secure and proper remote desktop connection between multiple computers. The fact that it also features end-to-end user chat, multiple operating system support, file transfers and screen sharing means it's not just intended for the big company or government IT departments; the homemaker can also utilise its capabilities.





## Remote Access

# Windows Remote Desktop Connection

### DETAILS

- Price: Built in with Windows XP onward
- Manufacturer: Microsoft
- Website: [goo.gl/AdK5xn](http://goo.gl/AdK5xn)
- Required spec: Windows XP or later, 1GB RAM

The built-in Windows Remote Desktop Connection has been around since the early Windows NT 4.0 Server edition, where it was then called Terminal Services. Back then, it relied on Citrix technologies to establish the connection between machines, but Microsoft has since developed the Remote Desktop Protocol, which is essentially what RDC really is.

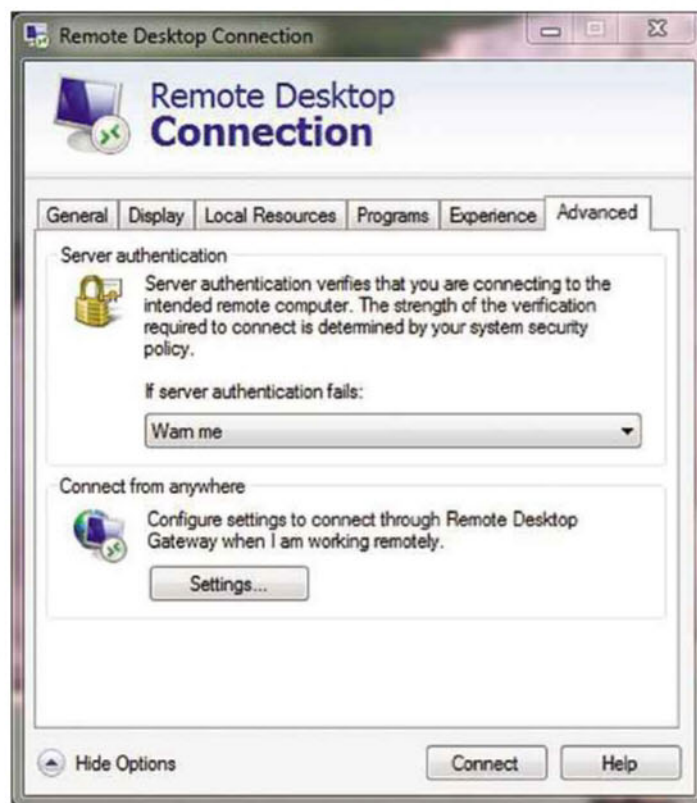
Its security has often been in question, with older versions of RDP having a vulnerability whereby an unauthorised individual can access an RDC session using a man in the middle attack. These days, though, Windows RDC is just about as secure as any other remote desktop product.

RDC sessions by default use 128-bit encryption as provided by the Windows Cryptographic Services, and there's extra protection available in the form of SSL (TLS 1.0) layered security and FIPS-compliant algorithms. You can also change the default listening port and establish a

more stringent group policy to set client connection encryption levels, use of the Specific Security Layer For RDP Connections, an Authentication Certificate Template and force Network Level Authentication. To be fair, though, many of these options are out of the technical scope of most home users.

Naturally, Windows RDC is more of an operating system add-on as opposed to a stand-alone product. This means that it misses out on some of the extended features that many other remote desktop connection products offer. However, it's not without its fair share of useful elements. You can redirect network printers, redirect local drives, copy and paste files across machines; there's also support for adaptive graphics and 32-bit colour depth, media streaming and multiple monitor support. And with the newer Windows 8.1 version of RDC, there's even a dynamic in-session USB redirection feature that can allow a user to swap USB devices between machines.

Despite all this, though, Windows RDC does have its share of problems. The Technet forums are awash with various connection difficulties, problems with saved credentials, the screen going blank at random times during a session, and copy and paste malfunctions. Most of the time, these are the result of a connection being idle for too long before being used, while



others can be fixed by a number of intricate methods and by delving into areas of Windows that no one in their right mind should ever venture. Where a stand-alone, third-party product problem can be nailed down fairly tightly to one specific issue, a Windows Remote Desktop Connection problem tends to be a little vague at fixing.

Windows RDC may be scoffed at by many, but for the sake of creating a reasonably secure, straightforward connection to another machine, it does a

pretty good job. Granted, there are better products available, and professionals or companies may instead opt for something with more features and security. For home users or on-the-go technicians, though, Windows RDC is more than capable of creating a connection without the hassles of having to find a third-party product.

Rather than the likes of TightVNC being the first port of call for a remote desktop connection, then, perhaps Windows RDC should be.



▲ With multiple monitor support and it being fairly lightweight, there's enough to recommend it





# LogMeIn Pro

## DETAILS

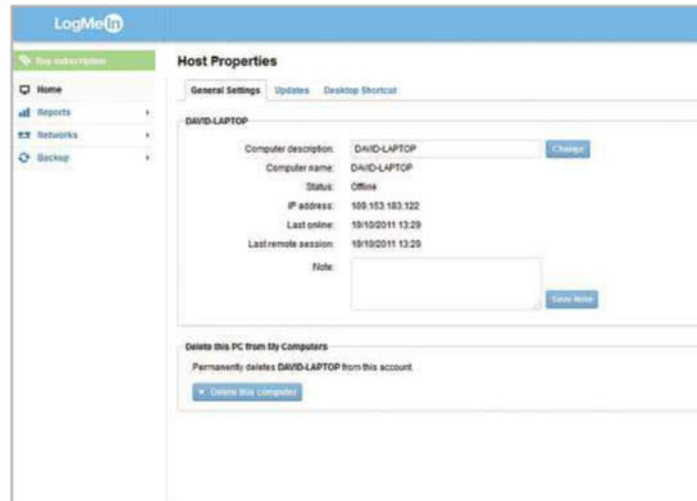
- Price: From £164 per year
- Manufacturer: LogMeIn Inc
- Website: [goo.gl/Lik1aC](http://goo.gl/Lik1aC)
- Required spec: Windows XP or later, Mac OS 10.6 or later, 1GB RAM, updated browser

LogMeIn started life in 2003 as a cloud-based remote connectivity solution for IT management. But the model proved to be so successful that the LogMeIn management decided to expand product range to include the average user with LogMeIn Free.

Unfortunately, in what is now regarded as something of a PR disaster, LogMeIn terminated its free service as of January this year, which resulted in many users jumping ship and opting for something else as opposed to sticking with the company and paying for the Pro version.

However, despite the mass desertion, the LogMeIn Pro version has a lot going for it and doesn't cost all that much considering what you get.

File transfers, file sharing, remote to local printing, desktop media streaming, wake on LAN, remote to local audio and the actual remote desktop sharing are but a few features we can mention. Additionally, the software isn't bound by OS, so virtually any internet connected web browser that's capable of rendering on a secure channel is capable of displaying the desktop of the other machine. Of course, you can opt to download the Windows and Mac client versions without



▲ You can keep track of all your connected computers via the management console



▲ Connection to different systems is a bonus

the hassles of using a resource hungry web browser.

Both the web-based and client versions support the highest possible forms of password and connection security. Each of them pass through the LogMeIn Gateway and Database to offer a centralised SSL/TLS certification authentication method, as well as user ID authentication, security codes and account level auditing. Furthermore, the LogMeIn Gateway selects the highest possible form of encryption available depending on the connected client and hosts. This means that the data

transmitted in session can use a combination of RC4 128-bit encryption, 3DES 168-bit encryption, and AES 128-bit and 256-bit encryption keys. This method allows the host to choose the strongest level of encryption that the client has to offer, and it allows both the client and host to decline specific encryption algorithms without needing to update the components on both ends. The result is an extremely secure connection with which to conduct your remote desktop activities.

Aside from the security and connection features, LogMeIn Pro allows the user to view

HD content through the remote connection. In fact, it's designed to allow games, movies and TV content to be streamed without loss of quality – obviously depending on your connection speeds. This means it has a relatively lightweight impact on the system resources, although it's difficult to measure, since the connection is via a web browser. Suffice to say, it works well across remote sites and is even better across a LAN.

The pricing for LogMeIn Pro isn't quite as bad you would initially think. For £64 per year you get remote desktop access for two computers through the browser, desktop, iOS and Android devices. For a further £164 per year, you can have up to five computers. And there's even an option for a small business package for up to ten computers at a generous £289 per year.

All in all, LogMeIn Pro is a great remote desktop tool that's perfect for the homemaker and an ideal solution for smaller businesses. For the average enthusiast though, it may be overkill and a tad too expensive to recommend.





## Remote Access

# TeamViewer

### DETAILS

- Price: Free up to £1,567
- Manufacturer: TeamViewer GmbH
- Website: [goo.gl/VeRNB4](http://goo.gl/VeRNB4)
- Required spec: Windows XP or later, Mac OS 10.5 or later, Linux, Android, iOS, 1GB RAM

Where LogMeln ceased its free version to users, TeamViewer, its main competitor for web-based, cloud-centric, remote desktop access software, took over and has since become very popular indeed.

Like LogMeln, TeamViewer offers the user a solution whereby you can connect and control the desktop of a remote machine through a browser without having to mess around with the settings on your router or allow extra traffic through your firewall. It supports chat, voice over IP, remote printing, Wake on LAN, recordable sessions, file transfers, and you

can open multiple connections in different tabs.

It's optimised for HD content, is cross platform including support for iOS and Android, and it offers full encryption based on RSA public/private key exchange and 256-bit AES session encoding. Furthermore, the session password changes every time the software is launched, and the connection utilises a two-layer authentication process involving the TeamViewer username and password structure, along with a generated code based on a TOTP (Time-based One-Time Password) algorithm. There's also the option to pass the connection through various SSL tunnels from the client browser side of things, but the fact that TeamViewer is accredited with security inspection kite marks from the likes of FIDUCIA IT AG means the session data is well and truly kept from prying eyes and hacking attempts.

The list of features are impressive, and the fact that this is free for home or

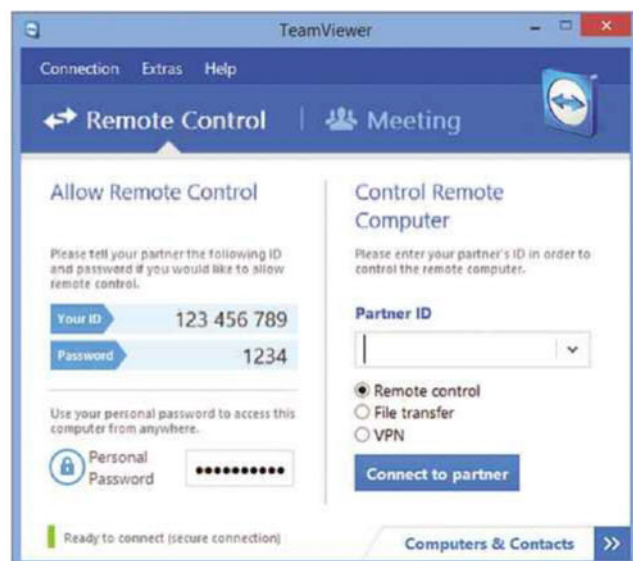
personal use is an absolute bonus. Commercial use costs from 499 (£393) for the Business version with a single licensed workstation, to 998 (£786) for the Premium version with unlimited licensed workstations. There's also a more complete package in the form of the Corporate version, which costs 1,990 (£1,567) and offers unlimited everything and up to 25 participants in the TeamViewer Online Meeting feature. Needless to say, there's something here for every type of user, but it's the home user version we'll concentrate on in this group.

TeamViewer is incredibly fast and stable, and it brings a ton of features to the user. The interface is easy to use, a no frills affair if you prefer, which is quick on machines with lower than usual resources available. In fact, the entire package feels a lot more user friendly than the likes of LogMeln, without losing any of its professional features or abilities. In other words, both the company and the home user will be far more

comfortable using TeamViewer than most other solutions.

Performance is excellent between sites and especially through a LAN, to the point where remote gaming, should the need ever arise, is a possibility. The resources used were minimal, with the browser itself taking up the lion's share of the system memory, and no other issues cropped up during our testing between various desktops.

On the whole, we were quite impressed with TeamViewer. The combination of speed, well designed user interface, encryption technologies and features make this a remote access tool everyone can use.



▲ With a combination of security codes and 256-bit AES, TeamViewer is more than secure for most users

▲ Connecting to multiple system works like a charm



# Ammyy Admin

## DETAILS

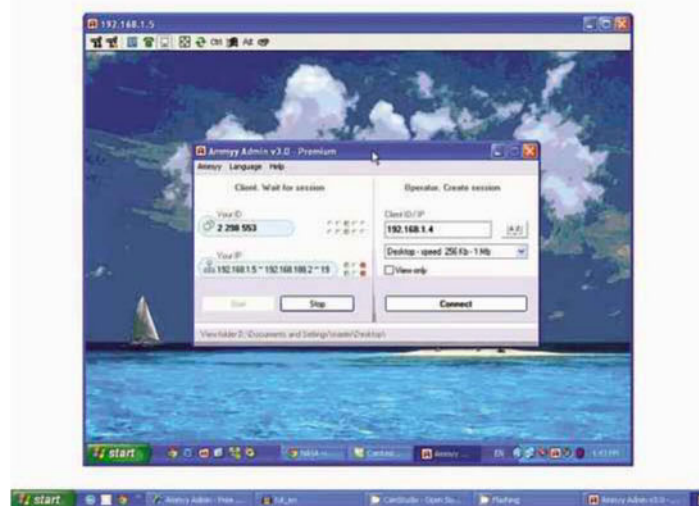
- Price: Free up to £60
- Manufacturer: Ammyy
- Website: [goo.gl/SkPbii](http://goo.gl/SkPbii)
- Required spec: Windows XP or later, 512MB RAM

**A** mmyy Admin has been around since the mid 2000s and offers users a free and portable remote access solution that's powerful and easy to use. The fact that Ammyy claims to have well over 39 million users is something to make even the most cynical sit up and take notice. Of course, whether it's any good remains to be seen.

The main feature of Ammyy Admin is the fact that it's installation free and can be executed from a USB drive if necessary. That doesn't mean it lacks features, though. Indeed, with Ammyy Admin you'll find voice chat capabilities, an integrated file manager, file transfers, firewall transparency and a reasonably high standard of security.

All session data when in remote access is protected by 256-bit AES and RSA encryption key setup. Each session is conducted much in the same way as TeamViewer or LogMeIn, in that a random ID number is generated with each new session for both the host and client machine. Naturally, you can further this security through a VPN or SSL tunnelling, but for the most part the security is solid enough for the home user to work without fear of it being intercepted.

Performance is surprisingly good with Ammyy Admin, although there were some issues with application



▲ The connection isn't great, but it's sufficient to remote help another user



▲ There are major security concerns, what with the current level of scamming using this product

“Disappointingly, there's a time limit for the free version”

windows not displaying correctly, and in some cases there was a graphical glitch on the desktop when connected. While these didn't bother us so much during the tests, we could easily imagine them to be awkward if you were trying to diagnose a remote problem. Also, it's worth mentioning

that we couldn't get any video played remotely either.

Disappointingly, there's a time limit for the free version. If you use the product for more than 15 hours over a period of a month, then it's blocked until the time limit is reset again at the start of the next month. This isn't too much of a headache

for most users, who may require a quick five minute hop onto their remote sever once a week, but for some it could be an extremely limiting factor.

Unfortunately, despite the generally good aspects of Ammyy Admin, there have been of late some rather nefarious uses of the software. It would appear that the infamous 'We're from Microsoft' scam calling crowd are using Ammyy Admin as their preferred method of gaining access to people's machines. This has obviously had something of a negative impact on the software in the eye of the public, and as Ammyy Admin is quick to point out, "We can assure you Ammyy Inc. doesn't make these kinds of calls and never asks to download and launch Ammyy Admin." However, the damage is done, and mud sticks, as they say.

Ammyy Admin is free for the home user and costs from £20 from the commercial starter pack through to £60 for the all-powerful Corporate licence, with each offering different features and unlocked time limits.

There have been a number of cases where Ammyy Admin users have claimed to have been hacked when using the software. If these remarks are true or not remains to be proved, but it's worth bearing in mind.

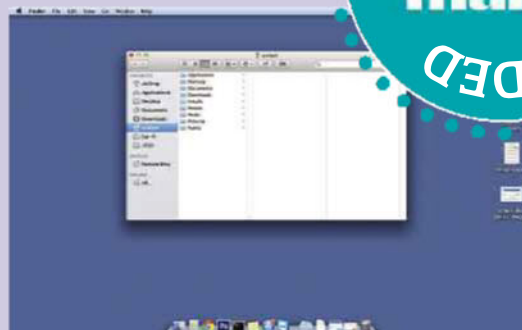






### TeamViewer

We think TeamViewer has it all. You get great encryption of your session data, excellent speeds, low use of resources and it's certainly 'feature rich'. Plus, it's free for home users.



### LogMeIn Pro

Although LogMeIn Pro does cost, its service and features are just as good as TeamViewer. And like TeamViewer, it's being continually developed for a more mobile world and home working. Perhaps it'll even reinstate the free model?

## How We Tested

Each remote desktop product was tested on two machines connected on a gigabit Ethernet LAN and across two separate sites some miles apart. One site was running a 75Mbps broadband connection and the other a 150Mbps leased line. Both machines had i7 processors, 8GB RAM, desktop graphics and were running Windows 7 Ultimate with Ubuntu, Vista, and XP in VirtualBox environments.

	TightVNC	DameWare Remote Support	Windows Remote Desktop Connection	LogMeIn Pro	TeamViewer	Ammyy Admin
<b>Price</b>	Free. For commercial use, call for details	From £224 per user	Built-in with Windows XP onward	From £164 per year	Free up to £1,567	Free up to £60
<b>OS Support</b>	Windows 9x onward, Linux	Windows, Mac, Linux	Windows only	Windows, Mac, Linux		Windows only
<b>Mobile Os Support</b>	Under Java, VNC for Android	DameWare mobile available	Can connect to mobile RDP connections only	Android and iOS support	Windows, Mac, Linux	None
<b>Web Based?</b>	Java VNC Viewer		No	Yes	Android and iOS support	No
<b>Capable Of Viewing HD Content?</b>	Not really	No	Not really	Yes	Yes	Not really
<b>File Transfers?</b>	Yes	Yes	Windows Clipboard	Yes	Yes	Yes
<b>Levels Of Security</b>	Password encryption only by default	Yes	Windows Cryptographic Services	AES 256-bit, RC4 128-bit, 3DES 168-bit encryption	Yes	256-bit AES, RSA key encryption
<b>Windows Components Tested</b>	In conjunction with G/C drivers	256-bit AES, 3DES, RC4 128-bit encryption	No	To some degree	256-bit AES, TOTP	Yes – DirectX compatibility
<b>Other Hardware Tested</b>	No	Yes – Ports, connected devices etc.	No	No	Reports generated for hardware	No



# Tech Origins

## Bluetooth

### David Briddock digs into the past of an alternative wireless technology

**W**ireless networking technology, once seen as rather miraculous by many consumers, is now treated as an absolute necessity for any computer, mobile device or personal gadget.

While the ubiquitous wi-fi is the technology most people have heard about, mobile devices invariably incorporate a subtly different wireless variant called Bluetooth.

#### Ericsson

In the 1990s, Ericsson employees Japp Haartsen and Sven Mattisson were investigating a short range wireless replacement for serial data cables. Based in the company's Lund research labs, deep in the south of Sweden, they finally settled on short-wavelength UHF radio waves. Frequencies ranged from 2.4 to 2.485GHz, part of the industrial, science and medical (ISM) radio band.

Their intention was to deliver a localised wireless personal area network (WPAN) for any personal computers and mobile devices within range. To create this network, while avoiding the expected interference issues, they created a specification based on a frequency-hopping spread spectrum technique.

#### SIG

Ericsson's work soon attracted interest from other big players in the personal computer and mobile phone arena. And in 1998, Ericsson teamed up with IBM, Intel, Toshiba and Nokia to form the Bluetooth Special Interest Group (SIG).

