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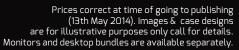
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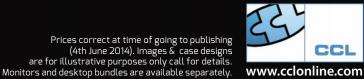
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#### **06**Upgrade Deals

We like upgrades. Lots and lots of upgrades. We can't always afford upgrades, though, so we're particularly keen on cheap ones. We reckon our readers probably like a good deal as well, so we asked David 'Del Boy' Hayward to dig around for some great deals. From processors to graphics cards, motherboards to keyboards, there's something here for everyone

#### **16**Here Comes The Sun

Finally, the summer is upon us, and it's time to go outdoors and do outdoor things. We can't help wanting to take our gadgets along with us, though, so how do you protect electronic devices from the dual threat of sea and sand? We've picked out a selection of apps and addons that can give your seaside excursions a techie twist

# 26 Facebook's Privacy Battle

When it comes to Facebook and the subject of privacy, there's often a huge question mark over whether it can or, indeed, wants to keep our data away from prying eyes. Like half the UK population, Sarah Dobbs has a Facebook account, and she's been looking into what the site has done to tighten things up and asking: is it enough?

# **40** Group Test: Gaming Keyboards

One of the key advantages of gaming on a PC instead of a console is that you get to use a keyboard and mouse. It's no surprise, then, that there are a plenty of high-quality peripherals on the market that can make your gaming go more smoothly. David Hayward has been looking at six high-end keyboards to see offer the best mix of features and usability







#### **60** Test Your Website

Building a website used to a complex affair, but nowadays, it can be relatively straightforward. Unfortunately, things can still go wrong, and when they do, you might need some help to get your site up and running how you want it. Thankfully, Shaun Green knows more than a thing or two about testing sites, and he's here to show you how it's done

# **66** Satya Nadella's First 100 Days

When Steve Ballmer announced that he was stepping from the top spot at Microsoft, some people might have been surprised. Quite a few others were probably relieved. Now there's new man at the helm, and already he's shaping up to be a whole different kind of leader. David Briddock looks at his decisions so far and where they might be taking one of the world's biggest technology firms

#### **70** Local Search For iOS

Remember when searching for a local business meant picking up a huge paper directory and leafing through it to found what you needed? These days, of course, you can do it much more quickly online and also using mobile apps. Not only is it quick, but it means you have access to information no matter where you are, and this week Keir Thomas has been test a selection of iOS apps to see which are worth your time

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#### **Group Test**

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# GREAT PC UPGRADE DEALS

David Hayward takes a look at a complete set of PC component upgrade deals to tantalise your wallets he PC is an amazing product, when you stop to think about it. A simple £200 unit can allow you to surf the internet, write your memoirs, do your accounts and play a brief selection of games. However, if you later feel the need to expand its use and embrace more advanced pastimes, like video editing, photo editing and more recent, triple-A rated games, then generally all you need to do is upgrade a selection of components.

Which components you upgrade depends greatly on what you want your PC to finally end up doing. More memory will allow you to have more programs open at the same time and in some way speed up the loading times of these programs and the core operating system. An SSD will drastically speed up the entire system and make you feel like you've got a brand new PC. A graphics card upgrade will open up better quality games and allow for faster video and photo editing.

Likewise, a new, highly efficient power supply will improve energy consumption and help to reduce your electricity bill (and your carbon footprint), while a new monitor will ease eye strain and deliver stunning visuals to boot. There's really so much that can be achieved through the upgrade process.

This has been the bread and butter of Micro Mart these last 29 years, so we thought we'd have a look at the latest and greatest PC upgrade deals available right now and see who's selling the bargain components and for how much.

To further help, we've broken the upgrades down to their component categories; with luck you'll find something in among this collection that'll pique your interest.

#### Memory

More RAM means better multitasking and better performance for those memory hungry programs such as Photoshop, Outlook or Firefox when you have more than two tabs open.

You'll be able to quickly switch from one program to another without Windows having to constantly read and write to the Pagefile, and there'll be enough left spare for the modern operating system to gobble up when it sees fit.

More RAM won't necessarily speed up your entire system, but it will be noticeably faster, because you'll be able to do more a lot quicker than before. In theory, at least.

**Aria**: This 4GB G.Skill AEGIS 1600MHz 240-pin DDR3 SDRAM single chip is currently available for a mere £27.98. Although this performance memory is designed for gaming, it can be added to any compatible system for an instant boost in performance. Check out **goo. gl/sDLTQR** for more details.

**Overclockers**: 8GB of Kingston HyperX Impact Black Series at 1866MHz is available as a dual chip kit from Overclockers for £67.99. This RAM is capable of recognising the platform it's plugged into and will auto-overclock to the highest stable frequency, up to an incredible 2400MHz. goo.gl/e8kSuP.

**CCL**: A two 4GB kit of Patriot Viper 3 (Black Mamba Edition) 1600MHz performance RAM is available from CCL at just £59.82. It's a good bargain for 8GB of fast memory that can be tweaked to a possible 2133MHz. goo.gl/84kuQb.



**Dabs**: Dabs is offering a single stick of 4GB Kingston HyperX Fury Series 1333MHz DDR3 CL9 RAM for £30.45. Much like the Impact Black series, the Fury Series can auto detect the platform and overclock itself up to 1866MHz. goo.gl/wvlW6S.

#### **Storage**

Having a lot more storage available means you'll be able to make local backups, share more content to the other computers and devices on your network and toy around with virtual machines.

The ultimate PC upgrade, though, is the addition of a solid-state drive. Although they're not as big as standard hard drives in terms of storage, they are blindingly fast and will speed up your PC, if used as the system drive, to such a degree that you'll be amazed. Stick a fast booting Linux distro on there and you'll be at your desktop in just a few seconds from powering up.

**CCL**: A Crucial MX100 2.5" 256GB SATA-3 solid-state drive will offer you not only great low cost per gigabyte, but also enough reliable storage space at an incredible speed. Plus this deal also includes a downloadable copy of Acronis True Image 2014. All for £74.81 at **goo. ql/diUBCq**.

**Ebuyer**: A Seagate 1TB SSHD for £59.45 offers the best of both worlds. With 64MB cache and 8GB SSD cache, the read speeds average out at 190MB/s, which means you get the best combination of space and speed. **goo.gl/UqIPVY**.

**Aria**: Aria is offering a 500GB Samsung 840 EVO Series 2.5" SATA-3 (6GB/s) SSD for £179.99. It may sound expensive, but considering the normal price is around £200, for a 500GB SSD it's certainly a bargain worth considering. **goo.gl/Rl00sN**.



**Overclockers**: If it's just heaps of storage you're after, then this 4TB Western Digital Caviar Green SATA-3 hard drive will certainly accommodate. It features IntelliPower, which reduces the power consumption by up to 40% and it only costs £119.99. goo.gl/ZNc0jl.

#### **Motherboard**

The motherboard, being the core of the PC, is usually also the single most common cause for potential bottlenecks in terms of performance. By upgrading your motherboard, you'll future-proof your system to some degree and you'll be able to upgrade to better performing components that take advantage of the newer technology.

Make sure, though, that the motherboard you get is compatible with the type of memory and CPU you currently have or else you'll have to pay for an upgrade of those too.

**Aria**: This Gigabyte GA-H81M-D2V micro-ATX board will take Socket 1150 Haswell CPUs and features two PCle 1x, one PCle 2.0 16x slots, four SATA ports, six USB 3.0 and two USB 2.0 ports. It's currently at the bargain price of £35.99 and can be found at **goo.gl/MydX6r**.

**CCL**: An Asus M5A78L-M/USB3 AMD Socket AM3+ motherboard is currently available from CCL at £48.79. With six SATA and six USB ports, four memory slots, VGA, HDMI and DVI, a single PCIe 2.0 16x and a single PCIe 1x slot, this AMD motherboard is an overclocking bargain. goo.gl/occKc0.

**Overclockers**: MSI offers an excellent range of motherboards, and its Z97 Gaming 5 Socket 1150 DDR3 ATX board is an excellent bargain component for £114.85. With two-way Nvidia SLI or three-way AMD CrossFire support, fourthand fifth-generation Intel Core CPU support and plenty of other features, this makes for a superb potential gaming PC upgrade. **goo.gl/cl1MEC**.

#### **CPU**

The processor is one of the most important upgradable components in a PC. If you've got great components everywhere else but a weak CPU, then your entire system will eventually suffer and you'll have wasted your money.

It's not just about the highest number of GHz these days; a good upgraded processor takes everything into



consideration, from the number of cores, the amount of cache, power usage and so on. If you're lucky, you can pick up an excellent bargain and a great upgrade.

**Aria**: The 3.4GHz Intel Core i5-4670K is a Socket LGA1150 (Haswell) CPU and is a bargain at £155.99 from Aria. It usually comes in at around £175, and considering its much improved performance over other processors of this class, it's not a bad deal. goo.gl/E6IIML

**Overclockers**: AMD Kaveri 7850K 12 Compute Core APU with Radeon R7 Graphics is available from Overclockers for £131.99. This AMD CPU has four CPU cores and eight GPU cores available, with up to 32GB of shared memory for the APU. **goo.gl/E5VSEH**.

#### **Graphics Card**

A good graphics upgrade can completely open up what games you play, the videos you watch and the photos you edit. Higher resolutions are achievable at a better performance, and more resources will be available for the CPU and memory since they're not being consumed by an integrated GPU. It's not all about gaming, though; offloading video to a better GPU means you'll have fewer problems when watching movies or video editing. Imaging software like Photoshop utilises a better graphics technology, and you can also use an advanced GPU for Bitcoin mining.

**Dabs**: This MSI GeForce GT210 1GB low-profile graphics card may not be able to play *Watch Dogs* at the highest possible resolutions, but it's more than capable



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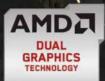




## GIGABYTE 488X MOTHERBOARDS













F2A88X-D3H



F2A88XM-DS2



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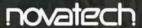














of offering a small boost to a flagging system with an older integrated graphics option. At £16.78, it's not going to break the bank either. goo.gl/PQGclA.

**CCL**: A Powercolor AMD Radeon HD7770 1GB GHz Edition will provide a decent enough boost to a system without a dedicated GPU. At £65.98 for a DirectX11 card, it's not a bad bargain at all. **goo.gl/OwIFZL**.

**Aria**: An MSI Twin FrozR GeForce GTX770 OC Edition with 2GB of GDDR5 will certainly allow you to play the latest games at the higher settingsm and it comes with *Watch Dogs* free as well (for a limited time). Not bad for £229.99. goo.gl/8zsPXq.

**Overclockers**: Of course, if you're after something a little more extreme and capable of doing almost anything you can throw at it, this MSI GeForce GTX780Ti Gaming Edition 3GB GDDR3 card from Overclockers will more than suffice. It's £479.99, mind you, as opposed to the usual price of around £550, so if you're particularly flush, then this a bargain worth looking into. goo.gl/Z6sDTu.

#### **PSU**

An upgraded PSU will offer you a lot more than just power. If you get an 80-Plus certified model, then you're going to be buying a far more efficient power supply with better stability, less noise and heat, and protection against electrical damage to component parts.

Most modern PSUs will also help lower your electrical bill by only consuming the power they need and will feature an eco-mode whereby unused hardware is powered down over time.

CCL: Antec is ahead of game when it comes to PSUs. This 550W TruePower Clissic TP-550C is 80-Plus Gold Certified, which means it's 92% efficient, and can save you up to 20% on your electricity bill. Plus there are plenty of connectors for all your components. A bargain at £65.54. goo.gl/zWSjTj.

**Ebuyer**: A Cooler Master VS-Series 550W Semi Modular 80-Plus Gold

Certified PSU from Ebuyer is available for £78.99. It features a 120mm silent fan, modular cabling system, 92% efficiency and every connection you could ask for. goo.gl/hls0f0.

**Aria**: This 1200W Corsair AXi 80-Plus Platinum Certified Modular PSU is pretty impressive. With far better voltage regulation, near silent fan, 94% efficiency and plenty of connectors, it's available for £215.99 from **goo.gl/rGniUq**.

#### **Sound Cards**

A sound card may not be everyone's idea of a much needed PC upgrade, but they do offer an advantage over built-in sound.

If you have a specific need to output or input audio from various sources, then the usual motherboard audio may not be able to deliver. A dedicated sound card, though, can offer better 7.1 support, different modes, signal to noise reduction and better communications.

**Maplin**: This Creative Sound Blaster Audigy SE 7.1 PCI sound card from Maplin only costs £19.99 and offers EAX Advanced HD 3.0 support, 24-bit



#### Here Today, Gone Tomorrow Deals

While all of these deals are correct at the time of writing, we all know how dynamic the computer component industry is. Therefore, if the deal we mention here isn't available anymore, for whatever reason, you can be sure that something else will no doubt be in its place and may even be far better than before.

The trick of course is to get what you want and when you can afford it. Many users see a bargain for a component they currently have no use for, but probably will several months down the line. If it's too good to turn down, then they'll jump at the chance.

Naturally we're not asking you to take this approach, but if you're planning an upgrade and an SSD suddenly becomes available for an absolute steal, then why the devil not?

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₽**50**%



analogue to digital conversion and output to a 7.1 surround system. **goo.gl/ UI7RvM**.

**Ebuyer**: One step up from the above, we have a Creative Sound Blaster X-Fi Xtreme Audio sound card from Ebuyer at £35.98. It's PCI-e 1x, 7.1 capable and has a X-Fi audio processor for 3D surround upmixing to 7.1. It also includes a free download of Cyberlink PowerDVD. Head to **goo.gl/UGI09F** for more details.

#### **PC Case**

A PC case isn't often regarded as part of the upgrade process. But if you consider that a better case will provide improved airflow, better cable management, more internal space for higher-end components and more options for modding, then you'll begin to realise just how important an upgrade it really is.

**Ebuyer**: This M3 Mini ITX Black Aluminium Cube Case is a smaller enclosure than the norm. At £41.98 from Ebuyer it's a high-quality case that looks good with easy access to the internal components. **goo.gl/lAzROm**.

**Overclockers**: An Aerocool Strike-X ONE Midi Tower case from Overclockers at £31.99 is a great bargain ATX chassis. With better cable routing management and plenty of internal space, along with ample airflow and cooling, this is an excellent choice. **goo.gl/z21WQz**.

**Aria**: For the gamer, this Sharkoon Bulldozer Black and Red Mid Tower ATX case from Aria will allow you to install full-sized components like graphics cards, while still retaining adequate airflow and access. There are also several low noise

fans pre-installed and a see-thru side panel in case you get creative. For just £43.99, it's not a bad purchase. **goo.gl/gkn62i**.

^^^^^^^^^^^^^^^^^^^^^

#### **Keyboard And Mouse**

Although a new keyboard and mouse won't speed up your system, they can make you more efficient when using your PC.

A gaming keyboard and mouse, for example, will allow you to create profiles, macros and have backlit keys and buttons for night-time gaming sessions. And a mechanical keyboard will offer you a better typing experience and will last far longer than a standard membrane model.

Currys: A Logitech MK330 Wireless Mouse and Keyboard set from Currys is a good upgrade start from a stock wired keyboard and mouse set. It's only £29.99 and offers 12 programmable keys, 11 hot keys and uses up a single USB port for the wireless adapter. goo.gl/lzxgzv.

**Ebuyer**: The Microsoft Sculpt Comfort Wireless Desktop Set is regarded as one of the best ergonomic keyboards available, and you can get it from Ebuyer for £62. There are plenty of advantages over a standard keyboard here and it's cheaper than a high street offering in most cases. **goo.gl/5ofSs6**.

**Overclockers**: The CM Storm Devastator Gaming Bundle may only be membrane technology, but for a mere £29.99 it's not a bad gaming starter set. goo.gl/rDICJs.

**CCL**: Roccat produces some fantastic mechanical gaming keyboards. This Ryos MK Advanced Keyboard with Cherry MX Black Switchesm at £74.99, is an excellent bargain, since you can pay twice that amount for a keyboard half as good. **goo.gl/fAoNAk**.

An upgraded PSU will offer you a lot more than just power

**Dabs**: Mad Catz products generally verge on the extreme, and the R.A.T. 3 3500dpi Gaming Mouse is no exception. For just £33.99 you're getting quite the gaming bargain. goo.gl/Z2rW6f.

#### **Monitors**

Squinting at an older monitor is only going to damage your eyes and reduce









is supplied by the USB connection, an external power supply is not

amazon.co.uk

needed.







Internal

connection

ICY BOX

the viewing pleasure of any photos, videos or games you want to play.

If you're working for long hours every day in front of a screen, then you'll need a better monitor to help reduce the long-term damage it does to your eyes, and if you've already paid out for better components, then you'll need something to get the best quality from them too.

**Currys**: An LG 23MP75 full HD 23" IPS LED monitor from Currys comes in at £149.99. This is a great monitor with a lot going for it in terms of picture quality and all-round style. goo.gl/zQSwJ8.

**Overclockers**: This is a smaller monitor from AOC; the E2250SWDAK 21.5" LED screen boasts some very impressive specifications considering it's only selling for £95.99. goo.gl/6xBxQE.

**Ebuyer**: If you want something bigger, mind you, then Ebuyer's Acer G276HLA 27" LED monitor will certainly suit your needs. With a response time of just 2ms, 100,000,000:1 dynamic contrast ratio and VGA, HDMI and DVI, it's a bargain at £199. goo.gl/HTcL9x.

**Overclockers**: Of course, if you have a mind for the future of viewing technology, then this Samsung U28D590 28" 4K LED monitor will no doubt make you sit up and take notice. 4K is being thrust upon us as the next best thing and something which we must all covet greatly. However, this model costs £499.99, which is somewhat cheaper than it usually goes for, admittedly. **goo.gl/r0bvxD**.

#### **Speakers**

Whether you're gaming, watching the latest movies or just using Skype, having a good set of desktop speakers can make a significant difference to your PC setup.

Even simple 2.1 desktop speakers offer a level of depth to any PC audio, and when mixed with one the above sound cards, the overall effect can be quite stunning.

**Aria**: These Logitech Z553 2.1 speakers with sub and control pad make for an impressive addition to the PC. They're selling for £66.98, a discount of over £13 from the usual price, and they offer superb sound in all frequency ranges. goo.gl/uTxJqq.

**Overclockers**: If you're after something a little more niche, then these MicroLab

#### **Suppliers And Shops**

It's worth mentioning that the suppliers we've looked at here are just the tip of the iceberg when it comes to PC components. Most of these are advertisers in Micro Mart and do occasionally offer special deals in the form of free delivery, for example, but it's worth spending some time hunting down deals.

Also, don't forget the local computer shop. Generally they may not be able to compete with the bigger online stores, but there are times where you'll come across something quite spectacular. So drop in from time to time and see what they have available.

FC730 5.1 surround sound speakers from Overclockers will fit the bill nicely. With a ton of features and excellent sound quality, they make for an exceptional upgrade at just £79.99. goo.gl/uirTDc.

**Ebuyer**: However, if don't fancy spending too much but you still want a 2.1 sound system, then the Xenta 303 2.1 sub and speaker system will set you back a mere £14.99 from Ebuyer. **goo. gl/dm00r4**.

#### Upgrade Deals For All Wallets

Depending on how much you want to spend and what it is you want to upgrade, these components should cover most tastes and budgets.

These aren't the limit, though; if you dig deeper you'll find some excellent bargains we've no doubt missed or have been added since we wrote this. So before you upgrade, have a scout around and see what upgrade deals are on offer. mm





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#### While you might like being close to sand and sea, your smartphone, tablet or laptop is likely to find it rather less agreeable

traditional beach activities can get bit dull at times, it's still nice to be outside in the fresh air.

The problem, however, is that while you might like being close to sand and sea, your smartphone, tablet or laptop is likely to find it rather less agreeable. If you're going to take your tech to the beach, then, you'll need to protect it from the elements.

And unless you're going to run the world's longest extension lead or you plan to sit in your car with the engine running, you're going to need a portable power source to keep your gadgets going. Otherwise they'll run out of juice within a couple of hours, and then you'll have no choice but to fly your kite for the 50th time or - heaven forbid have a conversation with someone.

Of course, you might actually enjoy the beach and all that comes with it, but technology still has its place, and instead of using it to replace your seaside experience, you can actually use your gadgets to enhance it.

Whatever your feelings towards the Great British summer, if your portable devices are going on holiday with you (including overseas), it pays to get them ready, both to protect them and to make sure you get the most from them. To help you get started, we've put together this guide, detailing some of the hardware and software that can help make sure your holidays go smoothly.

#### **Protect It!**

#### 1) Aqua-Quest Waterproof Laptop Case £25.12

#### www.amazon.co.uk

Taking your laptop to the beach isn't particularly advisable, but if you have some work to get on with and you want to do it with the ocean breeze in your face, then a decent case is a must. This one claims to be waterproof, which probably means it'll keep sand out as well. It should be fine for notebooks up to 17 inches, and you could always use it for smaller things like tablets. This padded case features a double zip lock and a velcro flap, and the Amazon entry claims it's 100% waterproof. Nevertheless, we wouldn't advise

testing the veracity of that claim too stringently. And, of course, once you take the laptop out of the case to use it, it'll be exposed to the elements once again, but at least while you're not using it it'll be protected. Plus it's a lot cheaper than going out and buying a special ruggedised laptop.

#### 2) Matias Laptop **Armor Case** matias.ca \$199.95 (around £120)

In spite of being touted on

the Matias website as the "a limo for your laptop", the Laptop Armor case doesn't actually appear to come with any wheels or a chauffeur. What you do get for your 120 quid (not taking into account customs duty or anything like that) is an aluminium case, with a "patented Foam Spacer design" to allow for laptops between 14 and 17 inches in size. What this actually means is velcro-backed strips of black foam, which can be taken out or added until your portable PC is sitting snugly. It also means someone has apparently patented the idea of putting soft stuff into a case to keep the contents safe. Just looking at it, you can guess your notebook is going to be fairly secure, and the website provides a handy video of a young lady in a lab coat dropping the Amor case with a laptop inside from a height of ten feet and then demonstrating the functioning and unharmed computer. It comes in three colours (black, white and silver), and it weighs 2.74kg, so you'll also get a workout every time you carry it somewhere.

#### 3) Optrix XD5 Waterproof Action Sports Case For iPhone 5 & 5s £99.95

#### www.johnlewis.com

Even though Apple's most recent smartphones have lost a good deal of ground to the Android competition, when it comes to accessories, it's still the iPhones that get the most support and the most interesting high-quality add-ons. Perhaps this is because iPhone owners are considered bigger spenders, or perhaps it's due to the much wider range of Android models that need to be catered for. Whatever the reason, cases like this one from Optrix tend to be iPhone-only. Nevertheless, the apparent quality of the product justifies its inclusion here. Waterproof at up to 10m, this rugged case also packs a 175° wide-angle lens and a protective touch-screen









membrane, so you can still interact with your handset without having to take it out of the case. If you're more serious about your iPhone photography, then you might want to check out the Optrix PhotoProX, which comes with four interchangeable lenses. It's available from eBay for around £120.

#### 4) OverBoard Waterproof Smart Phone Case £27.49

#### www.over-board.co.uk

Although it won't provide any protection against knocks or falls, a waterproof case for your smartphone will at least keep out water and sand, while still allowing you to use the touch-screen. This one from OverBoard is just one of many that are available from a huge range of different manufacturers, for just about every tablet and phone you can think of (including flip phones, because apparently people still buy those). They all do the pretty much the same thing, but prices tend to vary. The OverBoard ones are towards the higher end of the scale, but they tend to get good reviews, and if you're going to be putting a £500 phone in one of these things, you want to make sure it's going to be up to the job. A £10 saving now might not seem so appealing when your phone has drowned to death thanks to a shoddy waterproof case. That said, do shop around and read plenty of reviews.

#### Charge It!

#### 5) Voltaic OffGrid Solar Backpack f219

#### www.amazon.co.uk

First, let's address the elephant in the room here, the pachyderm that always sticks its trunk out whenever we think about solar-powered products and their relationship with the British weather. This bag is probably not going to be much cop in the UK, but this and the other bags from Voltaic (www.voltaicsystems.com) are worth a look if you're headed somewhere abroad where the sunshine is more frequent and consistent. The two 2W solar panels should take around five hours to fully charge a typical phone, and the built-in 4000mAh battery has a maximum output of 5W. Handily, this can also be charged with a USB cable or DC car adapter, so you don't have to rely on the sun. In direct sunlight, the battery apparently takes about nine hours to charge – unless you're in Britain, in which case it'll be fully charged sometime in the next millennium, by which time you'll probably have a new phone. If you're looking to charge a laptop, then take a look at Voltaic's Array backpack, which has three 3.4W solar panels and a much more powerful 20,000mAh battery with max output of 57W.

#### 6) Anker Astro Pro2 £59.99

#### www.amazon.co.uk

Currently reduced on Amazon.co.uk from £140, this portable battery pack boasts a 20,000mAh battery, which is said to be enough to charge a laptop once and smaller mobile devices several times over. With such an impressive capacity, it's not surprising that it's a pretty hefty bit of kit, weighing 510g, and although it's thin, its other dimensions are a little on the large side. If you're on a beach, though, miles from the nearest plug socket, then it's probably best to sacrifice some portability for more power. There are plenty of other more stylish battery packs on the market (although this one does feature a handy LCD capacity indicator) with more diminutive dimensions, but they won't provide the kind of power you'll find with a larger one like

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# The BioLite CampStove can help you kill two seagulls with one stone

this. Of course, such a big battery is going to need a while to charge, and the Astro Pro2 takes around four to five hours to get fully juiced using the included DC cable. The important thing is you'll get more time out of your gadgets, so you can play Words With Friends until the sun sets and you can finally go back home to your PC.

#### 7) Energizer AP750 £3.09 - £25

#### www.energizerpowerpacks.com

If your charging requirements aren't particularly demanding and portability is more important, this cheeky little charger could be just what you need. It's small enough to hang off your keys, so it won't weigh you down, but inevitably that means it's going to be somewhat lacking in the power stakes. With a rating of just 750mAh, it's not going to be fully charging your phone, but it's claimed that it can provide up to 90 minutes of talk time – and that's an important factor to note, because it won't help with any extended gaming sessions. Nevertheless, if you just need an emergency power supply for when you're out of options, the AP750 looks to be a reasonable solution from a reputable brand (there are loads of cheap, non-brand ones floating around the internet – buy those at your own

risk). Pricing for the AP750 seems to vary quite dramatically, though. We picked up the last two from **www.kikatek.com** for just £3.09 each, whereupon the price went up to £4.25, but we guess that's for Kikatek to order one in specially for you. Checking on Amazon. co.uk also revealed prices of around £5, but Google Shopping results seemed to more around the £15-£20 mark, so it's definitely worth looking around for deals. If you're paying £20 for a battery charger, you should be looking for something with greater capacity.

#### 8) BioLite CampStove £132.95

#### www.greenmanbushcraft.co.uk

Assuming you're going somewhere that allows campfires, the BioLite CampStove can help you kill two seagulls with one stone. As well as giving you a stove for cooking or just warmth, it'll also top up a phone or tablet via the built-in USB port, which it does by converting the waste heat from the stove into electricity. Apparently, its 2W output is enough to give 60 minutes of talk time to an iPhone 4S in about 20 minutes. Whether or not it's actually that efficient is difficult to say without testing it, but if you're going to be lighting a fire anyway, it surely doesn't hurt to give your phone a little boost at the same time. BioLite also has an updated version, the BaseCamp, which outputs at 5W for faster charging. At the time of writing, though it was on Kickstarter, with just five days left and \$575,828 pledged, so by the time you read this, its campaign will have ended.

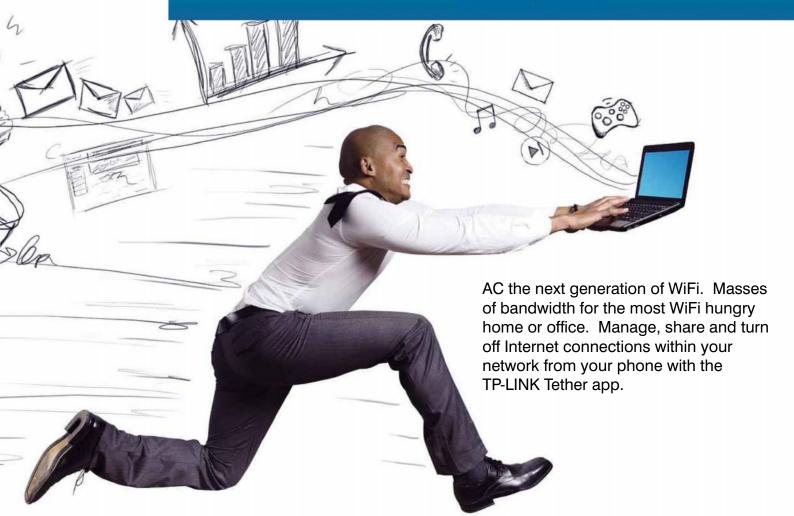
#### 9) Hymini Wind Charger £7.99

#### www.hymini.com

While solar power products in this country seems to be the embodiment of wishful thinking, a more hopeful prospect is wind power. And no we don't flatulence of any kind (although we do feel a new Kickstarter project coming on), but rather the sort of wind that ruffles your hair, blows leaves around and knocks over trees. And no we still don't mean flatulence. However, in spite of how windy the beach may get, you're probably going to need a decent-sized turbine to get a phone charged up. Sadly, there don't yet appear to be any large fan-based chargers for regular users (the one at www. gotwind.org/diy/Orange\_Wind\_Generator.htm isn't commercially available), but there are a few like the Hymini. With a 1200mAh battery built into it, it should be capable of providing a decent boost to your smartphone or tablet, but how long it takes to charge from the fan is the crucial matter. Judging by online reviews, the answer is 'a long time', although some users report better results by strapping it to a moving car. Of course, if you're in your car, you could just charge it via USB instead, which makes the fan charging seem a bit pointless. On the plus side, the official website says you can also wind it up by









AC1200 Wireless Dual Band USB Adapter



Archer C7

AC1750 Wireless Dual Band Gigabit
Cable Router



**Archer D7** 

AC1750 Wireless Dual Band Gigabit ADSL2+ Modem Router





Available from:















hand with the miniHANDCRANK generator, if you can find anywhere that sells it. All in all, an interesting idea (which is why we mention it here) but probably not a very good implementation.