SIG was responsible for formalising the Bluetooth specifications, while also managing the qualification program and trademark protection. This meant any licensed Bluetooth device must adhere to the SIG standards and associated patent network.

Today, SIG membership extends to almost 20,000 companies worldwide, spanning areas such as telecommunication, computing, networking and consumer electronics.

#### Simple Pairing

The early Bluetooth specifications (1.0, 1.1 and 1.2) concentrated on improving the robustness, reliability and interference-resistance with various transmission-centric refinements. In 2004, the 2.x versions raised Bluetooth's profile with its Enhanced Data Rate (EDR) for faster communication speeds.

Yet the pairing mechanism attracted much criticism. Users had to enter pin codes on both devices – an impossible act for applications like hands-free headsets.

However, Bluetooth v2.1 introduced a Secure Simple Pairing (SSP) mechanism. This used a form of public key cryptography to pair devices, and devices like headsets could be paired automatically.

#### Security

The SSP security features helped to reduce security fears, in particular the Man In The Middle (MITM) scenario where an intruder intercepts the communication link.

Examples of a MITM attacks include Bluesnarfing (device data extraction), Bluebugging (taking control of a Bluetooth device) and Bluecasting (broadcasting adverts to Bluetooth devices in the vicinity).

SSP uses binary codes or passkeys along with mandatory encryption to make MITM attacks very difficult.

#### Low Power

The appearance of Bluetooth Smart (version 4.0) in mid-2010 proved to be another milestone. Encompassing both Classic and High Speed specifications, it also offered a Bluetooth Low Energy (BLE) feature.

This low energy capability encouraged manufacturers to integrate Bluetooth into small, low-cost, battery-powered devices.

#### Finding A Name

So where did the rather unusual name come from?

Early on, Intel suggested that the SIG be called by the codename Bluetooth until the SIG's marketing group could come up with a formal name. Intel explained that the Bluetooth name was borrowed from the 10th century second King of Denmark, King Harald Bluetooth.

As this king was famous for uniting Scandinavia, it seemed appropriate for technology that intended to unite the PC and cellular industries via a short-range wireless link.



▲ King Harald Bluetooth



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# How-to Basics

## Make an image of your PC

### Part 1

Create the ultimate backup routine and take a snapshot of your system

**B**acking up your files is all fine and well, but there are times when a catastrophic drive failure renders your system drive totally inaccessible. Times like these involve acquiring a new hard drive, reinstalling Windows, going through all the updates, reinstalling your security and AV software, reinstalling all your applications, then all your data and finally get the desktop to look something like it did before the failure.

One of the best ways to quickly recover from an all-out technical disaster such as this is to image your system drive – in other words, take a snapshot of its current state and restore it when needed.

### Paragon Backup & Recovery 2011

Paragon has been around for a while now, and while it may not always be at the top of the backup charts, it has consistently moved

forward and improved its products so that they're some of the easiest and most effective in the drive imaging market.

It's ease of use we're after here – nothing too complicated or wrought with dangerous looking options. So to begin with we'll need a copy of Paragon's free drive imaging software.

Start by going to [goo.gl/fDrfhJ](http://goo.gl/fDrfhJ) and click on the Download link to get hold of the installer. Once this is done, simply double-click, followed by the Get Free Serial button. This will launch your default browser and load the Paragon Free Software registration page; all you'll have to do here is enter your first name, last name, email address, country and language.

Once you've entered your details, click on the submit button and wait for the email to come through. When arrived, copy and paste the product key and serial number into the relevant boxes on the setup screen and click 'Next'. Follow the remainder of install wizard,

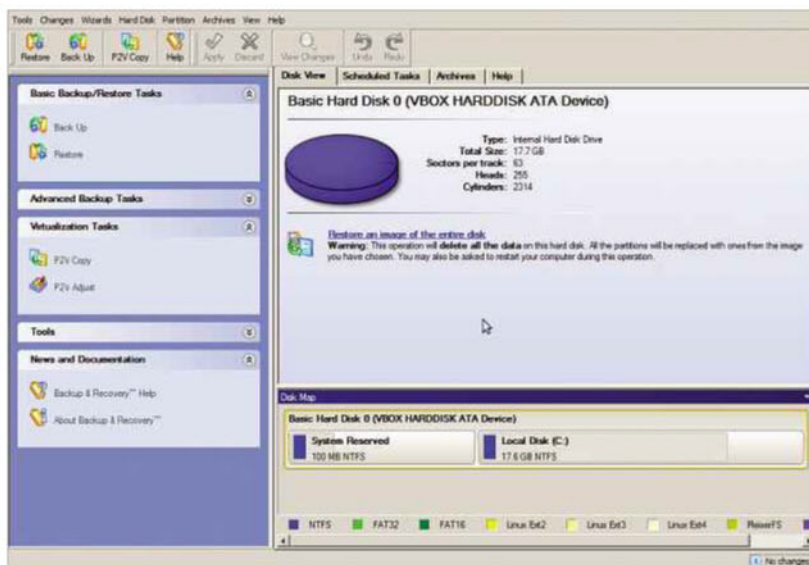
going with the defaults. When the installation has finished, click on 'Yes' to reboot your PC.

### Imaging Your Drive

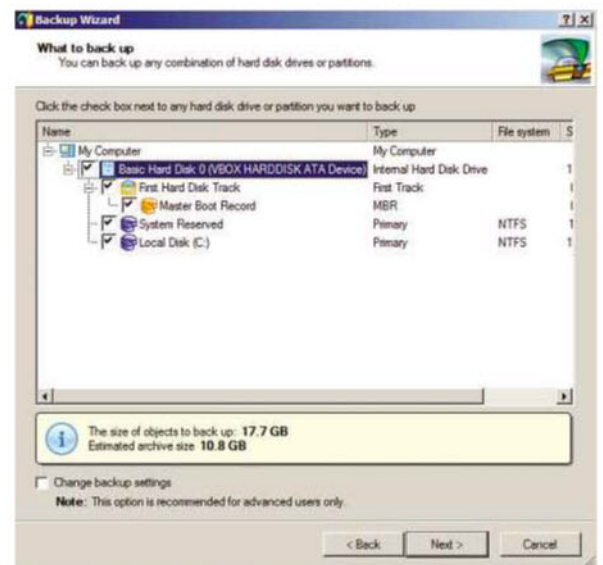
Looking at the start screen, we have the task pane on the left, a graphical view of your drive at the middle top, a partition disk map on the bottom middle and a healthy batch of icons along the top. We'll be using the 'Back Up' link on the task pane to start with, but before we click this we'll need to make sure we have a destination drive that's capable of storing the image we're about to create.

For this example, we're using a physical second drive shared via Virtual Box, but you can use any extra hard drives you have installed or a sizeable USB drive for instance; just be aware that the backup, although compressible, will take roughly half of the total space of the actual hard drive size.

Click on the 'Back Up' link on the left pane under Basic Backup/Restore Tasks, followed

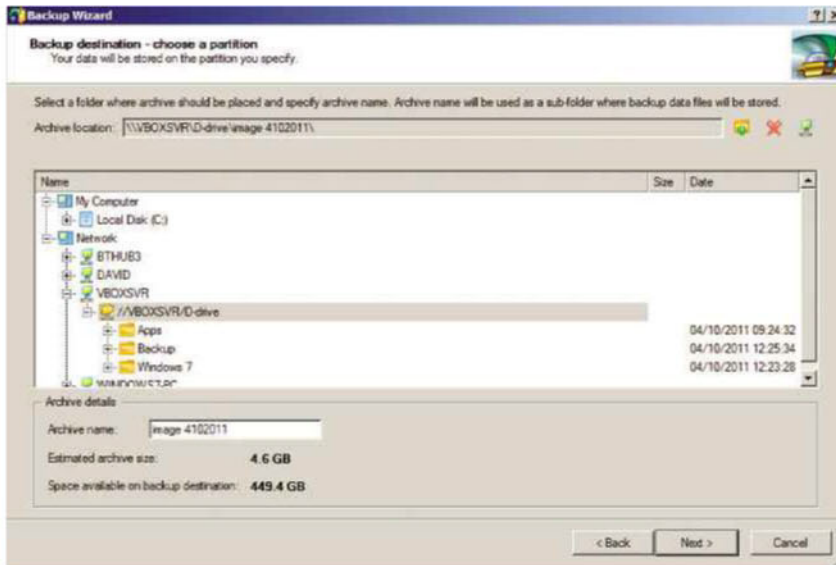


▲ Paragon Backup and Recovery free edition is really very good



▲ You can select the drives or partitions to image





▲ And you can pick from numerous destinations

by Next. The second window displays a tree view of your hard drive(s); all you need to do is click on the top level box of the hard drive you want to backup. The space we're using on the Virtual Box drive comes to 17.7GB, giving us an estimated archive image size, on the destination drive, of 10.8GB.

From here, you can click on the partition you want instead of the entire drive. As we're dealing with this from an easy-to-use point of view we'll stick to the whole drive image for now. Finally, tick the Change Backup Settings box, and when you're ready, click Next.

## Backup Options

As we've ticked the change settings box, the next window to pop up in the wizard will be the Advanced Backup Settings.

We won't go into too much detail here; the only options we'll touch on are the first Backup Image Options, the default that you're looking at now.

In the Compression Level drop-down box, select Best Compression and untick the Enable Image Splitting. We've found that image splitting can go wrong when imaging a drive. Some of the split archives can become corrupt as they move from one to another, and we're assuming that you have enough space on the destination drive to store the entire image without having to split it. But if you are planning on transferring the image to DVD or such medium, then obviously you're going to have to split the archive into burnable chunks. Just remember to check the archive integrity before burning to disk and make sure that the archive is restorable by simulating it once it's transferred to disc.

## Backup Destination

You have four choices of backup destination on the next screen: save data to local/

network drive, save data to a physical partition, save data to an FTP location and burn the data to an optical drive. If you have a USB drive present or you're using a network share, then you'll need to use the first option.

All these options come with their pros and cons, the most obvious being the speed of the imaging process. Across a local network, attached USB or another partition, the backup job will be completed relatively quickly. However, if you're backing up to a remote FTP or network share, then the backup will only work as fast as your internet connection will allow. The same goes for burning to optical media: the backup will only run as fast as the speed of the optical drive in question, so be prepared to dedicate some time the back if necessary.

After clicking Next, you'll have the opportunity to point the backup to a location and name the archive. Again, your setup and where the destination drive is located will affect what options are available in the main window. The three icons to the right of the Archive Location allow you to create a new folder within the destination, delete the folder and map a network drive. Most people find it useful to map a physical drive to a network location, but clicking in the Network expansion box in the main window will expand all the available network locations and shares.

Continuing, the following window allows you add a comment to help describe the archive and the option to either backup right away or schedule for another time. The next screen offers you a summary of the choices and options you've gone for, as well as the location of the backup image and what you decided to name it. There's also another estimation of the final archive size, so just



▲ The image can take some time

## Paragon Features List

The features list for Paragon 2014 is quite lengthy, to say the least. Here are a few examples of this fantastic little toolset can cover:

- Create partition.
- Format partition.
- Delete partition.
- Assign/remove drive letter.
- Hide/unhide partition.
- Mark partition as active/inactive.
- Modify: change volume label, test surface.
- Check file system integrity.
- Add an archive to the database.
- Delete the archive from the database.
- Restore from the selected archive.
- Restore file from archive.
- Differential backup.

take a moment or two to go through the summary and double-check that everything is pointing in the right place and that there are no glaringly obvious mistakes.

## Start The Backup

After clicking Finish, you can initiate the backup by clicking on the Apply button followed by Yes. When it's completed, click on Close to take you back to the main Paragon start window.

There you have it: an image of your PC in its current state. It's not much to look at, and you won't be able to retrieve anything from it through any sort of file manager. To do this, we'll have to use Paragon's Volume Explorer, which we'll cover next week. [mm](#)



# Monitoring Your Bandwidth Use

**David Hayward** looks at a collection of network monitoring tools

**H**ow many of us appreciate the amount of bandwidth we use on a daily basis? For the vast majority of users, the question of how much bandwidth they're using isn't important; it's usually the speed of the connection that's often questioned. However, what if you're on a metered connection? Or what if your usual broadband provider is down and you're forced to access email and your connection to work via a tethered solution? How would you go about measuring the many thousands of bytes you're consuming?

Things like a simple email can chew up your bandwidth without you realising. For example, an email exchange between a couple of people may use up, on average, around 150KB, with 75KB per message per person. If the email exchange goes back and forth a few times and an average Word document attached, then that number can rise to well over 500KB. Now if you include the vast number of people you may communicate with on a daily basis (as a rough example, let's say ten people based on the aforementioned scenario), the bandwidth for email alone could chalk up a rather considerable 5MB plus.

That's just the email; imagine what would happen to that amount once you open up Firefox, check your Facebook account, look at a few images via Flickr, respond to some Tweets, engage in a conversation on the Micro Mart forum or watch a news report for five minutes.

## Monitoring

Admittedly, while tethered with a phone, we can monitor the amount of bandwidth being used through the phone's built-in network usage tool. For normal desktop duties, though, it's a tad more difficult.

There are a hundred and one third-party programs available for every conceivable platform to help you monitor your bandwidth use, but what about the built-in tools? Surprisingly there's a fair amount of choice of network or bandwidth monitoring tools across all the available operating systems, but some of them are simply not good enough to get any real data from. However, we can use a few tricks to see how many bytes are traversing our network during the course of a day.

## Windows Tools

The best starting place to check your Windows bandwidth use is via the Performance Monitor. Here you can collect data throughout the day regarding your connection to your local

network and the internet – although the two are often impossible to distinguish.

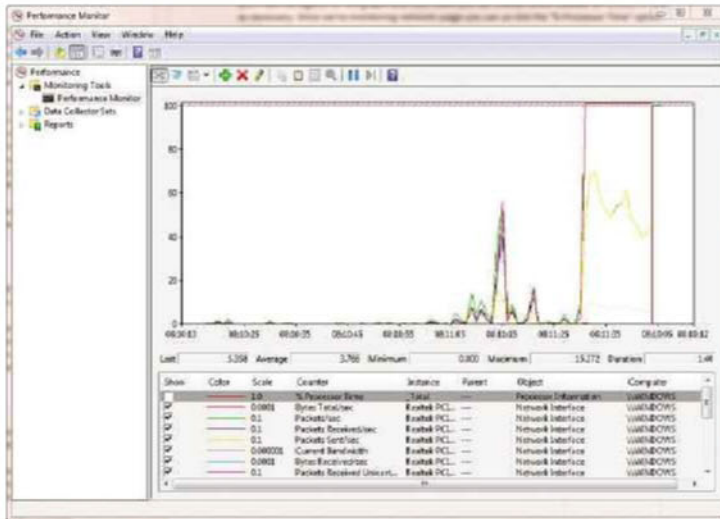
To view and monitor the current bandwidth, click the Start button (we're using Windows 7 in this example) and enter 'Performance'. Click on the Performance Monitor link, which should be the first choice in the search results, then once it's loaded, click the green plus icon located in the upper portion of the right-hand data window.

**“ Downloading the 900MB or so of the latest Ubuntu will cause a large spike in the data, but then so will watching Superman via your NAS unit downstairs ”**

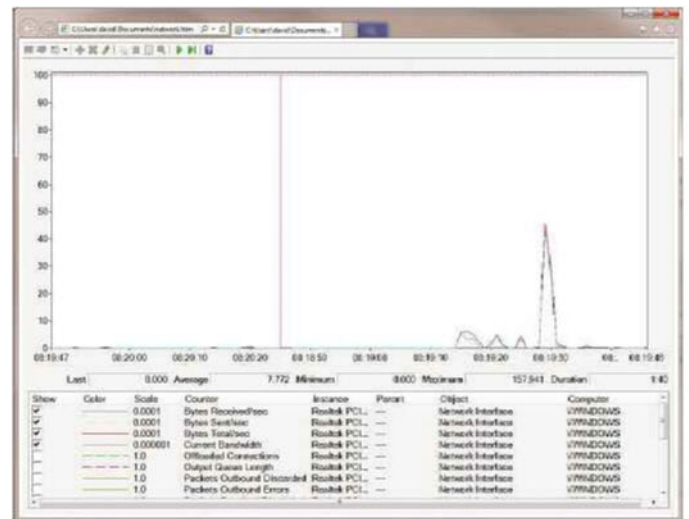
From there, scroll up (it's usually up, as the Performance Monitor defaults to Processor) to Network Interface and click the entire branch. You'll now see another set of choices under the Available Counters, labelled Instances of the selected object; this is where you'll choose your active network connection. If you're using wi-fi to connect, then click on and highlight the wireless connection on your PC, otherwise you can choose the wired controller. As a quick note, if you have any other virtual controllers installed, such as VirtualBox or the Teredo Tunnelling Pseudo Interface, you can single them out to see what traffic is being used by the programs that communicate with these virtual protocols.

When you've selected the network interface of your choice, click the 'Add>>' button followed by the OK button. You should return to the main screen, with various lines beginning to appear across the graph in the right-hand pane. If you look to the bottom of the right-hand pane, you'll see the legend for the graph, and from there you can choose which counter to remove or add as necessary. Since we're monitoring network usage, you can untick the '% Processor Time' option and leave the rest alone for the time being.





▲ Performance Monitor via Windows 7 gives a good indication of how much traffic is flowing through your network interface



▲ You can create logs or dump the contents to HTML for reporting on later

If you now start to download something sizeable such as the latest Ubuntu, for example, you should notice a sharp rise in the number of bytes sent and received as displayed in the main window. The graph can then be tweaked to exclude other counters such as Packets received Unicast per sec or Packets received errors. You can also, via the toolbar along the top of the graph window, choose the sort of graph you want to see and even set timed logs that capture the data and save it to a configurable area as a CSV or other file type for you to build a graph with in Excel. Plus you can opt to save the output data to a pre-defined database, if you have one already set up.

Performance Monitor is certainly a reasonably powerful resource once you get to grips with it and you start to monitor the results. However, it's far from perfect, and the results that are collected via the network card can be skewed when you start to use your local network resources, since these also use the network interface, but you obviously won't be charged for them if you're on a set bandwidth plan.

Downloading the 900MB of so of the latest Ubuntu will cause a large spike in the data, but then so will watching *Superman* via your NAS unit downstairs. Therefore it's not as accurate as we would like it to be, but for the sake of argument and provided you're careful with the results and what you access when monitoring, it can be reasonably effective.

## Linux Tools

Linux is a little different when it comes to monitoring your network traffic, and at the same time it also becomes a little difficult to keep in line with this article's built-in tools remit.

A built-in tool is normally and obviously a program that comes with the operating system. But since Linux is so diverse with its choice of distributions, a specific tool that's in one distro may well need to be installed in another.

Saying that, though, there are a few Unix/Linux tools that make it through to probably 99% of the distributions available.

The first example of these is `tcpdump`, which can be used to display a description of the contents of packets that are being transferred through a network interface. It has a number of command variables and extensions that can be added, but for the sake of this example we'll only use a couple of flags.

First, though, you'll need to find out what your network interface is called; it's usually `Eth0` or `Eth1`, but if you enter the

following into the terminal, the output will show you which current active network connections you have:

```
ifconfig
```

All you need to do is remember the name of the one you're using to access the internet, then enter the following, provided 'eth0' is your network connection:

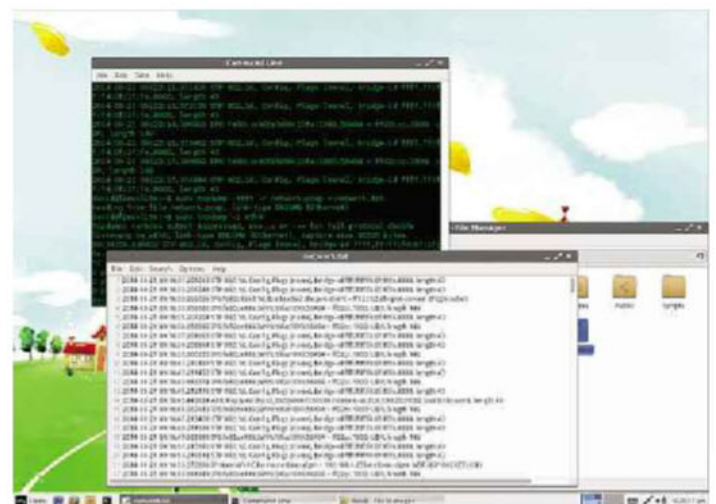
```
sudo tcpdump -i eth0
```

When you want it to stop, simply press `Ctrl + C`.

The result isn't pretty, and it can take some getting used to before you understand what's going on. You can make it a little neater and save the output to a file that can then be read later by entering the following:

```
sudo tcpdump -i eth0 -w network.pcap
```

This will dump the details to a file called `network.pcap` which can be read back by any good network analyser tool or by entering:



▲ `Tcpdump` in Linux is a very detailed monitoring command, but it's a little confusing too





▲ The Mac Activity Monitor isn't too bad at letting you know much bandwidth is being used

```
tcpdump -tttt -r network.pcap
```

To further enhance this, you can pipe the details to a text file with:

```
tcpdump -tttt -r network.pcap > network.txt
```

You can open the network.txt file in any decent editor.

Unfortunately it's far from the kind of readable format you'll find in Performance Monitor. To get a better or more readable level of output you can use tcptrack.

Tcptrack is included in a fair few number of distros but not all of them. If you try to run it via the terminal and it displays the 'not installed' message, then you'll have to get it from the distro's repositories. Otherwise, you can use it with, once again substituting the eth0 part with your own network interface:

```
sudo tcptrack -i eth0
```

This will then begin to monitor the connection, but once more it's a little messy and confusing to look at.

There are other methods with Linux to better track the bandwidth use over time. Tools such as SLURM, bmon, iftop and especially IPTraf are excellent, and each reports the data in a slightly different way. The trick of course is finding one that better suits your requirements and which you can easily make sense of.

## Mac Tools

The built-in Mac network monitoring tools appear to be a little thin on the ground. Well, either that or we simply don't have enough experience with monitoring the network on a Mac – which isn't too surprising really. But as with Linux, there are a number of tools available that were once a part of earlier versions of the Mac OS but have since been removed and are now stand-alone programs. So although we're cheating slightly, it's only a little bit.

Activity Monitor, though, is a built-in solution that's bundled with OS X,

and it works in much the same way as the Windows Performance Monitor. It's relatively easy to get to grips with and by opening it then clicking on the Network tab, located along the bottom of the window, you'll be able to determine your network activity.

Activity Monitor is located in the Applications > Utilities folder, and as with its Windows cousin, it displays a graph based on the level of activity through the connected interface. And as before, its usefulness is limited in that it will display the total amount of traffic going through the interface regardless of whether that's local network traffic or from accessing the internet.

To get a better idea of your broadband use you can use SurplusMeter, which despite being a third-party program, did start life in earlier Mac operating systems and is ported from / inspired by (more or less) iOS. So essentially, although we're clutching at straws here, it has built-in credentials.

“ If you've never explored the inner workings of your router then it's worth having a poke around ”

SurplusMeter isn't the best-looking program available for the Mac, but it does offer you a far more dedicated way of measuring the amount of internet traffic you're currently using. You start off by specifying which day of the month you want to start from and what monthly cap you want to set, and SurplusMeter will then start to track all internet-based traffic across all network interfaces.



▲ SurplusMeter is good at letting you know your bandwidth limits



▲ The most accurate way of measuring bandwidth use across all devices is via your router





▲ **BitMeter OS** is a cross platform all-in-one program that will keep track of the data being used

It's certainly a better way to manage and determine the different types of traffic.

## Router Tools

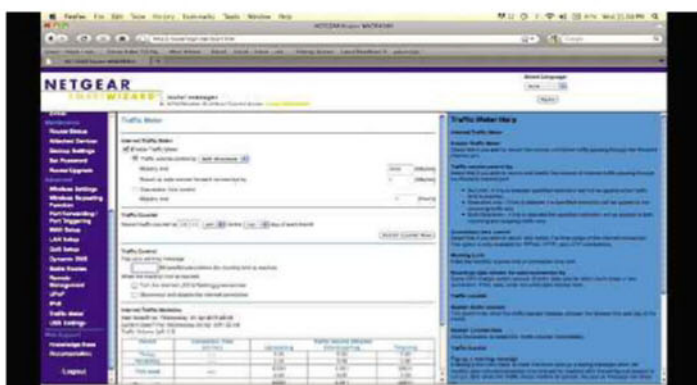
For the best possible accuracy across all your devices and computers, you're going to have to be able to track your bandwidth usage from the source, in other words at the router level.

Most routers usually have a setting somewhere in their administration software that will inform you how much data has been sent and received since it was last powered up or connected to the internet.

For example, a standard BT Home Hub 3 has, within the Advanced settings, a page labelled Broadband, with a sub-page called Internet. On this page you'll see a very basic readout of the connection time, followed by the number of gigabytes transmitted and received since the unit was last connected to the internet.

More complex routers (usually the ones that aren't supplied by ISPs) can provide a higher level of detail. The Netgear N750 is able to monitor traffic against a user-set bandwidth cap and can even display a warning or stop internet access altogether should the traffic data exceed that cap.

Of course, every router is slightly different, and every brand does its own thing according to the firmware they have installed. You can also hack the firmware to a more exotic downloadable version that's compatible with your router, but that opens up an entirely different can of worms and it's generally not



▲ **Some routers have better control and management tools for monitoring than others**

## Third-party Alternatives

Although we've gone for built-in programs here, most of the time at least, there are undoubtedly hundreds of other third-party alternatives available that will offer far more control over the monitoring process.

We could list all the different versions for all the different platforms, but there's one monitoring tool to rule them all and that's BitMeter OS.

BitMeter OS is a free, open-source, bandwidth monitoring program that works on Windows, Mac and Linux and can keep track of the amount of traffic passing through your network interface. You can then view the data either from a browser or by using its various command line arguments.

It's an exceptional program and one that will put the built-in tools to shame. If you want to get hold of it or even try an online demo of it, then visit [codebox.org.uk/pages/bitmeters](http://codebox.org.uk/pages/bitmeters) for all the relevant information.

recommended unless you really know what you're doing and you don't mind if you brick your router by accident.

If you've never explored the inner workings of your router, then it's worth having a poke around (provided you don't alter any settings if you're not sure about) and seeing what information you can determine regarding the amount of traffic that's passed through it.

To add one final layer to this, there's always a way to check your current internet bandwidth usage via your ISP's account page. Most of the big name ISPs have a My Account login page that will inform you of your monthly balance, often together with details of where the majority of the traffic has been logged from.

## Conclusion

There are a reasonable amount of tools available for you to detail the amount of bandwidth and traffic you're consuming on a minute by minute or daily rate, regardless of the operating system and the number of devices accessing the connection.

Naturally, you can also opt to install any number of the freely available or commercial traffic monitoring programs and tools. These will offer you a far more comprehensive and detailed explanation of the data, where it's coming from, what programs are using it or hogging it and so on. And they can usually be set to limit the amount of traffic on a particular computer, device or just for a particular program. The choice is obviously yours and depends on how much you want to get from the analytics. **mm**



# The Technology That Nobody Wants

**Not all the latest technology sells well. Mark Pickavance looks at some recent examples of product misfires and why they failed**

**W**e've all lived in a consumer society long enough to realise that the difference between wanting something and having it can be wider than a chasm.

I noticed recently that a number of UK military aircraft came up for sale to the public, and a nice lady bought a Panavia Tornado F3 for £36,800. As much as I'd have loved to outbid her, what I would have done with that item had it been mine I've absolutely no idea, because I don't own a hangar or even have a garden big enough for it to rust in.

Luckily the F3 found someone who does have a plan for it, I assume, but not all technology is so lucky.

In this feature, I want to look at technology that doesn't find a home, usually because it's not what the buying public actually wants to buy.

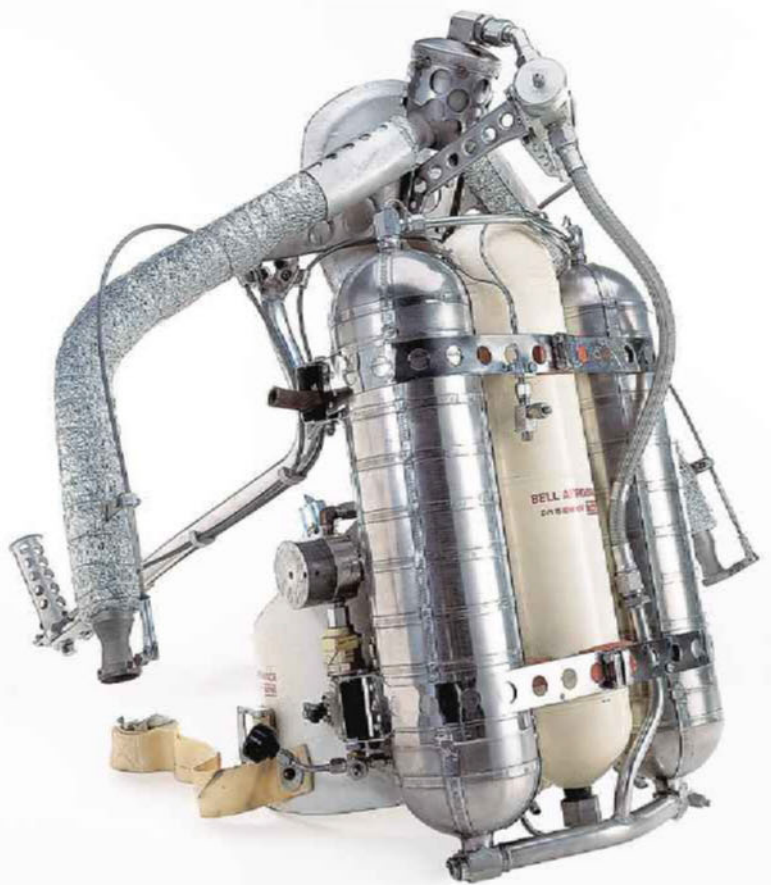
And there isn't any better place to start than those products closely associated with Windows 8.

## **Touch-screen Laptops**

When Microsoft launched Windows 8, it poured plenty of scorn on laptop makers for failing to embrace touch in the way it envisioned.

In the first year of Windows 8, less than 5% of the portable PCs sold had touch panels, and this undermined the ethos of the interface redesign that Microsoft wanted.

However, having pointed the finger at PC makers, was that criticism justified? No, almost certainly not, as proven by Microsoft



▲ *Bell No. 2 Rocket Belt, currently residing at the Smithsonian National Air and Space Museum. We'd all be using these to commute if they just weren't very expensive prototypes, with a total operational flight time of just 21 seconds*





▲ It was possible to buy this Panavia Tornado F3 for less than £40,000. Though it isn't flightworthy yet, and the fuel tanks take nearly 9,000 litres of aviation fuel. At about 50p a litre, that's £4,500 for about 90 minutes of flying time. At this running cost exclusive of insurance and maintaining, the personal market for these is rather limited. But everyone can dream...

itself and the very poor initial Surface product sales. PC makers just make what sells, and if there wasn't a strong demand for touch-controlled laptops, then being barked at by senior people from Redmond wasn't likely to change that landscape.

Abuse turned to denial, and then finally resignation that it had created the second coming of Vista, rather than the game-changer it had been hyping so fervently.

“ The bottom line is that the tablet market is dominated by Apple and Android, and it's very difficult now to see how that might change any time soon ”

But these events don't really explain why its new OS and touch didn't take the world of computing by storm.

If there is a complete answer (and I doubt there is), then it has to do with what people use laptops for versus how they use tablets. For the most part, tablets are consumer devices, where you just continually click on what you want for it to be presented.

Laptops, on the other hand, are much more about creating things, a process that usually involves a keyboard and mouse, and not a stubby finger.

The other factor is that there was initially a price premium for touch. That led many people to go for cheaper designs that didn't have touch, knowing that they already owned a tablet if they needed that functionality.

What reviewers often say about Microsoft's own Surface design is that it neither offers the best tablet or laptop experience, and in this respect it's always going to fail when compared with something specifically built for one of those jobs.

Historically, Microsoft was one of the first companies to offer tablet technology, long before the iPad existed, but those products weren't a success. They failed because Microsoft didn't



change the underlying OS (then XP) to reflect the touch model in any significant way.

Ironically, the Surface seems to be failing because it did change the model, but in doing so migrated away from what the customers wanted to do with those systems.

The bottom line is that the tablet market is dominated by Apple and Android, and it's very difficult now to see how that might change any time soon.

There appears to be no strong hybrid market developing despite plenty of products, and laptops without a touch-screen still outnumber those with one as we rapidly approach the two-year anniversary of Windows 8.

If people really wanted to touch their laptop screens, then Microsoft's plan would have worked well, but it didn't. Windows 8 market share is actually declining at this time, in the part of its lifecycle where it should be rapidly growing.

### 3D TVs And Monitors

Grouping these two items together seemed logical, though it could easily be argued that they've both failed for subtly different reasons.

A few years ago, every TV maker on the planet wanted to push 3D, jumping enthusiastically on the resurgence of 3D cinema viewing.

► The lack of demand for 3D screen technology has led some makers to use marketing material that presents their hardware achieving things it patently can't deliver. That probably doesn't help the credibility issues that 3D has from cinema use





However, even before those products actually came to market, the public's liking for paying extra for dubious benefits seemed spent. While some liked the immersive action that 3D screening can generate, others complained it gave them headaches or just didn't work at all. And critically, the effect wasn't an integral part of the viewing experience, whatever James Cameron said. As if to prove this, most movies were still being screened alongside the 3D version in 2D, and box office receipts soon began to show that people preferred 2D if given a choice.

If you look at the current crop of summer blockbusters, the 3D aspect of it is massively played down, as it's not a major reason that people flock to see the movies. Many movies are still made in 3D or badly converted to that technology later, but it's mostly about artificially inflating the opening weekend box office returns, rather than any sort of demand by the viewing public.

With that goose cooked, it wasn't long before TV makers realised that their customers weren't prepared to pay extra for this feature or the special glasses you're required to wear in

“ On that basis alone any Hollywood agent would be backing a sequel if the Nintendo Wii was a movie ”

order to trick your eyes (brain) into seeing some depth.

From being the darling of the Consumer Electronics Show one year, 3D was hardly mentioned on TV makers' stands the following. These days, it's just another feature that many sets have that isn't often used by those that buy them.

The collateral damage of this failure is that live TV events in 3D have also dried up for the most part. Last year, sports broadcaster ESPN stopped its dedicated 3D channel, and in this country, Sky TV's collection of 3D channels hasn't grown as rapidly as those supporting HD.

The industry consensus is that until TVs can generate 3D images without glasses, this isn't going to become a mainstream success and maybe not even then.

The parallel failure of 3D monitors for computers is partly because of all the reasons already mentioned, and also the manipulation of standards in respect of PC gaming platforms and hardware.

Nvidia was first to offer a modern accelerated 3D viewing system for the PC, using its own system for synchronising LCD shutter glasses to the frames generated in the computer. The beauty of this solution was that it could handle a variable frame rate and still present alternate frames to each eye.

Unfortunately, it was expensive, only worked on Nvidia video systems and required plenty of work on the part of the game developer to incorporate it. Since then, Nvidia has rewritten 3D Vision to use the Windows Display Driver Model, but it still needs the firm's special glasses. AMD developed its own 3D solution called HD3D, which equally failed to inspire mass adoption.

With the advent of Oculus Rift and other immersive 3D technologies, what interest that 3D displays got is rapidly disappearing. In short, 3D gaming on the PC was never

affordable, and the titles that offered it worked just as well (if not better) in 2D.

For those that like 3D, don't fret. As a technology it has been back at least three times in the past few decades, so it won't be long before those that market these things have yet another stab at it. Obi Wan, you're my only hope...

## Smartwatches

Class this writer a 'wearables sceptic' up till now, as almost all the devices I've seen so far seem to be enormous wrist watches that you need to charge up on a daily basis to get the time out of them.

To be fair, for once, the very first round of these items, like the woeful Samsung Gear didn't really sell the technology well. They all generally set out with the premise that we'd like to be able to answer our phones while they were buried deep in a pocket or bag. That might be so, but paying £200-300 for the joy of not keeping track of our tech does seem a little excessive.

But the relatively poor sales of these devices might indicate that I'm not alone in finding them to be expensive trinkets rather than invaluable gadgets.

That doesn't stop numerous hardware makers investing many millions in developing these products and trying to generate some enthusiasm about their imminent arrival.

As a few companies have tried and generally failed, many in the tech industry had been looking to Apple to launch the definitive smartwatch (and now, of course, it might have). Barely a month went by without a whole new slew of leaks



▲ Search the internet for iWatch concepts and you can find hundreds of them. As you might have guessed, many were far from accurate



about potential prototypes and launch timescales for this 'breakthrough' product.

Now that it's finally been announced, we can see it's a typical Apple product: stylish but expensive and not greatly different from what's already on the market (so no doubt it'll be huge success).

Having seen the critical mauling that the Samsung Gear got, Apple clearly invested much time and effort designing a wearable solution, hence the reason it took so long to come to the market. Love or loathe Apple, this could well be the product that finally takes the smartwatch market to the next stage. Or it could just be the final confirmation we get that no one wants these devices.

## Thunderbolt

Have you got a PC with a Thunderbolt connection on it? No, me neither, because when it comes down to it, despite what Intel and Apple say, it's no quicker a technology than USB 3.0 for connecting external drives.

And before anyone writes to me and says 'but what about the DisplayPort functionality?', that's another connection tech that's failed to inspire a sea-change in world of PC display technology, where many people still use VGA, DVI and HDMI.

To summarise; Thunderbolt takes one widely available and cheap technology (USB 3.0) and welds it to another that isn't (DisplayPort), and invites the customer to buy inflated cost cabling and devices that aren't compatible with most computers.

How could it fail? Very easily, it appears.

What makes this an even less remarkable revelation is that it's almost a blow-by-blow repeat of what happened with IEEE 1394 FireWire about 15 years ago.

Apple saw that technology as the natural successor to SCSI, and in many respects it was, because they both used expensive control technology to keep the management of data away from the computer.

That Apple peripherals cost much more than their nearly identical PC counterparts just helped it sell this notion. Apple helped keep the price of IEEE 1394 high, and over in PC land, people realised that USB 2.0 did pretty much the same job but more cheaply. By the time that commercial reality sank in, FireWire had died, irrespective of its technical superiority and Apple kudos.

This time, through the same hoops Apple decided to 'bring a big friend', so to speak, in the form of Intel, which it convinced would benefit from foisting another contrived standard onto the PC market. As a result, Intel tried to entirely ignore USB 3.0, not including it on its motherboards, while all its competitors added it using third-party silicon. Thunderbolt hasn't taken off on the

PC, USB 3.0 has, and Apple's track record of creating new ports by altering a few pins every five minutes is starting to wear thin with even its most die-hard fans.

The first Thunderbolt cable Apple sold cost \$49, the latest costs \$29. A typical USB 3.0 cable costs \$2 or less. With that sort of cost cutting, it isn't a big surprise that this technology hasn't inspired a mass defection away from good old USB.

## The Wii-U

If you look at the estimated sales figures from the ever-reliable Wikipedia, then worldwide the Wii sold more than 101 million consoles. That's massive, and on that basis alone, any Hollywood agent would be backing a sequel if the Nintendo Wii was a movie.

But if the Wii-U was a movie, it was the one that only appeared at the art-house cinema that only opens a couple of nights a week, before disappearing as quickly as it arrived.

Some 18 months after it was released, the Wii-U has staggered to an unedifying 6.7 million consoles, the majority of which were sold in the first nine months. At the current rate of growth, approximately 160,000 consoles a month, it will take the Wii-U another 50 years to reach the same penetration as its predecessor. Or it would, if the old Wii still wasn't selling more and Wii-U sales weren't declining.

So where did the Wii-U go wrong? There are so many problems with this console it's hard to know where to begin, but putting the display in the controller that had the appearance of a Hasbro toy didn't help.