#### **Connect It!**

#### 10) TP-Link M5350 Portable 3G Hotspot Wireless N Router £43.98

#### www.dabs.com

If you own a smartphone, then you already have a device that can access the internet while out and about. And you can even share that connection with your wi-fi only gadgets, like tablets and laptops. Despite that, there are a number or reasons why a portable hotspot like this could still be useful. For a start, you might find the tariffs on a dedicated 3G/4G SIM to be cheaper than a phone SIM. Then you have to consider the battery life of your phone. 3G and 4G use more juice than wi-fi, and if you're using the phone as the hotspot, you're increasing its workload and draining the battery even more quickly. With a dedicated portable hotspot, you can remove that burden from your phone, giving you more time with your devices. Just put your 3G SIM into the M5350 and its 2000mAh battery promises to give you between six and ten hours of internet access, depending on bandwidth usage. Up to ten people can connect simultaneously, but sharing a 3G connection with that many users is probably going to result in dial-up-like speeds or worse. It also comes with an SD

card slot so you can use it as USB storage, and it has an OLED display that presents a host of useful information, such as signal strength, network type and traffic statistics (which, unfortunately, means network traffic and not helpful advice for the drive home).

#### **Hear It!**

#### 11) Music Angel Friendz £20

#### www.amazon.co.uk

Until recently, we'd never heard of Music Angel, but a friend gave us one of these fairly timid-looking speakers as a gift. It doesn't look like much, but when we switched it on, the shear volume blew us away. For such a small product, this speaker manages to produce a surprising level of high-quality stereo sound. Even the bass has a little bit of oomph to it, although it's never going to compete with a fullsize speaker set. It's a pretty simple bit of kit, connecting to any device with a 3.5mm output, but that's fine if you just want to get your music up and running without fuss. What this speaker doesn't have, though, is Bluetooth, but that's actually a benefit here; if you're using one of your mobile devices to send music to this speaker, then using a cable rather than Bluetooth is going to save you some valuable battery life. Indeed, it's built-in battery (charged via USB) can last up to 120 hours, with charging taking up to three hours. Obviously mileage may vary, but it's an impressive figure nonetheless. You get all the leads you need plus a storage pouch in the box, and you can connect a Friendz with other Friendz to boost the volume.

It's worth noting, though, that there are tons of fake Music Angel products pouring out of the Far East at the moment, so buy with care.

#### 12) Tank Waterproof Bluetooth Speaker £29.95

#### www.red5.co.uk/tank-waterproof-bt-speaker.aspx

There's no shortage of battery-powered Bluetooth speakers, and they range from about £5 up to several hundred. If you're headed to the beach, though, where water and sand are likely to be flying about, then you probably don't want to take anything too expensive with you. For just under £30, you can get one of these tiny speakers, which not only won't hurt your wallet but which is designed to take the odd knock or two. In terms of its waterproof credentials, it's actually splashproof (IPX4 compliant), but that should be more than enough, unless you like dunking speakers into the sea and trying to listen to them underwater. In which case you're very strange. As with any portable speaker, we'd recommend extending the battery life using the auxiliary input, but the Bluetooth connection is there if you want it. It also includes a built-in noise-cancelling microphone and a hands-free button, so you can use it to take and end phone calls. It's ideally suited to the shower, but it's definitely got what it takes to be a decent addition to your seaside trips as well.



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The above images are simulated images may differ from actual product. For more information visit www.zalman.com











#### Ways To Protect Your Skin Today:



#### 13) Braven BRV-1 Rugged Speaker £108

#### www.pixmania.co.uk

If you'd rather not skimp on the sound quality but still want a speaker that can survive the harsh, unforgiving demands of the British coast, then Braven has just the product for you. The BRV-1 is IPX5 compliant, so it can take more of a soaking than the Tank, but again it should not ever be completely immersed in water. It's still small enough to be held in one hand, so it's not going to be massively loud, but its two 3W speaker and 70mm passive subwoofer should be fine for music on the beach and for taking calls using the built-in speakerphone function. The 1400mAh battery, charged via USB, should give you a maximum of 12 hours use, so it'll be fine for even the longest and most tiresome of seaside jaunts, and it even has a USB port so you can charge your phone, tablet or MP3 player from it. If you're after something a little bigger, check out the BRV-X. As well as having a larger 5200mAh battery, it's also possible to pair two of them together via Bluetooth for proper stereo sound. Pixmania sells it for £188.

#### App It!

#### 14) RNLI Beach Finder Free

#### iOS and Android

Okay, kids, time to put on our dad hat and get serious for a moment. Splashing about and frolicking in the sea is all well and good, but such carefree shenanigans are never more than a couple of minutes from disaster! Well, maybe that's a little overdramatic, but the point is the sea is a very big, scary thing, and it can swallow you up so fast, it'll be like you were never there. Of course, if you get into trouble in the ocean, and the beach you're on has lifeguards, then your chances of getting back safely to dry land no doubt improve immensely. Helpfully, the Royal National Lifeboat Institution has produced this free app, which will point you in the direction of your nearest lifeguarded beaches, as well as providing real-time weather and tide reports. You can also enter a sandcastle competition, send virtual postcards and take a beach-related quiz. As it says on the RNLI

website, with the Beach Finder on your phone, "You don't need to pack the lifeguard." We're pretty sure no one in the history of either beaches or lifeguards has ever actually attempted to do that, but it's the thought that counts.

Low risk for all skin types.

#### 15) AA Parking £1.69-£1.99

#### iOS, Android and Windows Phone

Unless you're lucky enough to live within walking or cycling distance of a beach, then you're either going to have to rely on public transport or you'll have to drive. If you're taking your car, then the matter of parking is obviously going to come up, and since even the slightest hint of sunshine causes the UK population to flock to the sea in their droves like newborn turtles, finding a place for your vehicle can be a wholly traumatic affair. This app from the AA can not only tell where the nearest car parks are, but it can also provide you with tariff information, so you can save a few pennies, as well as your time and sanity. It's based on the database of parking info at www.parkopedia.co.uk, and it also has search filters for street parking, free parking, covered parking and secure parking, among others. And, "where available", it can provide real-time updates of space availability. Sadly, though, it can't help you with your parallel parking.

#### 16) World UV

#### Free

#### iOS and Android

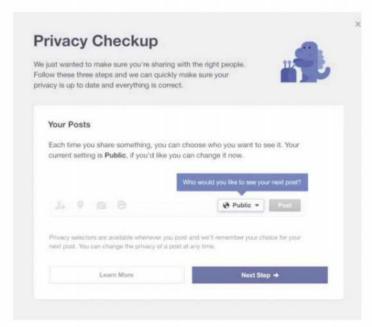
As we said at the beginning of this article, the sun is most definitely now sporting a rather wonderful item of headgear. And if the sun has his hat on, it might well be time for you to put on yours, not to mention a generous slathering of sunblock, because as lovely as a bit of sunshine can be, burns and skin cancer are not. This free app, created in partnership between the British Association of Dermatologists and the Met Office, provides daily UV forecasts for more than 10,000 locations worldwide. And rather than just give you a bunch of confusing numbers and jargon, it frames this information with advice for identifying your skin type and tips for what you should do to protect yourself from the sun's harmful ultraviolet rays. mm





# Facebook And The Battle With Privacy

Facebook always seems to be tinkering with its privacy settings. But does it really have your best interests at heart? Sarah Dobbs isn't so sure...



t's almost hard to remember what the world was like before Facebook. For most of us, checking our Facebook feeds is a part of our daily routine, something we do without even really thinking about it. It lets us stay in touch with people who might otherwise have completely fallen out of our lives. It lets us turn acquaintances we met once in the pub into proper friends. It lets us share the minutiae of our daily lives with our friends, family and colleagues, and it gives us a window into their lives at the same time.

Social media has been around long enough now that it's changed the way we interact with one another, and while Facebook isn't the only website around, it's definitely one of the most popular and significant: recent figures show that approximately half of the UK population has a Facebook account, which makes it impossible to ignore.

But while some of you reading this will enjoy being able to keep in touch with everyone in your lives digitally, some of you will probably be shuddering. Social media and, yes, specifically Facebook, has changed the way we think about privacy. You undoubtedly have someone on your Facebook friends list who overshares, telling you things over the internet that they'd never dream of sharing in real life. And putting too much information about yourself on Facebook can have negative consequences, as a whole generation of jobseekers has been warned, over and over.

In real life, we don't treat all our friends and acquaintances in the same way; we don't tell everyone everything. On Facebook, though, it's harder to make those kind of distinctions, and the site seems to be constantly encouraging us to share more and more of our personal information with it – and its advertisers. It's in Facebook's interests to get you to post more, but is it in yours? Let's take a look at some recent Facebook changes and dig into the motivations behind them...

#### **Friends Only**

Until recently, when you signed up to Facebook, the default privacy settings for everything you posted was 'Public'. So if you updated your status to say you were having a bad day at work or posted a picture of your kids or even just added a few flattering selfies to your photo gallery, those things would be visible to



everyone and anyone who stumbled across your Facebook page. You'd have to actually go into your privacy settings and change them to limit access to your stuff to your friends.

Changing your settings isn't a difficult process, and if you're reading this, you've probably already done so. You might even have set up custom groups to show different posts to different people. However, for anyone less tech-savvy, it might not have been obvious that they needed to do that. It might seem obvious to those of us who've been using Facebook for years, but newbies might not have realised it was possible or even that their posts were public in the first place. For Facebook, making everything public by default meant more advertising revenue, because anyone who didn't know or care enough to change their settings was letting all their data hang out, ready to be monetised.

# Social media and, yes, specifically Facebook, has changed the way we think about privacy

Bearing that in mind, the recent change to the default privacy settings is actually pretty decent, from a user's standpoint: as of 22nd May, all new users will have their posts set to 'Friends' by default. In a blog post announcing the change, Facebook acknowledged that "it is much worse for someone to accidentally share with everyone when they actually meant to share just with friends, compared with the reverse."

As sceptical as we've been about Facebook's privacy changes in the past – and there have been so very many of them – this seems like a move in the right direction, helping new users find their way and protecting them against unintentionally sharing too much.

#### **Dinosaurs**

Along with the new default privacy settings, Facebook has also launched a new 'Privacy Checkup' tool. A cute cartoon dinosaur – dubbed 'Zuckersaurus' – will pop up to walk first-time users through their privacy options when they first post on the site. If they don't make a decision, the 'Friends' default will kick in; if they do try to post something publicly, a pop-up warning will appear, asking them to check whether they definitely want to do that.

The Privacy Checkup tool will also be available to other users, as part of an overall drive towards getting users to understand



# Contact Information Mobile Phones Ask for Alicia's phone number Address Ask for Alicia's address Email Ask for Alicia's email

their settings better. As it's rolled out over the next couple of weeks, you'll see that little blue dinosaur asking you to check your default setting is the right one, that you haven't enabled any apps you didn't want to and that various key bits of info are only available to the people you want to share with. And if you don't change your privacy for a while, you'll get another visit from Zuckersaurus, just checking you still want to share with the same people you used to.

# **♦** You'll have noticed the site is quite keen to know all your information **9 9**

The whole thing sounds like Facebook has finally listened to the thousands of users who were upset with how complicated Facebook's privacy settings are and is taking their concerns seriously. At the developers conference where these changes were announced in April, Mark Zuckerberg said, "My goal for the culture of Facebook is to build a culture of loving the people we serve which is as strong, if not stronger, than hacking at Facebook."

Again, that all sounds like solid, positive stuff that benefits the user rather than Facebook itself. But there are some other changes that maybe aren't quite so loving...

#### The Ask Button

If you've been using Facebook for any length of time, you'll have noticed that the site is quite keen to know all your information. If you don't fill everything in – like the city you live in, your phone number, your relationship status, your email address and even your employer and professional skills

#### **Apps Anonymous**

Another change Facebook has recently made concerns apps that interact with Facebook. At the moment, if you want to play games or do quizzes or use various other Facebook apps, you'll need to agree to share some of your Facebook information with the developers. Generally, it's pretty basic info, and sharing it doesn't do any harm. Soon, though, you won't have to do even that, because Facebook is rolling out Anonymous Login.

As the name suggests, Anonymous Login will let you log into Facebook apps without actually giving the apps any of your data. Facebook will know who you are and what app you're using, but your information won't be passed on to the app developer unless, after using the app for a while, you decide you're happy to share.

Also, Facebook Login is being changed so that you can choose which specific bits of information you're happy to share with websites and apps. Say you want to comment on a website that uses Facebook Login to verify the identity of commenters. Previously, by logging into Facebook you'd have to share most of your basic info, like your name, email address, birthday and sometimes your friends list. Now, though, you can work down a check list and choose what gets shared and what doesn't. You'll still be required to share your public info, like your profile picture, but the rest will be up to you.

– you'll get semi-regular nagging pop-up messages asking you to supply that info. Facebook will even guess, based on your friends' info, where you live and where you might have gone to school. It's a little bit creepy.

What's creepier, though, is that Facebook now encourages your friends to ask you for the missing info too. A few months ago, Facebook introduced text links in users' profiles, where their friends could click to ask for their phone numbers or relationship status, which was bad enough, but these are now slowly being replaced with Ask buttons.

Of course, if you're friends with someone and you've lost their phone number, it might be handy to drop them a Facebook message and ask for it. But this isn't just a message; it's a request to add that information to their profile – which is a bit weirder. You can supply a reason when you're asking for information, though it's hard to know what a good one might be. I mean, if you have a crush on someone, getting Facebook to badger them to update their relationship status probably isn't the smoothest of possible moves.

This isn't a feature that anyone actually needs or particularly benefits from; if you want that info from a friend, Facebook already offers you plenty of ways to ask for it without this creepy automated system that ultimately just benefits Facebook and its advertisers.

#### **Entertain Us**

There's something even more intrusive on its way, though. Facebook is introducing an extra option to the status update box: the ability to share what music you're listening to or film you're watching or game you're playing while you're updating your feed. But rather than asking you to go to all the trouble





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of typing 'I'm watching Game of Thrones' or 'I'm listening to One Direction' into a text box, if you're using a mobile device, Facebook will offer to fill in the blanks itself.

Using the microphone on your phone or tablet, Facebook will eavesdrop on your entertainment habits in an attempt to figure out what you're doing by matching the audio to its database. Then you can share that info with your friends. If you're listening to music, a 30-second snippet will be available to your friends;

# • Using the microphone on your phone or tablet, Facebook will eavesdrop on your entertainment habit

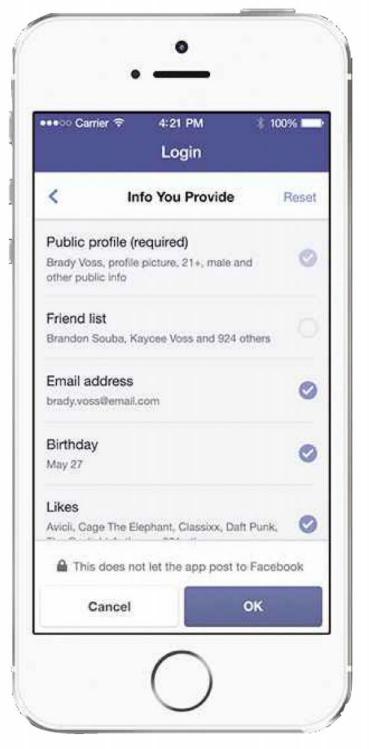
if you're watching telly, information about the show will appear next to your post.

From Facebook's perspective, having this extra insight into its users is valuable. The site can use your preferences to target advertising more accurately to you, and if the feature spots that you're watching a TV show, it'll encourage your friends to talk about it with you. It's all stuff that encourages people to use Facebook more often and for longer stretches of time, during which it can advertise to you more and make more money off you.

It's all optional (you have to opt in to let Facebook record sound, and you have to agree to post it once it's identified your entertainment of choice), but there's something unpleasant about the idea. Facebook says the audio isn't saved anywhere, so employees won't be listening in on your conversations, and you can change the privacy settings of your posts, but it's still not something I can imagine many people being keen to use.

#### Money, Money, Money

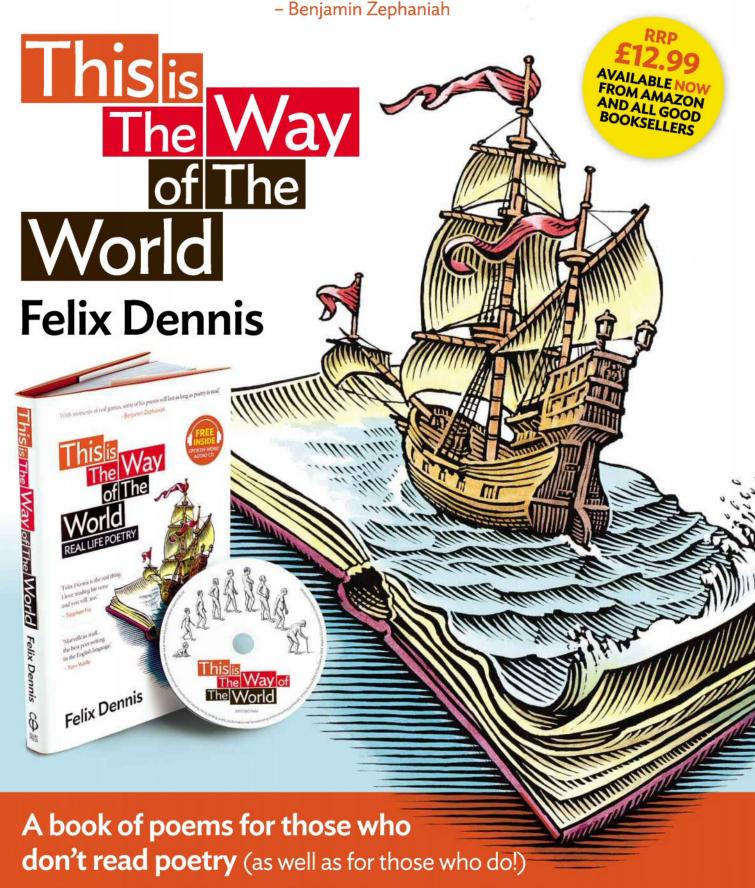
The thing is, as much as Zuckerberg might talk now about loving users, Facebook is ultimately a business and not a philanthropic organisation. The bottom line is always money: if the company is going to spend time and money developing new features or changing the way the site works, it has to be sure that its investment is going to pay off in the long run. It makes sense, of course, for Facebook to try to appeal to as many people as possible and to make its users feel safe and secure using the site. Otherwise, it's going to lose its user base to other sites and services. Changing things in response to user demand might be partly motivated by wanting to keep people happy, but it's not just because Facebook likes spreading joy. It's because happy



users keep coming back, sharing more information and seeing more adverts.

Being too paranoid about these things doesn't serve much purpose, and if you're using Facebook, it's going to be because you find value in it for yourself. It's a really useful site for sharing photos, having a chat to people and generally keeping in touch, but since Facebook doesn't charge for those services, users do need to be aware that they're paying in other ways. The newest changes to Facebook's privacy settings show that the company is thinking very carefully about how it can maintain the delicate balance between happy users, happy advertisers and happy bank managers. mm

'With moments of real genius, some of his poems will last as long as poetry is read.'



A collection of 'real life' poems by Felix Dennis, one of Britain's best-loved poets, charting life's course from infant to endings with illustrations by Bill Sanderson.





#### Where Next?

In Issue 1314's article 'Where Next for Software?' you reported that the LibreOffice developers were "ideologically opposed" to Microsoft's changes, including the Ribbon. I also don't use the Ribbon in the software I create, for two reasons.

First, Microsoft has taken out a patent on the Ribbon, so it is only possible to use it if one uses Microsoft's own development tools, or tools whose vendor has bought a license for the Ribbon. Second, the Ribbon is less convenient than traditional menus and toolbars for many users.

For example, the average number of clicks to use a toolbar is exactly one, but for a Ribbon button the average (in realistic use) is always more than one. It is one if you happen to be on the Ribbon tab you need (which mostly you will be in a well-designed application), but you'll always need to click a different Ribbon tab at some point to access some other button.

Another problem with the Ribbon is that it takes up a significant amount of vertical space. Yet most modern screens are much wider than they are tall, so vertical space it at a premium. With menus and toolbars you can often either drag toolbars off to the

left or right and have them in vertical strips, or you can hide the toolbars altogether and just use the menus: either way gives you far more vertical space which makes a big difference when working on document-centric applications on a laptop.

Mark Summerfield

#### Military Genealogy

Miliary Genealogy can be difficult if you do not get help. In World War I some military units like the Royal Engineers were spread around the whole British army as they worked largely on what would today be described as infrastructure projects. So the many small corps of the Royal Engineers can be difficult to track down today.

However, I got some really excellent help tracking down the military activities of ancestor from WWI from the 'Sapper History' site and they produced a brilliant Google Earth map with all this soldier's locations, the relevant rail lines, German trench lines and many other features on it. I also got a PDF copy (from the National Archives) of the Royal Engineer 83rd's diary for

about £3 and it covered four years. The "Sapper History" site got it for me from the National Archive and I was also given help with all sorts of other details related to this difficult quest.

The reason the 83rd's diary was such good value was that it had already been digitised. However I also needed to get the diary of the 136th and the cost of that was £45.50 for about three months of wartime diary. The reason for this extreme difference in price is that the 83rd's diary had already been copied as part of a collection but the 136th has not been copied yet and they therefore charge a fee based on how long it would take to copy it. Interesting for those who need to get data from them.

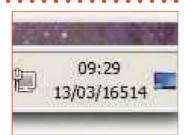
Harry Deakin

#### **Computer Time**

Attached are a couple of screen grabs, apparently my computer thinks It's the thirteenth of March in the year 16514. No idea how that happened

#### Alan Jones





#### GET IN TOUCH...

#### By email

letters@micromart.co.uk

#### By post

Micro Mart 30 Cleveland Street London W1T 4JD

#### Online

forum.micromart.co.uk



# **Component Watch**

#### With new GPUs coming, there are some great deals on the old ones

t's been well over a year since Nvidia's 700-series GeForce cards were first released, and it's not long until 800-series cards are due to hit shelves. That means retailers are already preparing their stock for a sell-through, and potentially competitive price cuts are to be found! If you're interested in building a state-of-the-art games machine, there are loads of cards to choose from, and that's why we've picked five of the best to spotlight. They're not necessarily cheap (the latest technology seldom is), but you won't find better prices than this anywhere else online!

Deal 1: Zotac GT 740 1GB RRP: £84.99 / Deal Price: £64.92

One of the cheapest 700-series cards around, the Zotac GT 740 claims performance four times better than integrated graphics – although you'd expect so, given how much it costs! Clearly it's



a low-end card, but that doesn't mean it's completely useless. A GK107 Kepler core clocked at 993MHz is formidable enough for older and simpler games. If you prefer slightly better performance, you can find models up to 4GB, but if it's budget you're after, this is the model to get.

Where to get it: Ebuyer - bit.ly/1l41Er6

#### Deal 2: EVGA GTX 750 Ti 2GB RRP: £131 / Deal Price: £121.40

Slightly more formidable but still at the cheaper end of the price spectrum, the GeForce GTX 750 is a good mid-range performer at a good mid-range price. The base clock speed is 1189MHz, moving to 1268MHz in boost mode. 2GB of RAM is



more than enough at this price, though you can find versions with different amounts if you're willing to pay a little more or less!

Where to get it: Ebuyer - bit.ly/1pfC3Dk

#### Deal 3: Palit JetStream GeForce GTX 760 OC 2GB RRP: £205 / Deal Price: £189.62

If you prefer a slightly more capable card, the GTX 760s are consistently reliable and good enough to play modern games brilliantly. This Palit GTX 760, which supports up to three DVI monitors, has 2GB of RAM and is factory-overclocked to a base speed of 1072MHz (1137MHz



with boost). Buy it now and you can even get a free copy of *Watch Dogs* to put it through its paces!

Where to get it: CCL Online - bit.ly/1s2D57Q

#### Deal 4: Gainward GeForce GTX 770 Phantom 4GB RRP: £314.99 / Deal Price: £281.99

Already one of the cheapest GeForce GTX 770s around, Gainward's version is available for a reasonable discount from multiple retailers. With a GK104 GPU clocked at 1046MHz (1085MHz with boost) and 4GB of RAM, it's certainly no slouch in the specs department. It



also has relatively low power requirements: just 230 watts at stock speeds. Whether you plan to overclock it yourself or don't want to pay extra for cards that run at the limit of their abilities, the GeForce GTX 770 is a great choice at any price.

Where to get it: Overclockers - bit.ly/1u1qtcD

#### Deal 5: Gigabyte WindForce GeForce GTX 770 OC RRP: £275 / Deal Price: £249

What could be better than a GeForce GTX 770? How about a factory-overclocked GeForce GTX 770 with 4GB of DDR5 RAM? Yeah, that's what we thought. As well as a WindForce 450W cooling system, Gigabyte's OC edition features a GPU running at 1137MHz, clocking up to



1189MHz in boost mode. Designed for use with multiple screens, the reasonable chunk of cash you save off retail price will go some way towards the cost of a new monitor!

Where to get it: Dabs - bit.ly/1s2DHdz



# From Bedroom To Billions

# PowerDirector Comes To Android/ Windows 8

Free to download

yberLink has now decided to provide its PowerDirector software for Android and Windows 8 tablet users

The video editing software has been around on the market for years, so the prospect of this now coming to a wider audience was no doubt expected. Tablet users can now experience such features as a timeline workspace and drag-and-drop

for more accurate editing, and as this is free to download from Google Play and the Windows store, it seems silly for any potentially interested people to not give it a go.

Also among PowerDirector Mobile's feature-set are a wide library of video effects and transitions, export to full HD and built-in tools for sharing to YouTube and Facebook. The website for anyone interested is **www.cyberlink.com**.

## Power Director

### Hackers Take Advantage Of Cryptolocker



#### Ransomware still causing headaches

hose pesky hackers are at it again. It turns out that security software specialist Bullguard has uncovered a massive phishing campaign put together by hackers to exploit the mass panic caused by the Cryptolocker ramsomware. The spam email campaign promises decryption keys for Cryptolocker, saying that a tool can be downloaded to unlock any affected files.

Naturally, this is all bunkum and this 'tool' is actually malware which any unsuspecting victim will have just downloaded on to his or her system. At this point, any user will be warned that they have a bunch of registry problems (which they don't) and that these problems can only be cured by buying a product on offer by the scammers (which is a lie).

Best advice? Please, be careful about downloading anything from a source you don't recognise.

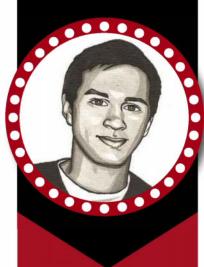
#### **Geek movie to air at games festival**

heffield. Home to Jessica Ennis, Pulp and, more importantly, the Games Britannia Live festival. This annual family friendly festival is all about celebrating Britain's rich videogame heritage, and this year there's a particular treat in store for those among us of a gaming persuasion.

Documentary From Bedroom To Billions, a feature-length film about the British videogames industry from 1979 to today, will be shown at the festival for the first time ahead of a full public showing in London this September. The screening is completely free, but to be in the frame for one of 100 tickets on offer you need to give what's considered to be a winning reason for wanting one over at the Britannia Live website (gamesbritannia. com/live).

Aside from the screening, the event itself promises to be something rather special, with hands-on drop-in activities, hacks and interactive workshops, so if you're in the area on 28th or 29th June, this is probably worth a look-in.

If you can't make it up north but are interested in the film anyway, **www. frombedroomstobillions. com** is the website for you.



Microsoft has been struggling to innovate and adapt for some time now. Yes, it's launched new products and tried to new things: we've had Surface, Windows 8, Windows Phone, and before them we had Zune and Kin. All were considered varying degrees of failure.