It also wasn't supportive that the controller only lasted 3.5 hours on a full charge and that most of the games entirely ignored its functionality. Developers also didn't rally to Nintendo's side and instead decided to launch standard Wii versions on it, often with little or no modifications. But that was just the start, because once it became apparent that the Wii-U



# THUNDERBOLT™





▲ *Styled to look like an old Apple Mac didn't stop Sony's eVilla from a commercial catastrophe back in 2001.*

wasn't another Wii sales-wise, many of them stopped their game development teams and pulled Wii-U projects.

As the collection of 'hotly anticipated' titles dwindled to just those being created by Nintendo itself, what interest the console had in the gaming community vaporised. Or their interest relocated into the next-generation consoles that Microsoft and Sony were readying.

Despite stating that it won't do this repeatedly, Nintendo might be forced to discontinue the Wii-U by the end of this year and accept that it represents an era of console gaming that is

**“ Mr Sugar's only consolation is that his wasn't the only company to come up with the same abysmal product concept ”**

probably history. While failing with the Wii-U, Nintendo has also been entirely avoiding acknowledgement of the other competing product eating its mobile lunch: smartphones.

Based on recent statements by the company, Nintendo had a single plan where the Wii-U was massively successful and no contingency should that not occur.

Another Mario title is unlikely to address this problem, even if that's all Nintendo seems capable of offering at this point.

The Wii-U: a console few people bought because they had a very similar one gathering dust in a drawer somewhere that only came out at Christmas.

## Messaging/Video Phones

If you watch any sci-fi movies through the 60s and 70s, even up to *Blade Runner* in 1982, they all have video phones, because that's exactly what people thought the future would be like.

What this notion didn't consider is that many people like the fact the other end of a conversation can't see them or their home or tell as easily if they're spouting lies.



But despite those obvious problems and a lack of any real standards early on, a lot of technology companies decided to make phones that could read emails and make video calls. And almost without exception, they were garbage and were rejected wholesale by the buying public.

What shocked this writer was that having failed to impress anyone with their initial products, some companies went on to make new designs, somehow convinced that they'd not correctly mixed the magic ingredients to commercial success.

In the UK, one of these was Amstrad, which launched its E-mailer in 2000, aiming to ride the wave of people wanting to have this technology without having a computer or understanding how one worked. It then launched two subsequent designs culminating in the E3 with Videophone capability in 2004. I can't find any information on how many of these it sold, but the underlying E-mailer service was discontinued in 2011, ending any functionality for the device beyond being a wired phone.

What makes me laugh about the E-mailer is that somehow Sir Alan managed to convince the BBC to market it for him by always placing one in the *Apprentice* house, rather bending the corporation's strict rules on advertising.





Despite this or maybe because of it, the E-mailer and all the other internet-connected phones that could e-mail, texts and video weren't a success and with hindsight seem rather silly now.

Mr Sugar's only consolation is that his wasn't the only company to come up with the same abysmal product concept.

**“ Tech history is littered with products and ideas that just didn't work or connect with the buying public ”**

Sony launched the eVilla stateside for \$499 and elicited such a positive response that it canned the product after just three months in 2001. If that didn't generate a 'You're fired!' moment, then it's hard to imagine what would.

### Some Other Notable Contributions

Tech history is littered with products and ideas that just didn't work or connect with the buying public. While I was writing this, I even came across a few that I'd somehow missed entirely, mostly because they failed even before I heard about them.

One of these was Twitter-based Peek, a dedicated tweeting device that was launched in the USA in late 2008. The gizmo cost \$99 for six months use on 3G and \$99 to buy. Why anyone would use this instead of a smartphone was the question most asked, and the project folded in 2012 by way of an answer. *Time* magazine labelled it one of the 50 best inventions of the year 2008, revealing its substantial weakness in technology journalism.

Devices that compete with phones have trouble, but so do the phones themselves when they're focused on a market that doesn't exist or a customer who's fictional.

No feature on failed phones can be complete without mentioning the horrific Microsoft Kin One and Kin Two. They were designed for socially networking teenagers but sold with contracts that even business users would flinch at. Microsoft discontinued them after just 48 days, because they were an unmitigated commercial disaster.



Equally baffling, though marginally more successful are phablets that are bigger than 6 inches. With many top-end designs now going for 5 or even 5.5 inches, exactly how big does a phone need to be before it's no longer practical to hold it up to your ear? How about seven inches or eight inches?

If you think I'm being silly, then you need to check out the Asus 7" Fonepad and Samsung's 8" Galaxy Note 8, which are precisely those sizes. Unless you're the size of Robert Ludlow, you're going to look stupid calling on one, as most people decided before they bought either. Its fine as a tablet, but the only valid use for a Galaxy Note 8 as a phone is something to hide behind.

Scale is something that companies sometimes can't quite get right, as proven by some of the huge tablets that some companies have made, presumably because they think that the ultimate desktop PC is really a giant iPad. The most laughable of these is the 27" Lenovo IdeaCenter Horizon, which weight a thigh-crushing 8.59kg if you're daft enough to place it in your lap. I've covered similar devices by Viewsonic and AOC, and they're never going to win any hearts, minds or device of the year competitions. Niche interest from body builders is still a possibility, however. [mm](#)





# Property Apps For Android

Find a new place to live with this selection of six property search apps for Android

**W**e Brits treat searching for and owning homes as a bit of a game, with blow-by-blow commentaries exchanged across dinner tables, so it's perhaps no surprise that property search is a hot area in the app stores. Whether you're looking to rent, buy or even share a place, these apps should be considered the first port of call – and so say even estate agents who, it seems, exist nowadays primarily to show people around properties and then collect a questionably large commission.

As usual, all the apps reviewed below are available for free in the Google Play store, and were tested on a tablet and phone running Android Jelly Bean, the most common version of Android in use at the present time.

## Rightmove

If you haven't heard of Rightmove before you visit a high street estate agent, then you certainly will have by the time you leave. Rightmove stickers will likely be everywhere, and the estate agent might even have been surprised to see you walk in. House hunting nowadays is done via apps and websites, with estate agents apparently caring little that they're becoming irrelevant, and Rightmove is undoubtedly the

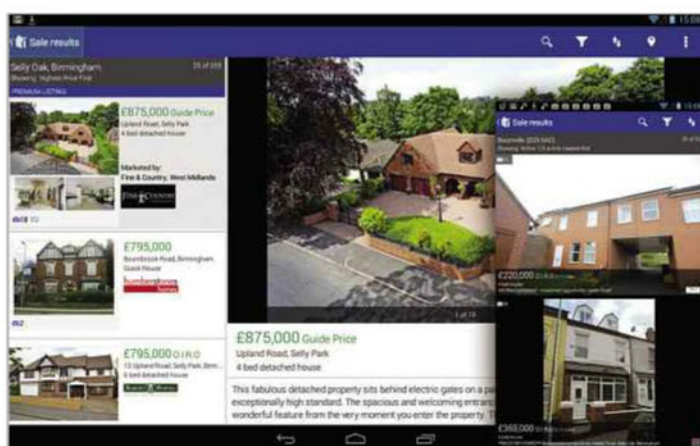
industry leader for finding what you want. It's not an exaggeration to say that most if not all the currently available properties sold or rented commercially will be listed by the Rightmove app.

On a phone, the app opens to show two buttons at the top: For Sale, and To Rent. The tablet version of the app moves these buttons to the left of the screen but keeps them large. On both phone and tablet, underneath the buttons you'll find options to view saved searches and saved properties (both of which require you to create an account) and options beneath to let you find agents in your local area and request a property valuation. You can also opt to search overseas, rather than the UK.

The wider screen of tablet also includes access to the filters at this pre-search stage and the ability to enter a search area, rather than rely on GPS. On a phone, these options appear once you've tapped the For Sale or To Rent buttons.

Results are shown as a list on a phone screen, with prices and brief headline details inset against large thumbnail pictures. A similar approach is taken on a tablet held in landscape orientation, although the list is shifted to the left and the first property automatically selected for viewing at the right of the screen. When viewing





▲ The Rightmove app provides access to virtually every property being commercially sold or rented, but it could have more features

property details, the same approach is taken on both tablet and phone: the lead paragraph from the description is shown, with a Read More label beneath that when tapped expands the description to full screen (meaning you can't simultaneously view the photos, alas). Back on the main details page, swiping left and right on the photos moves through the gallery of images, or you can tap any photo to switch to full-screen photo viewing mode.

Also accessible from the details page are floorplans, map/street view, nearby schools and energy performance certificates (EPCs). At the bottom of the listing on a phone are two buttons: one to call the agent immediately and one to email. Just the email button is listed beneath the picture on the tablet version of the app.

Applying search filters lets you set min/max prices and min/max numbers of bedrooms, and you can also cut out properties listed for longer than a set period of time (up to 14 days). Advanced filters let you filter in or out new or pre-owned homes, shared ownership or retirement properties, and properties with garden or parking. You can also opt to view properties with 'character' and auction properties.

That's an impressive list of filters, but missing is any ability to specify arbitrary words within the description. If you want a property with a conservatory, for example, then you'll have to search through each and every listing to find them.

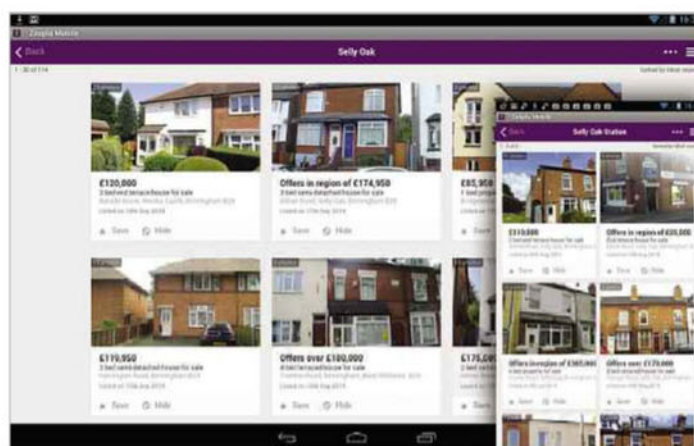
The Rightmove app makes a tough job very pleasant but, perhaps surprisingly, it's far from a paradigm of how things should be done.

## Zoopla

Breathing hard down the neck of Rightmove, Zoopla is the nation's second favourite property search service – if market share is taken into account, that is. However, Zoopla has been gaining significant ground on its competitor, not least with this app that offers a significantly better feature set compared to Rightmove's effort.

On a phone and tablet, the app opens to a tappable menu headed with the usual sale and rent options. Unique entries in the menu include options to search solely for new homes and also commercial properties. Underneath this are current prices and sold prices options. As you might guess, these let you see the average prices of properties in the area, both on sale right now as well as historically. The data presented is detailed, showing growth over particular time periods, and obviously very useful for working out the best time to buy or sell.

This alone should make Zoopla a standard inclusion on your tablet or phone, but most people will be using the app mainly to search for places to live, which can be done via your GPS location, if your device hardware supports it, or via a typed place name or postcode.



▲ Zoopla not only lets you search for properties but also lets you research the area, including historical property prices

On our test phone, results appeared in a grid list, with two side by side, while on a tablet in landscape mode, the grid was widened to show three properties. In each case, the price was listed beneath the thumbnail image of each property, along with key features (number of bedrooms, etc.) and also the date the property was first listed.

Tapping any thumbnail opens it for viewing, and again the tablet and phone take the same approach of showing large images with the description beneath. This looks a little messy on a tablet screen, however, with the description text spreading across the width of the screen in landscape mode. The description can be expanded by tapping the down arrow beneath it, and a terrific feature is the statistical info provided by Zoopla, such as how many times the property has been viewed and (if it's available) data about when the property was last sold and its price at that point. Links to viewing stats for the area are also shown, allowing you to view the ratio of rented to owned properties, for example.

“ Breathing hard down the neck of Rightmove, Zoopla is the nation's second favourite property search service ”

Beneath the description are options to view floorplans, EPCs and to view the location on a map. You can also add your own note.

Search filtering allows you to define max/min prices and max/min number of bedrooms, as well as define a wider search radius. Perhaps most usefully, you can also specify keywords, such as 'conservatory', if you're looking for a particular property feature that you anticipate will appear within the property description.

Zoopla is the best property search app we've come across and – on the basis of app features, if nothing else – we're left wondering why exactly Rightmove is considered the market leader.

## Property Finder UK

This is a curious little app that's not directly linked to any property search service. Instead it aims to let you search several third-party sites simultaneously. Its other neat trick is to show its results not as a list but as pins on a Google map.

Designed to work on phones (on a tablet, the user interface is stretched to the point of ugliness), the app opens to a search screen



where you can choose whether to search for properties that are for sale, available to rent or that are part of shared properties. Beneath this you can filter properties by whether they're flats or houses, then set the number of bedrooms (min/max) and the price range (again as min/max values). Finally, you can set when the properties were added, but that's all. There are no other filtering options, so if you're looking for a bungalow or a property with a utility room, then you're going to have to look through each of the results.

While choosing your search criteria, you'll notice the user interface looks a little rough, with fuzzy text and search boxes. Even the app icon looks like it was knocked together in Microsoft Paint, and it's fair to say this isn't an app that aims to be a paragon of design. But does this really matter if the app does the job it's supposed to?

Map view looks just about acceptable, however, and is certainly functional. Tapping near the bottom of the screen away from any of the pins shows a zoom control. Additionally, the usual pinch-expand gesture works fine to zoom in and out.

“ We're not sure what to make of Hibica. There are just too many rough edges ”

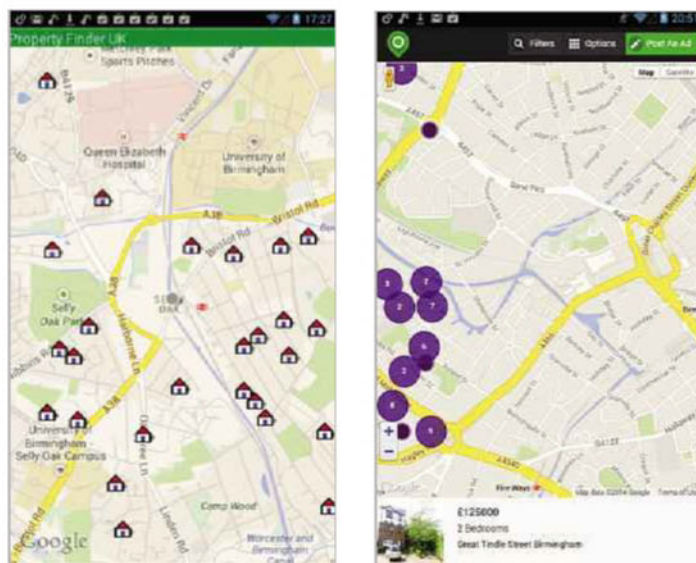
Tapping any of the pins that represent properties opens a translucent window at the top of the screen, showing a thumbnail image of the property, along with headline details (price, number of bedrooms) and also details of which site it was listed at – and it's here that Property Finder UK is a little different compared to other apps. Tap on the More Details part of the window, and you'll then visit the website where that property is listed, although still within the Property Finder UK app. This means that the number of details you see is entirely dependent on the nature of the agency or property search service concerned. The developer behind Property Finder UK says it searches Zoopla, Homes & Property, Gumtree and “many other real estate websites”, but in our limited tests looking at districts of London, Birmingham and Manchester, the vast majority of properties came from the needaproperty.com website.

Property Finder UK's map mode aside, there isn't much to write home about. We can't be certain if the properties it lists are also found in the other apps, but we'd be surprised if that wasn't the case. Take a look at Property Finder UK if you wish, but we simply can't consider it an essential tool.

## Hibica

Being clever so-and-sos, we asked Google to translate the name of this app. It told us that Hibica means ‘wild’ in Latin. That makes some sense when the defining feature of this app is discussed: alongside raiding Zoopla's database for its property searches (as do a lot of other property apps), Hibica lets users upload details of their own properties for sale or renting. Estate agents may well be wild should Hibica prove successful.

Let's look at the core search functionality first, however. On both tablet and phone, the app opens to a search field, alongside which are Buy and Rent buttons. You're invited to enter a town or postcode, but quite a few towns we entered produced a No Results error, including Selly Oak in Birmingham, Chorlton-cum-Hardy in Manchester and Littlehampton on the south coast. Larger areas,



▲ Key to Property Finder UK is the map view that represents available properties as pins, and tapping any shows quick details

and places in London, met with better success. Postcodes aren't the answer: some postcodes are recognised, while others again produce the same No Results error message.

Tapping the More Options button lets you further define a maximum and minimum price, as well as maximum and minimum number of bedrooms, but nothing else. There's no keyword filtering, for example.

Results are shown as pins on a map, but once again we found ourselves unduly baffled, because each pin had a number: 4, or 2, or 5 and so on, and into the double digits when there are a lot of pins. Logic suggests the number might indicate the number of bedrooms, the price bracket, the distance from the where we attempted to search, the amount of time the place has been listed or perhaps several properties under one pin. None of this proved to be the case. There's no help file to explain either, so we remain perplexed.

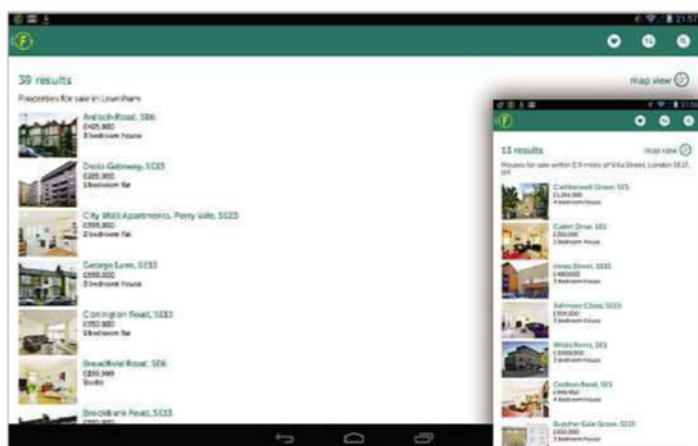
On a phone, tapping any of the results shows a thumbnail image below, along with headline details such as the price. Tapping this thumbnail then opens the property details in full screen mode. On a tablet, the results are listed at the left instead, and tapping one of the pins scrolls the list so the result is at the top. Tapping that entry then opens it for viewing.

It's back to being perplexed when viewing a property description, though, because as far as we could tell, there's only one photo listed for each property. Swipe left or right on the picture and the same picture slides into view. Weird. Remember that the data comes from Zoopla, which typically shows many images.

And try as we did, we couldn't find a single property listed by an individual. All appeared to be listed by estate agents. Adding a new property is easy, however, and can be done within the app by tapping the Post An Ad button when viewing results or by tapping the menu icon and selecting the option. Put simply, all you need do is provide the same details you might expect to see on a professional listing, such as the location, description and price. The app provides access to price data, so you can work out the best to expect. There's no charge for the service.

We're not sure what to make of Hibica. There are just too many rough edges. That we couldn't find any privately listed properties is a surprise and made us realise the estate agent monopoly might not be down to estate agents but rather to the public at large.





▲ Foxtons decided to create its own app, and the result is surprisingly powerful, although limited to London and Surrey

## Foxtons

There's nothing like doing it yourself, as London/Surrey-based estate agent Foxton clearly believed when it created its very own app. And while it's tempting to be cynical, we have to admit that it might have created something other apps can learn from.

The app opens on a search screen on both the iPad and iPhone, where you can type a postcode, street or area. Of course, these have to be London or Surrey-based. Alternatively, you can simply choose to be shown properties near your location using GPS (assuming your device is equipped, of course), and a nice little feature is the ability to define your area using a map; a circle is displayed and you can zoom the map in and out via pinch-expand and drag it around, until the circle broadly encompasses the area in which you'd like to search. Only interested in properties around Burgess Park near Camberwell? Well, now you can limit your search to just that area.

Further filters on the search screen let you choose a property type (house, flat, houseboat, land or garage/parking), min/max prices and the min/max numbers of bedrooms. As for lettings, you can uniquely choose between long lets and short lets.