Most of those products were born under the stewardship of Steve Ballmer, and while we can't necessarily blame the fortunes of an entire company on one man. we can be sure that some his actions and attitudes were less than helpful. Now, of course, there's a new man in charge, Sayta Nadella - and, as David Briddock explains this week, he has quite a different leadership style. He's only been in the job for a short while, but his willingness to embrace open source software speaks volumes.

The fact is Microsoft needs to starts producing what people want, instead of trying to force people to want the things it produces. So far, it seems Nadella gets that. See you next week,



# Sony Beats Nintendo

#### Mario and Luigi unavailable for comment

ony has managed to place yet another feather in its cap on what is turning out to be a pretty good year so far. Figures have emerged from Japan's Nikkei news site that suggest that Sony has overtaken its rival for the first time in eight years in terms of the number of consoles sold.

Sony sold 18.7 million systems in the last financial year compared to Nintendo's 16.3 million sales, and the figures are reportedly based on Nintendo's and Sony's own.

Let's be completely honest about this: this is not a shock. Sony's PlayStation 4 has become the bestselling next-gen console, outstripping Microsoft's Xbox One relatively easily. Nintendo, on the other hand,

has struggled since the launch of the Wii U, and it could be argued that its best days (the Wii was a massive hit and a popular seller) are behind it. It's still sad to witness the decline of Nintendo, though, even if it's largely as a results of its rivals doing impressive business.



#### Meanwhile... On The Internet...

f you were ever in doubt that malware was big business, then we'd point you in the direction of news revealing that there's a whole new form of trojan due to be trying to get access to your computer pretty soon. According to RSA security researcher Eli Marcus (tinyurl.com/Motl1316a), the Pandemiya code is comprised of about 25,000 original lines, which appear to have taken its creator around a year to complete. Nobody's going to put in that much work without some reward at the end, surely?

According to Marcus, the new nasty is currently being sold in two different variants, costing \$1,500 and \$2,000 respectively (making it relatively expensive compared to some other trojans available), with the more expensive version offering additional plug-ins for extra functionality. Apparently, one of the interesting features of Pandemiya is the ease with which it can be expanded and shaped to specific tasks, with the creators saying there's a Facebook-specific variant on the way soon. The effect this has on the general public remains to be seen, but it's another reason to be extra careful out there (tinyurl.com/Motl1316b).

or many – not us, of course – Microsoft's seemingly infinite capacity for shooting itself in the foot is a constant source of amusement.

For such people, the start of the World Cup was great, as all the cool points that the company had hoped to collect by hiring *Breaking Bad*'s Aaron Paul to front its latest big Xbox One TV ads seemed to be frittered away amid stories of Paul's "Xbox On" command – heard at the start of the commercial – activating units in real-life living rooms (tinyurl.com/ Motl1316c). The phenomenon seems to be limited, however (tinyurl.com/Motl1316d), and one wonders if it's not part of some clever 'all publicity is good publicity' scheme to spotlight the ads and the functionality. Cynical? Us?

f you have an eye for a bargain and something in the region of \$17m lying around that you fancy taking a punt with, why not check out the FBI auction of the Bitcoins that US Federales seized when they shut down Silk Road. You never know, you could pick up a bargain (tinyurl.com/Motl1316e).

ithout wanting to get to self-referential, we'd like to tell you how this week's column was nearly bought down by a DDoS attack...

As many people did, when Google decided to kill off its reader software a while back, we switched our RSS feeds over to Feedly; it's still the service we rely on to round-up many of the stories and little snippets you see in Meanwhile every week, and it's generally very good at doing just that. However, Feedly itself has been the target of an attack in the last week, one which bought the site down on Wednesday 11th and Thursday 12th June and still appeared to be interrupting the service as the magazine went to press on Friday.

Most worrying is the fact that the attack was part of an extortion plan; Feedly's blog was quick to point out that it had been contacted by whoever was controlling the attack and asked to pay in order to prevent it happening (tinyurl.com/Motl1316i. The attack apparently started pretty soon after the company made it clear that no payment would be made.

What's more, it's just one of a few similar attacks to take place in recent times, with Evernote (tinyurl.com/Motl1316j) and a as-yet-unnamed gambling site (tinyurl.com/Motl1316k) having also suffered from similar threats recently. The effect of these recent attacks can clearly be seen in the graphic provided by the Digital Attack Map created by Google and Arbor Networks (tinyurl.com/Motl1316l) and appear to be part of an increasing trend towards bigger and bigger attacks that exploit multiple attack methods – aka Vectors – to bring sites down. Security provider Incapsula noted that the gambling site flood totalled over 100Gbps and utilised more than five vectors.

The biggest such attack seen in recent times was targeted at anti-spam organisation Spamhaus, and totalled something like 300Gbps. While these are nowhere near that, they're still a massive threat to companies reliant on the web for business.

#### Aaaaaaaand Finally...

Even the creators of this map don't seem to know how

much importance to place on it, but following on from the city-by-city analysis of the most popular bands on Spotify at tinyurl.com/Motl1316f, number crunchers at the site have gone on to identify a distinct North/South divide in appreciation of Bastille and The Arctic Monkeys (tinyurl.com/Motl1316g). Llke those never-ending, eye-catching stats we get from Pornhub (tinyurl.com/Motl1316h),

you can file this under 'interesting, scientifically questionable, and largely pointless'. Just how we like things, then.

By the way, you can still download PDFs of the Meanwhile... pages with working links by visiting tinyurl.com/MeanwhileDownload or make contact with us @Micro\_mart...

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

Richard Dunn's story is already a bit of an internet classic. Guy gets stuck in airport alone for the night as he waits for an early morning flight. Guy gets bored and decides to make a goofy video for his wife. Guy fires up Celine Dion's version of All By Myself and messes around for a couple of hours lip syncing to the song in the now deserted terminal. Guy posts video to

YouTube; the whole thing goes viral, and all of a sudden he's getting praise, attention and abuse from all the disparate corners of the globe (tinyurl.com/Motl1316m).

If you haven't actually seen his little video (vimeo.com/97634383), it's an endearing amplification of the 'dance like no one's watching' thing we've all done at one time or another – and a great example of how a mobile phone, a good idea and boredom can go a long way.







The happy trio were the subject of the caption competition back in issue 1314, here are the best of your suggestions:

- doctoryorkie: "Doctors used to say: 'Keep taking the tablets'. Nowadays it's the PR people."
- doctoryorkie: "Apple reveal the new iCar: 'Look dad its got Windows'.
- John Davies: "With those teeth, they've got to be on an Apple a day!"
- Ondrive: "Apple's new psychic interface provides an embarrassing insight into what dad's really search for on the internet."
- Le Me: "Even Grandad, who's been stuck with Windows 3.1 for ten years, laughs at Apple's attempt at a 'fast' device."
- wyliecoyoteuk: "And then he said... Hahaha... He said... This is the best bit... Haha... He said: 'YOU CAN HAVE WINDOWS 8.1 ON IT!' Laugh? I just bought an iPad!"
- wyliecoyoteuk: "Finally released: secret camera shots of the first test user viewing of the Windows 8 interface."
- wyliecoyoteuk: "The reaction to David's selfie wasn't quite what he had hoped."
- Tom Turnbull: "And this is me in my swimming trunks on the beach.'
- sgb101: "So your saying by putting this fruit sticker on the back, we can charge an extra £200? Really?"
- blacklion1725: "Siri has just said, 'You're punching above your weight a bit there son!""

Thanks to everyone who entered, and congratulations to our winner, PlaneMan, who suggested, "Apple staff examine Microsoft's projections for Windows 8.1 take up."

If you have something funny to say about the picture below, get yourself to the 'Other' section of our forum (forum. micromart.co.uk), where you can see the picture or email us at caption@micromart.co.uk.



## **Minecraft** Maker **Launches New** Game

#### **Virtual currency requested for Cliffhorse**

inecraft has become such a mainstream hit that it's little surprise that its developer should be releasing a new title.

Markus Persson is now selling his first game since his hugely popular hit in the shape of Cliffhorse, a game that apparently only took him a couple of hours to put together. Show-off.

Persson is asking for payment for Cliffhorse via virtual currency Dogecoin, but it's worth noting that you can still download it

without payment. It's also worth stating that some commentators are viewing this game as a spoof, a means of criticising the sale of early access games that are understrength compared to full releases.

Sure enough, the actual game itself is a little ridiculous. In it, you play the role of a horse pushing around a huge ball around a hilltop. Yup, sounds pretty pointless to us. Whatever the reason, people have already paid for this, so it's had an impact. See it for yourself at cliffhorse.com.

## Lexar Expands Professional **Workflow Line**

#### Aimed at photographers and videographers

lash memory firm Lexar has expanded its Professional Workflow line to now include 512GB and 256GB USB 3.0 storage drives.

They're designed for use with Lexar's Professional Workflow hub, and the drives give photographers and videographers drives to back up images and video files from multiple memory cards at once. The DD512 and DD256 drives offer transfer speeds up to 450MB per second and write speeds of up to 245MB per second, and they can be bought from www.lexar.com/ workflow for £99.99 and £149.99 respectively.



## **Snippets!**

#### **CIA Joins Twitter**

The CIA has a sense of humour: who knew? America's Central Intelligence Agency has opened up its official Twitter and Facebook accounts and it's done so in style. The very first tweet from the CIA Twitter account read, "We can neither confirm nor deny that this is our first tweet." The wags. Although raising a few eyebrows (we wonder which Facebook accounts the CIA boys will 'like'?) expect no great revelations to follow.

#### Google Apologises Over D-Day Doodle

While the world was commemorating the 70th anniversary of the D-Day landings, Google was honouring a legendary Japanese Go player via its daily doodle.

The Daily Telegraph reported that the doodle had been uploaded by accident, and it was pretty swiftly removed, replaced with a simple link to letters, photos and maps pertaining to the Normandy landings.

#### Heartbleed Software Bleeds More Holes

The very same software that contained the now famous Heartbleed bug has been found to contain even more security holes. Luckily, these new bugs uncovered in OpenSSL are not thought to be anywhere near as dangerous as Heartbleed or as easy to exploit. The new security vulnerabilities were discovered as work was carried out to close Heartbleed and render OpenSSL secure.

## Digital Guard Dog From Neoji

#### **Protect your home**

mart technologies are quite the thing these days, so we bring you news of the Neoji box, a kind of digital guard dog for your home. Only problem is that it's not currently for sale.

Neoji monitors your house with an app that can be installed on your smartphone to see what's going on from a distance. Neoji is also equipped with sound, temperature and odour sensors, as well as a high-def camera, and users can program the box to notify of events in real-time or simply of anything unusual or suspicious.

Right now, Neoji is launching a crowdfunding campaign to bring this device to reality so head for **www.indiegogo.com** to read up more on that.



## Corsair Breaks Its Speed Barrier

#### Flash transfers in a flash

orsair has launched its new Flash Voyager GTX USB 3.0 flash drive, coming in 256GB and 128GB capacities. It's thin, it's lightweight and, most importantly, it's the fastest USB flash drive the company has ever put together. Offering peak transfer speeds of up to 450MB/s read and 350MB/s write, this is clearly a speedy fella.

Compatible with USB 2.0 and USB 3.0, Windows, Mac and Linux platforms, the Flash Voyager GTX drives will be available from next month, costing around £70 and £120 each.



## **PlayStation TV Coming To Europe**

#### **Autumn rollout unveiled**

uring Sony's E3 conference, alongside the various games discussed – which include updates to the *Uncharted*, *Infamous* and *Little Big Planet* series – it was announced that its PlayStation TV product is to come to European shores this autumn.

The box will allow consumers to stream video and PlayStation titles to TVs and has been around in Japan for some time already.

Sony also previewed its Project Morpheus VR headset, but it's worth noting that it, and many of the titles the firm announced, won't actually be with us until 2015.

As for Microsoft's big E3 announcements, news that the *Halo* series would make its way to the Xbox One was welcome, but hardly surprising, while other big titles getting a runout included the exclusive *Sunset Overdrive* title, which looks great, if a little annoying.



## Community Corner

#### **Announcements and other stuff**

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

MM Forum: Head to forum.micromart.co.uk for discussions about all things PC, networking, OS, mobile, and tech related.

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



The Micro Mart community forums are powered by InstantForum.NET the leading ASP.NET discussion forum platform from InstantASP. Learn more at www.instantasp.co.uk

## **Computer Passes Turing Test**

#### Fools judges into thinking it's a human

ugene Goostman may sound like a name handed to a human being. Heck, it could even belong to a 13-year-old Ukranian boy, right?

During a run-out of the Turing test – the experiment which sets out to test whether or not someone is interacting with another human or a machine – Eugene Goostman passed the test, the first time this has ever been done, in fact. Which, of course, means that Eugene Goostman is not a human being after all. No,

Eugene Goostman is a supercomputer and one that managed to fool a third of judges at London's Royal Society that it was a human. Five computers were put through their paces in the event organised by the University of Reading, and Eugene was the only one to come out on top.

Given that this is the first time a computer has managed to achieve this level of trickery, this is something of a big deal in the field of artificial intelligence. Just remember: don't panic.

## Netflix Upsets Verizon

#### **Cease and desist letter issued**

he web streaming market in America has become a little more, erm, shouty as telecoms firm and major player Verizon has taken the strong line of issuing Netflix with a cease and desist letter.

The issue it has with the streaming service revolves around complaints from consumers that Netflix had told them that Verizon was behind slow connections. Verizon wrote that there was "no basis" for Netflix to make those claims and to solely

blame Verizon for the streaming problems.

This obviously follows a longer-standing argument between the pair surrounding Verizon's fee demands for keeping video quality high, as Netflix has been forced into paying up to establish a direct connection to consumers' homes to keep streaming quality strong.

Expect this argument to continue for a while longer yet. In the meantime, it's the consumers, as it often is, who miss out.

## NETFLIX

## **Crucial Goes Ballistix**

#### **Elite DDR4 memory announced**

emory master Crucial has launched fresh Ballistix Elite DDR4 modules, promising next-gen memory for highperformance gaming.

Naturally, these are aimed at overclockers (memory with a name like this usually are), and the modules deliver speeds starting at 2666MT/s and 3000MT/s with room to grow. They also offer twice the

bandwidth of mainstream DDR3 memory at up to 24GB/s, improved system responsiveness and increased frame rates, and all this while delivering up to 40% more power efficiency than DDR3 memory also.

High-end gamers can take advantage of better heat dissipation plus an integrated thermal sensor for real-time temperature monitoring, and 4GB and 8GB modules are available alongside 8GB, 16GB and 32GB kits, all from August at uk.crucial.com.

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Gaming Keyboards

As dedicated PC gamers, we require a little something more from our peripherals. While a normal, bog standard keyboard will suffice, there's nothing quite like getting your game on with one that's been designed purely for the art of playing.

Backlit keys, programmable macros, extra-long cable lengths and a host of other additions make the gamer feel more like they have an edge over the competition.

**David Hayward** thoroughly tests six contenders in a variety of games to see which will lead the pack.

#### **Gaming Keyboards**

### **Razer Anansi**



azer has a particularly good relationship with gamers. Its products are well thought out, produced to the finest detail, reasonably priced, and they actually work to the parameters First off, build quality is that they clearly state. They provide everything a game might

Anansi MMO Gaming Keyboard. The average MMO player will no doubt agree when we say there's a heck of a lot of key binding going on, and when in the heat of battle or some intense looting sessions, there's nothing worse than cramping your hands with some painful rapid key combinations. This is where the Anansi steps in and makes your life considerably easier.

need, and this clearly comes

apparent when using the Razer

There are seven thumb modifier keys, over 100 programmable keys, a set of media keys, five additional gaming keys, on-the-fly macro recording, and it's even backlit, with the ability for you to choose from more than 16 million colours and have it cycle through the range of colours. The number of features this keyboard is capable of performing is simply staggering, but despite its glitz and numerous abilities, it's still a very nice keyboard to use.

impressive. From the moment you open the box, it oozes charm, and there's an overriding professional feel to everything. The keyboard itself is sturdy, sleek and well designed. The keys are positioned well and press with a satisfying feel. The thumb modifier keys, located below the spacebar, are within easy reach, even for smaller hands, and the five additional gaming keys, located on the far left of the keyboard, offer easy access without having to take your eyes off the action on screen.

The dual USB connection (one for the keyboard and functions, the other for the lighting arrangements) is housed in a sturdy, shielded cable that extends to an impressive two and a half metres. However, the real selling point here are those seven programmable thumb modifier

keys, which enable the gamer to instantly combine several key presses into a single button.

The default key assignments are good for general MMO use, but through the Razer software you're able to set different profiles – up to ten, depending on the game you're playing and the key bindings that better suit your style. It does take some getting used to when you first start using the thumb modifier keys, but once you've got the measure of it, you'll wonder how on earth you ever managed without it.

The price may seem a little steep (although, going to press, we noticed it was on sale at Maplin for £69.99), and that's really the only negative aspect of this product. But you get what you pay for, and in this case it's an astonishingly good keyboard with some amazing MMOinspired features that'll enhance your experience within the game to the extreme. If the MMO is your favourite pastime and you demand the highest quality, then this is the keyboard for you.



Outside of MMO work, it's still a good keyboard





## **Mechanical Gaming Keyboard**

#### DETAIL!

- Price: £122.98Manufacturer:
- Logitech
- Website:
- goo.gl/ucyDGg
- Required spec:
- Windows Vista or later, 2x available USB ports

......



The G710+ features a detachable wrist rest; six programmable G-keys, with up to three macros per key, making a total of 18 individual functions per game; a Game mode switch, which disables the Windows key (in case you knock it when gaming); and a collection of media keys sit at the top of



**66** The Cherry MX Brown

switches offer a good tactile

feel for gaming

the keyboard and a volume control roller sits above the numpad. There's also a back light with variable adjustments, up to four brightness levels and individual lighting of the WASD and arrow keys from the rest of the keyboard, in a sterile white LED light.

We previously reviewed the G710+ some time ago, in among a collection of more business and productivity bent

mechanical keyboards, and on reflection it wasn't the best category to judge it against. As a result, it didn't fare too well in that instance, but after having used it for a little while, we've grown to really appreciate this keyboard. The build quality, at first, doesn't feel all that great. After using it for a while, though, you soon grow accustomed to it and begin to value the fact that it's light but still remains sturdy enough to take the kind of beating a rabid gamer could dish out.

And to add to the above statement, the programming of the macros isn't all that bad either. Thanks to the special Macro Record key and the Logitech software, you can start building a macro profile for a particular game in no time at all. Also, the included software comes with a selection of preprogrammed macros for over 250 popular games, so you're bound to find something you play in that little lot.

The USB pass-through allows you to connect a mouse, USB headset or some other potential gaming device, and the cable routing on the underside of the keyboard is a particularly nice touch that'll keep those annoying lengths of cable from getting tangled up while you lurch across the desk with the mouse.

As we stated earlier, the Cherry MX Brown switches offer a good tactile feel for gaming, plus the addition of a small rubber ring reduces the impact noise and thankfully doesn't alter the travel or pressure needed to press a key. The multimedia control keys and elements, including the rubber volume wheel, are adequate and discrete enough to not hog the entire keyboard.

All in all, we feel we were a little unfair the first time around to the G710+. And it's only since using other gaming keyboards that we've come to appreciate it since. Okay, so it's a tad plascticy, but it performs well enough and will no doubt last for many years of gaming.



▲ It's more than enough for casual and avid gamers alike



#### **Gaming Keyboards**

## **ROCCAT Ryos MK Pro**



occat has made quite a name for itself in gaming circles. Its gaming mice, audio, accessories and even mousepads are considered as some of the best and most well-engineered on offer.

For this group, we managed to acquire a Roccat Ryos MK Pro, a keyboard that will no doubt pique the interest of both amateur and professional gamers alike.

This a Cherry MX Brown example, although Cherry MX Blue, Black and Red are available depending on your particular preference. The MX Brown switches have a lovely tactile feel and offer N-key rollover and anti-ghosting to boot. The keys are each



▲ It's a beautiful gaming keyboard and one that's tough enough for the job

individually backlit, with a sharp blue against a patented anti-fingerprint glossy black effect, and by using the Roccat Easy Shift feature, you're able to configure a secondary function to virtually every single key, which when added to the five macro keys totals a potential 500 customisable macro keys.

If that isn't enough to impress you, then the added allure of a pair of 32-bit ARM Cortex CPUs with 2MB of flash memory to store your unique macro configurations and setup will no doubt make you sit up with interest.

Combine the above features with an integrated two-port USB hub, microphone and headphone ports, underside cable management, Roccat R.A.D. (whereby your statistics and gaming trophies can be won and shared) and Roccat Talk, in which other Roccat products are able to communicate with each other to offer even more customisation and configuration for gaming, then we are looking at an incredibly impressive product that's dedicated to every aspect of PC gaming.

The build quality of the Ryos MK Pro is excellent. It's a good solid, weighty keyboard with a 1.8 metre, braided USB cable and a large solid palm rest. The big rubberised feet stop it from skidding around the desk when in use, and the toughened feet raise the keyboard to a respectable and ergonomically sound level.

However, it would be nice if the palm rest was removable, as it makes the keyboard quite deep, and we would like to have seen a little more length between the cable split for the dual USB connection and the headphone and mic connectors. But these are very minor issues and easily overcome.

The downloadable driver for the Ryos really opens the keyboard up to its full potential. You can alter the backlighting arrangement, opt to play a sound when a macros is activated, disable or enable certain keys, update the firmware, control the many macros and a thousand other things. In other words, it's a fully featured keyboard with plenty to get to grips with and configure to your heart's content.

We were fairly impressed with the Roccat Ryos MK Pro. The Roccat Talk protocol function is especially interesting, as it can allow you take full advantage of a Roccat setup and give you the edge over any other setup.

As a base gaming keyboard, the Ryos MK Pro is excellent, and with the added configurations and options, this keyboard is boosted into a category of its own. It may not be the cheapest gaming keyboard on offer, but it's by far the most versatile, responsive and one of the best we've ever had the pleasure of testing.



The Ryos is quite possibly the ultimate gamers choice





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#### **Gaming Keyboards**

## Mad Catz S.T.R.I.K.E. 7



gaming keyboard will usually comprise of some effective colour schemes, key back lighting, extra-long cables, USB extension or at the very least a headphone port and probably a level of gaming crazy come-look-at-this showmanship. However, this entry from Mad Catz goes one step further than that, and in terms of showmanship, would put the likes of Lady Gaga firmly in her place.

This could be easily be classed as an extreme gaming keyboard, the sort of keyboard Batman would undoubtedly have on the main console of the Batcomputer. It's a product that takes looks to a degree of silliness yet still offers some pretty amazing toys for the gamer to get their teeth into.

There's a lot to take in here, from the modular design (as evolved from the R.A.T. gaming



▲ It's really quite an extraordinary keyboard, but ultimately just a keyboard

mice range), backlit keys, customisable macro keys and the obvious addition of an LCD touchscreen. In fact, it's not actually a single keyboard, but rather five different hardware elements that can be combined to give you a fully controllable and quite stunning keyboard setup.

The V.E.N.O.M. TFT-LCD touchscreen is probably one of the more tantalising of the hardware modules, because with this you're able to program advanced macros, adjust the level of the backlit keys, balance chat and volume functions, launch various apps and websites and even utilise any in-game secondary screen functions. It's quite an effective bit of kit that's well designed, and once the setup is complete, it works reasonably well with Windows and during some games.

The keyboard section is similarly designed, but as opposed to using mechanical switches under the keys, it uses a patented Mad Catz membrane technology to emulate the tactile feel, responsiveness and durability. Each key is interchangeable, has a 16 million colour backlighting arrangement and is laser etched to avoid wear and tear.

Likewise, the numpad section offers a range of programmable macro keys that can be used with the Function Strip module across three different modes with 24 macro keys. The longer attachment cables offer a larger degree of fine tuning and placement as well, but the vast majority will most likely combine both the numpad and keyboard sections.

The aforementioned Function Strip is a four button add-on

arrangement that clips to the side of the individual modules. It adds the extra macro functionality and, when used with the numpad macros, can offer up to 72 user-defined keys for a wealth of possibilities.

Finally, there's a threepart palm rest that features a thumbwheel and action button, both of which are programmable and can be attached to any of the modules to allow for those all-night gaming sessions.

Setting up the S.T.R.I.K.E. was a complex affair. After deciding on a module layout, hooking up the power to the LCD screen, plugging in the power brick and screwing everything together with the hex driver, you have to wait for the keyboard to actually boot up before you can use it. Once the drivers are installed and the control panel is up and running, the complexity of this keyboard goes into overdrive and blinds you with options, options and more options.

However, when you get used to it, the S.T.R.I.K.E. is a decent gaming accessory. But it's not great, and it doesn't feel as good as the G710+ when in use. It's also shockingly expensive, and you have to question its overall usefulness over bragging rights and looks.

To be honest, although the Mad Catz S.T.R.I.K.E. is an amazing collection of hardware, it's not as good a keyboard as the others on test here.







## Corsair Vengeance K70

# • Price: £110 • Manufacturer: Corsair • Website: goo.gl/aN7uVC • Required spec: Windows XP or later, spare USB port

orsair may well be more familiar in the drive or RAM industries, but it does occasionally get out to show off its other products to the general public. Whether that's a good thing or not remains to be seen.

In this instance, the Corsair Vengeance K70 is a Cherry MX Red gaming keyboard that has been designed to be fast, fluid and good looking to boot. N-key rollover via USB and anti-ghosting are all present throughout the textured and contoured gaming specific keys. Other key switches available are MX Blue or Brown, all of which differ slightly in price.



It's certainly a good enough keyboard but lacks many other gaming essentials

The keys themselves are mounted on top of a bushed aluminium frame, as opposed to being recessed inside the usual plastic keyboard case. The idea behind this design is to increase the rate of travel across the keys and thus improve the overall speed at which each key can be accessed and used. For the most part, it works, but you're left with a bit of an odd feel when using the keyboard and one that seems to take a little longer to get to grips with over

a more standard setup. The layout isn't cramped, though, and the included media keys, which are a lower profile than the rest of the keyboard, make for an otherwise well designed and engineered product.

Additionally, the red glowing backlight keys are soft enough to be easy on the eyes in a darkened room and, as with most illuminated keyboards, can be configured for a number of different setups, depending on your personal tastes, through the included or downloadable drivers.

There's a handy USB passthrough in place and a number of key layout functions that can be utilised to enable or disable certain keys or even change the language layout if needed, plus you can alter the polling rate of the keyboard to cater for older BIOSs and systems. However, we were surprised to find a severe lack of programmable keys and macro functions. Naturally, a macro setup of 500 keys, as on the Roccat Ryos MK Pro, may be viewed as a little extreme and, granted, not all gamers make use of the macro and programmability features of a gaming specific keyboard. But to omit these features for a gaming keyboard is a little strange, in our opinion.

The detachable, soft-coated palm rest is very comfortable, and when attached with the keyboard raised, the design we mentioned before makes for an easy and comfortable setup – albeit one that's probably more suited to a typing position over that of a dedicated gaming board.

On the whole, although a decent enough mechanical keyboard despite being a tad awkward to get used to, the Corsair Vengeance K70 doesn't come across or feel like a true gaming product. True, it looks okay and is aesthetically pleasing enough to satisfy most users, and there are hints of gaming potential in the form of the backlit keys and special attention to the WASD keys, but apart from that, it sadly lacks the stuff that the other keyboards offer the gamer.







#### **Gaming Keyboards**

### **Das Keyboard 4 Ultimate**

# • Price: ~£105 • Manufacturer: Das Keyboard • Website: goo.gl/w9bBe8 • Required spec: Windows, Linux, Mac OS X (driver free), spare USB 3.0 port

as Keyboard is often referred as the Cadillac of the keyboard world, or in the case of the UK, most likely the Mark 1 Jaguar. It offers the best build quality imaginable, the best use of components and often the best selection of features you're ever likely to find. As you can imagine, then, we were quite looking forward to getting our hands on a gaming version of a Das Keyboard.

The Das Keyboard 4 Ultimate is, in this case, a Cherry MX Brown switch keyboard with the usual Das Keyboard touches such as gold contacts, high-quality materials, dedicated media control functions, along with an oversized volume knob, two-port USB 3.0 hub, blank key caps, metal casing and an extra long two-metre USB cable.

There's also the rather odd addition of a magnetised ruler, which comes packaged with the keyboard. The ruler attaches to the base of the keyboard and lifts it slightly, although not as much as pair of pull-out feet and, being magnetised, it can be removed and stuck elsewhere on the metal chassis. We don't know about you, but we find rulers very handy to have around, especially when it comes to measuring stuff (that was intentional sarcasm, by the way).

Needless to say, N-key rollover and anti-ghosting are all included here, together with a very solid build and a good weighty feel, without it being too hefty to move if needed. While on the point of its construction, the Das Keyboard 4 presents itself as one of most minimalist gaming keyboards out of the group. This in itself is a dual-edged blade, in that on one hand it's a lovely keyboard to use when gaming or at any time for that point, but on the other hand it's sadly lacking in anything that can distinguish it as a gaming keyboard over the rest of the group.

In all fairness, it's not specifically stated that the Das Keyboard 4 is a gaming product, but elements of a gaming nature are advertised to sell it. The



N-KRO, for example, is worded so it's primarily targeted at gamers, and our Ultimate edition of the Das Keyboard 4 again targets gaming enthusiasts. If that's the case, then we must therefore rate the Das Keyboard 4 as a gaming keyboard.

Unfortunately, by doing this, the Das Keyboard doesn't come out quite as well as one would have expected. The lack of backlighting, macro functionality or an extension driver means that this keyboard is far from being the first choice for the professional gamer Where the other examples we've tested here opt for a huge array of extra features to give that edge over the competition, Das Keyboard is instead relying on its good name, quality and minimal approach.

Naturally, you could easily argue that PC gaming can be achieved on an old IBM keyboard with buckling spring key technology just as well as any example in this group, and for the most part you'd be correct. But the emphasis is on gaming, and in the modern world of the gamer, such features as macro-enabled keys are crucial selling points.

Saying that, the Das
Keyboard 4 is a splendid
mechanical keyboard that oozes
the legendary Das Keyboard
style, but it's pretty far from
being the first choice of the
professional or dedicated
gamer. And, if we're being
honest, the Professional edition,
which has the laser-etched
and printed key caps would
probably suit the majority
of users far better than the
Ultimate edition



▲ Call us old fashioned, but we'd like letters and stuff on our keys







#### **ROCCAT Ryos MK Pro**

There was certainly a lot of good gaming keyboards on test here, but we feel the Roccat Ryos MK Pro had the edge over the rest in terms of features, use, feel and overall quality.

Plus the Talk protocol is an excellent additions to the product range and worth looking into more.



## Logitech G710+ Mechanical Gaming Keyboard

The Logitech G710+ comes in as the Highly Commended due to the fact that it's actually a really good all-round keyboard.

Gaming, both semi-professional and casual are handled with ease, as are normal keyboard duties. Plus the price isn't too bad either for a keyboard with so much going for it.

#### **How We Tested**

Each gaming keyboard in the group was arduously tested with a number of games: World of Warcraft, Assassin's Creed IV Black Flag, DC Universe Online and a host of indie titles that we painstakingly took time to play test thoroughly. Where possible, macro keys were assigned and used, as were the media and USB hub functions of the available boards.

	Razer Anansi	Logitech G710+	Roccat Ryos MK Pro	Mad Catz STRIKE 7	Corsair Vengeance K70	Das Keyboard 4 Ultimate
Price	£85.99	£122.98	£159	£232	£110	~£105
Size	515 x 190 x 20mm	525 x 228 x 60mm	234 x 508 x 26mm	237 x 191 x 383mm	478 x 234 x 98mm	457 x 172 x 203mm
Weight	1020g	2177g	1750g	3302g	1800g	1300g
Mechanical Switch Type	None – rubber dome	Cherry MX Brown	Cherry MX Brown, Blue, Black and Red	None – Mad Catz membrane	Cherry MX Red, Blue and Brown	Cherry MX Brown and Blue
Multimedia Controls?	Yes	Yes	Yes	Yes – via LCD	Yes	Yes
N-KRO?	No	26-Key	Yes	No	Yes	Yes
USB Hub?	No	1	2	2	1	2 USB 3.0
Headset Ports?	No	Possible via USB	Headphone and mic ports	Yes – via LCD	Possible via USB	Possible via USB
No Of Macros?	100+	18	500	72	0	0
Backlit Keys?	Yes – 16 million colours	Yes	Yes	Yes –16 million colours	Yes	No

## REVIEWS

## **AOC 12473PWM**

#### Finally, a monitor that sounds as good as it looks

#### • Price: ~£165 • Manufacturer: AOC • Website: goo.gl/kwUdst Required spec: Spare VGA, HDMI port, MHL-compatible device, audio port ......

onitor, and even TV speakers are notoriously weak when it comes to dishing out the sounds. The audio is often tinny, with very little or no bass, and as a result a decent set of desktop speakers are often the solution; this does however mean extra cost, another plug socket used and the space taken up with the speakers themselves.

AOC though may have a solution in the form of its latest monitor, the I2473PWM. This is part of a new AOC 'Style' range of monitors, which means it has a very thin bezel surrounding an equally thin screen, with something of a twist in that there's a set of 7W Onkyo speakers built into the base.

The 23.8" IPS screen has a dynamic contrast ratio of 50,000,000:1, viewing angles of 178°, and a reasonable 5ms response time. Naturally it's fully capable of displaying a HD 1080P resolution, and has a single VGA, and two HDMI (both of which are MHL compatible) inputs alongside a further 3.5mm audio input, and a headphone port.

Before we get to the sound, though, it's important to establish that the screen quality is very good indeed. Colours are vibrant, bright and crystal clear; the decent response time is more than



A very good choice for

those with limited space on

their desktops



enough for most gamers, movies will look good too and the brightness levels are fantastic for those who sit working at their computer for hours every day.

The icing on the cake, though, is the built-in sound; located in the base of the monitor stand, 7W drivers may not seem very powerful on paper, but when they're as close to you as your monitor generally is, they can provide more than enough level for you to appreciate what they can do. The audio reproduced is of a good quality too, with clear mid to high range frequencies and just enough bass to compliment the setup. Obviously you can buy better 2.1 desktop speaker setups but, considering this is all-in-one, what you're getting here is certainly a huge improvement over traditional monitor audio output.

The I2473PWM is quite a sturdy example of just how thin a large monitor can actually be. The screen is only around 15mm thick but doesn't feel like it's about to snap when you adjust it through its range of tilt (-5 to 15°). Also thanks to the narrow bezel it appears deceptively larger than it actually is; an effect that makes it excellent for Windows 8 or a Linux distro with enabled and active hot corners and edges.

Another notable feature is that the I2473PWM is surprisingly light considering it's got the a set of speakers attached to its base. Weighing just 4kg, you are able to manoeuvre this monitor around to a more comfortable position if necessary.

Although there's no height adjustment or pivot or the



ability to wall mount the screen, the I2473PWM is a very good choice for those with limited space on their desktops that also want decent sound from their setup. The addition of a USB hub, DVI and physical volume controls, as opposed to touch sensitive controls on the base, would make this monitor as near a perfect example as humanly possible. However, considering it's only going to cost in the region of £165, you're getting a pretty good buy all the same.

mm David Hayward

Impressive visuals, and a superb built-in sound system as well





## Swann NVW-470 All-in-One Secure package

#### An easy to install wi-fi video surveillance system from Swann

# DETAILS • Price: £400 • Manufacturer: Swann • Website: www.swann.com/uk/ swnvw-470kit • Required spec: Windows-based PC with internet access

urglar alarms and video surveillance cameras are sadly a necessary component of our society. Unfortunately, in the past the low quality and high cost of these items, have discouraged people from buying them. Yet as we all know technology moves on at a pace; now it's possible to get quite sophisticated systems for quite a low price.

This latest release from Swann Security is just such a product; consisting of a high resolution, very low light camera and a touch screen monitor; both of which are wi-fi enabled. While being accurate, that description somewhat oversimplifies what the system is, because it's a very comprehensive and advanced surveillance package.

Firstly let's look at the camera; it's a very smart and robust unit, fitted with a one megapixel sensor, producing a 720p (1280 x 720) resolution video image. It also has an inbuilt microphone to record sound and an IR array that operates down to 0 Lux; which means it can operate practically without any light at all. In this mode it outputs a black and white image, whereas in daylight you get full colour. All this really means is that the video image it produces are sharp and clear. We've all seen footage on TV from video surveillance systems, showing people being robbed; or during civil unrest, where the quality is so bad it's impossible to recognise anyone. Whereas in this system the clarity of the video image is superb; it also has a range of up to 50 feet, covering a 65° field of view. Yet the best thing about the camera and in fact the whole system is that it's wi-fi; no running

cables all around the house or the property you want to protect. All you need is a power socket near the location of the camera; there is in fact an RJ45 socket on the camera, in case you prefer to make it hardwired, however.

Now we come to the 7" touchscreen monitor, which is another component of the package. In fact it's rather more than a standard touchscreen, because it has a built in control menu so you can configure the whole system. This relates to the number of frames captured each second, whether to use still or movie capture and the sensitivity of the motion detection feature (which actually works very well, with very few false triggers once it's been configured).

Recordings are made onto an 8GB mini SD card (supplied) that sits in a slot on one side of the monitor. You can change this card to increase storage to up to 32GB if you wish. The monitor also has an inbuilt player to review any recordings made to the card. Alternatively you can

connect the output directly to your router via the RJ45 cable, and then record it on your PCs hard drive. You can also output the signal to a HDTV via the inbuilt HDMI socket.

But there's more... the package includes the SwannLink software. This mirrors the on board menu but has more options and is easier to configure using your PC's keyboard and mouse. For example, you can tweak the encoding parameters of video footage, the recording schedule; you can even set an email address where an alert will be sent if the system is triggered. Finally if you decide to connect the system to your network, you can access it remotely using the SwannView Link App on your smart phone or tablet. Clearly to use this option you'd also need to have your network running continuously.

Incidentally the system can handle up to four cameras at once; the output is automatically split into four viewports on the monitor or TV. Like a single camera you can configure them the same way, and record the output to your chosen device.

mm Joe Lavery

#### A high-quality surveillance package that takes minutes to set up





## **Acer Aspire P3-171**

#### Acer's P3 takes yet another approach to providing a Windows 8 tablet PC



'm fascinated by how different hardware makers have reinterpreted Microsoft's vision for a Windows 8 tablet PC. That they've all chosen to do this is rather indicative of the malaise in the sector; what we've actually experienced so far is a global struggle to deliver any genuinely desirable solutions based on this OS and its touch interface.

The Acer Aspire P3 goes by various monikers, but I think that we'll settle with calling it a 'Hybrid'. It's a design that aims, like the official Surface line, to offer a tablet form factor with genuine ambitions to replace a laptop PC.

To that end it's taken an 11.6" touchscreen tablet, and mounted it in a soft binder with a thin Bluetooth keyboard and pre-installed Windows 8 on it. Inside the P3 is a either a previous generation Intel Core i5 or i3. The review model featured the lesser of these possibilities, a 1.4GHz i3-3229Y chip twinned with 2GB of DDR3 memory. The GPU technology here is that provided by Intel's HD 4000 integrated set so, while it can play a 720p movie back smoothly, it won't be attracting gamers to it any time soon.

Those who have lots of apps and data could also not be interested, because the total storage on offer here is just 60GB. After the OS has eaten



it's fill that leaves less than 30GB free for the user's application and data. The normal assumption would be that you could augment that tiny capacity with a SD card, but there isn't one. Compounding that design mistake, there is only a single USB 3.0 port for all the possible uses you might have for it. There are models of this machine around with double the RAM and 120GB hard drives, but these do cost much more for what are still modest amounts of storage and memory.

The display resolution is also a bit disappointing, being just 1366 x 768 pixels. The Surface 2 Pro is 1080p, and the new Pro 3 is even higher. That said, the panel is sharp and reasonably bight, and desktop apps are actually useable on it if you've a mouse handy.

The display resolution

is a bit disappointing, being

just 1366 x 768 pixels ••







Acer Aspire P3-171	Specifications		
CPU	Intel Core i3 i3-3229Y 1.4GHz dual core		
	processor		
RAM	2GB DDR3 RAM		
Storage	60GB storage		
OS	Microsoft Windows 8 64-bit		
Display	11.6" 1366 x 768 screen. 16:9 Active		
	Matrix TFT Colour IPS LCD		
GPU	Intel HD Graphics 4000		
Ports	1x USB 3.0 port.		
1x Micro HDMI port	521.28 x 293.22 (H x V)		
Networking	Bluetooth 4.0 +HS		
802.11 a/b/g/n Wi-Fi	5ms		
Camera	Acer Crystal 5MP webcam		
Battery	5280 mAh 4-cell Lithium Ion Battery (non-		
	removable)		
Battery life	Up to six hours		
Keyboard	Bluetooth (included)		
Size H/W/D	1.02 x 19.07 x 29.54 cm		
Weight	0.79kg		

Acer quotes six hours operating time on the battery, but this seems a highly optimistic figure based on the older Ivy Bridge technology inside the P3. Not using a Haswell chip may well have reduced the purchase price, but it's also impacted on performance, as this system isn't half as snappy as I would like it to be. Delays when launching Metro apps seem fairly commonplace, and there aren't any upgrade options above the purchased specification to remedy this. In this respect the P3 epitomises the concept (pushed by Apple, to the envy of all) of the PC as a commodity, where you're punished for the choices you made prior to purchase for the life of your purchase, with no hope of redemption other than to buy again in a year or so.

The P3's strengths are its x86 compatibility and that a keyboard is included in the price. It doesn't, however, come with Microsoft Office for free like the Surface 2 offers. That keyboard also isn't something I'd want to type lots

## •• It's never going to be

#### as stable or versatile as a

#### laptop 9

on, as it has almost no key travel. The positioning is also poor, as accessing the top line of keys caused my knuckles to trigger unwanted touch responses from the display.

It's also a pig of a job to get the P3 out of the binding tray, should you wish to use full tablet mode at any point. It should concern Acer how obvious problems like this made it through testing and into production.

The way the keyboard is designed puts the P3 in the same boat as the Surface, in that putting all the system weight in the screen has massive implications. It's never going to be as stable or versatile as a laptop, ever. In this design the keyboard can't easily detach, but the flexible hinge doesn't allow for a controllable viewing angle or make working on your lap/knees practical.

You're therefore forced to accept that it's not a laptop replacement, and what you've

got an expensive tablet that can run x86 applications that aren't designed for the most part to be touch controlled. So far 'hybrid' has been reinterpreted as meaning the worst of both worlds in this context, and sadly the P3 doesn't contradict that assertion. While it looks rather attractive, it sadly fails to deliver much that's compelling. mm Mark Pickavance

## A disappointingly low specification Windows 8 tablet





## Anker 40W five-port USB Desktop Charger

#### Mark discovers a real solution to a very common problem

# • Price: £20 (Amazon) • Manufacturer: Anker • Website: www.ianker.com • Required spec: A collection of USB charged devices

cronis has a long and well-regarded history in the PC home user and business IT administrator community. Its products are of a high standard, easy to understand and extraordinarily powerful, but they also work well and are reliable.

A few months back I reviewed a StarTech USB charger for this publication, and realised what a very useful device this type of gizmo was. The only problem with that product was the rather steep price, so I didn't



buy one. Instead, I kept my eye out for a more affordable solution that might perform the same import job of keeping all by tech charged. Eventually, and for once, my patience paid off when I noticed this lovely 40W fiveport charger from Anker, sold through Amazon for less than £20 delivered.

Initially, at this price, I did wonder if it was one of those too-good-to-be-true moments which inevitably end in tears. However, after using this device for a month, I can confirm that this is certainly worth what is being asked for it, even if the original £50 RRP was something of a stretch.

For starters, this is a nicely made and finished product, unlike others I can mention, and comes either in a crisp white or black plastic finish. In terms of size it's not much bigger than a pack of playing cars, and its AC 100-240V compatibility makes it a perfect companion to international travel.

The design ethic here is a minimalist one I admire. The charger has no lights or indicators, because it doesn't actually need them to operate. Often in these things, when there are so many charging ports, some are allocated to phone charging (1A) and others to tablet recharge (+2A). On the Anker charger all the ports can support up to 2.4A, up to a maximum of 8A over the five ports.

Obviously, the maths there doesn't add up to charging five iPads at full power simultaneously, but it would handle them all balancing the power demand between them proportionately. What's really clever is that the ports use PowerlQ, automatically detect the drain on each port and delivering exactly the power

needed from its overall budget. Because of this facility it doesn't need to designate ports for low or high demand devices, as they can all be tweaked to whatever is required. The only things that you need to supply are the USB charger cables, though usually these detach from their respective chargers these days.

There aren't many products I review here that I'd give a wholesale recommendation, but this is one of them. It does what you need it to do, eliminating a whole gang sockets worth of chargers in a single swipe and it does it without any fuss or circumstance. It's also very cathartic to collect up all the odd shaped chargers and replace them with this single much cleaner object.

If I have an issue it's that the growth of chargeable devices in the Pickavance household has reached such epidemic proportions that I might be forced to buy another one. However, for the modest amount of money, that's not such a bad thing – and this is certainly a device that most people should invest in.

mm Mark Pickavance

## An effective five-port charger that keeps your tech primed for use





#### **Features**

- Input: AC 100-240V
- USB Output: 5V / 8A
- Colour: White or Black
- Size: 91 x 58 x 26mm / 3.6 x 2.3 x 1.0"
- Weight: 130g / 4.6oz



## Crucial MX100 512GB SSD

#### Crucial brings the day that SSD becomes the norm closer



t's only been three months since Crucial last released a new SSD, the M500 replacement M550. From what I understand the M550 is still the flagship SSD Crucial product, with the M500 now replaced by the new MX100 SSD reviewed here. Those looking for higher speeds are likely to be slightly disappointed, because both the MX100 and M550 have effectively maxed out the SATA-3 interface as far as read performance is concerned.

Crucial's MX100 specification says 550MB/s read and 500MB/s write, and my tests revealed that you get marginally less read world reading, and on-the-button writes. Performance is not what is special here, though, confusingly for a new SSD. The critical change is that Crucial moved has from 20nm MLC NAND modules to 16nm ones in the MX100, scaling the circuit track down by 20% and the surface area per modules by an even greater percentage.

From a purely technical standpoint that's both simultaneously a good thing



While this isn't the very

fastest SSD you can buy, it's

fast enough



and yet could come with baggage. It's positive for Crucial, as they can extract more NAND modules out of their silicon, reducing the unit cost. Also, the narrower tracks might require less power to work reliably, as they've got a lower resistance.

However, a glance at its spec sheets reveals that the MX100 uses no less power than the M550. My guess is that that the majority of power use is in the controller side of this equation, and that hasn't been scaled down like the NAND silicon.

Further examination of the feature set in detail shows there is very little difference between the MX100 and M550. The only exception of note is a modest performance advantage of the M550 in maximum IOPS, but only 5%. That might be a clincher in some mission critical exercise, but the majority of users would find it almost impossible to tell the difference if blind tested.

In reality, the big difference here is the price, with the 512GB review model being offered for an alluring £160 RRP. The two other options; the 256GB and 128GB are £79 and £57 respectively. At this point Crucial aren't offering a 1TB model, but it has decided to stop making less than 128GB SSD drives.

Those that want mSATA or M.2 form factor drives must still go for the M550, because at launch the MX100 is only been offered exclusively in the 2.5" SATA package. I should also mention that a reduction

CrystalDi	skf4ark 3.0.2 x64	- 0 X			
File Edit	Theme Help Language				
All	5 • 1000MB • D: 0% (0/477GB) • Read [MB/s] Write [MB/s]				
Seq	515.5	500.7			
512K	462.4	494.7			
AK.	31.64	109.6			
4K Q032	275.4	274.8			

in fabrication scale could have an impact on reliability, as a flaw that 20nm might live with could cause a 16nm track to fail, theoretically. However, Crucial is exhibiting enough confidence in its new fabrication method to offer the same three-year warranty and 72TB Endurance limit on the MX100, as they do on the 20nm M550.

With the MX100 being so competitively priced at this performance level, it should should encourage anyone who has been putting off moving to SSD purely because of cost to make the shift. While this isn't the very fastest SSD you can buy, it's fast enough – and at just 32p per gigabyte (on the 512GB model), it's edging ever closer to hard drive affordability. mm Mark Pickavance

## An enticingly affordable SDD with plenty of performance punch



#### **MX100 Specification**

- Sequential 128KB READ: Up to 550 MB/s
- Sequential 128KB WRITE: Up to 500 MB/s
- Random 4KB READ: Up to 90,000 IOPS
- Random 4KB WRITE: Up to 85,000 IOPS

## **Among The Sleep**

#### What can be scarier than facing the horrors of the world as a child?

#### Price: £15 • Manufacturer: **Krillbite Studio** goo.gl/rhVgo2 • Required spec: Linux glibc 2.11+, Windows XP or later, Mac OS X, 2GB RAM, 512MB graphics card. VR headset for added immersion

......

irst person horror games usually fall into one of a few themes. There's the bloodbath, locked in a mental institute type affair with nothing but a torch to light your way; the zombie-type apocalypse or the more generalised sci-fi horror, chestbursting aliens mix. However, Krillbite Studios have put a new slant on these themes, and come at the genre from an otherwise unusual perspective.

Among The Sleep has you playing as a two-year old toddler who, fresh from a successful Kickstarter campaign, must fathom out a set of puzzles while navigating his way through a dream-induced world of his own creation. The game is cleverly conceived and touches upon such subjects as abuse, alcoholism and family breakups. As the story unfolds, you begin to get an idea as to what's going on and certain elements are tied together in a psychological fashion that comes out through the toddler's imagination.

The horror element is driven by this young protagonist wandering alone in a world where something terrible is hunting it down. What that is, as you later learn, is





#### •• The game could have been

#### fleshed out a little more

quite thought-provoking and revealed through the use of some interesting environmental effects: flashes of lightning briefly illuminating the shadow of 'the beast', creaks of doors, door handles moving, violent bangs and the increasing sound of the child's heartbeat. All these elements contribute to a tone that's very sinister.

The execution of the horror element doesn't come across particularly well, though. There are certainly parts of the game where you feel vulnerable being a toddler in a world where a creature is hunting you, but the problems come in the form of headache-inducing walks from one location to the next in order

to hunt out objects to unlock the way out of the child's imagination. In the end, then, despite Among The Sleep using a borderline taboo storyline told through the eyes and limited understanding of a toddler, the game actually feels empty of anything worth spending your time uncovering.

Graphically it's okay; there are some decidedly dodgy shadowing effects going on, and the environments often feel a little too much like a poor house simulation model, but the facility to use a VR headset brings in a greatly improved feel for the game, albeit from the rather seasickness-inducing perspective offered by the eyes of the twoyear old. Playing this with a device like the Oculus Rift, with a good set of headphones, will naturally allow you feel more like the main character, but the continual painstaking trudging through various set pieces will probably be enough to make you exit the game long before seeing its conclusion.

There is a feeling that the game could have been fleshed out a little more in places, and the build up to the ending, which is to some extent left open to the player's own interpretation, could perhaps be a little less reliant on the emotional and a little more on the physical side of things.

Among The Sleep isn't terrible, it's pretty good, but your interpretation of how good is really down to your own personal life experiences. The elements it brings together could make the ideal recipe for a startlingly remarkable game. However, a lack of substance left us feeling a little deflated as opposed to being scared, and in the end you're simply left playing an on-rails child toddling simulator with a talking teddy bear.

mm David Hayward

#### An interesting story but some very tedious gameplay





## **Blockstorm**

#### Minecraft, but with lots of guns and explosions

# DETAILS • Price: £9 • Manufacturer: GhostShark Games • Website: goo.gl/SK4GHX • Required spec: Windows XP or later, 1GHz CPU, 1GB RAM

layed out in a fully destructible Minecraftesque world of blocky voxel environments and characters. Blockstorm is a new First Person Shooter from GhostShark Games. Although it's still only Early Release and very much in its infant stages, this doesn't mean the game is unplayable in its present form, though. Indeed, there's a lot going in this odd, yet entertaining take on the world opened up by Minecraft – and the groundwork has been done to allow a lot more content to flood the available servers in due course.

For the time being there are three games type available: Deathmatch, Team Deathmatch and Assault. Each match is played out over a five minute session, by default, and when starting a game you have a wide range of differently designed characters to choose from. You can play either as a Spetsnaz, desert solider, sniper, chef, robot, mercenary, and even something resembling Lon Chaney Jr.'s Wolfman. Needless to say there are rather a lot of options, and through the use of the editor functions you also have the opportunity to include your own personally designed character.

The weapons at your disposal range from a single shot rifle to the more destructive machine gun. Alongside the primary weapon you can include a





66 Blockstorm is, at heart,

a simple shooter but there are

some interesting elements



secondary lesser powered gun, an area effect weapon such as grenades or C4, a shovel to dig out the landscape, a block with which to build the landscape and a knife for some close quarters combat.

While *Blockstorm* is at heart a simple shooter, there are some interesting elements that make it a little more compelling that the usual run of the mill FPS. For starters the environment is, as we previously mentioned, totally destructible. This, naturally, leads to some clever use of traps to lure an unsuspecting opponent

into. Destroying the seemingly solid ground from under their feet is suitably satisfying, as is carefully picking off the supports for a large structure and watching it collapse on top of a group who are bunkered behind well-kept defences.

The same can be done to you, of course, but there's the opportunity to further build the environment to give you a better view of the game world and for others to take you out if you stick your head up for too long.

The in-game editor function will allow you to construct an

entire world, a la Minecraft style, which can then be used to play on. Unfortunately the editor does appear to be a little clunky in places at present, at the time of writing at least. The foundations are there for the more imaginative among you to delve into and to create some pretty elaborate arenas and sets to battle it out on, though.

This is an evolving game, and one that the developers are keen for the public to get behind and contribute to in order to make it better. Of course this is half the battle, and there's a lot that could potentially go wrong here. This is an ambitious but fun project, its merits lie in its simplicity and community feel, although there is a way to go yet.

The Minecraft graphical system may not appeal to everyone, but to those who want a little more from building blocks and crafting, *Blockstorm* offers something in the style of an easy to use FPS. There are enough elements here to keep most gamers amused and entertained for a limited period, as much as one can expect from an arena style shooter, at any rate.

mm David Hayward

### A fun and entertaining first-person shooter



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# How-to Basics Make Your Own Firewall Part 1

#### An old PC gets turned into a worthwhile project this week

e were digging around our collection of old PCs the other day, elbow deep in the PC graveyard. Among the debris of beige-coloured cases, we came across our old Linux Mint 10 machine. Although still relatively modern, this base model Acer Revo isn't quite as impressive as it once was. The old Atom-powered CPU had seen better days, and the 1GB RAM isn't enough to run any of Microsoft's latest offering and would most likely struggle with the latest version of Ubuntu. So what to do with it?

What better use than to toy around with making a firewall, then.

#### Firestarter, Twisted Firestarter

For this project, we thought we'd turn our attention to the handy program Firestarter, a free GUI for Iptables, the built-in firewall that all Ubuntu-based systems have installed by default.

Firestarter has been around for a little while now, and although it's now overshadowed by the likes of Gufw, it's still a pretty good place to start to get your head around the various rules and policies that make up a decent firewall. Also, we're not going to remove our copy of Linux Mint 10. Why? Well, we thought that many of you may already be running an older version of a Linux distro, and Mint 10 was pretty stable. Granted, it's not quite as up to date as the latest offerings, but it's still enough for a test project.

We'll also require extra network card; either wired or wireless will do, but preferably wired in this instance. The reason for this is that we're going to have this firewall machine as the first line to the internet and all other PCs on the network will access the outside world via this one. In our case, we managed to locate a USB Ethernet adapter.

#### **Installing Firestarter**The installation of Firestarter co

The installation of Firestarter couldn't be easier; with Linux Mint booted up, drop into a terminal and type 'sudo apt-get install firestarter', enter your admin password and select 'Y' when asked. The package will then be downloaded and installed, together with any dependencies that are needed.

When the package has downloaded, exit from the Terminal screen and click on Menu; Firestarter will appear in the list of available internet applications.

#### **Firestarter Firewall Wizard**

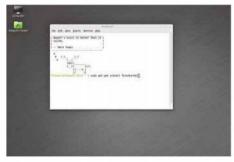
As this is the first time Firestarter has been used, when you click on the Firestarter icon, you'll be greeted with first the admin password, then the setup wizard.

Click on the 'Forward' button when you're ready, and the wizard will automatically detect any live and operational network interfaces you have installed. In our case, we have the first network device as 'Ethernet device (eth0)'. Of course this entirely depends on the hardware in your system, but the first choice is usually the system default.

As there are two network devices on this system, we want to make sure that the default network device is the one that will connect to the router, be that wired or wireless, and the other will be used for the internet connection sharing functions. There are also notice two check boxes: 'Start the firewall on dial-out' and 'IP address is assigned via DHCP'. As we are using a normal DSL router for dishing out IP addresses, we'll check the second box (the DHCP once). When you're ready, click on 'Forward'.



▲ Once installed, Firestarter is easy to locate via the menu



A We forgot how quaint the older Mint installs were



▲ Setting up the Ethernet ports is relatively painless



▲ Firestarter, up and running

#### **Internet Connection Sharing Options**

The next page allows you to set up any internet connection sharing. What this means is that Firestarter will allow access to the internet for any other computer on your network via the firewall network connection that was displayed on the first page of the wizard.

Since we're going to set this machine up as the home LAN firewall, it makes sense to use the ICS function to filter the web traffic. Tick the 'Enable internet connection sharing' box and make sure that the default network device is correct.