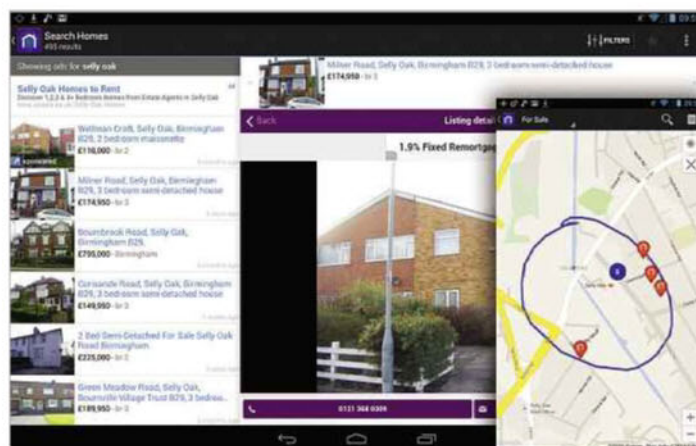
On both phones and tablets, the results are shown in a single column list, complete with thumbnail images, prices and the number of bedrooms. Tap on an entry, and details are shown full screen, headed by a photograph. On a tablet, this photograph fills the screen, forcing the user to scroll up to see the details. Bearing in mind this doesn't happen on the phone, we're not sure if it's a bug or a feature, but we found ourselves liking such a bold approach. After all, the photographs are pretty much all that attracts us to a property in the early stages.

In addition to photo galleries, most properties feature a virtual tour, which is essentially a 360° panorama of one of the rooms (usually the main reception room). On a tablet in landscape mode, you can view this in one fell swoop, or tap the play button to fill the screen and then drag left or right to scroll to rotate in the virtual space. On a phone held in portrait mode, rotating is the only way to see all the image.

It's difficult to find complaints with the app, but one irritation is that tapping the back button at the top left when viewing details of a property drops you right back to the search screen and not back to the list of search results. It's best to simply ignore that button and use the device's hardware back button instead, which works as you might expect.

## Trovit Homes

Trovit is a 'vertical search engine', which means that it doesn't focus on the entire web. Instead, Trovit's speciality is classified ads for things like jobs, cars and properties, and the Trovit Homes app is focused



▲ Trovit is a vertical search engine that specialises in classified ads for property, and it includes a neat map search mode

solely on the latter. The name of the service comes not from Latin this time but from Esperanto, where it means 'found'.

On starting the app, you're invited to choose where in the world you live, so the app knows that if you type 'Birmingham', you mean the West Midlands and not Alabama.

“ While Trovit might not be the first port of call when searching for properties, it's useful enough ”

A search field appears next, which will appear each time the app starts, and you can type a natural language query: '2 bedroom bungalow in Selly Oak', for example. Alternatively, you can click on the map button, at which point your location will be located via GPS (or you can type it into a search field at the top). You can then draw an area in which you'd like to search, which is an ingenious approach, because most of us define area not by arbitrary town or city borders but by proximity to things we want to be close to, such as a school or the home of a relative. It's even possible to limit your search to a particular street or road by drawing a line down it.

Once you've drawn an area, properties will appear as pins, and tapping these will show a pop-up balloon with a thumbnail image and headline details. Tapping the balloon will then open the property for viewing.

As an alternative to browsing through map pins, you can tap the menu icon at the top right, which switches to showing properties in list form. This is the same list you'll see should you type a query on the search screen.

It's when tapping a result that you'll learn how Trovit differs from other property apps. It's a search engine and not a properties database. Results are taken from the web, so when you click a search result, you're taken to the web page of that particular estate agent (or even the Rightmove or Zoopla's websites). This happens in the app, and you're not switched out to your default browser. What you see in terms of details and pictures depends entirely on how diligent the estate agent is.

That aside, while Trovit might not be the first port of call when searching for properties, it's useful enough to be considered a powerful component of anybody's house hunting toolkit. [mm](#)



# PC Tip Of The Week

## Create A Ram Drive

Fancy making the fastest hard drive in the world? Read on...

**W**hat is a RAM drive? Well, in the easiest possible way to explain, a RAM drive is simply an amount of your computer's RAM allocated to become a recognised hard drive as opposed to being RAM that the system can access as normal.

The advantages of creating a RAM drive mainly stem from the fact that your computer memory is significantly faster than any hard drive or SSD available today. So by creating a RAM drive with spare RAM, you are essentially creating the world's fastest hard drive.

### What You Need

We're going to assume you have at least 8GB of RAM installed on your system, you have a 64-bit operating system and you have a copy of the Freeware version of DataRAM's RAMDisk ([goo.gl/CYn9M](http://goo.gl/CYn9M)).

### Installation

Although there are a few RAM disk enabling programs on the market, DataRAM RAMDisk is one of the better versions, primarily because it's easy to use and configure and because it's free and supports RAM drives up to 4GB in size.

Start by installing the RAMDisk software (the defaults will suffice unless you have something specific to your system), and then launch the RAMDisk Configuration utility once it's on your system.

Next, in the Settings tab, set the size of the RAM drive you want in megabytes, and tick the radio button for 'Unformatted Partition'. Remember this is your actual memory that's going to be used; once the RAM drive is created that memory will no longer be available to the system.

When you've set the size of the RAM drive and selected the formatting type, click on the 'Load/Save' tab and tick the 'Load Disk Image at Startup'. This will store the contents and settings of your RAM drive to a file on your actual hard drive so you can re-access it whenever you boot the RAM drive up again. Also, tick the 'Save Disk Image at Shutdown', so the software can automatically save the changes to your RAM drive image file when you shut down your PC.

# Hard Drive      SSD      RAM Disk

Sequential Read (MB/s)	Sequential Write (MB/s)	Random Read (IOPS)	Random Write (IOPS)	4K Sequential Read (MB/s)	4K Sequential Write (MB/s)	4K Random Read (IOPS)	4K Random Write (IOPS)
112.3	109.3	41.69	48.05	0.543	0.693	1.004	0.698

Sequential Read (MB/s)	Sequential Write (MB/s)	Random Read (IOPS)	Random Write (IOPS)	4K Sequential Read (MB/s)	4K Sequential Write (MB/s)	4K Random Read (IOPS)	4K Random Write (IOPS)
477.9	235.7	402.7	248.9	30.49	64.67	200.3	233.2

Sequential Read (MB/s)	Sequential Write (MB/s)	Random Read (IOPS)	Random Write (IOPS)	4K Sequential Read (MB/s)	4K Sequential Write (MB/s)	4K Random Read (IOPS)	4K Random Write (IOPS)
5766	7760	5649	7172	657.0	554.8	631.9	544.7

▲ The speed scores don't lie: RAM drives are super fast

Finally, if you want your newly created RAM drive to appear every time you boot into Windows, click on the 'Options' tab and untick the last entry in the list 'Do not start RAMDisk when Windows starts'.

If everything is ready to go, click on the 'Start RAMDisk' button, and after a few seconds you should receive a driver installation notification message appear. Click on Install, followed by the 'Format Disk' window that appears after, and choose NTFS and include a drive label.

### Is It Fast, Though?

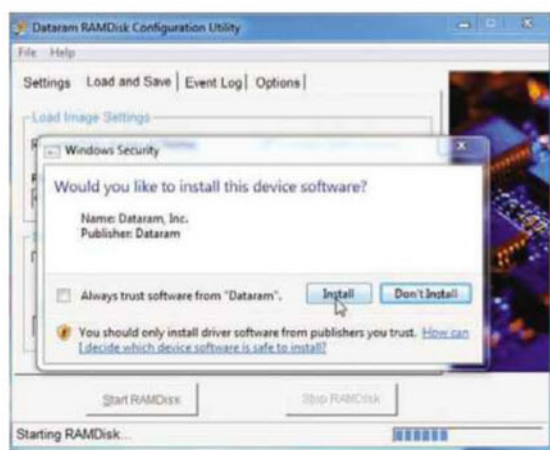
All being well, you should now have access to another drive from Windows Explorer, which will be a maximum of 4GB. What you can do now is copy over any program folders or install any software up to the limit of the drive size and enjoy the instantaneous launching of the program in question.

To answer the question: is it fast? In a word, yes, it is. As you can see from the screen-shots, a sequential read speed of over 5700MB/s and writes of over 7700MB/s are well and truly worth gawping at.

Our test of *Crysis*, which only just fit in the 4GB after some clever snipping of unnecessary files, was pretty good, although a decent graphics card still helps. However, when we used the drive to store a VirtualBox image we were well impressed with Linux Mint 15 booting in just a few seconds and an image of Windows XP powering up to the desktop in just under eight seconds.



▲ The max RAM drive setting for the free version is 4GB or 4096MB



▲ Once initialised, the RAM disk becomes a newly inserted hard drive



# The Things That Frustrate Us About... Instagram

It's the photo sharing app that changed the way we look at pictures, but it's still downright annoying sometimes

**F**or such a simple idea, Instagram has been massively popular. It's a social networking app where people share photos, one at a time, and... that's pretty much it. Since it launched, though, it's racked up more than 20 million users, two billion photos and sold to Facebook for a billion dollars. It's hard to argue with those kinds of numbers: Instagram is pretty amazing.

But like everything, it has its downsides, and that gives us plenty of reasons to have a moan about it. Here are three of the major frustrations Instagram users face...

## Ugh! Limited Photo Editing Tools

Part of Instagram's appeal is its instantly recognisable photo format: it forces users to crop their photos into squares, like Polaroid images, and it offers a set of filters that can be applied to images to enhance their colours or hide flaws. In years to come, cultural critics will look back and wonder why all digital photos from the 2010s were trying to look like decaying relics from the 1970s, and that's at least partly down to Instagram's filter tools.

But though Instagram offers loads of ways to mess with your photos, none of them are very exact. The filters are blunt tools, and the tilt shift is even worse, with no facility to adjust which parts of the photo it applies to. More tools have been added recently, letting you tweak contrast and saturation and so on, but it's still pretty basic, and it doesn't really let you get the best out of your pictures.

**Fix it:** It depends how much you care about showing off your photo editing skills, but if it really bothers you, the best alternative is to download another photo editing app. Then you can edit your pictures first and upload them into Instagram already looking their best. That does rather take away from the spontaneity of the program, though.

## Nrgh! No Comment Notifications

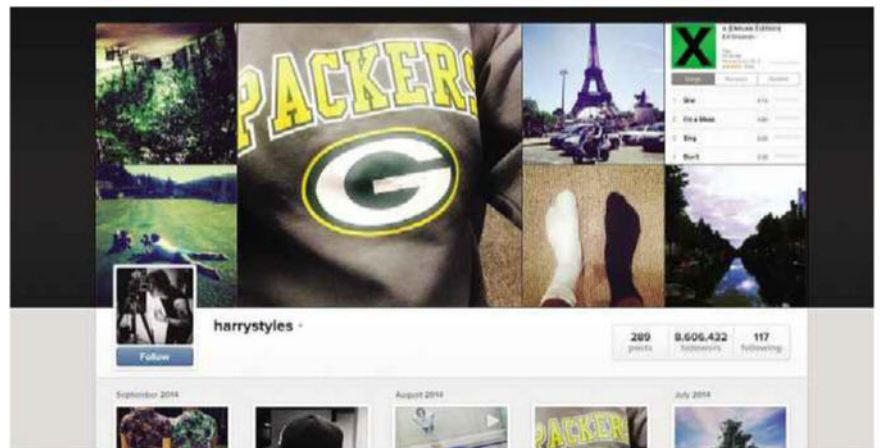
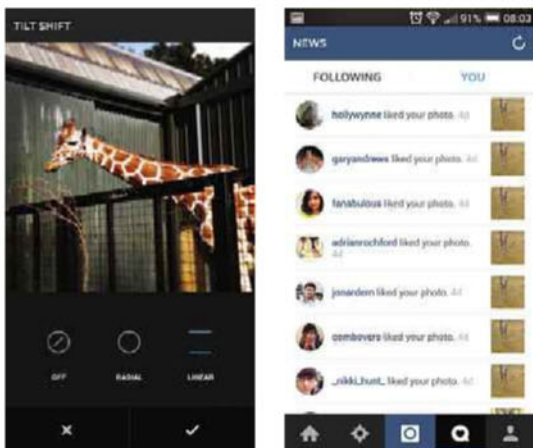
Instagram is meant to be a social network, but the interactions it allows aren't actually very good. You can like someone's photo, and they'll get notified, but if you comment and they reply, it's likely you won't find out about it – which makes conversations a bit tricky.

**Fix it:** The only way to be sure someone will be notified of your comment is to tag their username when you're writing a comment, as if you were on Twitter. That's okay; it's just a bit annoying, and it's easy to forget. You can't reply to a specific comment, though, and there are no comment threads. Bah.

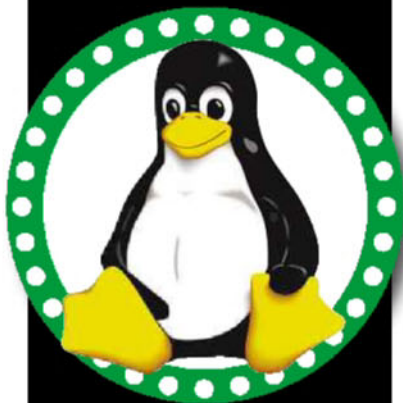
## Grrr! The Web Interface Sucks

Instagram is designed for use on mobile devices, but there's a web interface, where you can look at photos, likes and comments. But that's all you can do. There's no way of uploading photos from your PC, so if you did want to edit a photo in a proper editing suite before sharing it, you'd have to transfer it to your PC, edit it and then send it back to your mobile for uploading. And if you've taken a photo on a camera or a device that can't run the Instagram app, same deal: you'll have to find a way to transfer it to a device that can.

**Fix it:** You can't. It's partly intentional; Instagram photos are meant to be off the cuff, sharing your life as you live it, but... well, call me a perfectionist, but sometimes that's not good enough.







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

## Scribus 1.4.4 - Better DTP Than Ever Before?

**Scribus enters a new phase of desktop publishing**

**S**cribus has been the stable backbone of open-source desktop publishing software for quite some time now. Despite the more recent additions in the form of LibreOffice and so on that cropped up over the years, there has been a close-knit community of developers, testers and users who have helped hold the Scribus flag high and kept it going through the ever changing software climate.

The newest release, Scribus 1.4.4 is, to all intents and purposes, purely a bug fixing solution. However, there are some notable new features included that signify a potential opening and turning point for this greatly matured program.

First off, though, the bug fixing team has been hard at work filling in the gaps as found and submitted by the community. The user interface has been spruced up slightly, and problems regarding multiple image importing, undo and redo (at times undo can crash Scribus after changing the page arrangement) and ghost entries in the Outline window have all been resolved and closed off.

Other fixes such as the Autoquote script have been rewritten and further enhanced to provide more options, and the Barcode plug-in has been updated to better reflect some of the new features that the team have implemented since the last 1.4.3 update in July last year.

Of the new features, the likes of PDF/X-1a export, various scripts, better support for Windows 8, a new colour palette for professional geographers and improved page borders that now act as guide lines, make for a more rounded and suitably enhanced experience for the current Scribus users. However, one of the more significant additions is the implementation of the latest version of the CMYK colour set, as created and recommended by the Newspaper Association of America. This means, of course, that Scribus is the only DTP software that now provides the latest version of the official NAA colour set, a credit that's certainly going to improve its prospects and hopefully increase the overall user base.

Scribus is maturing, but for most home users, the

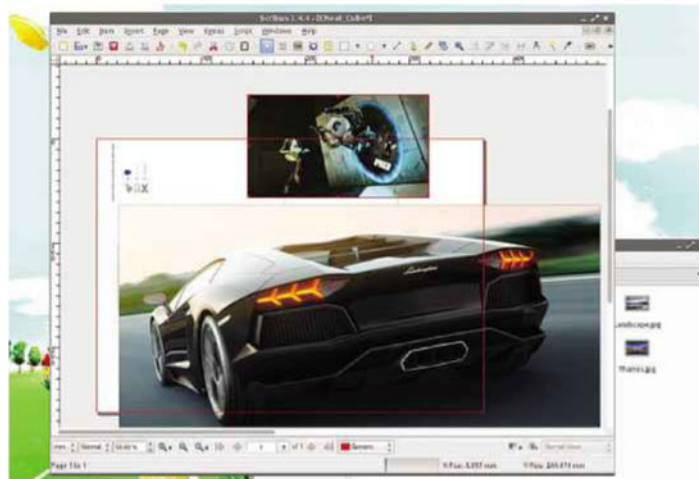
official NAA colour set isn't something you would normally get excited about, unless you have a specific need. What the home user receives through the version 1.4.4 update is a far more stable program that's committed to improving itself.

There have been some problems in the past where trivial elements have caused frequent crashes. Spell checking, XPS import, importing .ODT files and even changing preferences have triggered a fatal crash. Thankfully, though, version 1.4.4 has managed to plug the leaks and, from what we can see, has also managed to improve the performance of the program.

The load times and interface certainly feels a lot snappier than the previous version, and moving images around the page doesn't feel like you're wading through treacle or waiting for the graphics of the ZX Spectrum version of *The Hobbit* to load line by line.

We did like the new features, and the fixed bugs certainly made for a better and less frustrating experience than before. But even with these new additions, is it enough to catapult Scribus from the back of the line to the forefront in this world of more office-led programs?

Admittedly, we've not used Scribus for some time, as other DTP software has taken over. With the new found stability and improvements in performance and features, though, we think Scribus could well be entering a new phase of appreciation among home, casual and professional users.



**< Scribus 1.4.4 fixes many issues and adds some neat new features**



# New Kickstarter Joy

Sven Harvey's found about a new Kickstarter of major interest

**Y**ou may recall that System 3 released *Putty Squad* for the Amiga 1200 last Christmas as a free download, following its release on the PS4 (and it's since been released on the PS Vita, PS3, Xbox 360, 3DS and the PC). Well, a new Amiga-related Kickstarter project is to offer actual physical copies of the game in the authentic packaging (including actual proper Amiga 1200 disks as it was originally going to be used for the release in 1994) as one of the pledge rewards.

The Kickstarter itself is for Bitmap Books' follow-up to its popular C64 book *Kickstarter* and takes the form of "Commodore Amiga: A Visual Compendium". Bitmap Books specialises in high-end lithographically produced books featuring computer and videogames. As with the Commodore 64 book, the new volume will focus, as you would expect from the title, on the visual aspects of the software for the classic Amiga platform, including the cream of the machine's pixel art, game maps and box art. It's set to feature the Amiga Demoscene as well as the best software houses on the Amiga (and on a personal level, I hope there's to be at least a sizeable nod to *Deluxe Paint*, *Personal Paint*, *Photogenics*, *Reflections* and *Lightwave*, among others).

Starting on 13th October, the Kickstarter campaign runs for 30 days, and the book is expected to be Bitmap Books' biggest project yet featuring a number of as yet unveiled contributors, who should create some excitement among fans of the Commodore era of Amiga computing.

100 copies of the physical version of *Putty Squad* are scheduled to be produced as pledge rewards for the campaign, with 50 of them being signed by the original development team. Produced in association with System 3 itself, and thanks to the game being finished off by the English Amiga Board member 'Galahad' for the release last Christmas, the game packaging will match as closely as possible what would have been if the game had been released as scheduled in 1994, when it even got as far as being reviewed very positively by many Amiga magazines. This is an exclusive deal, and no further physical copies of the

game are expected to ever be produced after these 100.

Keep an eye on [www.bitmapbooks.co.uk](http://www.bitmapbooks.co.uk) for the Kickstarter launch and link!

Kickstarter  
launches on  
13/10/14



BITMAP BOOKS KICKSTARTER

## Picking The Right A1200

In the last Amiga Mart, I suggested that the best place to start with a real classic Amiga would be an Amiga 1200 – very specifically the Commodore released Amiga 1200, rather than an EsCom one (which have weird adjusted PC floppy drives, which trip up some trackloaded games).

Now you may not be aware that the A1200 went through multiple motherboard revisions. Of all of the versions of the motherboard from 1A to 2B, it's generally believed that the best is the 1D1 motherboard, as it has built-in workarounds for the odd bug in the chipset. Later revisions didn't have these as they were supposed to have later, timing-fixed co-pros... but often shipped with the older ones.

Thus grabbing a 1D1-based machine is probably your best bet if you do, indeed, intend to upgrade the machine with a processor board (accelerator/turbo card) and other ingenious devices.