Once that's ticked, we'll have to select the local area network device – in other words, the second network card that will be used to carry the LAN traffic to and from the firewall. In our case, we have two, more or less, similar type network cards installed: eth0 is the one that's connected to the router (the default connection that we selected in the first wizard screen), and eth1 is the network connection that will serve and firewall the rest of the LAN machines.

From the drop-down list, select your second LAN network device. We could go into the creation of a DHCP server here but, to be honest, that falls outside of the basic firewall setup we're trying to achieve here, plus it could also potentially mess up any settings you already have on your own LAN. By all means activate the DHCP function and have a play with it, but for now just click 'Forward' when you're ready to continue.

#### Start Firewalling

If you're still with us after all that, then the final wizard screen will be displayed on your monitor.

The obvious and only choice here is the 'Start firewall now' box which is selected by default. If you're happy with the selections you've



A penguin with a match, a dangerous combination

made, click on 'Save', and within a few seconds the Firestarter status page will spring into life and look something along the lines of the screen shot.

#### Firestarter Status And Preferences

Before we go any further into the setup of the firewall, let's have a little look at Firestarter and what information it can provide.

The initial start-up status screen looks pretty bland at first. However, if you expand the 'Active connections' option, then open up Firefox and browse to a website, then you'll begin to notice the traffic being filtered through the network device with the amount of megabytes received and sent, and the activity in KB/s.

At the bottom of the status page you'll see a list of the source and destination addresses, together with the port number and what application is using the connection. If you visit another page (the BBC, for instance), the numbers and connection information will alter as it will if you use the update manager instead of Firefox – all basic stuff and what we'd expect to see from a working connection.

At the top of the Firestarter screen you'll notice the preferences icon (the one that looks like three switches). Clicking on that will launch the preferences window and, once there, if you navigate down to the Policy option under the Interface group and tick the 'Apply policy changes immediately' button, you can add and remove filtering rules without having to stop and restart the firewall every time.

It basically saves you a lot of time and headaches in case you get something wrong. When you're done having a look through the preferences, click on 'Accept' to save the previously ticked option, and the window will close.

#### **Next Week**

Next time, we'll have a look at setting up some rules and see just how far we can push Firestarter.

#### More Free Firewalling And Filtering

Firestarter is just one of many firewall applications, although strictly speaking it's just a front end. Here are a few more for Linux (as it's free) that are well worth mentioning:

**Iptables**: As mentioned, this is the built-in Linux firewall. You can read more at goo.gl/t4Aks3.

Gufw: Based on Iptables, but very good. Find out more at goo.gl/rCYAax.

**IPCop**: A small Linux firewall distro. For a copy, go to goo. gl/G9JIPb.

**PF**: Packet Filter for OpenBSD is the default firewall for the BSD distros goo.gl/G3BQI7.

## How To Test Your Website Youke A Pro Like A poly we'll

**Shaun Green** guides us through the tools we'll need to make sure our hard work's working

hese days it's a doddle to learn how to build your own website. There's no shortage of useful tutorials to get you started, whilst many web hosting services also offer 'one-click installs' of popular platforms like Wordpress, Joomla, Ghost, Drupal and more. Unfortunately none of this comes with a guarantee that your site will work exactly as you want it to. Even using a generic install of Wordpress (the world's most popular blogging software) and a top-rated Wordpress theme, doesn't guarantee that your site will display correctly or consistently in every browser. On top of that, platforms which allow the installation of plugins open up further risks around browser incompatibility, security flaws, performance issues and other concerns.

The more complicated your website, the more likely it is to exhibit problems in the real world – and this is particularly true if you've eschewed pre-built platforms, plugins and themes and coded all or parts of a modern site yourself. The greatest risk to the success of your hard work is that you fail to see these bugs yourself. Instead visitors to your site will, leaving them with a negative impression of their experience. If you've just built a site to update family and friends on the goings-on in your life, then that may seem like a minor annoyance... but if you're trying to build up a readership or establish a small business it can seriously impede your efforts.

Locating and identifying bugs and other problems is where software testing comes into the picture. It's a huge industry today, supporting the development of software across the world, and continues to evolve alongside modern web technologies and the ways we use them. Unfortunately whilst creating websites is today very common outside of professional development, understanding the basic principles of how to test are not. That's why we've got the essential round-up of free and open source testing tools to help you cover all bases – and start to understand what testing is all about along the way.

#### **Simple Online Tools**

The easiest way to get started testing your website is with some of the many free online tools available today. Whilst these are not a magic bullet that will point out all the problems your site may have, they're an excellent starting point to help identify issues in your code or highlight problems you may have overlooked. Here's a few of our favourites.

### W3C Markup (goo.gl/s9tFXy) W3C CSS Validator (goo.gl/r6cu5K)

The World Wide Web Consortium, or W3C, is the organisation behind modern web standards and the (mostly) consistent experience we enjoy online today. Even Microsoft have fallen

into line with the standards defined by the W3C (since IE7 at any rate). As part of its effort to promote good code that adheres to standards, the W3C offer a few online tools that will automatically scan the page at any given URL and identify the exact locations of any contraventions of standards. It will even automatically detect the suitable encoding and doctype (or CSS profile type) that is appropriate for your site, which is very useful if you're unsure of the exact variant you're using.

One thing to note is that the Markup Validator currently describes its HTML5 support as 'Experimenta', so you may wish to take those reports with the occasional pinch of salt.

#### WebPageTest (goo.gl/fDu9cc)

Performance is a big deal when it comes to websites. As early as 1993, usability expert Jakob Nielsen was arguing that a one second load time was the upper limit for a user's flow of thought to remain uninterrupted, whilst up to 10 seconds was irritating but tolerable to retain attention. More recent studies have indicated that the majority of users expect a page to load in just 2-3 seconds.

Performing these tests is a little trickier. Professional performance testing involves custom scripts that instruct dedicated servers to simulate hundreds or thousands of users performing sequences of actions, all to see how the environment holds up under stress. This kind of procedure is well beyond the resources and skill of most individual website owners, but fortunately there are tools like WebPageTest that can, at least, give you independent information on your page load times. Best of all, they're 'clean' - whereas any results derived from

#### **More Easy Online Tools**

Getting a range of results from a variety of sources is never a bad idea when it comes to testing, so you may also find the following tools and resources useful.

#### Nibbler (goo.gl/FzEA2b)

This tool will test your site against a variety of criteria and score it against them, including accessibility, user experience and marketing.

#### **SimplyTestable** (goo.gl/vHD5Wo)

SimplyTestable offers a range of automated checks for your site, although you do need to sign up. They offer free accounts as well as paid options, although you may need to click around a little to locate the option!

#### UITest (goo.gl/bgsJKu)

This website doesn't include its own tools, but it does link to hundreds of others (so many, it's easy to feel overwhelmed by choice! However, if you want an alternative to any of our suggestions, this is a great place to start.

your own PC may be affected by your own internet connection speed, simultaneous traffic on your network, active browser plugins you may be running – or extensions, and so on. Results are further broken down by category, giving you the information you need to focus on compressing images, streamlining Javascript, and so on.

#### Validation Output: 31 Errors

Line 61, Column 48: Attribute xmlns:fb not allowed here.

xmlns:xsd="http://www.w3.org/2001/XMLSchema#"> <!--<![endif]-->

Line 61, Column 48: Attribute with the local name xmlns:fb is not serializable as XML 1.0.

xmlns:xsd="http://www.w3.org/2001/XMLSchema#"> <!--<![endif]-->

2 Line 61, Column 48: Attribute xmlns:v not allowed here.

xmlns:xsd="http://www.w3.org/2001/XMLSchema#"> <!--<![endif]-->

Line 61, Column 48: Attribute with the local name xmlns:v is not serializable as XML 1.0.

xmlns:xsd="http://www.w3.org/2001/XMLSchema#"> <!--<![endif]-->

<sup>▲</sup> The W3C Validator's output may not be sexy, but it is damned specific.

#### WAVE (goo.gl/BCalll)

WAVE is powered by WebAIM, a non-profit organisation dedicated to web accessibility – the practice of ensuring websites are accessible to all users regardless of their ability or method of interaction. Accessibility is an unknown field to most outside of web, QA or development industries, but it's a legal requirement in the UK and USA – albeit one that's rarely actively enforced.

WAVE checks the URL you feed it against a set of standards derived from the W3C's WCAG guidelines (yep, the W3C certainly get about when it comes to web standards) and generates a report including a detailed breakdown of errors and alerts. It even tells you where adjacent colours lack sufficient amounts of contrast, an oft-overlooked but vital consideration for many users with impaired vision or colour blindness.

#### MobiReady (goo.gl/X5qBuq)

Today many of us do much of our web browsing either on the move or on a mobile device whilst ostensibly doing something else (I know I've made it through a lot of dull TV thanks to my trusty tablet). This has introduced a whole new range of considerations: for example, mobile devices often feature reduced resolutions and non-standard orientations compared to traditional PCs. Entirely different interaction methods are used for navigation, and mobile browsers famously don't support Adobe's Flash content.

While testing across a huge range of mobile devices is beyond the reach of You N. Eye, Esq., MobiReady helps you get a head start on problems ther mobile users may encounter when visiting your site. It includes considerations around pageload times and costs on data connections, compliance tests against best practice code, and checks for various other potential issues from overly large graphics to popup windows.

#### **General Tools And Software**

Once you've put your website through its paces using the online tools we've covered, it's likely that you'll want to try and debug any issues you've run into. Although the process of fixing bugs is so specific to the issue at hand that there is no one-size-fits-all approach, there are some pieces of software that you may find useful in a variety of contexts.

#### **Uptime And Performance Monitoring**

Getting your website up and running is the first step, and ensuring it runs well is another. However, once everything is in place, it can be a mistake to surrender to complacency and trust that all will be well. This is where services that monitor site uptime and performance - and notify you promptly of any problems - come in handy.

There are a wide variety of options out there, but here are three suggestions that offer free plans which are ideal for anyone running a single website. Their offerings vary slightly, so check out what they offer and see what looks closest to your specific needs.

Pingdom (goo.gl/TjNuWq)
Uptime Robot (goo.gl/sSc78E)
Site24x7 (goo.gl/CVBIH1)

These same pieces of software can also come in handy when trying to track down issues that you're aware of but have yet to trace to a specific cause...

#### Beyond Compare (goo.gl/CMGoNP)

This handy bit of software facilitates comparisons between files and folders. This can be useful in a variety of ways, for example comparing the files you have hosted online against local originals, or comparing a modified CSS, HTML or PHP file against an original template.

While Beyond Compare is commercial software, a free trial is available that should be sufficient for your purposes of getting a site up to scratch (and knowing whether you're going to want to use it again in the future). If you do want to bite the bullet and purchase it for continued use, it's not too pricey, at \$30. Alternatively, you could try an open source equivalent like WinMerge or Meld.

#### Notepad++ (goo.gl/ru5P1z)

Notepad++ is a free alternative to Notepad that is specifically designed to support the editing of source code. It allows you to



▲ Understanding the differing performance experiences of mobile and desktop users is valuable

## Thanks to the efforts of organisations like the W3C, the majority of browsers adhere to the same set of standards

easily locate specific lines and columns, for example where the W3C Markup Validator has flagged an error within a file. It uses simple and intuitive colour coding to flag different types of code. It's also an extremely lightweight piece of software; you'll certainly never find yourself waiting on it!

The uses of Notepad++ are manifold. From personal experience I found it utterly invaluable in trying to track down malicious code throughout a Wordpress installation when it fell victim to a variant of the Pharma Hack (a common problem for PHP-based software like Wordpress). It also helps you to make simple edits like changing colours in a CSS document. If it also made cups of tea it would be my favourite piece of free software.

#### **Compatibility Testing**

Compatibility is the term commonly used to refer to how well a website performs with a range of browsers. Today, thanks to the efforts of organisations like the W3C, the majority of browsers adhere closely to the same set of web standards – in fact many even use the same underlying rendering engine to display web pages. As a result, insofar as modern browsers are concerned, adherence to standards means your website should display consistently across the range of major players.

That's the idea, at least. The reality is, as always, a little more complex – and only becomes more so if you want or need to cater for users running out of date browsers. The discerning web native may scoff at the idea of people using anything but the latest Chrome, Firefox or Opera, but worldwide market share stats show that, for example, up to 26% of users are still running IE8!

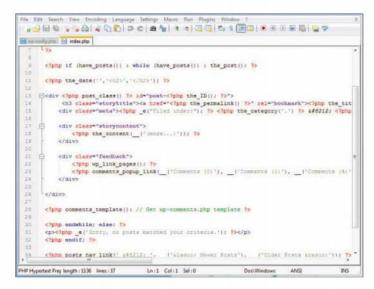
The first step in compatibility testing is simply to install as many browsers as you can on your machine and explore your site in each one, page by page. It's dull and painstaking work, but can pay dividends, and there's no excuse not to do it if you want to ensure your website is working as well as it should. At the very least, you should check your site in Internet Explorer, Firefox and Chrome... and although it's a less popular browser I'd add Opera to that list too.

There are also plenty of services that are a great supplement to manual checks of your site – or, if you're in a hurry, can give you some basic results quickly.

#### Browser Sandbox (goo.gl/9gQ2xC)

This service allows you to run any browser, instantly, from the web. They're run remotely in an isolated virtual environment and essentially run just like a local installation, including any plugins you want. For regular checks nothing beats having the browsers installed yourself, but this is a great alternative.

The free version of the service gives you access to a good range of the latest versions of popular browsers. They also allow checks using legacy versions of browsers – great if you want to check something in a specific old version of IE or Firefox – but you do have to crack open your wallet to do so.



↑ The colour coding Notepad++ features is frankly indispensable when looking at and de-bugging, code

#### BrowserShots (goo.gl/JDrryV)

If you need results quickly or the idea of looking at your site in multiple browsers bores you to tears, BrowserShots is what you need. It takes a different approach to Browser Sandbox, instead allowing you to enter a specific URL and then returning screenshots of the page at that address in the various browsers you've selected. It's an entirely free service, and they include legacy versions of browsers in that offering – which may be much more cost-effective than shelling out your cash for the full version of Browser Sandbox. On the other hand, you can't interact with a screenshot.

#### iPhoney (goo.gl/oUa5aq) iPad Peek (goo.gl/lqB7bi) TestiPhone (goo.gl/TcGKte)

These services are run by different outfits, but they have a lot in common. All three are entirely free and they all simulate the version of Safari running on Apple's iOS. Given that the iPad and iPhone are among the most popular mobile devices in the world today, it makes sense to check your website in them – even if you don't own either device yourself.

iPhoney requires that you have a Mac and be running OSX.4.7 or higher, which is why we've also included TestiPhone (which is a little more clunky). Happily iPad Peek doesn't care what OS you're running.

#### **Browser Plugins And Extensions**

Still with us? Excellent: this is where we begin to get a little more serious. The following plugins and extensions are available for either Firefox or Chrome (not both) and can be hugely helpful to those who want to take their testing to the next level.

#### Firefox: Firebug (goo.gl/Y71ZHI)

Firebug is arguably among the most useful general-purpose test and development tools around. It allows you to easily inspect the code for any individual element on your page, track Javascript messages to identify individual calls or isolate problems, and analyse performance in real time. It also allows you to modify CSS whilst viewing a web page, so you can instantly see the effects of changes you make and decide whether or not to make the amendment permanent. Also, when it comes to tracking down bugs in Javascript, Firebug's a great starting point.

It's as much a development plugin as it is a test plugin, but either way it's indispensable.

#### Firefox: Web Developer (goo.gl/zl9iDu)

Okay, so this plugin is even more obviously a development plugin than Firebug, but since you're testing a website you built yourself it's obvious that the lines are rather blurred! Besides, the Web Developer plugin is packed with features that are immensely useful for testing. It includes direct access to many of the validators we covered in the first part of this article, plus others such as spiders that search for broken links. Its error console can be handy in tracking down the cause of any odd problems you're running into.

It can also display multiple copies of your current browser window in various responsive layouts, effectively simulating what mobile users see. You can selectively display code-level elements on screen, or selectively disable images, CSS or cookies to test your website in a granular fashion. It doesn't do everything, but it has a fair crack at it.

#### Firefox: YSlow (goo.gl/uFvRQr)

YSlow's a less multi-purpose tool than the others in this section, but that doesn't make it any less helpful. Note that it integrates into Firebug, so you'll need to install that first.

It's designed specifically to analyse web pages and grade their performance based on various categories, then deliver suggestions tailored to the problem areas your site exhibits. For example, one of my sites uses multiple external Javascript scripts, so YSlow suggests combining them. It then contextualises its advice by explaining the problem to you, and why the solutions it suggests will help.

Its suggestions aren't always feasible, but they'll often put you on the track of a fix that works for you.

#### Chrome: Adobe Edge Inspect (goo.gl/VaY3VV)

If you're serious about making your site work on mobile platforms and want to test it using actual devices, then Edge Inspect is a pretty useful plugin. There are a few hoops to jump through, including signing up for an Adobe Creative Cloud account. Then you'll need to install a small app on your mobile devices alongside the plugin itself, following which you can sync your browser and devices over your wi-fi network.

Once accomplished you'll be able to slave the mobile devices to your desktop browser, and any navigation changes you make in the selected window or tab will be reflected on the mobile device. It's a tremendous time-saver when you want to compare every page on a site between desktop and mobile versions – even more so if you want to do this with multiple devices.

There are also remote inspection tools for checking code or error logs, plus a feature that allows you to easily snag screenshots from your mobile devices.

Sadly, Adobe have reduced the number of simultaneous mobile devices you can use with a free account to one, and the cheapest paid option is over £17 per month. However for mobile testing with actual devices it's still a very helpful tool.

#### **Track Your Bugs**

It's fair to say that if you're just looking to make sure your website looks okay on various browsers and doesn't return anything too serious via any of the online tools we've mentioned, you won't need to retain a database of bugs you've identified to help you manage the processing of debugging them. On the other hand, if you've got a lot of issues to fix and are struggling to keep track of them all, such a tool is going to be indispensable to you.

#### Would You Like To Know More?

If by this point you've gotten a taste for testing, you may be wondering where you can go to take things even further. We could fill an entire magazine with more helpful information on testing and test tools, so instead here's a roundup of areas and possible tools for you to explore if you're so inclined.

#### **Usability**

This is the process by which the experience of your end users is evaluated. There are some services on the market with free plans that you may want to investigate to learn more about usability:

ClickTale (goo.gl/A3X23B)
MouseFlow (goo.gl/YUiG5w)
UserVoice (goo.gl/uRfLR2)

#### **Performance And Load Testing**

This highly-specialised form of testing relates to the performance of your site's code within the context of its host environment, and as noted earlier in this article it's not something that can be picked up and quickly learned. However, some services are available that offer very limited performance tests at no charge – tests that can give you both useful feedback and teach you a little about what these test types are about.

CloudTest Lite (goo.gl/Bdah5r) Load Impact (goo.gl/SrM6V0) Load Zen (goo.gl/KCkdyG)

#### Security testing

Also known as penetration testing, this is a highly specialist form of testing that demands serious training and accreditation. However, it is possible to learn a little about some of the simpler tests that can be performed to check for possible holes and exploits in your site, such as SQL injection.

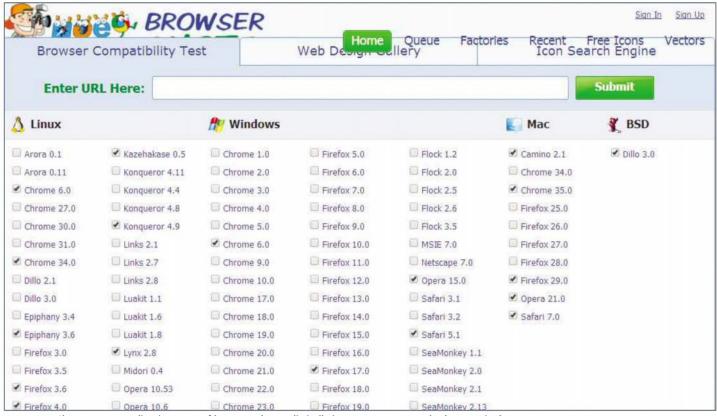
•• If you're serious about making a site work on mobile platforms and want to test it, then Edge Inspect is a pretty useful plugin

Modern bug trackers are often implemented into larger project and workflow management systems (JIRA is a popular example), and most of these are pricey commercial solutions, but there are some free options out there to help you maximise your bug-hunting efficiency.

#### Snowy Evening (goo.gl/yMhvXb)

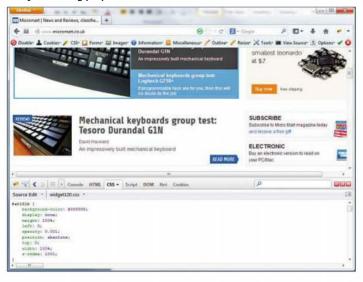
A relatively new entrant into the bug tracker market, Snowy Evening stands out thanks to its clean, modern interface that sits atop a system with all the core features you'd expect. You can enter bug tickets to describe the problems you've encountered,

## HOW TO TEST YOUR WEBSITE



A Browser Shots supports a dizzying array of browsers, but realistically it's not necessary to check every single one

#### **▼** The Firebug and Web Developer plugins complement one another very nicely for testing purposes



follow them up using various status change and commenting features, and use filters to control the tickets you want to see at any given time.

It's not as extensible as other offerings, nor as powerful or feature-rich as more established competitors, and it's exclusively focused on bug tracking. But for our purposes it's perfect, being simple, focused and vendor-hosted. Best of all it offers a free plan that allows a single project with a couple of users. This is highly unusual in the bug tracker marketplace – and is presumably part of a plan to build their market share up. Best take up the offer while you can, as I doubt it'll be around forever!

#### Bugzilla (goo.gl/80fwVv)

Bugzilla is a bug tracking system that sees common usage among businesses and other organisations. It offers more features than Snowy Evening, such as advanced query (search/ filter) tools, integrated email capabilities, and a structural focus on security, performance and scaleability.

Much of this is overkill as far as we're (and, we suspect most of you will be) concerned; for example, who needs an email update system when you're the only person using the tracker? However, Bugzilla does have a proven reputation, possessing a fifteen year pedigree of top-notch performance – and being the tracker that Mozilla use in-house.

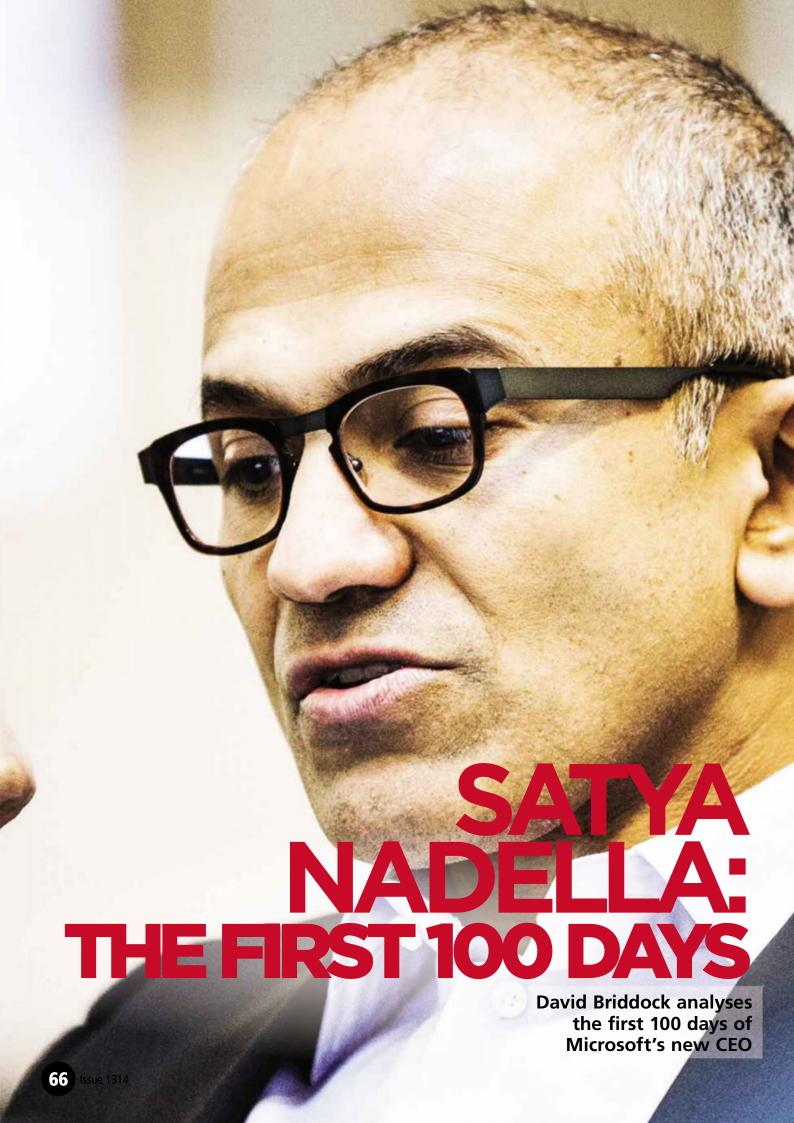
Bugzilla does require a server install, however, so it's an option for serious enthusiasts and professionals only.

#### **Final Considerations**

Hopefully by this point you're buzzing with ideas about how you can take a fine tooth-comb to your website in order to identify any problems it might have. The next step from there, of course, is to either put your developer hat back on to fix them yourself, or contact others for guidance on the next steps – the creator of a Wordpress theme, for example, or perhaps your web host.

One final note to bear in mind, though: on behalf of the individuals and organisations offering some of the many free services we've listed here in order to help you out, we'd like to reiterate that many are supported by ads in lieu of subscription payments. Therefore, if you find their service useful and are running an ad blocking plugin, you may wish to add an exception in order to help keep these valuable services alive for other people who may need them later on.

Now: get testing! mm



n 16th May 2014, Satya Nadella celebrated 100 days as CEO of Microsoft. But who is Nadella? Where did he come from? Why was he chosen to take on the CEO role? And how did he fare in taking control of direction and change at such a huge organisation?

#### **Indian Roots**

Nadella grew up in Hyderabad in southern India, a city traditionally known for pearls and diamonds. Since those times, Hyderabad has evolved into a major tech hub. Today, its home to the largest Microsoft Research and

Development operation outside the United States. By 1998, Nadella had earned

By 1998, Nadella had earned a Bachelor of Engineering in Electronics and Communication from the Manipal University, where he's remembered as a first class student who was always asking questions.

After moving to the United States, he went on to study masters-level computer science at the University of Wisconsin Milwaukee and later received a Masters in Business Administration at the University of Chicago's School of Business.

Armed with these qualifications, Nadella first joined Sun Microsystems, before moving on to Microsoft in 1992.

#### **Microsoft Roles**

Nadella is a 22-year Microsoft veteran. His roles have included senior vice president of Research and Development for the Online Services Division and presidents of the Server and Tools Business, where he championed the move from client services to cloud-based infrastructure.

Nadella was named as head of the Server and Tools division in February 2011, which he subsequently renamed to Cloud-Computing and Server Software. Reporting directly to Steve Ballmer (along with only four other executives) he demonstrated his impressive management skills. In 2013, this division alone generated more than \$19 billion in revenue. An impressive figure indeed.

Along the way to these huge profits he also guided the rise of Windows Azure and its associated technologies, which now underpin Microsoft's internet services such as the Bing search engine, Skype phone service and the Xbox Live online gaming. All are notably cross-platform services that encompass the Linux world – something that Ballmer considered to be the enemy.

His appointment as CEO this year instantly made him the most powerful Indian-born tech executive in the world.

Being an insider meant Nadella was able to observe and learn from other senior Microsoft executives. And, of course, it put him in a much better position to build a supportive team than would be the case for a Microsoft outsider.

#### The Ballmer Legacy

The challenges faced by Nadella weren't helped by the state of Microsoft after Ballmer's lengthy 14-year reign.

The board was unhappy with Microsoft's lack of pace and how its competitors seemed to be winning the innovation battle. For much

suggested, "Nadella will be very smart to organise a 100-day plan."

A critical item on this to-do list was the need to decide which opportunities to focus on. He also had to decide who would join him on the board and what sort of leadership team would best deliver his new vision for Microsoft.

In the midst of change, Nadella also had to develop a sense of urgency and innovation throughout Microsoft's management layers and across the engineering teams – an achievement that would test his ability to engage with and

motivate the company as a whole.



the same reasons, Microsoft shareholders weren't happy either.

Just as importantly, staff moral was low, with Ballmer's approval rating having fallen well below 50%.

However, Nadella wasn't fazed by the challenges ahead, and in one of his first interviews as CEO he said, "I get excited about new things, I buy more books than I read or finish, I sign up for more online courses than I can actually finish, but the thing about being able to watch people do great things, learn new concepts is something that really excites me."

#### The Challenges

Despite his varied experience, a CEO role would be a new one for him. Nevertheless, he understood it would be important to strike hard and fast; to make quick gains, a number of key questions needed to be answered. Randy Ottinger, an executive vice president with Kotter International, which specialises in leadership change and corporate strategy,

#### **Early Moves**

Nadella was quick to make changes right at the top. One of the first was Bill Gates stepping down as chairman of the board. He hasn't gone altogether but remains on the board as founder and technology

adviser, a part-time role that is likely to involve three days a week. It's a move that's attracted support from Wall Street investors, the shareholder community and industry commentators alike.

Another key – and well supported – decision was to appoint John Thompson as chairman of the board. To many, Thompson is a lesser-known player in the Microsoft family, but he has extensive CEO experience (see boxout) and will prove to be another important advisor.

Other executive moves include Stephen Elop's returned to Microsoft from Nokia and the promotion of Scott Guthrie to lead the cloud group, Nadella's previous position. Although Ballmer remains around, he seems rather out of place in the new scheme of things, and could well drift away soon.

#### Mobile First, Cloud First

Right from the off, Nadella was keen to communicate his high-level vision, which identified winnable opportunities and where



consumers would benefit from a seamless technology integration across all their devices and applications.

All this was underpinned by his 'Mobile First, Cloud First' message, which is starting to become more like a mantra. It's a simple, clear message and one that everyone can understand and get behind.

He also wasn't afraid to make bold decisions to back up this message and align the company behind the identified opportunities.

Firstly, Nadella made peace with Apple. His swift move to support key Microsoft products on Apple devices is an excellent indicator of things to come. Apple iPad and iPhone devices popped up regularly at its developer conference and that the customer conferences – something that's expected to continue throughout the year.

The Office for iPad announcement, made at Nadella's first public appearance as CEO, sent a clear message, especially when you consider a touch version of Office still isn't available on Windows 8. Meanwhile the popular – and recently updated – OneNote app is now available on the iOS, Android and OS X platforms.

He went further by ensuring the Windows licence fee was eliminated from smartphones and tablets up to nine inches in size, and consumers also benefited from his decision to pull the plug on its much reviled tactic of making Xbox users pay for an upgraded Live Gold subscription just to use the entertainment features included in the console.

The developer community was another target of Nadella's charm offensive. Keen to convince developers to create more apps, he offered them the holy grail in app development tools – tools that let app developers write an app only once, then quickly convert it to Windows 8, Windows

#### **JOSH THOMPSON**

New Jersey born John Thompson was chief executive of Virtual Instruments, a privately held cloud computing company, before becoming chairman and CEO of Symantec. His previous experience included various roles at IBM and UPS, along with positions on government boards and commissions.

Thompson joined the Microsoft board in 2012 and led the search for a new CEO that resulted in Nadella's appointment.



Phone, Xbox, iOS and Android. As one developer later remarked, "This was a very strategic move. Microsoft is offering a lot of support, making it easy to work with them."

These and other similar moves put Microsoft in a strong position to pursue and market solutions for the global technology community, rather than just existing Microsoft consumers.

#### **A New Style**

Most observers agree Nadella is leading by action and not by words, and his personal demeanour definitely sets him apart from Ballmer, whose big, boisterous approach to doing business has characterised Microsoft since the turn of the millennium.

At every public appearance, Nadella's almost constant smile is very noticeable. He really does seem to be confident in the CEO role and in the direction he's taking the company. In fact, Nadella himself talked to Wall Street analysts at the quarterly conference call. That's not something any of his predecessors have done. In an assured performance, he's said to have told those present that Microsoft's new attitude is, "Courage in the face of reality."

His quiet persona indicates a good listener. Many are impressed with how he's able to inspire people rather than just push them. At product launches and in presentations he's happy to quickly pass the baton on to others, shining the limelight and praise for whatever is being demonstrated.

Even from an external observer's perspective, Nadella is embarking on a



#### **BILL GATES**

XXXXXXXXXXXXX

Bill Gates was only 15 when he teamed up with Paul Allen to develop and sell a \$20,000 traffic data system in 1970. By 1975, the pair had formed Microsoft on the back of BASIC 1.0 software sales, developed for the Altair computer.

In 1978, Microsoft relocated back to his Seattle hometown. It was in Seattle that Gates bought DOS and converted it to run on the IBM PC. Critically, he retained full control of the MS-DOS licence. This enabled Microsoft to sell the same operating system to the growing number of IBM-compatible PC owners.

It's this sharp business acumen that ensured that Gates became a billionaire by the age of 31.

large-scale cultural shift. Recent keynote presentations, with their relaxed style and audience inclusive nature, offer a clear indication of cultural shift.

Jason Hoffman, ex-vice president of corporate strategy at Telecom giant Ericsson and CTO at cloud company Joyant, thinks Nadella exactly what Microsoft needs when he said," he's always been an exceptionally thoughtful, calculating person."

Despite this relatively short period in charge, he appears to have gained huge support and backing from within the organisation. Glassdoor, an online job and career website, reported Nadella's approval rating among Microsoft employees was 85% in May 2014 – a dramatic contrast to Ballmer's dismal 39% rating for his last 12 months.

#### **Going Forward**

Under Nadella's leadership, this 40-year old company seems to have acquired a new attitude. And Microsoft certainly is showing greater respect towards its consumers, its developers and even its competitors.

Many now believe Nadella truly understands how Microsoft must evolve to compete in the modern world and that it must continue to push its older but still lucrative business forward, as encapsulated by the Cloud and Enterprise division's noteworthy successes.

He knows the internet will be at the heart of everything Microsoft does for many years to come. So while Ballmer's 14-year tenure is littered with missed opportunities, Nadella wants to ensure he's getting the maximum out of each and every engineering and research team. **mm** 

## **Tech Origins**Electronic Synthesiser

#### David Briddock examines the early days of music synthesis.

igital synthesiser technology created a new era in popular music. By the start of the 1980s, our radio waves were filled with new, highly distinctive sounds and effects. But it all started some decades earlier.

#### **Early Analogue**

The term 'music synthesiser' appeared in the 1950s during electronics development by the Radio Corporation of America (RCA). An early RCA non-real-time device was superseded with the Mark II Sound Synthesiser. This 12-oscillator, fixed-tone analogue machine was installed in the Columbia-Princeton Electronic Music Centre.

In 1958, the BBC established the Radiophonic Workshop to experiment with sounds generated from custom-designed electronic circuitry. Daphne Oram, Delia Derbyshire and other creative artists revelled in the unique Radiophonic environment to compose ground-breaking themes and sound effects for programmes such as *Doctor Who*.

#### Studio To Stage

Similar analogue hardware found its way into records studios, such as Abbey Road, and enhanced classic records from artists like The Beatles and Pink Floyd, but musicians needed a more affordable and portable solution.

In the US, Robert Moog adapted work by early pioneers, including Harald Bode, to launch the first commercially available synthesiser. Designed with the new solidstate component technology, it had was a flexible modular design, where soundgenerating modules could be chained together using a spaghetti-like collection of patch cables.

It was an instant hit, with Micky Dolenz of The Monkees purchasing one of the first models. Over the next few years, many other major bands including the Doors, Pink Floyd, Yes and ELP along with studios like Abbey Road, utilised Moog synthesis on a host of tracks – many now regarded as true classics.

#### Analogue Issues

Despite being wonderfully flexible, Moog analogue synths were limited to monophonic sounds. In addition, they had two major issues.

Firstly, they were rather fragile and unreliable beasts. And secondly they were extremely time consuming to set up, with all those patch cables and dial settings.

To assist with these issues, groups often toured with a dedicated Moog engineer and numerous spare parts. Even with this expert support, it was often impossible to replicate the original studio sounds in live situations.

#### **Digital Synths**

The rise of digital synthesiser technology offered the promise of cheaper, more robust devices with effortless sound repeatability.

The five-voice polyphonic Prophet-5, from American company Sequential Circuits, was the world's first synthesiser with a sound configuration storage facility. However, it still used analogue circuitry.

True digital sound generating synthesisers appeared in the 1980s. Two of the first were the Synclavier and the Fairlight CMI, but as they cost around \$20,000, few could afford one. Yet digital progress was rapid, and by 1983, Yamaha had introduced the DX7, complete with FM-synthesis technology, for a far more reasonable \$2,000.

#### **Today**

Modern synthesiser technology takes advantage of today's low-cost yet powerful computing hardware. Two recent products in particular hark back to those hands-on synth days

Music instrument specialist Korg launched the MS-20, a kit-based reincarnation of the classic Mini Moog for around £500 (**goo. gl/uy7FYX**). And the \$159 Korg Synth Kit (**littlebits.cc/kits/synth-kit**) transports artists back to that early BBC Radiophonic period to rediscover the joy of building their own experimental electronic music devices. **mm** 







▲ Korg MS 20





## Local Search

Apps For







Need to find a service or business in the locality? Keir Thomas explains how it can be done using your iPhone and iPad

eople have attributed all sorts of things to the iPhone's success. The touch-screen was no doubt a major factor, as was wi-fi connectivity. But perhaps the most important of the lesser discussed features is GPS. All of a sudden, your phone knew were it was even more precisely than you did. That opened a door to all kinds of interesting apps, including being able to search for things locally.

Even before the iPhone the concept of local search had turned into a holy grail for developers. Websites like Yell.com have existed for as long as the modern internet but are barely known among the population at large, partly because the cultural change required to use such services is still coming about, but also because local search tends to be, well, a bit rubbish – here in the UK, at least, although in the US many users swear by such services.

We set this aside, however, when we reviewed the five local search apps listed below. We put them through possibly the toughest test, asking them to return results on common searches (takeaways, pubs, petrol stations etc) in a rural corner of Derbyshire where the nearest city is 20 minutes away. The area is popular with visitors, however, so such searches are not unlikely. However, we also added in non-local searches Manchester, Leicester and central London, provided the app had the functionality.

Note that iPad owners with cellular data will have more accurate results more quickly because their devices contain actual GPS hardware, compared to wi-fi enabled iPads and iPod Touches that use fuzzy positioning based on the location of local wi-fi routers.

#### **Yell.com Search**

Yell.com is what we formerly called the Yellow Pages here in the UK. The organisation was renamed in 2000, probably to avoid copyright issues (in the US the name simply isn't protected, so several organisations use it). Since the renaming, the UK-based company has been taking over the world, including building a strong US presence.

Two apps are available to cover the iPad and iPhone/iPod Touch screen formats, and both have identical names. Both are also impressive in terms of features and they look terrific.

On the iPhone, several large thumbnails provide access to informal quick searches, such as 'Grab a bite' or 'Fancy a drink?' These can be scrolled through by swiping left or right. For more specific searches you can tap one of the icons that appear at the bottom, and dragging this sheet upwards fills the screen with the icons that provide quick access to searches for pharmacies, hospitals or vets for example.

The app works in a similar way on the iPad, except the large thumbnails can't be scrolled through – the three you see is all you get – and the icons at the bottom can be scrolled left and right by swiping, rather than filling the screen.

The biggest difference between iPad and iPhone is that on the iPhone you simply see a list of results, showing local businesses, while on the iPad the results are accompanied by a map with pins showing the location of each business. The map data is provided by Google, so it's accurate and standard, and you can switch to satellite and hybrid views as usual. Tapping any of the pins opens a pop-out window showing a star rating based on reviews, and tapping the transit icon

#### LOCAL SEARCH APPS

•••• EE 09:39 am





A Yell.com looks terrific, is packed with features, and is backed with a brilliant database of local businesses

## Even before the iPhone the concept of local search had turned into a holy grail for developers

offers a choice of switching to Apple Maps or Google Maps to work out a route. What more could you want?

On the iPhone, tapping any of the results shows similar information full-screen, along with a small map at the top of the screen, which expands to fill the screen when tapped or if you drag the small handle downwards. Again tapping the transit icon will plan a route in your choice of app, and you can also tap the phone icon to initiate a phone call (using the iPhone's standard phone app).

The list of results we saw was impressive and numerous. It skipped a few local businesses here and there (asking the app for the nearest petrol station ignored the fact one was around 500 yards away, for example), but no local search app can truly replicate local knowledge. One small niggle we noticed in our testing was that Yell.com doesn't appear to have many reviews for businesses. This is true even in central London. Recommendations are extremely useful and something we'd expect to see in an app like this.

Search for non-local businesses can be useful if you're about to visit an area, and this can be done by tapping the location field on the home screen and entering a postcode or the name of a town or city.

The Yell.com app is terrific and all you need for local searches. It's well thought out, well designed and backed with a genuinely useful set of results.

#### **Thomsonlocal**

In the local directories war of the 80s and 90s, Thomson had as big a presence in most of our homes as Yellow Pages. The company diligently continues to deliver small slabs of paper to most of us but, on the evidence of this app alone, Yellow Pages/Yell.com is nowadays in an entirely different league compared to Thomson.

An upset encountered early on is that there's no iPad version of the Thomsonlocal app. As always, you're free to install the iPhone app on an iPad and use it in magnified mode but this isn't ideal. The logic might be that iPads rarely leave the home, where we're most likely to need local search. But neither did the original Thomson Local directory, and that was still something we turned to regularly.

The default home screen shows icons for popular searches, such as petrol stations, electricians, dentists and so on. Alternatively you can type the name of a business type into the field above.

It's with the list of results that the second irritation can be found: sponsored results. We searched for a nearby florist in north Derbyshire, for example, and the first result was Interflora, in Sleaford, Lincolnshire. Search for a petrol station and the first result is A1 Clutches. We don't even know where this is located, because no address is listed, but we doubt by the business title that it sells much petrol.

Of course, your eye naturally skips such results provided they're not too ambiguous (although many are), but they're an irritation.

Search results were numerous and of reasonable quality but sometimes questionable. Searching for a nearby doctor entirely ignored the local surgery, for example, and reported results that were at least five miles away. On the other hand, Thomsonlocal picked up on the nearby petrol station that Yell.com missed (although it placed the pin in the wrong map location, perhaps because it was working via postcode data). There's an option to sort results according to distance, rating, A-Z or 'Default'. We've no idea what the latter means.

It seems non-local searches are impossible. There's a Map Search option, but this simply shows a map and a search field, with the results shown as a series of pins. Thomson can only advise on where you're physically located. Dumb.

Focusing on the positive, a feature we really liked was the ability to create a new contact straight from the app. Additionally, a search result can be texted, emailed or tweeted to others (all using iOS's built-in apps), although it seems Facebook or LinkedIn are beyond Thomson's ken. That's a shame, because the ability to share the address for a business meeting is useful.

This is an iOS 6 app, not updated for iOS 7, and there are quite a few bugs. For example, typing into the search field and then viewing the results, before tapping to return to the home screen, leaves the



▲ Big Local App attempts something very ambitious but simply doesn't deliver

keyboard still visible on the screen obscuring half the quick search icons. To get rid of it, you need to tap again in the search field and tap the Cancel button.

To be blunt, there's a little to like in the Thomsonlocal app and some things not so great. Give it a try, but just don't expect too much.

#### **Big Local App**

Yet another iPhone-only app, usable on iPads in magnified mode, Big Local App aims to provide just about every local resource for an area – from tradesmen to news to sports to council services. Unfortunately, although the list of areas covered is impressive, here the word 'local' appears to apply only to your nearest city or large town. A list of the locations covered is included for reference within the app description.

Even though the app asks for your GPS location, it didn't make a suggestion for us. Sheffield is technically closest, but we plumped for the more familiar Manchester.

The home screen shows icons for BBC News, Council, Education, Sport & Leisure, Vouchers, Tourist Information, Cinema & Arts and a Business Directory. Additionally, an animated carrousel beneath



A Better for users in built-up areas, AroundMe is a good looking app with some nice features

shows places of interest in the area and also has a few more buttons to let you find cafes and restaurants, for example.

Our best guess is that the app is tapping into RSS news feeds for various sites and presenting them in a hierarchical display. Tapping the Council button, for example, showed information about Manchester City Council. Tapping the More Info button then showed headings for various departments within the council, and the information shown looked a lot like it does on the website of the council.

Tapping the Education icon takes you to a list of Schools and Colleges, but here you hit a familiar limitation of the app. Although the list of results shows the name, address and phone number, tapping them does nothing at all. You can't tap to phone the number, for example, or tap to view a map of the location. This is true of the Business Directory too. Nor can this information be shared with others via social media or email. This feels like lazy programming.

The exception to this rule are results that appear at the top of the list that may or may not be sponsored, it isn't clear. These include details and a More Info button that again appears to plunder information from the website.

Big Local App attempts something very ambitious, but the app simply doesn't deliver. It also looks pretty awful compared to just about any other app reviewed here.

#### **AroundMe**

Simplicity is the name of the game with AroundMe, which on both the iPad and iPhone has an interface showing clear icons for common searches.

When the app starts, simply tapping one of the big icons shows a list of results on the left of the screen on an iPad (with a map at the right showing pins) or filling the screen of the iPhone.

Non-local searches can be carried out by tapping the location icon at the top right of the iPhone screen or the top right of the results list on the iPad. Once a postcode has been entered, AroundMe will centre searches around that location.

So far so good, and there's little doubt that AroundMe is both good looking and easy to use. But what about the results?

For our tough Derbyshire-based test we saw 'No results found' for quite a few of the categories, including Banks/ATM, Concerts, Gas Stations, Hospitals, Parking and Pharmacies. Other apps here returned at least something in these categories, even if it's 10-20 miles away, and here we hit a fundamental limitation (or feature) of AroundMe: it appears to be deliberately limit results to a small

radius around you. It really does want to return truly local results! However, for some reason this doesn't apply to searches for non-typical businesses, which can be done by tapping the search field at the top of the icon list on an iPhone or the icon at the top right of the iPad screen. We ran a specialist search through the system – clock repair – and a long list of businesses appeared. The furthest away was 40 miles. So one tip is this: if you want results that aren't strictly local, ignore the default searches and use the search field instead.

Tapping a search result or pin shows more details of that business, filling the screen on the iPhone or causing a pop-out window to appear on the map of an iPad. On an iPhone, a small map is shown at the top of the screen and a nice touch on both iPhone and iPad is that AroundMe automatically works out a route to get to the business. Map data is provided by Apple, rather than Google, so beware that there may be the occasional baffling inaccuracy. Tapping the transit icon switches you out to either Google Maps or Apple Maps for turn-by-turn directions, and tapping the share icon opens the standard iOS share sheet so you can pass on details via whatever social media you have set up.

Along with the usual data within the results, such as phone number and web address, AroundMe taps into Foursquare to get comments about the business and to show pictures of the place if there are any. This is again a nice touch, and we found that even the more obscure local pubs in the locality often featured Foursquare data.

The interface is blighted by large and intrusive ads that appear above the map or results. £1.99 removes them. Pop-up dialogues also appear advertising other apps, although during our testing the iPad version appeared immune from this.

AroundMe is a truly mixed bag and by design is perhaps better for those who live in built-up areas.

#### **Bizzby**

Although the apps reviewed so far let you search for local tradesmen or services, Bizzby aims to take control of the entire process – from searching, to payment, to tracking progress, and finally to reviewing the work for others to be informed. It also assumes you want the requested service immediately, so you can't use the app to book in a carpenter for two weeks hence, for example. Unfortunately, the app works only in London at the moment, so our review is somewhat speculative.

Talking of restrictions, the app also works only on an iPhone, although can be used on an iPad in magnified mode.

Setup includes providing your phone number, to which a confirmation code is sent. It's claimed this is for security reasons, but we suspect the real reason is so that people don't use the app to cause mayhem by booking tradesmen or services they don't intend to use.

The home screen includes three categories: Cleaning, Handyman and Health & Beauty. Tapping one then shows a further series of subcategories. Tapping Handyman, for example, shows headings for Handyman Per Hour, Plumbing Work, Electrical Work, Assembling Furniture, Hanging & Fixing and Decorating.

Tapping any then automatically composes a brief message, using auto-detected GPS data. For example, tapping the Plumbing Work heading shows the following: 'I need a plumber to fix a water leak + description at [address] now in 59 minutes'. Most of the fields can be tapped to change them; tapping 'fix a water leak' cycles through other typical plumbing emergencies, such as 'unlock a sink' or 'fix a shower'. If none of these are correct then tapping the Description field lets you type manually. You can also add a photo.



A Bizzby lets you book and pay for certain tradesmen and services all via a single app, but is limited to London right now

Once you're happy with the message, you can hit the Get Price & Bizzby It button, which immediately shows the hourly rate you're probably going to have to pay and cycles through the database of handyman to find a result local to you. For the plumbing email above, this means contacting 176 plumbers, apparently, although in my tests I got no takers, because I live a few hundred miles beyond the M25.

Searching is quite a scary thing to do, and it's not clear what personal data is being passed to the tradesmen concerned. Do they get your mobile number? Do you feel comfortable passing 176 anonymous plumbers your home address?

Once a tradesman has been located, you can tap to book them and they should turn up within the time limit you defined.

Bizzby is an intriguing app. We're just not sure how necessary it is. My goal in a new area is to find a trusted tradesmen or service I can use repeatedly, rather than put out a tender to hundreds of people each time. Additionally, it's rarely the case that a tradesman is needed ASAP. If you're in a situation where you need a plasterer or foot massage within 30 minutes, then you probably need to work on your organisational skills.

Perhaps the best we can say is that Bizzby is an app to keep an eye on as it matures.  $\ensuremath{\mathbf{mm}}$ 



# Facebook History

#### David Hayward looks to remove his 'choice' Facebook searches this week

learing your internet or browser search history is a sure-fire way of protecting your privacy from others, especially if you're using a shared computer. But have you ever considered that your Facebook searches are logged and viewed? Thankfully, you can clear them too.

We won't go into the gory details of why you would want to clear your Facebook search history. Looking up former girlfriends or boyfriends profiles and viewing some of the more 'select' pages available are the top reasons. However, each of these searches are logged and viewable to anyone who can access your Facebook account.

#### **Activity Logs**

Start off by clicking on your Facebook profile, in other words your name. This will bring up the friends or public view of your page on Facebook.

If you look in the bottom right of your cover photo, not your profile picture, you'll see a button labelled 'View Activity Log'. Click this and you'll be taken to the page that details your posts, likes and all other Facebook activity since the day you started using it.

At a first glance it looks fairly standard and not all that revealing. If you delve a little deeper, though, you'll soon begin to realise just how much is being monitored or rather logged by Facebook.

#### Searching

With the Activity Log window open, click on the 'More' option in the third section of the list down the left-hand side of the screen. It'll be under 'Photos', 'Likes' and 'Comments'.

This list will now expand and include a wide variety of other options, all of which will link to something you've viewed, posted or liked previously on Facebook. If you browse to the bottom of the list, just above the 'Less' option, you'll see a link for 'Search'. Click this and you'll now be shown a complete list of every search you've ever conducted on Facebook, right from the moment you opened your account.

#### **Clear Your History**

Browsing through the list will no doubt reveal those times you've had a little too much wine and decided to look for your ex-girlfriend or something similar and something that'll not go down too well with your current partner.

To clear Facebook of this lot and to protect your privacy, just click on the 'Clear Searches' link that's located in the top right of the search screen. This will now permanently delete all those embarrassing searches you performed and wipe the Facebook slate clean.

#### Conclusion

Of course, clearing your searches needn't be all about hiding something embarrassing; it's more of a privacy issue. After all, if you can see the logs generated by Facebook, then there's no reason why some hacker or someone who has the ability to gain access to your account can't as well.

Plus, it begs the question: why does Facebook need to log your searches in the first place? Makes you think, doesn't it?

#### **Facebook Privacy**

If you need a little more information regarding Facebook privacy and the various settings within your profile, then check out **goo.gl/cykpdu**.

Here you'll find an almost complete help section on privacy controls, Facebook data and how it affects your profile.

# Activity Log All Timeline Review Your posts Posts You're Tagged... Posts by others Posts You've Hidden Photos Likes Comments About Friends All Apps MORE

↑ The Facebook search log is hidden deep within your profile



▲ After clicking on 'Clear Searches', your Facebook viewing history is now wiped







#### This week, Sarah tackles the master irritator that is Apple's iTunes

ost of the time, if you don't like how a particular program works, there's an alternative you can use instead. Hate Word? Try OpenOffice. Enraged by Internet Explorer? Switch to any number of other browsers. iTunes, though, you tend to be stuck with if you want to use an Apple device like an iPhone or iPod. There are other programs you can use, but Apple doesn't really want you to, so those come with a whole host of added frustrations. Therefore, most of us stick with iTunes, even though it's really incredibly annoying. Here are some of the most common irritations it throws up...

#### **Bah! Syncing issues**

The main purpose of iTunes is to manage your media library and move files – whether that means music, ebooks, podcasts or movies – between your computer and your iOS devices. But it's very annoying, especially if you have a lot of songs on your computer. You have to click a checkbox next to each and every song to tell iTunes whether to sync it or not, which can be incredibly time-consuming. Also, if you want to use iTunes as a music player on your computer as well as a media manager, you'll find it won't play songs you've unticked, so you'll have to tick them to listen to them – and then untick them again when you connect your device.

Fix it: The only advice we have to make this process quicker is to use the Shift key to tick/untick large swathes of songs in one go. Not that this helps if you want to cherry-pick from your favourite albums. An alternative is to make playlists of the music you want and then use the iTunes setting to sync those – though that's not much easier.

If you like podcasts, it's worth checking the syncing settings for those: you can get iTunes to automatically give you the latest ones or choose your favourites from the list.

#### **No! Library Dramas**

For obvious anti-piracy reasons, you can only sync one library with your Apple device. Many of us, though, use more than one computer, whether that's multiple computers at home or one at home and one at work or some other configuration. Connecting your iPod to another computer, whether it's a friend's or a new work machine, means you risk wiping your entire library. And if your computer died and you didn't back up your files? You'll struggle to restore them from your iPod.

Fix it: Just be careful about connecting your iPhone, iPod or iPad to computers – and it should go without saying, but it's a good idea to back up your data!

#### **Argh! Constant Updates**

You might have installed iTunes, but that's never the end of the story. Apple is constantly making changes, so you'll find yourself prompted to update iTunes on a semi-regular basis. That's irritating in itself, but to make it more so, Apple has usually changed something functionally minor but aesthetically gigantic so you'll have to relearn how to do basic things like finding your playlists or syncing your podcasts every time you install a new version.

Plus you can never just update iTunes: Apple will ask you to install Safari or QuickTime or some other nonsense you don't want as part of the bargain every time too. It's almost enough to make you consider buying a Zune.

Fix it: You can stop automatic updates by opening Preferences and unticking the box to automatically check for updates. Other than that, make sure to read any dialogue boxes that pop up properly, and only agree to updates you want! mm

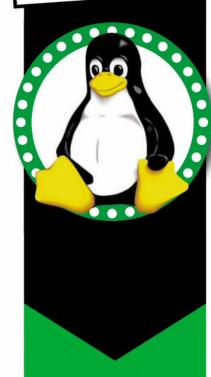








# **Specialists**



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 Lite 2.0

Quite possibly the best distro we've ever used

inux Lite is a distro that seems to have found favour wherever it's been installed. Yet, for some odd reason it is also one that's often left to one side or forgotten completely when the talk turns to fresh, lightweight and manageable desktops. Why this is I have no idea, and it's a shame because the recently released version 2.0 of Linux Lite is an exceptionally good example of what can be achieved when the right combinations of desktop, tools, programs and ideas come together.

If the selling point for a Linux distro these days is its user friendliness and ease of use for tor the beginner (or even being considered Windows-refugee compatible), then Linux Lite should be top of the shopping list. Based on Ubuntu 14.04 LTS, this Xfce installed distro is loaded with everything you could possibly want from a modern day PC.

GIMP, the latest versions of Firefox and Thunderbird, Mumble (a high quality voice chat program) and VLC are the standard fare. LibreOffice also makes an appearance, but there's more to this distro than the inherent programs.

There are pre-built and configured tools to help install extra software or even remove it, via the Lite Software feature (that runs via a set of well designed scripts). There's also a pre-designed user manager in the form of Linux Lite User Manager, which makes account management a little easier to understand for those who are new to Linux.

Naturally the more common tools and administrative programs can be accessed, and for the hardened user there's always the Terminal, which has a rather natty and retro looking green text on a black background theme going, so despite the emphasis being on the new user a regular distro junkie will appreciate Linux Lite just as much.

The menu layout is clean and uncluttered, as is the desktop and interface, which helps improve the already minimalistic nature of Linux Lite. There have clearly been some carefully laid plans put in place when designing Linux Lite as everything from the wording of the programs and tools in the menu, to the well documented support and help manual is excellently presented.

#### **Waxing Lyrical**

As I previously mentioned, the former Windows XP user will have no trouble getting to grips with Linux Lite, but it needn't be totally dedicated to bringing new Linux members into the community. The right-click context menu, for example, houses such additions as 'Create Launcher', 'Task Manager' and even a screenshot option, all of which form a better companion to enter into Linux with. However, a few tweaks here and there can turn Linux Lite into a desktop powerhouse - and one that will no doubt please the more advanced user.

Looks aside, the clever combination of Xfce and the minimalist approach of the overall system, Linux Lite is an exceptionally quick and sprightly desktop to use. It boots within seconds, is snappy to respond and open programs, can switch between workspaces quickly and adds a certain sense of style to what is in essence one of many similar lightweight distros.