The good news is that the vast majority of the Amiga 1200s that were assembled in the UK (in Commodore UK's factory in Scotland) used just that motherboard – so a great rule of thumb is to try to get a Commodore Amiga 1200 with 'Made In The UK' on the underside silver badge.

These British assembled Amiga 1200s did have a tendency to turn up in Desktop Dynamite packs with a good array of productivity software (shame about the two games, mind). That may well be the best place to start. More in two weeks!



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

## The One For Everyone Else

**Ian McGurran takes a look at Android One, the smartphone for everyone**

In the recent weeks, Apple has launched its best smartphone and arguably one of the best smartphones yet made. Superb screen they say, fantastic camera they claim, gorgeous design, and there are no doubt many more superlatives to come. But one area that the high praise doesn't quite reach is the price: £539 for the base iPhone 6 is still recognised as being an awful lot of money. In these somewhat tighter times, very few will want to stump up that kind of money. That's here in what is referred to as the First World, so what chance do those in the third world have of being able to embrace this technology? In times past, the featurephone has ruled over those continents where the average wage can be 41p compared to the UK's £6 (after tax), but things are beginning to change.

Google has always designed Android as an operating system that is available to any user, on nearly any device, anywhere in the world. As close to a borderless OS as possible. While we in the more affluent parts of the world have had cheap and powerful Android handsets for a couple of years now, even these devices have not been cheap enough for the developing world. Coupled with low proliferation of mobile data, smartphones have struggled. Now, with the economies of scale for mobile production such that a powerful enough device could now be affordable in these countries, Google has started a scheme for Android to gain a foothold: Android One.

Essentially, Android One is not a single device but rather a set of specifications that

a device must fit in order to receive the Google seal of Android One approval. If this sounds familiar, you'd be right, as it's not dissimilar to how Microsoft control the licensing of Windows Phone. All devices must have a screen of at least 4.5", a quad-core Mediatek CPU, dual SIM slots, micro-SD expansion, Android 4.4 and a low retail cost. Many of you will look at that and would want precisely that for the UK too, and who's to say we won't? For now, though, the main licensees are those in countries such as India, Pakistan and the rest of the Indian subcontinent.

In these countries, computer use and the internet hasn't had the same explosion as in the richer parts of the world, and it's no surprise. PCs are big and expensive to own and run, and the wired telephony system is even less built for data than ours. Smartphones, while still not so cheap, may help change this. Supplying GPRS, 3G data or even wi-fi to an entire village is much cheaper than wiring it into every home. Phones are much smaller and can be used in cramped and less than ideal conditions, and they're much more personal. Google is aware of the lack of data plans like we have in the UK, offering additional features such as offline videos for YouTube.

Of course, there are the flip sides to schemes such as these. For its part, Google isn't doing this for entirely philanthropic purposes. Markets such as

India, Pakistan and China equate to billions of new customers, and if it can get a device that's connected to its wealth of paid services into the hands of these new customers, then profit will surely follow. Google may argue that this is more of a side-effect and isn't its main reason for the scheme, but it's sure to enjoy reaping the rewards all the same.

The other concern is that the rulers of some countries benefit from having their subjects less technically literate, less connected and therefore less organised. Many have been unnerved by the events of the Arab Spring and Ukraine, and understandably see smartphones and all that they entail as a Pandora's box that cannot be shut once opened. Those wishing to bring their countries out of an autocratic darkness and into a democratic light may well feel these devices can bring their people together and move forward. But for those wishing to cling to power, they will likely see them as a grave threat.

So what can this mean to citizens of developing countries? Just the act of connecting people to the internet alone may change the lives of many. It will allow them to find their own information, to educate themselves and to help make their own decisions. Android One is a great scheme to facilitate this, and hopefully it can give the poorer parts of the world the luxury of information that we in the richer parts have had for some time now.

android one



# Colour Clash

Shaun rounds up some of the latest news for the UK's favourite computer brand (that's Sinclair, by the way)

The former professional 8-bit software developer that is James Bagley (also known as Jim Bagley), who is noted for his work on the Sinclair ZX Spectrum games *World Class Leaderboard* (1987, US Gold), *Cabal* and *Midnight Resistance* (1989 and 1990 respectively, Ocean Software) and others, is back programming the rubber-keyed monolith and has released a playable demo called *AttrBike* to whet your appetite.

In terms of gameplay, it's rather simple, as you take on five other computer-controlled opponents in a last-man-standing type affair, which is a similar idea to the movie tie-in arcade game *Tron* or the 'Snake' affair that appeared on many classic Nokia mobile phones during the late 1990s and early 2000s.

*AttrBike* is played as a 2D game; as each competitor travels in the playfield, a trail is left that is lethal to any surviving players, so fast reactions and sharp turning is required, with movements only allowed horizontally or vertically.

What separates this from other games of its type for the old Speccy (other than the five opponents) is that it uses a technique called Rainbow Graphics to allow more than the usual two colours per attribute cell. As I understand it, this trick updates the colour attribute RAM on the screen by closely following the raster beam on the visual display unit for each update. As long as the code is carefully timed, it will be able to display more than two colours per character cell. But because this is quite

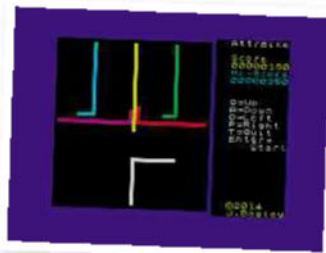
intensive for the Speccy's 3.5MHz processor, the visible screen area is essentially reduced somewhat (or at least the segment that can have any action is).

The current public release of *AttrBike* contains two elements, one allowing you to test the Rainbow Graphics effect with a simple paint program and the other being the playable bit as described above. To download this, head over to the World of Spectrum forums at [tinyurl.com/AttrBike-ZX](http://tinyurl.com/AttrBike-ZX), and to find out some more about the ZX Speccy games that Jim was involved in, see [tinyurl.com/James-Bagley-ZX](http://tinyurl.com/James-Bagley-ZX).

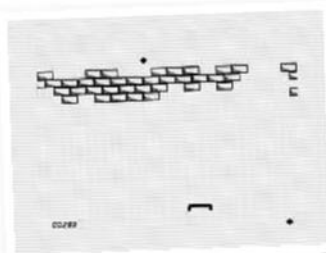
## Breaking Through

*Thro' The Wall* is a simple *Breakout* clone for the 16K ZX Spectrum that was created by Psion Software and released by Sinclair Research in 1982, when it was bundled with the rubber-keyed version of the machine on the Horizons pack. As I recall, it was a mix of BASIC and machine code that was a fairly competent version of Atari's classic 1976 arcade game, which later appeared on the Atari 2600 VCS games console.

Sinclair ZX81 owners now have their own version of *Thro' The Wall*, or four different variants, each of which has been created with the z88 development kit (z88dk as it is known), which allows one to create software for the ZX81 and other Z80-powered machines using the popular language C, which in turn gives the convenience of a high-level language, with much of the power of assembly or machine code.



▲ Test your reactions with Jim Bagley's *AttrBike*



▲ Psion's *Thro' The Wall* has been ported to the 16K Sinclair ZX81

Like the Spectrum original, this ZX81 version, also called *Thro' The Wall*, is as playable as a *Breakout* clone needs to be; move your bat at the bottom of the screen left and right to bounce the ball against the wall above. Each brick that is hit with the ball is removed from the play area.

The game requires a wobbly 16K RAM pack to run, with versions being available that utilise some of the high-resolution solutions available for the monochrome beast, such as the WRX. Each variant of this conversion is available from the Sinclair ZX World forums at [tinyurl.com/Thro-The-Wall-ZX81](http://tinyurl.com/Thro-The-Wall-ZX81), so if you want some simple brick-smashing action then this is the place to be: [assembloids-c64-2013.html](http://assembloids-c64-2013.html).



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

## From Hell

Dead Island developer Techland head off into a *Skyrim*-like fantasy realm for the zombie RPG brawler, *Hellraid*

This week, Ryan looks at Techland's forthcoming zombie games *Dying Light* and *Hellraid*, and checks out the multiplayer mode in EA's *Battlefield Hardline*...

### Plug & Play

Given the success Techland had with *Dead Island* (estimated sales to date: five million) and its semi-sequel *Dead Island: Riptide*, you'd probably assume the Polish developer would automatically be behind the forthcoming follow-up, *Dead Island 2*. Instead, publisher Deep Silver made the surprise announcement at E3 back in the summer that the task of making the zombie-bashing sequel had been passed over to Yager, the German studio most famous for the moody shooter *Spec Ops: The Line*.

Techland recently explained to Eurogamer that Deep Silver had ownership of the *Dead Island* IP right from its inception in 2011, though was understandably vague about why the publisher had passed the development duties on to someone else. "There's always tension between the publisher and developer," Techland game designer Maciej Binkowski said.

While *Dead Island* might be out of Techland's hands, the studio still has a couple of intriguing irons in the fire. Unsurprisingly, perhaps, both of its forthcoming projects are zombie-themed. The first of them is *Dying Light*, the survival horror action game announced last spring. Set in what appears to be a South

American favella, it's about as close as we're likely to get to a 'Mirror's Edge: Zombie Edition', with the player running, jumping and sliding along rooftops and through narrow streets to avoid the undead.

The other game Techland have in store for us is similarly full-blooded, but less hectic in terms of pace. Called *Hellraid*, it's a project that began life as a mode for *Dead Island* before spinning out into a game in its own right. At first glance, it looks for all the world like *Skyrim*, with a first-person view out on a craggy, fantasy-themed open world, and a sword gripped firmly in the player's right hand.

Techland has described *Hellraid* as the spiritual successor to games like *Hexen* and *Witchaven*, and it's certainly possible to see the influence in the game's combat. In a 20-minute demonstration of *Hellraid*'s alpha build ([youtu.be/0f92GtvFh9E](https://youtu.be/0f92GtvFh9E)), Techland showed off what the story mode's first level looks like. Among the ruins of an old castle, the undead lie in wait; to fend off these skeletal, Harryhausen-esque ghouls, the player has weapons such as a sword or a mace at their disposal, and magical items, such as a freeze staff (you can probably guess what that does from the name alone).

The process of battering the undead with swords and blasts of icy magic looks like gory fun, and there some big boss battles to break things up, too; Techland's demonstration ends with a violent encounter with a huge minotaur wielding an axe. *Hellraid* doesn't look like the most sophisticated game we'll play over the next few months, but it does, at the very least, look as though it'll provide a few solid hours of fantasy brawling.

*Dying Light* is out on the 30 January 2015, while *Hellraid* will arrive on Steam Early Access this autumn.

### Online

Visceral is going all out to shake things up in the *Battlefield* franchise with the forthcoming *Hardline*. A game we've looked at before in these pages, the new title puts aside the military theme of its predecessors and goes for a city-based cops-and-robbers approach. It'll be the first-person shooter version of Michael Mann's classic thriller, *Heat*.

More recently, the game faced a bit of a rough patch, with a June beta test receiving a somewhat downbeat response. That cops-and-robbers theme, it seemed, was somewhat skin deep, with the police running around blowing up criminals





▲ Remember the old coin-op, *Chase HQ*? *Battlefield Hardline*'s multiplayer mode looks a bit like that, with cops engaging in high-speed pursuits with fleeing criminals

with grenade launchers and jumping out of helicopters with parachutes strapped to their backs. The consensus was that *Hardline* played like a re-skinned *Battlefield 4* – a bit of a disappointment, given how promising such a game could be.

As a result, Visceral (and co-developer EA DICE) announced in July that it was pushing *Hardline*'s release back from October this year to 2015 in order to "make the game better."

"The more we thought about these ideas," DICE's vice president said, "the more we had to get them in the game."

Late September saw Visceral unveil a new video ([youtu.be/zOABuPJtGmg](http://youtu.be/zOABuPJtGmg)) of a multiplayer mode called Hotwire, that looks absolutely bonkers. Essentially an extended car chase, it sees criminals and the police leaning out of windows and shooting at each other in time-honoured, action thriller style. How it'll actually play on real-world servers is anyone's guess at this stage (we can imagine the flow of an otherwise fun chase being ruined if players can stand on the sidelines and take cars out with RPGs) but in theory, it all looks highly promising.

What we're waiting to see is how much Visceral change the balance of the Heist and Blood Money modes. One of the major criticisms in the beta was that both the police and the criminals had the exact same weapons and equipment. Wouldn't an asymmetrical approach, where the cops are more numerous but less well armed than the criminals, make the multiplayer action more fresh and interesting? At the very least, it would differentiate *Hardline*'s online modes from *Battlefield 4*'s.

*Battlefield Hardline* is now scheduled for launch in March 2015. Let's hope Visceral use the extra time to make the game really deliver on its promise.

## Incoming

Fans of *World Of Warcraft* don't have much longer to wait until the next slab of content, called *Warlords Of Draenor*. As well as adding a new, orc-heavy quest, *Warlords* will also raise the level cap from 90 to 100, and phase in new character models with higher polygon counts.

*World Of Warcraft* may be a decade old, and its user base far from the 11m of its peak, but Blizzard remains committed to its biggest-selling game. Given that it still boasts around 6.8m subscribers, this isn't all that surprising. In fact, far from winding *Warcraft* down in the coming years, Blizzard's pledged to reduce the gap between expansions, and has even grown its staff count from 150 to 220.

"We are always trying to simplify the game while at the same time add new things so that the total complexity does not get completely out of control," the game's lead designer told MCV. "In the long term, we are now positioned to release expansions more frequently."

Given that expansions often see old players return to *Warcraft* in significant numbers, the promise of more regular content updates could see the MMO retain its existing user base for some time to come.

*Warlords Of Draenor* is out on the 13th November.



▲ Blizzard has grown its *World Of Warcraft* team from 150 to 220 in order to create regular expansions to its world-dominating MMORPG. *Warlords Of Draenor* is out in November



# AD INDEX

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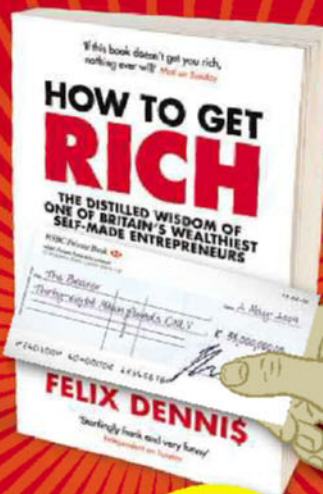
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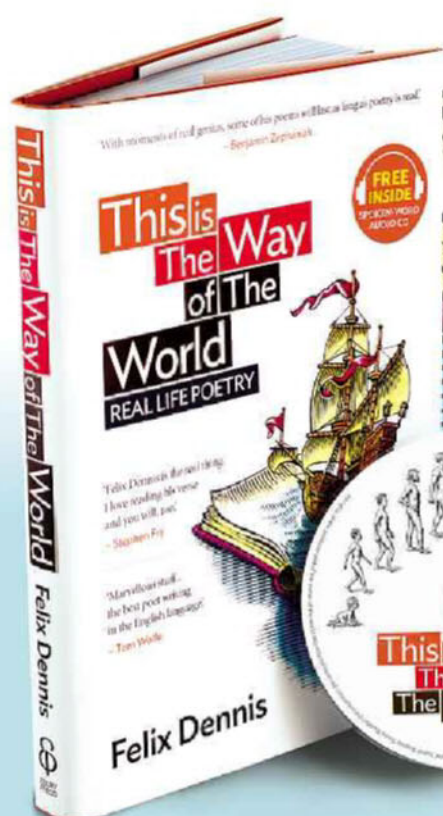
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Novatech Bundle Gigabyte GA-M61PME-S2P AM/ board. AMD2 Quad Core 630 processor 2.8ghz. 2x2gb ddr2 800mhz memory. Black atx case. 400w psu. Good working condition. £120 ono.

Tel: (01964) 622867 Email: [ian.macklin@mypostoffice.co.uk](mailto:ian.macklin@mypostoffice.co.uk)

Custom PC. AMD FX-4100, 8Gb Ram, 500Gb HD, DVD Writer, AMD HD-6750 GPU, Keyboard & Mouse, 19 inch LCD Monitor, Genuine Windows 7 Pro, £250 + delivery.

Tel: Mike Whittington (07533) 270020 Email: [mike.whittington@blueyonder.co.uk](mailto:mike.whittington@blueyonder.co.uk)

XFX HD 7950 GPU. I have 2 for sale, both have 6 months guarantee, willing to split, £180 for pair or £100 each + delivery.

Tel: Mike Whittington (07533) 270020 Email: [mike.whittington@blueyonder.co.uk](mailto:mike.whittington@blueyonder.co.uk)

Nvidia GeForce 9500GT Super+ 1GB DDR2 Video Card (Palt). Unboxed. Great Condition. Not Been Overclocked. £30 Inc P&P

Tel: Steven Seward (01354) 656578 Email: [steven\\_seward@sky.com](mailto:steven_seward@sky.com)

16GB Corsair Vengeance DDR3 RAM (2 X 8GB). £120 ONO. Brand new and unopened

Tel: Chris Paul (07827) 447779 Email: [cmpaul25@gmail.com](mailto:cmpaul25@gmail.com)

New Cooler Master HAF X USB 3.0 XL ATX Case. No PSU. Reason for sale it will not fit in my computer station. Buyer collect only. £80.

Email: [paul\\_999@sky.com](mailto:paul_999@sky.com)

Two laptop hard drives for sale. 1- HITACHI 250GB - SATA3 - 5400rpm. Sell for £25. 2- WD SCORPIO BLACK - 250GB - SATA3 - 7200rpm. Sell for £30. Paypal only please.

Tel: Wolfgang Dahm (07590) 440475

Intel Core 2 Duo T5600 Dual Core Laptop CPU. Removed from working Dell D630 Latitude laptop due to Gfx chip failure. Now no longer needed. Tested and fully working using CPU Burnin test. £15. Price includes P&P

Tel: Carole Walker (07551) 293083 Email: [omendata@gmail.com](mailto:omendata@gmail.com)

Mini-Usb Finger Optical Laser Mouse. Attaches to your finger and has two side buttons. Great replacement for standard mouse. Ideal for disabled users or for use where a normal mouse would not work. £10 p&p included.