It's also very stable and hasn't ever bombed out when we treated it to an intense Steam session or a spot of video editing, in fact it kept its liveliness throughout the entire time we tested it. Which is testament indeed to its construction and development.

To conclude, I'm very impressed with the work that has been done to deliver Linux Lite 2.0 in such a well polished, instantly useable, state. It's a great desktop and addition to our collection of worthy installations, and for this we applaud the development team and Linux Lite community.

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**≺** Linux Lite 2.0 is a thoroughly amazing distro

# Under Apple's Surface

When so-called tech fans slam Apple for such a technology-infused keynote, is it any wonder companies retreat to gloss?

n the aftermath of Apple's Worldwide Developers Conference (WWDC), it was suddenly readily apparent why companies sometimes emphasise gloss and surface rather than the foundations of technology. No sooner had Tim Cook left the stage than keyboard warriors took to the internet, in order to lambast what they had just seen.

What they hadn't just seen is Apple reveal some new trinket or other that no-one really needs or wants. There was no iWatch, no Apple television, nor even a revamped Apple TV. There were no new MacBook Airs, iPads or iPhones – though these were never likely to appear at a conference primarily about and for developers.

Instead Apple outlined its audacious vision for the future of computing, and that apparently went right over a lot of people's heads. Watch the entire keynote address, however, and it's pretty clear Apple's a truly bullish company once again, gunning for absolutely everyone in the industry. No-one was safe: mobile-, desktop- or cloud-based.

OS X has been reskinned and revamped; iOS has a slew of new technologies that will propel it beyond its contemporaries, without compromising the usability that made it so successful in the first place; baked-in features across Apple's systems set out to obliterate swathes of competing services; and in a move that precisely no-one predicted, Apple's overall vision is a kind of continuous experience across multiple devices and platforms, rather than Microsoft's rather more awkward idea of 'one device to rule them all' or the recent Asus toaster-fridge that

tries to be a phone, tablet and laptop that runs Windows and Android – why not also be a PS Vita, a VIC-20 and a theremin?

Pretty much the first comment I happened across – and from a professional tech writer, no less - may as well have just said 'meh' in 96-point text. The column outlined that Apple had really offered nothing new – just some minor changes here and there. Elsewhere, commentators leapt aboard that particular train of thought. iOS 8 still looks almost identical to iOS 7: APPLE FAIL! The Home Screen (the very usable Home Screen that most iOS users actually like) still harks back to the very first release of the iPhone, eschewing widgets: APPLE IS DOOMED!

Never mind that widgets finally made an appearance on iOS, but will be tidied away in Notification Centre, where they actually make sense; never mind that iOS 8 will usher in a staggering new set of APIs, opening up the system like never before and also boosting its power, notably in gaming; never mind that Apple revealed a new programming language, Swift; never mind that OS X adds a ton of features to help you be more

efficient; never mind that iOS and OS X are, as Apple puts it, connected like never before, with you being able to take iPhone calls on your Mac and 'hand off' documents to iOS devices sitting nearby with a single swipe. What really mattered was that, on the surface, major revolution didn't occur – it was all buried underneath.

The thing is, consumers don't want such overt radical change, and anyone truly interested in technology should therefore be thrilled by the advances Apple is making to its operating systems' guts. Too often, though, people who claim to be fans of tech lose themselves in a world of appliances, and that's deeply ironic when they're criticising a company famous for making such kit when it happens to have just announced some of its biggest technology advancements to date. True fans of technology need to start looking beyond the surface and also their own prejudices, before those are the only things that remain.

▼ iOS 8: basically the same as iOS 7...
if you weren't listening to anything
Tim Cook and friends said





Craig Grannell is a writer, designer, occasional musician and permanent loudmouth. He's owned Macs since 1996, when Apple was facing certain doom, and is therefore pleasantly surprised by its current success. Find Craig on Twitter at @craiggrannell





lan 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

# iOS The 8th

Ian McGurren hopes the latest iOS tenure is a little less controversial than Henry's

t's that favourite time of year for followers of the Cupertino way. Apple's World Wide Developers Conference is always of special interests as it is here that Apple reveals the latest versions of its OS X and iOS operating systems. 2013 saw iOS' biggest overhaul since its inception, with shiny buttons and skeuomorphism making way for clean lines, thin fonts and quite a lot of white. Not everyone was a fan at first but gradually the flat, simple Iveesque lines have become as much Apple's signature as their slick hardware design.

So it comes as no major surprise that iOS 8 wasn't the same major stylistic leap that iOS 7 was; indeed it's more of a refinement on the original idea. That's not to say iOS 8 doesn't have much that's new to offer; here's a few highlights.

#### Widgets!

Well, not quite, but it makes an interesting headline in an iOS column. The iOS SDK has been opened up to allow pseudowidgets from independent developers to appear in the drop-down notifications bar. So, if you have Sky Sports for example, there's no need to open the app - any favourite teams will appear right there with the latest score. As long as it doesn't become as annoying as app notifications you forget to opt out of, this could be very useful.

#### **Search And Locate**

Search now incorporates more results, including apps that you don't already have. For example, a search for Pizza Hut will now also yield a direct link to the Pizza Hut app. In fact this new

suggestion of apps idea has also made it to the front screen too (well, the drop down). Take Pizza Hut, again, as an example (where you may be enjoying a reasonable cheesy dinner): checking your iPhone may yield location-based app suggestions such as the O2 Moments app where there may be an offer for Pizza Hut.

#### Notification Interactivity

If you've used Handcent or similar on the Android platform, you may have already been able to reply directly from a message notification. Apple has taken this idea and run with it in iOS 8, allowing interactivity with many of the platform's notifications. In addition to the usual replying, there's additional interaction depending on the notification, so a Facebook notification for example can have buttons to like or share, Twitter - retweet, favourite and so on. Useful, though you'll need to grant the OS access to the specific accounts in order to enable this.

#### **Family Sharing**

We've all seen the articles about little Billy running up costs of £5000 worth of In App Purchases while mum and dad have remained blissfully unaware until the bill for the month arrives. To deflect any criticism

being laid at their feet, Apple has built Family Sharing into iOS 8, which will alert the account owner when a purchase is being made on another linked device. They can then approve this or kindly remind Billy that in fact his room is a mess. A boon for parents, a bind for kids.

#### Healthy

There's been a lot of buzz about health and fitness on mobile platforms in the last 12 months. To its credit, Apple has been the go-to company since Nike+ tied up with the iPod way back in 2006. However, while there are many competing products on the platform, they are all disparate and don't link together. The new Heath app is an attempt to bring all of these sensors under one roof, allowing the user to chop and change devices without having to change their apps too. It also opens up the system to additional sensors in the future that can tie in with those you may already have. Mobile health and fitness is going to be a major growth industry in the near future, and with Health, Apple has every intention of being at the centre of that growth.

IOS 8 will be a free upgrade to all iPads from the nowancient iPad 2 upwards, iPhone 4S upwards and the iPod Touch 5th generation from around October.



# Commando Redux

Shaun is not just your average Joe, as he demonstrates with a new version of Commando for the Commodore 64

1985 arcade hit, Commando was initially released by Capcom and duly converted to the main 8-bit personal computers of the era by Elite Systems Ltd. The Commodore 64 version was memorable for its music composed by the great Rob Hubbard, but the game itself was sadly lacking, containing only three of the eight levels from the 10p-chomping arcade machines, as well as some glitches on the graphics that left a bit to be desired. Now, these and other issues have been resolved thanks to the C64 group Nostalgia (nostalgia.c64. **org**) with one of the best remakes you're likely to see on the popular 8-bit machine.

Commando Arcade uses much of the original code base, fixing issues with the graphics and adding a remix to the famous game tune, but most importantly including all eight levels from the arcade game as well as a very impressive splash screen, a built-in trainer mode and a reworking of the controls to reduce the need to use the keyboard in play.

It's basically a one-man mission in which you take control of Super-Joe for a top secret mission to defeat the Evil Empire Army that have mastered the art of guerilla warfare; yes, it's a vertically scrolling shoot-em up, though one that's now of fairly epic proportions.

Super-Joe is armed with a rifle that has unlimited ammunitions, as well as some hand grenades which, along with a keen eye and sharp reactions, are his only defence across a now varied and rugged terrain. This is no game for the meek and mild (although

by today's standards it all looks a bit quaint).

Commando Arcade is available to download as a disk or cartridge image and may be installed onto compatible hardware for the C64 to run on a real machine. Full details and the relevant files are available at the Nostalgia website mentioned above or at csdb.dk/release/?id=130973.



By coincidence, if you wanted to make your own *Commando*-like game for the C64 but do not have the sort of programming skills to achieve this, but everything else from drawing the sprites to designing the levels, then you could use a utility like the Shoot-Em Up Construction Kit created by Sensible Software in 1987. There have been plenty of games made with this excellent utility, but due to its nature most of them

COMMANDO

▲ Capcom's arcade hit Commando as it should have been for the Commodore 64

are rather formulaic and somewhat predictable. With this in mind, Martin Piper has improved and tweaked the core engine to include a multiplexor to better handle more that eight hardware sprites on the screen at once, which he says improves the look and feel to the demo games included with the package. To download this new version, visit Martin's public Github repository at github.com/martinpiper/C64Public.

passionate interest in 8-bit computing and gaming and has been finding novel ways to

Shaun has a

finding novel ways to use retro technology since 1994

#### **Keep It BASIC**

My brief foray into BASIC programming is at an end for the time being, but that doesn't mean that the conversation has to end here.

If you'd like to discuss 8-bit programming in this high level language further then head over to the retro subforums at **forum.micromart.co.uk** or you may Twitter me **@ShaunBebbers**. Alternatively, there's the Facebook page at **facebook.com/retrocomputermart** or if you prefer proper old school retro, put pen to paper and write into the magazine via the address on the 'Your Letters' page near the front of the magazine. I look forward to hearing from you.

Actually, before I go, here's a one liner that will generate a random maze on the Commodore VIC-20 and C64: **0 PRINT CHR\$( 205.5 + RND(.) );: GOTO** 



# Specialists



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* 





This week, **Ryan** takes a look at what Crytek has planned for Homefront: The Revolution and checks out Trion's now free-to-play MMO, Defiance...

#### **Plug & Play**

In 2011, Korea invaded America. Well, in Kaos Studios' first-person shooter Homefront they did, at least. Hollywood writer John Milius dreamt up a nightmare scenario – with numerous, obvious parallels to his 1984 film Red Dawn - in which a united North and South Korea stormed the United States and took it by force. Milius had thought the details through in considerable detail, and the premise had a certain amount of dramatic weight even though the game behind it fell decidedly flat.

Despite a certain amount of controversy surrounding it (all references to Kim Jong-II and North Korea had to be removed from the game's Japanese release), *Homefront* sold reasonably well. Following the implosion of publisher THQ and the closure of Kaos Studios, the *Homefront* property wound up in the hands of Crytek, where it has the potential to flourish into something rather more unique.

Homefront does, after all, have that Milius premise behind it, which remained unresolved at the game's conclusion. A victory may have been scored, but the United States remained under the heel of its invaders. That brings us to *Homefront: The Revolution*, which takes place four years after the events of the first game (in 2031) and relocates the action to occupied Philadelphia. The protagonist this time is a chap named Ethan Grady, and the game will follow his journey from ordinary American to battle-hardened resistance fighter.

That's the plot, at least – the critical question is: can Crytek improve on the somewhat linear military shooter that came before it? The early signs appear to say yes. Homefront: The Revolution will take the form of an open-world shooter, where players take on guerrilla warfare missions against a technologically superior enemy. What's intriguing about Crytek's sequel is that it isn't just about headshots and meeting objectives: as The Revolution's designer Fasahat Salim told the website Polygon earlier this month, completing missions is only part of the game; there's the exit strategy to think about too.

A full-frontal assault on an enemy position will result in a swift and violent response from enemy forces and drones. The better approach, therefore, is to sneak in, carry out your objective, and get out before all the reinforcements show up. "If you can get in and get out before they have a chance to respond with all of their firepower," Salim told Polygon, "you've done well."

Based on what we've seen so far, *Homefront: The Revolution* looks as good as we'd expect from the creator of the *Crysis* series. Sure, the brown and grey palette's par for the course in a military shooter, but there are splashes of imagination too: the high-tech masks worn by enemy troops or the ominous, futuristic aircraft floating over the Philadelphia skyline.

What really sounds intriguing, though, is the notion of a resistance force that grows and changes as you successfully complete each mission: do well enough, and you'll find angry locals pouring out onto the streets to support your cause. If Crytek can make this element of the game play as well as it sounds, Homefront: The Revolution could be a truly superior sequel.

Homefront: The Revolution is due for release in 2015.









A Now free to play, Trion Worlds' online shooter Defiance is a far more attractive proposition

Online

Launched last April, *Defiance* was an ambitious joint venture between Trion Worlds and the Syfy Channel. With events in the MMO reflected in those in the TV series of the same and vice versa, it certainly sounded like a novel multimedia experiment on paper. Unfortunately, the *Defiance* TV series ultimately proved to be a fair bit more entertaining than *Defiance* the game, particularly when you considered its full-price status.

That's all changed, however, as Trion has announced that *Defiance* is now free-to-play. Suddenly, a game that once seemed a bit out of its depth – at least, compared to the sheer number of other shooter MMOs available – seems a whole lot more attractive.

It helps that, since its bumpy launch, Trion has smoothed out quite a few of the kinks. Admittedly, its post-apocalyptic landscape is as beige as it always was (the outsized mushrooms are often the only noteworthy things on the landscape), but the action's actually quite fun. You can hurtle around the expansive map in your ramshackle all-terrain vehicle, making getting from

point to point far less dull than in some MMOs, and the third-person, on-foot shooting sections are fast-paced and entertaining. *Defiance* really comes into its own in its Arkfall events. Here, players get together and fight a single, giant boss, which usually comes accompanied by a legion of smaller critters who scuttle around and generally make a nuisance of themselves.

Players of the F2P version of Defiance won't have some of the advantages of those who've paid for a copy (or Patrons, as Trion calls them). They won't get the boosts to XP or the 10% discount in the in-game shop, for example, but otherwise, they'll be playing the exact same game. Some of the issues Defiance had at release still remain (that there's quite a lot of grinding required to level up is still a complaint from players), but with its new free-toplay status, there's every reason to give Defiance a go and see what you think.

You can find out more at **www.defiance.com**.

#### **Incoming**

As we saw only last week, EA's flagship shooter series is stepping away from its military trappings with Battlefield: Hardline. Currently being put together by Visceral – the studio behind the Dead Space series – Hardline will be all about cops, robbers, bank jobs and high-speed pursuits. Comparisons with Rockstar's mega-selling Grand Theft Auto franchise are inevitable, but Hardline probably has more in common with the ill-fated APB, which sadly failed to live up to the strength of its core concept.

Although a fair amount of footage has already been leaked, EA recently released an official teaser trailer for Hardline (youtu.be/

Jod\_kkSY5v4), which again underlines the franchise's new direction:

this is *Battlefield* as urban thriller, with the destructible environments, multitude of vehicles and on-foot shooting now taking place in the middle of an American metropolis. More importantly, EA has also announced when *Hardline* will appear: its release date is set for the 21st October – thus following its predecessors' habit of launching approximately one month before its rival, *Call Of Duty*.

There's also said to be a five-minute gameplay trailer for *Hardline*'s multiplayer component on the way, though EA hasn't specified exactly when it will go live. You can keep an eye out for this at *Battlefield: Hardline*'s website (**www.** 







A EA has revealed that Battlefield Hardline is scheduled for release in October. Expect a five-minute multiplayer gameplay trailer to appear on its official website soon

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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 4x 512MB ddr 333 strips.SAE and I will post back to you. Tel: Jo Barden (01255) 870690 Email: comsnake@comsnake. 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@

btintemet.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: mail2luzl3y-gym@ vahoo.co.uk

Linksys WMP54G Wireless PCI card. £8 collection in Oldham or £11 posted to UK. Tel: Ken Vickers (01616) 78 6139 Email: mail2luz/3y-gym@

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) 612716 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

PNY Europe GEFORCE GT520 DDR3 1GB PCIE 2.0. £22 Tel: (02393) 117877

TP-LINK 32-BIT PCI 10/100M fast Ethernet adapter TF-3239DL.

Tel: (02393) 117877

Belkin 32-Bit boot Rom socket desktop network card F505000. Tel: (02393) 117877

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 Email: omendata@tiscali.co.uk

500GB IDE drive 3.5 inch formatted ready for use. Only £20 plus €3 for p&p. Refurbished.

Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

Creative Gigaworks T40 Series 2 PC Powered Speakers. As new, fully operational. See reviews and prices on Amazon. My price £40. Delivery £6.

Tel: Peter Van Win (01702) 559210 Email: vanpwin1@googlemail.

E-mu 0404 PCI Professional Audio card. Works perfectly with Windows XP, 7 and 832 and 64bit OS's. Optical, Co-ax, MIDI inputs/outputs as well as analogue. Price £50, delivery £3.50. Tel: Peter Van Win (01702) 559210 Email: vanpwin1@googlemail.

Akai Apc40 MIDI Controller. As new, in full working order with software, paperwork, etc in original carton. £240 ovno Delivery £6

Tel: Peter Van Win (01702) 559210 Email: vanpwin1@googlemail.

Hitachi Deskstar T7K250 HDT722525DLA380. 250 GB, Internal, 7200 RPM, 3.5". Used only for storage, taken from working PC, no bad sectors. £20, price includes P&P. Tel: (01202) 826057 Email: geoffandcynth@themailspot.com

Dell GX240 S.F.F, Intel P4/1.6, 768MB RAM 80GIG Hard Drive, CD-ROM, Floppy, network, sound, XP Profully updated, Office, Anti-Virus, utilities, £35.

Tel: (07710) 348638 Email pat4cars@aol.com

Dell GX3020 SFF Desktop, P4/3.2 Hyper-threaded 2 GIGS RAM, 80 GIG hard drive, CDRW-DVD combo, network, sound, XP Pro, C.O.A, reload disk, ready to use, £45, PayPal OK. Tel: (07710) 348638 Email pat4cars@aol.com

HP DC-7100 S.F.F. P4/3000 H.T, 80 GIG Hard drive, 1.5 GIGS RAM, CD-RW, Gigabit network, on board sound, front USB, £45. Tel: (07710) 348638 Email pat4cars@aol.com

250GB SATA drive 3.5 inch formatted ready for use. Only £14 plus £3 for p&p. Refurbished. Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

iMac G4 15inch. Iconic Mac PC, unique design, 700mhz CPU, 512MB RAM, 80GB Hard Drive, DVD/CDR, Apple USB Keyboard & Mouse, OS X 10.4 Tiger with other software installed. Boxed with disks. £80.00 Buyer collects.

Tel: Wayne Deeley 07748170828 wdizz55@gmail.com

Toshiba laptop. SP 6100l, complete except no HDD, unable to boot, charger: Windows 2000 installed. Wi-fi. RAM, DVD all present, good screen. Buyer collects. Spares or repair £15. Tel: Keith Turner (07799) 041618

Desktop computer. With Intel Core 2 Duo E7200, 2.53 GHz, 2 GB RAM, 75 GB HD, DVD/CD-RW, keyboard, mouse, 17" monitor. £ 120 plus delivery (free in London).

Tel: Mr. Mahra (02075) 610584 Email: xasan68@hotmail.com

Sapphire HD6670 Ultimate graphics card. 1GB, passive, boxed, new. £55 inc post.

Tel: Mick Young (02072) 321695 Email: mick.young@o2.co.uk

Blackmagic Design Intensity Pro video editing card. Boxed, new. £100 inc post.

Tel: Mick Young (02072) 321695 Email: mick.young@o2.co.uk

Hitachi Deskstar 17K250 HD T722525DLA380 250 GB hard drive. Internal, 7200 RPM, 3.5". Used only for storage, taken from working PC, no bad sectors. £20, price includes P & P. Tel: (01202) 826057 Email: geoffandcynth@themailspot.com

NASTwo Bay Server. Zyxel 221. Complete with 2x Samsung 1TB hard drives, installed. All new, not been used. Ready to go. Price includes courier delivery. £200

Tel: Mick Sharp (01162) 696813 Email: m.sharp026@btinternet.

Apple G4 dual tower. 1GHZ processor system, 756mb ram, DVD SuperDrive, OS 10.4 £100 or nearest offer.

Tel: Paul Brogden (07545) 496002 Email: paulbrogden2007@ hotmail.co.uk

Apple iMac G4 for sale. 2004, 1.25GHZ G4 processor, 17 inch screen, 1.25GB RAM, 75GB hard drive, OS 10.4, DVD SuperDrive. Comes with keyboard, mouse, and speakers. £150 or nearest offer.

Tel: Paul Brogden (07545) 496002 Email: paulbrogden 2007@ hotmail.co.uk

Apple iMac Intel 2006 for sale. 20 inch screen, 1TB hard drive, 2GHZ processor dual core, DVD SuperDrive, 2GB ram, 0S Lion. No keyboard or mouse included. Mint condition. £400 or nearest offer.

Tel: Paul Brogden (07545) 496002 Email: paulbrogden2007@ hotmail.co.uk

AsRock mobo N68-S. Original box and contents. £20 P+P extra at cost.

Tel: (01842) 879932 Email: mmadds@btinternet.com.

Lenovo ThinkPad X220. Brand new in box. 2nd Gen Core i5 processor, Intel i5-2520M/2.5 GHz (Max Turbo Speed 3.2 GHz), Windows 7 Professional 64-BIT (SP1). Open to offers of £425 owno.

Tel: Tim Wright (01268) 472483 Email: tim20k@tesco.net

Dell Inspiron 1525 laptop. Spares or repair £65. Has faulty screen and cracked bezel otherwise perfect working order. Works with external monitor. New PSU & battery. No hard drive. Email for full details.

Tel: Kevin Cazens (01792) 581036 Email: kevin\_cazens64@ hotmail.com

HP Slimline (\$3150) computer. NVIDIA graphics, Intel core2, 2GB RAM, 250GB HDD built-in freeview card with remote KBD, mouse WIFI, MS office 2007 home. £120 including postage. Tel: (01324) 562722 500GB IDE internal drive. Western Digital (or other brand, please contact me for other brands). Perfect working condition, ready to load your own operating system on or I can load XP Pro or Vista Business edition including a certificate of authenticity for an extra £10. £22, plus £4 for delivery. Excellent condition. Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas 96@aol.com

Lenovo ThinkPad X100e Laptop. Model 2876-2FG Athlon MV-40 1.6GHz, 250GB HD, 11.6in 1366x768 LCD, ATI HD3200, 802.11bgn wireless, Bluetooth, 1Gb Ethernet, Windows 7 Professional 32 bit installed. Upgraded to 4GB SDRAM. Works with Windows 8. £125

Tel: lan Bonnett (01932) 856971 Email: a2345@btintemet.com

Acer Aspire V5-171. Unwanted gift - as new. Intel 13, 6GB Ram, 500GB HDD, boxed and ready to go. £300, offers welcome. Tel: Tory Lloyd (07800) 565456 Email: Tony-Lloyd@hotmail.com

Dell Poweredge 1800 server for sale. 2 x 3GHz Xeon processors, 12 GB RAM, 3 x 160GB hard drives, 6CH SATA RAID controller. £200.

Tel: Kevin Gracie (07506) 685879 Email: kgracie 12@gmail.com

Main bits of a quick rig for sale. Asus PKSSE 775 mobo, Core 2 Quad 6600 GO, 8GB Patriot DDR2 memory. £125 plus postage for the lot. Will not split the CPU/mobo.

Tel: Pat Casey (07532) 387078 Email: patngerry@googlemail.com

Foxconn Nvidia GeForce 7200 GS video card. £15 plus postage. Tel: Pat Casey (07532) 387078 Email: patngeny@googlemail.com

Palit Nvidia GeForce 9600 GT Sonic video card. Factory overdock to 700MHz. £40 plus postage.

Tel: Pat Casey (07532) 387078 Email: patngerry@googlemail.com

Palit Nvidia GeForce 450 GT video card. £50 plus postage. Tel: Pat Casey (07532) 387078 Email: patngerny@googlemail.com

Fujitsu PSU model DPS-210 fb +3.3v 7.5A +5A, +12v 15.3A, -12v 0.3A, AUX +5v 2A A5 new. £4, postage £4.75. PayPal only. Tel: (02082) 246541 Email: K/Rider@yahoo.com

3 HP 338 and 1 HP 334 remanufactured inkjet cartridges for sale.
All brand new and unopened. £10 including P&P.
Tet: Roger Edwards (01383) 736399 Email: r.edwards 14@
virain pet

AMD A8 5600K 3.6GHz Processor. Was going to upgrade a PC but it was the wrong socket for my motherboard. It is a socket FM2 motherboard. Comes retail boxed. £50. Would prefer cash on collection.

Tel: Alice Higgins (01279) 851122 Email: a.higgins@inbox.com

Apple G4. 400MHz, 768MB RAM, 40GB hard disk, ATI Rage 128MB (AGP), Tower (graphite), M7824LL/A, DVD-ROM, zip drive, USB key, mouse. £55. East London, must collect. Tel: Tony (07506) 553871 Email: pattersong@hushmail.com

Various parts: 10GB (£3), 20GB (£5), 40GB (£8), 80GB (£10), 160GB (£20), DVD-writer (from £10), ATL/TNT cards 64MB (£8), 128MB (£12), 256MB (£15), 512MB (£20), AGP/PCI-E, PCI Sound (£5), PCI LAN/fire (£5), ZipDrive

(£5), Pentium II, III, 4 CPUs, mobo, AMD CPUs, bundles, SD RAM/ DDR. Ask for email list.

Tel: Tony (07506) 553871 Email: pattersong@hushmail.com

HP G6 laptop. Intel Core i3-380M 2.53GHz, 8GB RAM, 640GB disk, 15.6 LED, DVD-RW, HDMI, wi-fi, webcam, multi-media reader. Windows 7 64bit. £210.

Tel: Mark Ferns (02089) 321897 Email: mark@ferns16.plus.com

500GB IDE internal drive. Western Digital (or other brands — please contact me for other brands). In perfect working condition, ready to load your own operating system on, or I can load XP Pro or Vista Business Edition including a Certificate of Authenticity for an extra £10. Only £20 plus £4 p&p.

Tel: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas96@aol.com

3GB of Micron DDR2-667, PC2-5300, 240 pin, C15 desktop RAM in the form of one 2GB and 1GB stids. Tested and removed from working upgraded PC. £30 delivered. Payment via PayPal only. Tel: Stuart Wattie (07761) 071075 Email: stuart.wattie@htmernet.org.

Intel Core 2 Quad Q6600 G0 stepping CPU 2.4gig socket 775 65nm. No cooler as removed from upgraded PC. Never been overdocked or reseated. Only £45 delivered. Payment via PayPal only.

Tel: Stuart Wattie (07761) 071075 Email: stuart.wattie@ btinternet.com

16GB DDR3 RAM by Corsair. 2 X 8GB card CL.10. CML16-GX3M2A16 Corsair. £50 including insured post. Tel: Nigel Chaffey (02082) 910504 Email: dmjchaffey@aol.com

M5A78L-M/USB3 AM3+ motherboard for sale. Brand new. £35 including p+p.

Tel: Martin Welch (07971) 528739 Email: welch\_martin@ vahoo.co.uk

Acer TravelMate 371TMi laptop. Standard spec which includes wireless and CDRW with 2GB memory upgrade. Good dean condition complete with original discs etc. All sensible offers considered. Email: peterm@tsstd.uk.com

Corsair 4GB DDR3 1333MHz RAM. One stick of RAM used for about 3 months, selling due to upgrade. The RAM is XMS branded £15.

Tel: Sean O'Connor (07838) 064800 Email: seanocons@hotmail.

Tower PC with Windows XP and Office XP loaded. Certificate of Authenticity for Windows XP included. HP Photosmart printer and Canon scanner, with all discs for hardware. £50. Tel: Alan Phillips (01745) 354614 Email: alan.phillips74@ talkfalk.net

Asus MSA78L-M/JJSB3 motherboard for sale. Unwanted birthday present, brand spanking new. Normally retails for £59.99 on overdockers.co.uk. £35. Emait: weldn\_martin@yahoa.co.uk

5 - Control of the Co

Amstrad CPC464, Monitor, Printer, Covers, Games VGC £18.

Tel: (01245) 264327

4x 16B Gell. Memory PC2-600 DDR2-800 for sale. Taken from my old computer and no longer required due to upgrade. £35 including recorded delivery postage. Pay by PayPal. Will split if required.

Tel: (01299) 823518 Email: abberley 1@sky.com

Intel core 2 quad processor Q6600 socket 775 2.4 ghz x.4 8mhz 12 cache fsb 1066. I will fit an asus P5QLD pr motherboard working perfectly. Please email questions £35, £2.95 postage.