Tel: Carole Walker (07551) 293083 Email: [omendata@gmail.com](mailto:omendata@gmail.com)



Arima HDAMA rev G serverboard. Dual Opteron 250 cpus included. Totally unused stock. Extended format. 4GB SDRAM. Socket 940. Updated bios to 2.18b. Windows 7 compatible. A real bargain. £45 courier incl.  
Tel: (01223) 360986 Email: jhturner77@outlook.com

ASUS PSN-SLI Motherboard with SATA and IDE sockets. Includes manual cables and Intel 2 core panel, cables and Intel 2 core 2.4 ghz. CPU cooling fan and 4GB RAM. £75 including postage.  
Tel: (01359) 270218

Gateway MT6220G Laptop. Dual Core CPU, 2GB memory, 200GB HDD, 15"4 WXGA screen, Vista license. Excellent condition long battery life. Wireless superb, some disks. £120 with free postage.  
Tel: (01619) 501218 Email: medicineman@ntlworld.com

Toshiba Satellite L350-159 17 inch screen laptop. 320GB HDD, Vista license, 4GB memory. Restore disks, charger, WED lightly. Wireless excellent, long battery life, excellent condition, £165 with free postage.  
Tel: (01619) 501218 Email: medicineman@ntlworld.com

ASUS P8B75-m socket 1155 motherboard. With Pentium 620 processor and 4 gigs memory drivers for XG7.8 on disk. Original box and rear I/O cover £50. Free postage, please ask questions.  
Tel: (01619) 501218 Email: medicineman@ntlworld.com

Be Quiet Power Zone 750W '80 Plus Bronze' Fully Modular Power Supply. I won this in a competition, brand spanking new. This PSU normally retails for £100, selling for a bargain-tastic £75.  
Tel: Martin Welch (07971) 528739 Email: welch\_martine@yahoo.co.uk

Mini-USB finger optical laser mouse. Attaches to your finger and has two side buttons - great replacement for standard mouse. £10 p&p included.  
Tel: Gary Gemmell (01415) 712822 or (07551) 293083 Email: omendata@gmail.com

HP P02015dn extra lower 250 page feed tray. £20.  
Tel: Gary Gemmell (01415) 712822 or (07551) 293083 Email: omendata@gmail.com

New, boxed Belkin 24-Port CAT 5e Patch Panel. Part # F4P338-24-AB5. The RJ45 CAT 5 patch panel is 19 inch rack mountable and supports both 568A and 568B installations. Compatible with both 110 and Krone punch down tools. £15.00.  
Tel: Robin Hewlett (02083) 930301

TP-Link TD-W8968 wireless N USB ADSL+ Modem Router. Unused, boxed, with all cables and set up CD and installation guide. £20.00 plus postage.  
Tel: (01748) 886885 Email: hsturner@hotmail.co.uk

ALPS floppy drive (3.5"). Originally purchased as one of a batch for spares but never used. £5.00 plus £1 for P&P.  
Tel: Alan (01258) 446500 Email: alan@asandco.co.uk

SATA/64MB Cache, Model No: WD20EARS. £40.00 inc p&p.  
Tel: Michael (01452) 303732

HD 5850 XFX Black Edition for sale. It has been flashed with the Asus Bios and can be made to run as fast as a HD 5870. This is a high end card, has no problems playing all the latest games. Comes with box. £65 including P+P.  
Tel: Martin Welch (07971) 528739 Email: welch\_martine@yahoo.co.uk

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.  
Tel: Dave Thomas (01942) 706572 Email: davethomas96@aol.com

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.  
Tel: Dave Thomas (01942) 706572 Email: davethomas96@aol.com

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.com

Toshiba Satellite L350.17 inch screen laptop. 4GB memory. 300GB HDD vista license and Vista installed. Ready to use. Excellent wireless, excellent condition. Please ask any questions. £165.  
Email: medicineman@ntlworld.com

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.  
Tel: Rod Theobald (01706) 345418 Email: mail@rodtheobald.force9.co.uk

ASUS Fonepad with neoprene slip case. 16GB 7" Android tablet with Wi-Fi & unlocked 3G phone functions, Micro-SD slot, Model K004 (ME371MG). Warranty to 31 May 2014. £135 plus P&P  
Tel: Ian Bonnett (01932) 856971 Email: a2345@btinternet.com

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.  
Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

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.  
Tel: John Beech (01928) 733622. Email: johnbeech@dsl.pipex.com

E6300 CPU with stock cooler. Fully working, available due to upgrade. £10 plus £3 postage.  
Tel: John Beech (01928) 733622. Email: johnbeech@dsl.pipex.com

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.  
Tel: Ray Dawson (01202) 893997 Email: ray.dawson02@btinternet.com

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.  
Tel: (01619) 501218 Email: medicineman@ntlworld.com

ASUS P5QLD Pro motherboard. 3GB. Dual core CPU, 6GB main memory, set up disk and 1/0 plate. Heatsink and fan, comes in brown box £70 plus £5 postage.  
Tel: (01619) 501218 Email: medicineman@ntlworld.com

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.  
Tel: (01619) 501218 Email: medicineman@ntlworld.com

PC with AMD Athlon 6000+ dual core 3Mhz CPU, quality cooler with external speed control, Asus M3A motherboard, 2 GB DDR 2 RAM, Nvidia GT8600 graphics 500MB, 750W PSU, Audigy sound card, case fans front and rear, XP with SP3 and original XP CD - together with Sony 17" LCD Monitor (no missing pixels). £150, sensible offers considered.  
Tel: Ray Dawson (01202) 893997

Enermax Galaxy 1000 watt Gaming PSU. Modular, 80+ Gold with all accessories, boxed. Perfect for bitcoin mining, not new but unused. VGC. £80.00.  
Tel: Tim (01892) 689054 Email: wryrat@hotmail.com

Antec 900 ATX Gaming Case. Not new but unused, VGC. Boxed, with all accessories. £57.00.  
Tel: Tim (01892) 689054 Email: wryrat@hotmail.com

Free CPU and RAM. Athlon 64 3200 socket 939 CPU and 4 x 512MB ddr 333 strips. SAE and I will post back to you.  
Tel: Jo Barden (01255) 870690 Email: cornsnake@cornsnake.plus.com

Sapphire Radeon HD 6770 1GB in original box with power supply conversion cable and driver CD. £50 inc P&P.  
Tel: John O'Regan (01525) 862933 Email: t2o@greenbee.net

MSI Motherboard G41M-P28 LGA775 socket. Also two 2GB matched Kingston DDR3 1333 RAM. Both unused in original packing. £35, inc postage.  
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.  
Tel: Ken Vickers (01616) 78 6139 Email: mail2luz3y-gym@yahoo.co.uk

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.  
Tel: (01582) 612776 Email: alex.1922@hotmail.co.uk

Gateway Dual core laptop excellent condition. 100 GIG HDD 15.4 inch WXGA screen. Long battery life, 2GB memory, charger, legal Windows Vista. £129.95 plus £10.95 postage.  
Tel: (01619) 501218 Email: medicineman@ntlworld.com

## HARDWARE WANTED

Trying to breathe life back into an old machine? Why not submit a wanted ad to [MicroMartClassifiedAdverts@gmail.com](mailto: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: HD 3850 Graphics card, must be AGP.  
Tel: (07817) 861071



**Wanted: Fully working mainboard for AMD socket AM2+/AM3, micro ATX size.** Must use DDR2 RAM.

Tel: Brian Taylor (07570) 452557 Email: bmorgant@yahoo.co.uk

**Wanted: Factory system restore disc for a Dell Inspiron 1750.**

Tel: Darren Day (07707) 556193 Email: ddshaggy@btinternet.com

**Wanted: 4GB (2 x 2GB) of Corsair DDR2 RAM.** 800MHz XMS2-6400. Must be in good working condition.

Tel: (01928) 733808 Email: wilsa9@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) 777697

**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

**Wanted: Gigabyte G41MT-D3 1.3 motherboard in good condition.** Please notify price and postage.

Tel: 0121 455 8526 Email: j.deary@virgin.net

**Wanted: I am looking for 2gb (2x 1gb) of Muskin Redline PC3200 at 500MHz.**

Tel: (07817) 861011

**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@branxton.plus.com

**WANTED: Foxconn H61MXL-K I/O backplate.** Please state price & postage cost.

Tel: Steve Wilson (01617) 939906 Email: sb.wilson1@ntworld.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: (01523) 288072 Email: jauung2@btinternet.com

## SOFTWARE FOR SALE

Norton Utilities 16 for 3 PCs. Runs under Windows 8, 7, Vista or XP. Original Symantec CD with unused product key £12.50

Tel: Ian (01932) 856971 Email: a2345@btinternet.com

Dell Windows XP Pro SP2 Reinstall Original Cd. Allows You To Restore Your Dell PC / Laptop Without A Licence Key. Brand New Still Packed. £10. Price includes p&p.

Email: omendata@gmail.com

HP Windows XP Pro SP2 Re-Install Cd. Allows You To Restore Your HP PC / Laptop Without A Licence Key. Brand New Still Packed. £10. Price includes p&p.

Email: omendata@gmail.com

HP Windows 7 Pro Sp1 Re-Install Dvd. Allows You To Restore Your HP PC / Laptop Without A Licence Key. Brand New Still Packed. £10. Price includes p&p.

Email: omendata@gmail.com

HP Windows 8 Pro Re-Install Dvd. Allows You To Restore Your HP PC / Laptop Without A Licence Key. Brand New Still Packed. £10. Price includes p&p.

Email: omendata@gmail.com

HP Windows 8.1 Pro Recovery Dvd X 2. Allows You To Restore Your HP PC / Laptop Without A Licence Key. Brand New Still Packed. £15. Price includes p&p.

Email: omendata@gmail.com

Windows 7 ULTIMATE 32 bit version. NEW software and license (certificate of authenticity) 100% genuine and unopened software. ONLY £45 including P & P.

Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

Windows Small Business Server 2003 Premium Edition. 7 Disc Set. £30.

Email: omendata@gmail.com

Windows Server 2003 R3. 2 Disc Set. £20.

Email: omendata@gmail.com

Windows Vista 32bit for sale. Genuine Item with genuine product key. £35 including P&P.

Tel: Ian (01132) 629028 Email: ianmatthewuk@yahoo.co.uk

Windows 7 Professional. I have both 32 and 64 bit versions. NEW software and license (certificate of authenticity) 100% genuine and unopened software. ONLY £35 including P & P.

Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

Windows 8 Professional 64 bit. NEW software HP branded. 100% genuine and unopened software. ONLY £15 including P & P.

Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

Windows 2000 Professional. NEW software and license (certificate of authenticity) 100% genuine and unopened software. ONLY £15 including P & P

Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

Windows Vista Business. New and sealed. Book, software and license (certificate of authenticity) 100% genuine and unopened. (Dell branded but will install on any machine) ONLY £15 including P & P.

Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

Windows 7 Home Premium NOT BRANDED 32 and 64 bit versions. NEW software and license (certificate of authenticity) 100% genuine and unopened software. ONLY £35 including P & P.

Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

Office 2007 Pro Plus for sale. Includes Word, Excel, PowerPoint, Excel, Publisher and Outlook. Disk only with serial number. £40 including postage.

Email: ianmatthewuk@yahoo.co.uk

Windows XP Professional. New, 100% genuine. Disc, manual, certificate of authenticity. Dell branded but will load onto any computer. £15 including delivery.

Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

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: Windows Millennium Upgrade for Windows 98 SE.**

Tel: (01983) 613464 Email: tony@tonyfagg.plus.com

**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

## IMPORTANT BUYING ADVICE

**We work very hard to police our classified ads, and make them as secure as possible. However, please do your bit too and use the following guidelines:**

- **Never - NEVER** - pay by bank transfer or post out cash, unless you know the trader already, or are sure it is okay to do so. Pay by cheque, Paypal, Nochex etc wherever possible.

- Be wary of anyone who insists on you paying by the above methods if in doubt, get us to check them out by mailing editorial@micromart.co.uk

- Keep copies of all correspondence

- When sending out goods, at the least obtain a certificate of posting from the Post Office

**If in any doubt, feel free to mail us at editorial@micromart.co.uk. Every year, thousands of successful transactions take place through our classifieds, and that's just how we like it. Help us help you keep them one of the safest and most secure places to buy and sell computer kit.**



# ASK AARON



**Meet Aaron Birch. He's here to help you with any general upgrading, software and system building issues. He's got advice aplenty, and you're very much welcome to it!**

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Dennis Publishing  
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London  
W1T 4JD

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.

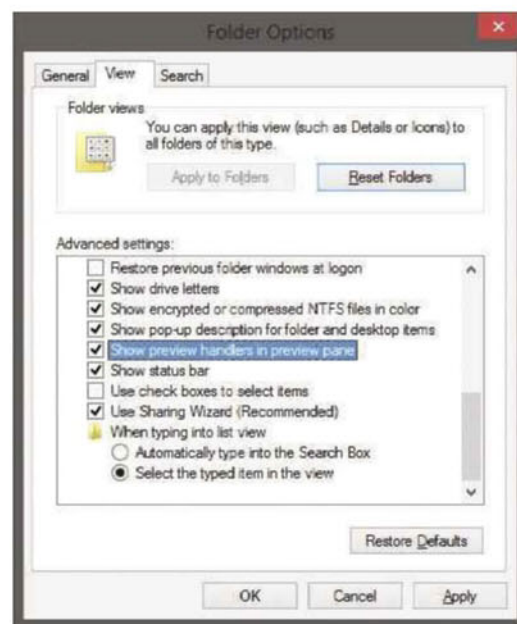
*Aaron*

## No Preview

I'm running Windows 8 on my PC, which is only about a year old, and I have a strange problem. Basically, I'm no longer able to preview any items in Windows Explorer. I used to be able to see and read documents without opening them, but can no longer see it. I do seem to have the option to enable the preview in Explorer's menu bar, but all I get is "No preview available."

This has happened since I've done a reinstall of my system, which I try to do every so often to keep things running smoothly. I've not installed other programs just yet, as I'm waiting on a new copy of MS Office to arrive in the post, but I'm sure Windows should be able to preview items anyway, especially Windows 8, with all its new features.

As I've just reinstalled Windows, I've not really had a chance to change any settings, although I admit I did play around a little to try to get Explorer to function more like I'm used to. I don't recall making any substantial changes, though. Can you help?



▲ Windows' Registry Editor can, as always, be used to alter setting to solve preview-related problems

**Will**

By the sounds of it, I suspect you may have one or two problems (possibly both) that are contributing to the lack of your preview option. The first thing to check is the actual setting that enables and disables the preview pane. You can find this within Explorer's Folder Options.

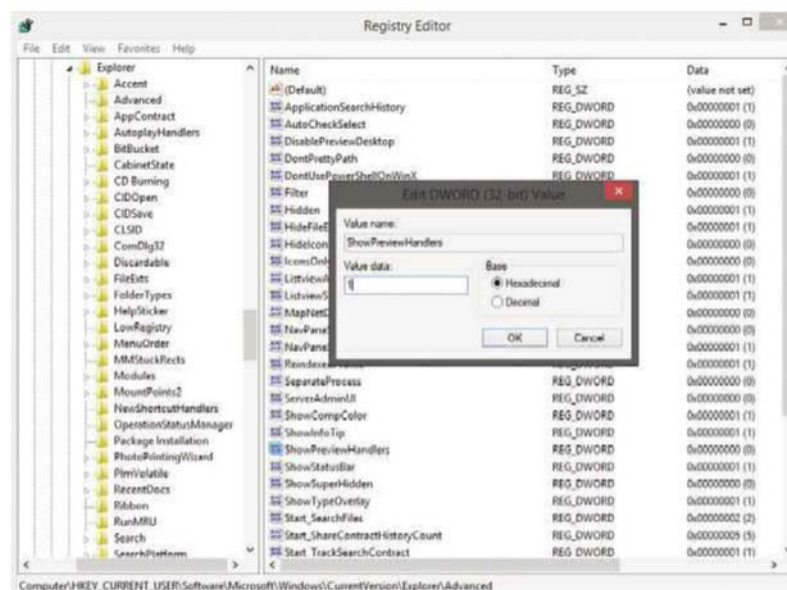
To open this, in Explorer click View and click the Options icon. Now select the View tab and browse through the list until you see the entry 'Show preview handlers in preview pane' near the bottom. Ensure that this has a tick next to it and then click Apply.

Alternatively, you can enable the preview pane via the registry, which can be useful if you're having issues with Explorer. To do this, open the Registry Editor (Windows+R and type 'regedit') and navigate to HKEY\_CURRENT\_USER\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced.

In the right-hand pane, locate the entry called 'ShowPreviewHandlers' and double-click it. Change the value to 1 to enable previews and 0 to disable them. When you're done, close the value window and then close the Registry Editor.

That will re-enable the preview pane functionality, but you may not be done just yet. As you said, you haven't yet installed any programs, such as Office, and this will also cause problems. In order to preview an item, you need a corresponding program that's able to view it. So, if you want to preview a Word document, you'll need Word (or compatible office application) installed. If you want to preview a PDF, you'll need a PDF viewer.

If you don't have these installed, you'll need to install them first. Once this is done, you should now be able to view items in the preview pane as normal.



◀ You can enable and disable the preview pane option via Folder Options



## Locked Out

I've been playing around with the security settings on my system (Windows XP), as I want to lock down certain parts to prevent other accessing them (I live in a shared house). I can't really afford special security software, so I've been looking at ways to secure my system for free.

One option I found was a command called 'CacIs'. I read on this and how to use it, and then attempted to use it on my folders, including my work folder, which is situated on my D: drive.

I used the command 'C:\Documents and Settings\Administrator>cacIs D:\mystuff\personalwork /e /p everyone'. Once I used this command, I checked it, and it was locked, just as I wanted, which was great. Then, I went to unlock it using the command's switches to alter the access, but I get told access is denied. I can now no longer access my folder, which contains a lot of work.

I really need to get access to my folders, and I'm hoping that you have some suggestion on how I can do this.

**Steven**

*The problems you have here, Steven, is that you've actually locked out all users, including the system Administrator. This is because you used the Everyone user*

*group when locking the folder. This prevents any access, so even an admin can no longer unlock the folder. CacIs can be a very dangerous command to play with, as it can cause serious security problems and lockouts, as you've discovered. There may be a way around it, though. Be aware, however, that I always advise readers perform this kind of thing at their own risk, and this certainly applies here. If at all possible, always try to back up any data beforehand.*

*Also, and although it may not work, I have seen System Restore work wonders in this situation. If you have any system restore points to roll back to, I'd highly recommend you try this first, as it could solve your problems with little risk to your data.*

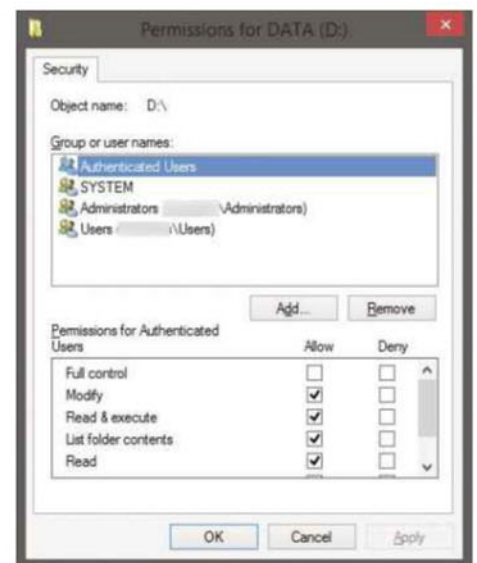
*For a manual fix, first you need to open up a command prompt as an administrator. Next, run the takedown command to restore ownership of the files in question to the admin user. To do this, type 'takedown /f D:\mystuff\personalwork /r'. This should enable the administrator to access the previously denied files. Right-click on the folder in Explorer and select Properties. Now click the Security tab and then Edit. Select Authenticated Users and ensure it has full control.*

*You could then run the icacls command 'icacls D:\mystuff\personalwork\\*. \* /reset /t' to restore permissions to those you*

*picked earlier. This should then allow you to get access to the folder and the files within.*

*For future reference, when using cacIs, never use the everyone permission. Instead, if you want to stop other users from accessing the folder using this method, make changes to the 'Users' group instead. This won't lock out the administrator, and will avoid any trouble.*

▼ **There are many ways to alter folder permissions, and these can also cause problems if used incorrectly**



## Fragment

For some reason, I'm not able to defragment my Windows XP hard disk. It simply keeps resetting and never finishes. As my machine is so slow, I really need to do this. I have a 500GB hard disk, and I have 35GB free (I've just copied a lot of work data over).

I usually defrag my hard disk once a week, to keep things going, but I can't do this now as it won't work. Help?

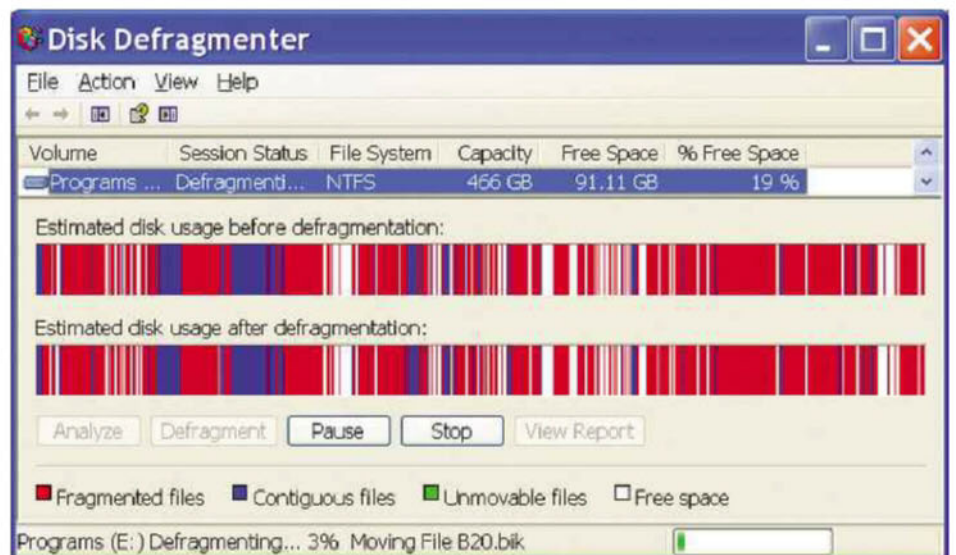
**Pete**

*The problem here is that you've got less than 15% of your drive free, which is the suggested minimum amount of space Defrag needs to work with, as it needs to be able to move files around, and to do that it requires space. You'll need to move some data off the drive to free up space so you can defragment. You also need to ensure no files are in use, and one of the best ways to do this is to run Defrag in Safe Mode.*

*I'd also suggest you trim down your defragmentations to once a month, twice*

*at the most. You really shouldn't need to defrag a drive as often as you do, and doing so will only increase overall wear and tear on the unit, shortening its lifespan.*

▼ **Defrag is a very useful tool, but you don't need to run it too often, and doing so can stress your hard drive**





# ASK JASON



**Meet Jason D'Allison, a veteran of Micro Mart's panel of experts. He's here to help with any technical questions, including anything to do with tablets or smartphones, as well as PCs**

Send your questions to:  
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Contact Jason by email at:  
[jason@micromart.co.uk](mailto: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*

## Turn It On Again

Each system on my network needs to have 'network discovery' turned on, but for some reason two of those systems 'forget' my settings, so whenever they boot up, 'network discovery' is turned off. Judging by the number of online complaints, it's not an uncommon problem. I've tried solution after solution after solution, without success. I actually wrote to you about this a few weeks ago, but I don't recall seeing a reply, so I'm guessing you're at a loss too!

Anyway, I'm wondering if some sort of script could be devised. I have to open Windows Explorer, select the Network tree, open the Network and Sharing Center, enter 'Change advanced sharing settings', select 'Turn on network discovery' and 'Turn on file and printer sharing', and finally hit 'Save changes'. Could this sequence of actions be automated and made to run at boot? If so, where would I start? What (free) tools would I need? Many thanks for any advice you can offer.

**David Wood, TalkTalk**

*I think you're in need of some macro or task-automation software. Head to [bit.do/SLtK](http://bit.do/SLtK) and install Do It Again. It's free. To run it, hunt down the .exe file in Program Files (or 'Program Files (x86)' if Windows is 64-bit), right-click it, and select 'Run as administrator'. You'll get errors if you launch the program normally.*

*Next, click 'Create a New Task'. Work through the steps you've outlined above – open the Network and Sharing Center, enable the relevant options, and so on. When you're done, hit Scroll Lock on your keyboard. Lastly, give the task a name.*

*For ever after, Dave, you'll be able to double-click the task in Do It Again's lower window, and the clicks and selections you 'recorded' will 'play back', fixing your networking issues automagically. By default, the various steps will occur at the speed you recorded them, complete with all your pauses*

*and hesitations – not ideal. To give things some pace, highlight the task, hit Options, point to 'Set pause time length', and choose '0.01 seconds'.*

*Sadly, one snag with Do It Again is that it needs to be launched before a task can be run, and the task then needs to be double-clicked. In your case, you'd probably be quicker simply performing all the steps manually. What you really need is a program that'll create a macro that can be triggered as soon as you log on. There are tools that meet that requirement, but I'm not aware of any free ones. Maybe other readers can help?*

*An alternative is to write the macro long-hand. Quite a few*

*free tools exist that use simple scripting languages. Check out this Wikipedia page and try a couple for size: [bit.do/SLUv](http://bit.do/SLUv). You'll need to learn how to write the lines of code, but it's quite basic stuff (or BASIC stuff). Some of these tools will indeed create a file for launch at log-on, which is marvellous.*

*PS – You're right: I haven't a clue why your network settings get reverted. If it were me, Dave, I'd back up my data and reinstall Windows. You'd waste a few hours, but you've wasted more than that already. As sure as eggs is eggs, that would solve the problem.*

▼ **Do It Again** lets you automate oft-repeated system tasks





## Connection Detection

I own an RM Mobile One laptop (I believe it's an Asus Z91E under a different name). It's eight or nine years old and has proved to be a reliable workhorse, but now the CD-RW/DVD-ROM drive has died. I've unscrewed it to see what replacement I need, but all I've succeeded in doing is confusing myself. The interface on the back is neither IDE nor SATA – it doesn't match any of the pictures I've found online. What sort of drive am I after? If it's non-standard, no doubt it'll cost me an arm and a leg!

**S. Paulet, Gmail**

*Don't panic! A laptop's optical drive – and hard drive – is often secured in a frame. This is typically unique to a given family of machines, but it's wholly removable. On yours, my friend, take out the screws and you'll find that the drive underneath is just a standard, off-the-shelf affair. Screw the frame onto the replacement and you'll be all set.*

*I can confirm that you're after an IDE/ATAPI unit. This could be either 9.5mm or 12.5mm in height – get out your ruler and measure one of your current unit's sides. An odd-looking frame and connector are fairly common on a laptop IDE/ATAPI drive, because the bay the drive slots into may have been designed to house both an optical drive and a floppy drive (one at a time, with the user swapping between them as required). The bay therefore needs a single interface capable of coupling to either device.*

▼ *Weird connectors on the back of laptop drives are fairly common, but almost always the drives beneath the frames and screws are bog-standard*



## Service Charge

My uncle's gifted me his faulty Android tablet: a 10.1" Motorola Xoom. He tripped over the charger cable, snapping the pin off the end, and this pin is still inside the charger socket. The tablet won't charge, so he's given up and passed it to me. I've tried charging it via the USB port, using a Hudl charger, but it's not having it. Do you think the snapped pin has caused a short? Is the tablet worth persevering with?

**Nolan, London**

*The original Xoom doesn't support charging via USB, Nolan, so your lack of success there is no indication that the tablet's faulty.\* Charging is achieved by that silly proprietary socket or by a dock (which uses the two copper plates you've no doubt eye-balled). Thankfully, Motorola dropped this decision for the Xoom 2 family, but that's cold comfort here.*

*The pin on the charger is thin and fragile, and yours isn't the first Xoom I've seen where it's snapped off. You *should* be able to retrieve it, though. Poke something non-metallic into the socket – a cocktail stick, perhaps – and work it loose. Will it have shorted something? Well, maybe, maybe not. If I had to guess, I'd say not, but the only way to tell is to get hold of a replacement charger.*

*Generic USB chargers can be had off eBay for less than the cost of a pint, and despite all the naysayers and the tales of woe, I've used dozens upon dozens without a single issue. Chargers for the Xoom are something of a specialist item, however, and the cheapest I've seen that looks like it'll be okay is here: [bit.do/SMmW](http://bit.do/SMmW). It's a tenner.*

*Why not give one a whirl? The Xoom may be three years old, but it's still a capable bit of kit. A 1280 x 800 screen, an Nvidia Tegra 2 dual-core SoC, 32GB of storage, an SDHC slot, stereo speakers, HDMI, GPS – the feature list is as long as the long arm of the law. Some mid-range tablets on the shelves right now don't offer more. Upgrade the work-in-progress that was Android*

*3.x (Honeycomb) to Android 4.1 (Jelly Bean) – an official update – and you're laughing.*

*\* Reports online suggest some users have actually had success in charging the Xoom via USB. I'm not sure how, as it clearly wasn't designed that way, and it's never worked for me. Perhaps the Xoom shipped in multiple revisions?*

▼ *Why oh why do some manufacturers refuse to employ the tried and true micro-USB charging port?*





# Crowdfunding Corner

Finding the right piece of portable technology can be difficult, but if you're looking for the thing that's just right, one of these crowdfunded products might just be it!

## Granola Strolla - Portable Solar USB charger

Hardware with environmentally conscious credentials is hard to come by, so – as its self-aware naming suggests – the Granola Strolla is wise to sell itself on that principle. One thing its name doesn't really do, though, is tell you what it is: a solar charger.

The Strolla works by absorbing sunlight and storing the energy within its (environmentally friendly!) Lithium iron phosphate battery. Attached to a backpack or coat, it charges your device while you're out during the day, so you can use it for longer between charges.

The 'multi-directional' design means it's always charging, and as well as being lightweight and water resistant, it's less expensive than other solar chargers. It works with all USB-compatible tablets and phones (with the exception of some Asus devices, which use a non-standard voltage!), using the same USB cables you'd use to charge it at home. There's no configuration or setup required: just plug and go.

Full details of the hardware's environmental credentials, from the materials used to its very design, can be found on the Kickstarter page. Some reward tiers are US-only, but you can get a Strolla for just \$60. It's already reached its funding halfway point with weeks to go, so there's a good chance things will turn out alright for this uniquely engineered idea.

**URL:** [kck.st/1oF32DH](http://kck.st/1oF32DH)

**Funding Ends:** Sunday, 12th October 2014

## VRB Wireless Headphones Featuring Crystal-Clear Audio

Wireless headphones are a great idea, but most have one of three problems: the range is too short, the battery life isn't long enough or the sound is low-quality. The VRB Wireless Headphones attempt to solve all three of those problems, promising all-day use, three times longer wireless range and crystal-clear audio all in one package.

The product page is convincing, promising high-end drivers as found in some of the world's best-reviewed headphones, amped-up Bluetooth allowing connections that cover up to 33 feet and a long battery life so that recharges can be few and far between. There's even a built-in directional microphone so you can use the headphones to respond to voice calls while paired with your phone and activate voice commands.

Of course, this tech, combined with super-stylish design, means they don't come cheap. Early bird backers can buy a pair of headphones for \$108 (plus \$20 shipping outside the US). If you miss those, you can still get a discount of \$71 off the retail price of \$199. There's a month to go and it's already doubled its target, so it's safe to say these headphones will be a success. Now you just have to wait for them to be manufactured!

**URL:** [kck.st/1rfDznL](http://kck.st/1rfDznL)

**Funding Ends:** Monday, 24th October 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

## Macrium Reflect Free Edition

**Cloning and imaging are the order of the day, and we have the ideal program for it**

**D**isk imaging and cloning is a practice that has saved many an IT support technician and home enthusiast.

There are countless times when we've built a PC for a friend or relative, only to have to come back to it several months later to find that 'fiddling' has rendered it unbootable and useless. In these cases, an image of the PC before we handed it over to them was a wise move and cut down on wasted building time.

Likewise, a new SSD to replace the aging and slow hard drive was easily cloned across, once we'd manually sorted the size difference.

We had a similar situation recently, where an SSD from a previous machine was upgraded and became free, to be destined to become the main system drive of another PC. It's an easy enough setup, but the task of finding the right cloning software was more difficult than we first anticipated.

Thankfully, someone recalled using Macrium Reflect, the Free Edition, with some success, so naturally we took a look.

### Macrium Reflect

Macrium Reflect Free is a clever and well laid out GUI front end to the built-in Windows Volume Shadow Copy Service.

This makes it a faster alternative to most other cloning and imaging programs and as a result of using the Windows services, it also means that the compression of imaging can be reduced up to 40%.

As the title suggests, the program is free, but it's limited to imaging, cloning, accessing created images, scheduling backups and creating Linux and Windows PE bootable media. For most purposes, including the situation in which we needed it, this covered everything satisfactorily. And what's more, it has a rather tiny installation footprint and is exceptionally quick in its operation.

Thankfully, we didn't need to create a bootable media device. Cloning the volumes on a hard drive to an SSD simply required us to hook up the SSD via a SATA-to-USB cable, give it some power and run Reflect. Both the drives were recognised, and it was a simple one-click solution to opt for cloning the main drive and selecting a destination.

The entire cloning process took less than half an hour, and several minutes later we had the old drive out and the new SSD in.

### Conclusion

We've had cloning software in the past, and for some reason they never really did the job

### Features At A Glance

- Free.
- Support for UEFI, GPT and RAID.
- Uses Volume Shadow Copy Service.
- Very easy to use.

well enough. True, they copied the system volume information across, but there was usually some sort of problem regarding the boot procedure, which often became fouled up somewhere along the line.

There was also the problematic appearance of random disk failures, unloaded drivers or an unexplainable system slowdown. So as you can imagine, we were prepared for the worst case scenario of it not working.

Interestingly, nothing of the sort happened. The SSD booted as expected, Windows sprang into life, and everything was as it should be. Even the system partition remained hidden when we opened Explorer, which came as a surprise. And to add to that, the Windows update that occurred during the cloning process finalised itself and reported a successful installation.

In short, we were fairly impressed. So the next time you're called on to clone or image a PC, consider Macrium Reflect Free Edition. It may help you out considerably.



▲ Reflect Free is easy on the eye, and it's remarkably quick too



▲ Macrium has done a sterling job with Reflect Free



# Logging Off

In the past few years I've come to the conclusion that storage is important. I need to clarify that statement, however, because I'm actually talking about physical storage rather than the computer related variety. As you go through life you collect stuff, mostly utter junk, that somehow becomes important to you. I'm now in my fifties, so I've got plenty already; when your parents expire, as mine have, you get to have some of theirs too for good measure. There are two ways to deal with this:

become a nostalgic curator of your haul, or a brutal realist and ditch anything that doesn't have an easily convertible value.

What brought this all to mind was a recent reorganisation in the Pickavance household, where we addressed the curious case of having CDs and DVDs shelved ready for use, that were never used.

At one time it was the fashion to display such a collection, simply to show that you collected such things and that you'd been keeping up with *NOW That's What I Call Music* numbering. These days it's clutter, compounded by the fact that I transferred all the discs to digital media more than a decade ago. Why I did this I'm still unsure, because I never listen to music for fear of missing a courier at the front door and the review item he's trying to leave with me and being annoyed for ever more. Video is equally well catered for digitally, so what I've done is amassed a pile of digital media I must store to give someone else a problem when I kick the bucket.

The alternative is to sling them at the likes of Music Magpie, which I'm told might offer 30p a DVD title, if I'm really desperate. There is a cost in not selling them, though, because the amount of storage space in my house is finite and the only practical way to rapidly change that would be to rent storage space somewhere.

The answer, if you hadn't guessed it, would be to buy any music I wanted online, and then when I've left this mortal plane it will cease to exist along with me. But that seems a really poor deal, when you consider that the CD is usually cheaper than the online version, and it takes minutes to legally rip the disc once you have it.

What I didn't previously grasp was that this isn't exclusively my problem. Others around the globe are also bending under the burden of the consumption society we all live in. A recent survey in Japan revealed that this entire nation has almost uniformly stuck a digit up to the digital download revolution. Where the divide between download and CD is falling one way in the UK, over in

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Japan 85% of all music is still bought in the physical format. And, rather than it slowly sliding towards downloads, the latest numbers hint that the CD position is actually strengthening a little.

Given what I know about the average size of an apartment in Tokyo, music CDs must take up an even greater proportion of available space than in my house. The Japanese as a nation love to collect things, even if I'm coming to the conclusion that it is merely stuff that makes my home seem even smaller.

I've seen the future, and in it each home will have a shipping container alongside it, for all the junk we can't easily let go of.

*Mark Pickavance*

## LAST WEEK'S CROSSWORD

**Across:** 7 Polymorphic, 8 Assess, 9 Capcom, 10 Plessor, 12 Sneak, 14 Knack, 16 Servlet, 19 QWERTY, 20 Aplomb, 22 Venn Diagram.

**Down:** 1 Apps, 2 Aliens, 3 AMR Slot, 4 Track, 5 Chopin, 6 Accolade, 11 Longwave, 13 Meta Tag, 15 Corona, 17 Velcro, 18 Dyads, 21 MIME.

### 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. It's no secret that we're not exactly sold on 3D TV or cinema, but we do rather like the idea of virtual reality. However, we're also rather keen on not spending loads of money, and the Oculus Rift, when it eventually reaches release stage, will probably be out of our price range. Google Cardboard, though, that's another thing

completely, and we've quite happily playing with this ultra cheap bit of technology this week, having ordered one after reading a recent Mobile Mart column. We have to say, it's quite impressive, and we're wondering whether this is a sign of the future, where all gadgets are made out of paper or cardboard. And perhaps the odd yoghurt pot. Not only could computers then be made out of recycled materials, they could be featured on Blue Peter. Then, if you build a really good one, you might be able to get a Blue Peter badge. Not that we want a Blue Peter badge. We're much too old for that now, and mature and stuff. That said, if anyone has a Blue Peter badge they don't want, we'd be happy to take it off your hands.



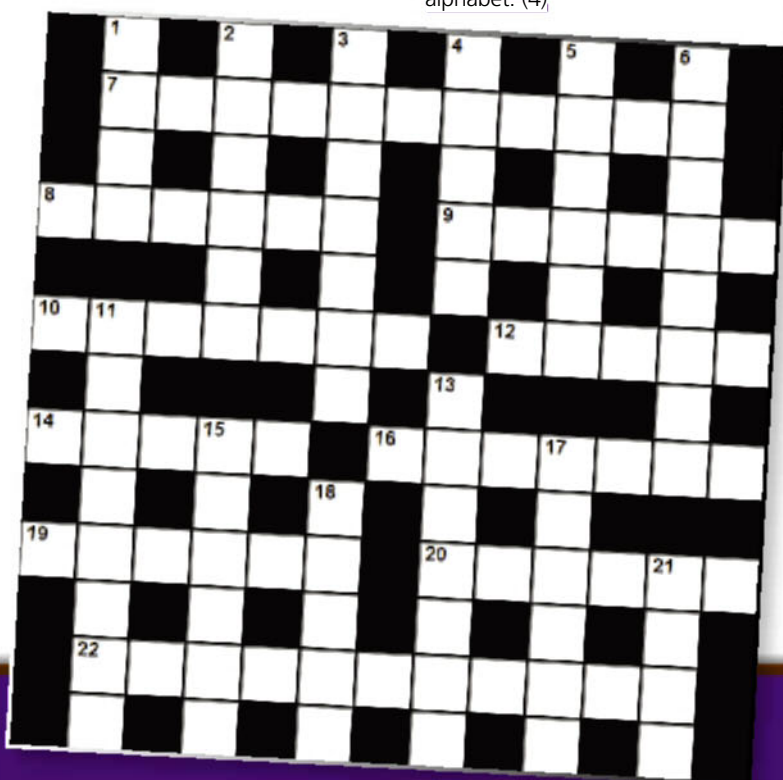
## THIS WEEK'S CROSSWORD

### Across

- 7 Of or pertaining to or characteristic of an orientation that characterizes the thinking of a group or nation. (11)  
8 Military actions designed to influence the perceptions and attitudes of individuals, groups, and foreign governments. (Abbr) (6)  
9 Expression or appreciation of subtle shades of meaning, feeling, or tone. (6)  
10 Where a large atomic nucleus such as that of uranium is split into two or sometimes more smaller nuclei. (7)  
12 A multi-national NASA scientific research satellite in a Sun-synchronous orbit around the Earth – flagship of the Earth Observing System (EOS). (5)  
14 Take control of without authority and possibly by illegal methods. (5)  
16 The branch of science concerned with the nature and properties of matter and energy. (7)  
19 A Roman poet; author of the epic poem 'Aeneid' (or pilot of Thunderbird 2) (6)  
20 Devoid of good sense or judgment. (6)  
22 Where you get to stand when you've upset the management. (2,3,6)

### Down

- 1 In statistics the difference between the expectation value of an estimator and the true value. (4)  
2 Subatomic particles intermediate in mass between an electron and a proton and transmit the strong interaction that binds nucleons together in the atomic nucleus. (6)  
3 Manufacturers of mass data storage devices, magneto optical and media. (7)  
4 An independently operating Internet program, typically one that performs background tasks such as information processing on behalf of a user or other program. (5)  
5 Use a sharp or hard implement to remove unwanted matter from the surface of something. (6)  
6 Term for an amplified musical instrument. (8)  
11 Range of portable and desktop PC's from Dell. (8)  
13 States that electric current is directly proportional to voltage and inversely proportional to resistance. (4,3)  
15 The "R" in DRM. (6)  
17 Microsoft's "Ergonomic Desktop." (6)  
18 Change in character or composition, typically in a comparatively small but significant way. (5)  
21 The ninth letter of the Greek alphabet. (4)





# In Next Week's Micro Mart

- Expert tips and advice from IT support professionals
- How to create your own text adventure game
- The history of shareware
- Plus the usual mix of news, reviews and advice



\* May be subject to change



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