Tel: (016190) 501218 Email: medicineman@ntbworld.com

Asus PSQLD motherboard with core 2 duo processor 2 gigs memory dimm and original setup disk also rear 1/0 cover, all working fine, email me with questions £39.95 plus £5.95 postage.

Tel: (01619) 501218 Email: medicineman@ntlworld.com

FREE 15" and 17" CRT monitors. Collection from Sherbourne, Dorset. Email 78453316@gmail.com for the list. Tel: Matthew Green (01935) 814972 Email: matt@configuredcomputers.co.uk

2 x Intel Core 2 Duo CPUs in excellent condition and perfect working order. Both socket LGA775 chips: one is an E6550 2.33Ghz/4m/1066fsb, the other is an E6750 2.66Ghz/4m/1333fsb. £38 including recorded delivery. Tel: Huseyin Huseyin (02088) 899344 Ernail: hichbiri@hotmail.com

Retro desktop MicroATX, baseunit, p3/1000, 256MB RAM, 40GB hard drive, CD ROM drive, floppy, sound network, dean install windows 2k-pro, copy of install disk, working key, ideal for older games, £15.

Tel: (07710) 348638

Dell GX620 SFF Intel Celeron D 2.8, 1.5GB RAM, 80GB hard drive, CD-ROM, Gigabit network card, Windows XP Pro, office utilities, antivirus, legal COA reload disk, ready to use. £45 (p&p £11) Tel: (07710) 348638

IBM Lenovo NTM-8183 SFF P4/3000 HT768 MB 40 GIG, CD-ROM, network sound dean instar xp-pro SP3, COA copy of disk & reload, ready to use, £45. Tel: (077103) 48638

Laptop for sale. eMachines E510 (Model: 1A2G16M) Intel T400 CPU – 1.7GHz Dual Core Celeron, 60GB SATA2 SSD drive plus spare 160GB HDD, DVD rewriter, 3GB DDR RAM, Wireless LAN, external Logitech mouse (trackpad not working), Windows Vista Home Premium, recovery CDs plus manual. £100 ono.

Tel: (01564) 200162 or 01564 702018 Email: pridding@blueyonder.co.ulk

Garning PC: AMD 1090t CPU, Asus Crosshair IV motherboard, MSI 6950 GPU, Kingston HyperX RAM, OCZ 650 watt modular PSU, 1TB HDD, Coolermaster CM II advanced case, LG DVD drive, 3 case fans and spare windowed side panel. £600 ono plus carriage.

Tel: Geoff (01228) 543406 Email soulie69@hotmail.co.uk

Apple MacBook Pro 15.4" Laptop - MC721B/A (February 2011). Quad Core, 4Gb RAM 500Gb HD OS X with original discs etc. Pristine condition. £875 owno Full details / pictures if required.

Tel: (01415) 694117 or (07870) 627677 Email: jimthechemist@ hatmail.com

Digital LCD PCI Diagnostics Computer Post Card. This is the latest design with screen which displays the error and the solution rather than the old type which only has LEDs and a two digit post code display. Essential tool for any computer techie. Brand new in box. Price includes postage and packing -£15. Tel: Gary Gemmell (01415) 712822 Email: omendata@tiscali.co.uk

Universal laptop power supply. Comes with all converters for all laptop power jack connections. Unused spare. £20. Tel: Gary Gemmell (01415) 712822 Email: omendata@tiscali.co.uk

Power Over Ethernet (Poe) Injector / Splitter plugin adaptors x 2. Allows you to connect a power supply to a device such as an IP-Webcam over 50 metres using a standard Cat5 network cable. Plug in your power adaptor to one end and the network cable will carry both the network data and the power to the device on the other end. Ideal for installing powered surveillance IP webcams, IP telephones, wireless LAN access points to places where no power socket exists. Brand new still boxed. £15. Tel: Gary Gemmell (01415) 712822 Email: omendata@tiscali.ca.uk

IBM Thinkcentre S51 (8171-21G) Intel Dual Core PC with new Windows 7 Professional, Microsoft Office, flat screen monitor, keyboard and mouse. £70. Tel: Gary Gemmell (01415) 712822 Email: omendata@tiscali.co.uk Apple Imac G3 - (Blue/White) complete with keyboard and mouse. Completely new installation of Mac OS. £50. Tel: Gary Gemmell (01415) 712822 Email: omendata@tiscali.co.uk

Cheetah Hard Disk 10.2GB-Scsi 10,000rpm-U/wide-£10. Tel: Gary Gemmell (01415) 712822 Ernail: ornendato@tiscali.co.uk

Computer Case UV Cold Cathode Tubes x 2 - with invertor, on/offswitch and all cabling. New unused spare -£10. Tel: Gary Gemmell (01415) 712822 Email: omendata@tiscali.co.uk

Zalman 120mm Silent Fan - Molex Power Connector - £7. Tel: Gary Gemmell (01415) 712822 Email: omendata@tiscali.co.uk

20cm Wireless Antenna Booster with cable, magnetic base and TNC Connector - New - £10.

Tel: Gary Gemmell (01415) 712822 Email: omendata@tiscali.co.uk

Does anyone want a collection of computers? Many types and makes including AS400, RS6000, VAX, Alpha, Terminals, PET, Sinclair, ZX81, Sharp MZ801k, terminals, SGi, HP UX, 486, 386, 286, 80's computers, Arnstrad, and it goes on. If you're interested you're welcome to view the collection and make me an offer. Cherry pickers welcome to see what you want. West London. Ernail: opium\_den@yahoa.co.uk or skub 1x.101@gmal.com

MSI Twin FrozrIII. Excellent performance/speed & quality and less than two years old £175ono. Contact Dave. Tel: (0161) 2235944 Email: Dave Gi@sky.com

GTX 580 Graphics Card. Working perfectly. £140 plus P&P. Local pick-up also welcome (Manchester). Tel: (07720) 209164 Email: Dave. Gi@sky.com

#### Refurbished Dell Ultra Small Form Factor GX620 P4

3.0/512/80 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. XP pro and genuine Certificate Of Authenticity can be loaded for an extra £10.

Tel: Dave Thomas (01942) 706572 Email: davethomas96@ aoLcom

#### HARDWARE WANTED

Trying to breathe life back into an old machine? Why not submit a wanted ad to MicroMartClassifiedAdverts@ gmail.com and see if any of the thousands of computer enthusiasts who read the magazine each week have what you're looking for?

Wanted: Factory system restore disc for a Dell Inspiron

Tel: Darren Day (07707) 556193 Email: ddshaggy@btinternet.com

Wanted: 4GB (2 x 2GB) of Corsair DDR2 RAM. 800Mhz XMS2-6400. Must be in good working condition. Tel: (01928) 733808 Email: wilsal9@aol.com

Wanted: One Series Printer HP DESKJET 610c in good working order. One servicing manual (Not Users Instruction Manual) for the HP DESKJET 610c Printer. Old Zip Discs. Tel: (01214) 777691

Wanted: A socket LGA 775 motherboard to enable me to build a computer for a local Royal British Legion member. He's able to pay for a 2nd hand board as long as it's not too expensive. I've got the other components. Tel: Nen Driver (101890) 8/02/95

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 PG3200 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@ntlworld.com

Wanted: Texas Instruments Laptop Power Supply Cable.

Mine has failed and without it, I cannot use or charge batteries.

Have complete working system with all software.

Tel: (01525) 288072 Email: jauung 2@btinternet.com

Wanted: DDR2 800mhz, 4GB. 2x2GB. Tel: (07817) 861011

Wanted: The Pet Companion. Has anyone a copy of the 1981 book "The Pet Companion"? This book collected the first 12 issues of Microcomputer Printout Magazine. Will pay £20 for a copy. Email: Thomas Tumbull tumbull50@sky.com

Wanted: A fully working and proven Compaq (HP)
DC7600 PSU. HP part number is 462434-001. Also a Compaq
(HP) DC7900 PSU. HP part number is 379294-001 381023-001.
Both must be 365 watt, not 240 watt versions. Must also be correct fit for SFF; not tower, CMT or USFF models. Thank you.
Tel: Mr Earl (07872) 495140

Wanted: Motherboard with 3GB CPU or higher wanted. Must have AGP interface.

Tel: (07817) 861011 Email: medicineman@ntlworld.com

Wanted: SDRAM laptop modules. Either PC100 or PC133 for elderly Dell Latitude CPt C Series Laptop. Wanted x2 SDRAM modules up to 254 MB for Dimms A + B (Non Parity). Email: gievans@fsmail.net

Wanted: AMD Opteron or FX Processor wanted. This does need to be socket 754.

Tel: 07817861011 Email: richardhaviland@gmail.com

Wanted: Motherboard for Toshiba laptop. Model SA60-302.

Tel: Edward Usher (07708) 235768 Email: e.usher@yahoo.co.uk

Wanted: Advent 6553 working motherboard. Tel: Sean Lavelle (01614) 280430 Email: sean-is@nthworld.com

Wanted: XD picture memory cards for Fujifilm digital camera.

Tel: John McNeill (07835) 441956 Email: jamaneill@live.co.uk

Wanted: PC case and PSU suitable for Intel 775 mobo, or complete 775 system, memory and HDD not important. Tel: Caz Hough (07900) 531125 Email: carolinehough@outlook.com

Wanted: Motherboard for ASUS X55U Notebook. Hannstar J MV1 also known as ASUS SX008D has AMD Dual

Tel: (01284) 752291 Email: coliningrey@aol.com

Wanted: 128MB, 256MB and 512MB USB sticks. Will pay £1 each and organise the postage. I will send a prepaid envelope with the payment.

Tel: (01642) 898269 Email: coleyb@ntlworld.com

#### SOFTWARE FOR SALE

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: davethomas 96@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 Tei: Dave Thomas (07828) 982930 or (01942) 706571 Email: davethomas 96@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 ind 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: omendata@gmail.com

Dell Windows XP Professional SP2 Original Installation / Restore Disk. Allows you to restore your Dell laptop or PC without using a licence code. £10 p&p included.

Tel: Carole Walker (07551) 293083 Email: omendata@gmail.com

Dell Windows Vista Business SP1 32-Bit Original Installation / Restore Disk. Allows you to restore your Dell laptop or PC without using a licence code. £10 p&p included. Tel: Carole Walker (07551) 293083 Email: omendata@gmail.com

#### **SOFTWARE WANTED**

Wanted: SmartDisk HD250 Installation CD. Novice Linux CDs with instruction manuals reasonable prices will be paid. Tel: Alum (01525) 288972 Ernail: jauung2@btintemet.com

## 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!

Send your questions to: Aaron Bich Micro Mart Dennis Publishing 30 Cleveland Street 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.



#### **Old School**

Now that support is stopping for Windows XP, there's another operating system added to the pile that people still use, but can no longer find support for. As a user of such systems in the past, and one who's been forced to upgrade on the fear that I can no longer run my programs, I find myself in a bit of a predicament.

I have a collection of older programs that I still need, and want to use, but many are not compatible with new Windows versions. Many of these programs are quite old too, even running in DOS (yes, I still use DOS applications). In recent versions of Windows, I seemingly have no chance whatsoever to run them, and even programs that aren't really all that old have trouble running properly.

I'm running my PC with a copy of Windows 7. I skipped Windows Vista on the plentiful advice found everywhere, including that found in this very magazine, which I thank you for, it sounded terrible, and although I've been forced to upgrade, I do like Windows 7. I'm not so sure about Windows 8, though.

I would appreciate any help you can give me with regard to running my older applications and programs, even my DOS ones, which I know may be asking a bit much. If you can even help me get one or two running, that would be an very helpful indeed.

Also, I've seen that there's a way to extend your XP support for another five years using some kind of registry fix, but I've also read that this could be problematic or even risky, what's your take on it?

John

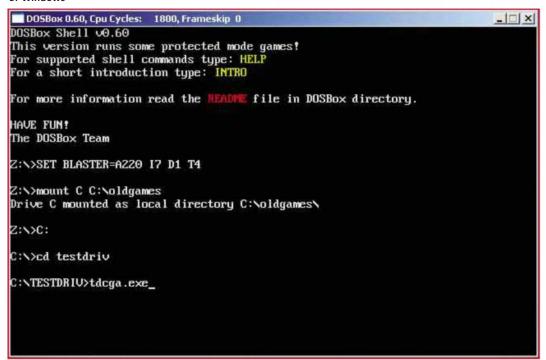
Running older programs on more recent versions of Windows is something of a art form these days. With each revision of Windows, the challenge can become more and more complex, but there are tools we can use to once again make use of older programs, even those old enough to run under DOS.

The most simple method of attempting to run older software lies with the use of Windows' own compatibility options. Accessed by going into the properties of a

program shortcut and selecting the Compatibility tab, you can use these to set an application to run under special modes designed for older operating system. This sounds great, and if it works, it is. More often than not, though, it's an approach that doesn't succeed. If this is the case with your apps, then a more hands-on approach is required.

Enter two software-based options, virtual machines and DOSBox. The former of these two options is one of the most reliable, but requires and actual copy of the older Windows OS along with a license. You can use various virtual PC programs, such as VMWare, to set up a virtual PC within your existing OS. This virtual machine can have an older copy of Windows installed on it, and once done, older programs can be used without any major problems for the most part. It's a method I'm fond of myself, as it can be used to easily run as many older apps as you like in their own environment, without any messing around, and the virtual PC not only manages this, but it's also a

**▼** DosBox is a great legacy emulation tool that can be used to run older programs on more modern versions of Windows





secure system, that protects your real PC and OS from viruses and so on, and is useful for browsing the Internet, or trying out downloaded applications in safety.

The other method, DOSBox, is a great option for those who don't want to mess around with virtual PCs, or don't have copies of older versions of Windows to install. Mostly used by the gaming community to run older PC games, it's a tool that can also be used to run old applications. You can get it for free from www.dosbox.com. It can be quite a complex program to use, but it's certainly worth it, as it's a brilliant way to run older software for free, and requires no extra Windows licenses and the like. There's a full tutorial on the site if you have any issues getting it running.

As for your final question about the extension of Windows XP's updates:

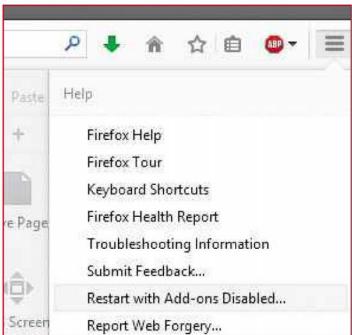
yes, there is a way, but it's hardly above board, and so I can't really condone it, or advise you to use it. Should you wish to look into it further, however, you can find more details of the technicalities online at tinyurl.com/mkp6e3o.

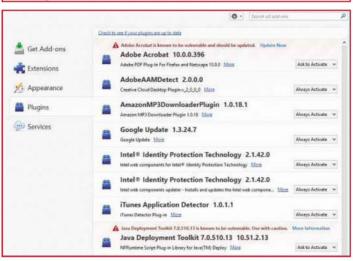
Found by a user in Germany, it involves fooling Windows XP into believing your PC is running certain software that comes under the extended update program, namely, POSReady 2009. Doing this, as you said, involves running a Registry hack; that's all that's needed. As I said, though, this is done at your own risk.

Microsoft has already issued a statement warning those who use the hack of potential issues, saying "The security updates that could be installed are intended for Windows Embedded and Windows Server 2003 customers and do not fully protect Windows XP customers.

Windows XP customers also run a significant risk of functionality issues with their machines if they install these updates, as they are not tested against Windows XP."

So, although Microsoft may not come down on you like a ton of the proverbial for tweaking your system as per the instructions, you do run the risk of updating your system with files that aren't actually designed for it. Still, many people have done so, and most seem to report no issues. If you do give it a go, you may want to do so running a copy of XP in a virtual machine, though, thus keeping your real PC out of harm's way. This is also a good idea from a security standpoint, as Windows XP is no longer secure when it comes to viruses and the like, as many security programs may not fully protect a machine from attack.





#### Firefox Down?

As a long time Firefox user, I've always been happy with my choice of browser, but I've been regretting that choice for the last few weeks. For some reason, Firefox seems to have become ridiculously slow and sluggish, to the point where a simple Google search locks up my PC for a couple of minutes before any results appear, especially image searches.

I also have a copy of Chrome installed, and using this presents no such problems, but I'd really rather use Firefox, and so would appreciate any advice you can give to get this problem ironed out. My copy of Firefox uses the auto updates, and so is up to date.

Phil

There could be a host of reasons why Firefox is behaving in this manner. However, before we extrend the search, I'd recommend you tackle the basics. First try clearing web cache and history, the most basic step, and see if this helps to liven things up a little. Then, try and running FireFox in its 'Safe Mode'. This will restart Firefox with all add-ons and themes disabled. If you do this, and the problem disappears, then it's obvious you have an issue with one of your installed add-ons. At this point, you can begin to step through them, one by one to locate which one causing the sluggish response. Once you find it, remove it and re-install or simply disable it if you can live without it. A common cause of such problems are antivirus add-ons.

To run in safe mode, click the options menu button at the top-right and then click the question mark icon at the bottom of the menu window. Select the option to Restart with Add-ons Disabled. You'll now be able to start the browser in safe mode

In almost all cases, this should solve the issue and leave you to hunt for the culprit, but a final fix may simply involve uninstalling and reinstalling Firefox, just be sure to backup your bookmarks and so on first, just in case. Good luck.

≺ Firefox issues can often be traced back to problematic add-ons and extras installed within the browser, so it's a good idea to use the 'safe mode' to root them out



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: Jason D'Allison Micro Mart Dennis Publishing 30 Cleveland Street London W1T 4JD

#### Contact Jason by email at: jason@micromart.co.uk

While we try to cover as many questions as we can, we regret that Jason cannot answer your questions personally, but he'll cover as many as he possibly can each week. Please ask one question per letter and remember to include the full specification of your computer, including its operating system.

Jason

#### **Touch Too Much**

Do you know where I can buy a new screen for a Medion Akoya E1317T Touch? As you'll probably recall, this is a 10.1" touch-screen netbook (running Windows 8.x) – you wrote about it towards the end of last year. Mine's now got a damaged screen.

#### Paul, Outlook.com

At first I thought this would be easy, but of course it's not. You wouldn't be writing in otherwise, would you? Silly me. The problem is that touch-screen netbooks are rare – touch-screen laptops haven't exactly taken off, either – so nobody's making replacement screens. Medion would possibly supply one if you really pushed and offered one of your kidneys, but units from third parties appear to be non-existent. There are none on eBay, and I think that applies only to about three products in the known universe.

The E1317T was £249 or £299 when launched – there were two models – and second-hand examples can now be bought for around £150 (on eBay, naturally). Maybe that's the way to go, Paul? Buy one of these and sell your broken one for spares-or-repair, recouping some of the cost. You'd probably get at least £50 for it. Or if you've formed a special attachment to the £1317T you already own, swap the screens over and re-sell the second-hand one.

▼ Touch-screen netbooks and laptops haven't really taken off, and finding a replacement screen can prove tricky



#### **Not A Pretty Sight**

Help! What's causing the horizontal line on some of my photos? I first noticed the problem after copying files from a 1TB disk to my new 2TB disk. The corruption seems to be random, and I assumed initially it was happening during the transfer process, but the example photo I've attached was edited in Photoshop Elements and saved to the 2TB disk straight off. This was a TIFF file, but at least one RAW file transferred from a memory card has suffered the same fate.

My PC's specs are listed below:

- · CPU: Core i5-3570
- · Motherboard: Asus (Socket 1155)

- · RAM: 16GB DDR3-1600
- · Boot drive: Samsung 830 SSD
- · Data drives: external 1TB HDD: external 2TB HDD
- · OS: Windows 7 Home Premium (64-bit)

I've not noticed any problems with files stored on the 1TB disk, connected via eSATA. So the issue appears to be related either to the 2TB disk, fitted in an Icy Box enclosure, or its USB 3.0 connection. What are your thoughts? Is there a solution?

#### Cluny MacPherson, Virgin Media

What a fascinating problem. Fascinating for me and the readers, that is. For you, Cluny,



I'm sure an entirely different word applies – perhaps !@\$% or !@\*&\$%&\*@!!!

Is the horizontal line always in the same place? Is there any other type of corruption? If the corruption never changes from one photo to the next, I'd suspect an intermittent issue with the sensor in the camera, but of course it seems that your original photos, on the memory card or the 1TB HDD, are always fine.

As you've deduced, the weak link in the chain appears to be the 2TB HDD or the USB connection. Or – and I'd place my money here if I was betting – the Icy Box enclosure (that's not to suggest Icy Box enclosures are bad). I suspect there's a bug in the USB or SATA controller. An odd one, to be sure, if the corruption always manifests itself in the same way. Anyway, trial and error should get to the bottom of it.

For starters, plug the enclosure into a USB 2.0 port (it'll be slow, I know). Even if that eliminates the corruption, there's no telling if the culprit was USB 3.0 on the enclosure or USB 3.0 on the motherboard. I'd be inclined to buy a cheap enclosure off eBay – a couple of quid for one imported from China (you might receive it by Christmas); less than a tenner for one from a UK vendor. Try that – on USB 3.0. If the problem recurs, it's the motherboard. If it doesn't, it's the lcy Box.

By the way, I think you can rule out the 2TB HDD without question. And bear in mind that it's not just photos that might get corrupted – documents and any other type of file will also be at risk when following the same transfer path. You won't really know which files have been affected unless you open the whole darned lot. One by one.

#### ¥ Oh dear!



#### **Assault On Battery**

A few weeks back I bought a used Samsung Galaxy S III. It's lovely, but I found I was only getting about three hours' use out of it per charge. When watching videos or playing a game, this would drop to an hour at best. Thinking the battery was to blame, I went on eBay and bought a genuine Samsung replacement. It was about £10 – some non-Samsung ones were going for less than £5! If anything, battery life is now even worse. Could the phone be faulty?

Rose, Warwickshire

Back in the glory days of computer fairs, I once engaged in conversation with a chap with a table full of speakers. This chap had recently visited a factory in China, and the owner had shown off the company's latest speaker sets. 'What wattage are these?' the chap had asked. 'Whatever the customer wants it to be,' the owner had replied. '60W, 100W, 200W – we've got all the different stickers.'

The same applies to cheap batteries. Sadly, Rose, whilst it may have Samsung printed on the label, your battery's almost certainly not genuine. My advice is to avoid 'branded' batteries on eBay. They're usually worthless, needing fake branding to shore up terrible quality. Samsung doesn't make phone batteries that sellers can price at £10 and still make a profit. Anything costing less than £25 is unlikely to be the real deal. Buy a battery with a brand no one's ever heard of.

Still be wary, though. The mAh ratings are often meaningless. The original S III battery is rated at 2,100mAh, but sellers' shelves often bend under the weight of batteries with tags such as 'extended life' and 'high-capacity'. Sometimes, the claimed mAh rating probably isn't even chemically possible given the battery's physical size! In the case of the S III, stick with 2,100mAh. Sellers that don't try to dazzle with big numbers are usually, in my experience, more trustworthy.

Buy from a UK seller: you'll receive the item quickly and you can return it easily if you want a refund. Buy from a seller that's

sold a great many of the same item already. Check any negative feedback, and if batteries are common causes for complaint, look elsewhere. Similarly, check positive feedback, and confirm that batteries are hitting the right notes. In general, avoid any seller with positive feedback totalling less than 99%.

There \*are\* good phone batteries out there for less than £10. Spending an hour on research should be well worth it, Rose. Oh, and I don't imagine for a second there's anything wrong with your phone. The original battery was no doubt old and tired, and the new one sounds like a bit of a duffer. With luck the phone should soon grant you a full day's use.

**▼** Genuine? Don't believe a word of it!



# Crowdfunding Corner

#### James Hunt picks a couple more ideas that might interest you

or this week's Crowdfunding Corner, we've picked out a pair of audio-visual peripherals that you won't be able to find in shops. It's all the fun of buying new gadgets, without having to deal with an under-informed sales assistant!

### The Link - A Device That Makes Any Speaker Wireless

A good set of speakers is hard to come by, but it's even harder to find a good pair that you can connect to a wireless source. Rather than waste time trying to find a wireless speaker, why not use a device that makes your existing speakers wireless?

The Link is exactly that. A small, portable, rechargeable device that converts any wired speaker into a wireless one. The connection uses Bluetooth to transmit audio, so you can link full-size speaker systems to any mobile device (or even a desktop system!) without the need for inconvenient cables trailing around the place.

The system works incredibly simply. Just plug connect The Link to an auxiliary connection and connect over Bluetooth. From that point on, it just works. A full charge lasts 25 hours and it has a range of 50 feet – enough to cover any home. It's small enough to fit on a keyring and can recharge from any USB port using a mini-USB connector. It even works with headphones!

Early Kickstarter backers can get one unit for \$30 (+\$10 shipping outside the US), while later ones can snap a unit up for \$35. The RRP of the device once it goes on sale will be \$49.95, so that's a pretty hefty incentive to buy in early! You can choose your colour (although it doesn't say which are available...), and higher tiers allow you to buy units in bulk. It's almost halfway towards its modest goal with three weeks left, so there's a good chance this one will make it!

URL: www.kickstarter.com/projects/thelink/the-link-adevice-that-makes-any-speaker-wireless Funding Ends: 4th July 2014

## ANTVR Kit: All-in-one Universal Virtual Reality Kit

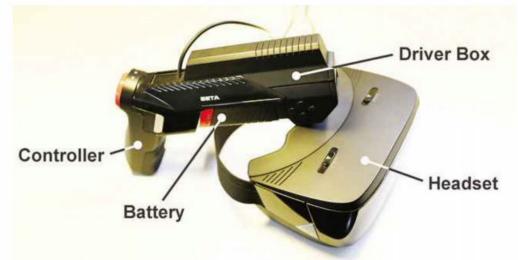
The success of the Oculus Rift has, unsurprisingly, left the door open for other virtual-reality-themed kickstarters. One that looks reasonably promising is the ANTVR Kit, which provides what it describes as an "all-in-one" VR experience.

The hardware comprises a VR headset and a video driver box/ wireless controller with rechargeable battery. The headset contains a full HD display with a 100-degree diagonal field of view. A nine-axis internal measurement unit tracks head rotation and movement for immersive performance. You can even use it to watch movies in 2D or 3D.

Even the controller is something new – a transformable design allows it to become anything the game requires (a gun, a standard gamepad, a sword), while built-in motion tracking continues the immersive feeling. All you need is a single HDMI source for the input (game or video), so it already supports a huge number of devices as a screen. Actual VR performance requires the game to support it. That said, games with stereoscopic support are automatically compatible, and if not, you can use third-party software/drivers to perform the conversion.

It certainly looks interesting, and there are far more features in the design that we can't explain here without running out of space. If you're at all interested in VR and/or are upset by Oculus Rift's buyout, this is worth looking at. There are many different reward tiers, but you can get a beta unit for \$300, which includes s headset, video driver box, controller, U2B module, two batteries, a charger, an HDMI cable and a transformable bag to keep it all in.

URL: www.kickstarter.com/projects/805968217/antvrkit-all-in-one-universal-virtual-reality-kit Funding Ends: Monday, June 23rd 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!



#### David Hayward is left muttering the immortal words "I'll be back"

he Linux terminal is inherently a pretty boring place to visit visually of course. Although the Linux user can make the terminal look a little prettier, it can often be more work than it's worth. Then there's the visual dumping of having multiple terminals open at the same time, which not only looks confusing but can make the user foamy about the jowls. However, there is a handy little application available for Linux that not only allows you to change the aesthetics of the terminal, but also allows you open up multiple terminals at the same time without being lost in terminal hell. And the name of this app? Terminator, naturally.

Unlike the name suggests, this has nothing to do with the Austrian Oak, which for many is more of a blessing rather than a curse. Wooden acting aside, Terminator lays itself gently on top of the existing terminal and allows for split-screen terminals as easily as pressing the shortcut keys or by

right-clicking the mouse and selecting either a horizontal split or a vertical split.

#### Installation

Installing Terminator is easy and can be accomplished by either searching for it in the software centre of your favourite distro or by typing in one of the following commands.

For Debian/Ubuntu based distros:

sudo apt-get install terminator

For Fedora-based distros:

yum install terminator

After installation, you can open up Terminator and start to play around with the split-screen and quite probably bless the day for an app that you didn't know you needed but are now thankful to have.

#### **Tweaking**

Aside from the obvious productivity enhancement of

#### Features At A Glance

- Split screens horizontally or vertically.
- Fully customisable.
- Great effects and colours.
- Very cool.

split screens, there's also the 'wow' factor of having a very movie-like screen to tap away on. With a little tweaking it's very easy to produce an effect much like the computer(s) used in *Die Hard 4* or any other Hollywood computer desktop screen (in fact, install cmatrix and have a system like Neo's).

By right-clicking in any of the terminal windows and selecting Preferences, you can choose the font and background colour schemes for the focused terminal, the inactive terminal and the receiving terminal. You can choose a background image or have it transparent. You can play around with the key bindings, add extra plug-ins, change the layout or add custom commands. In essence you can quite happily play around with the settings and

tweak Terminator until the proverbial cows come home.

#### **Shortcut Keys**

As we've already mentioned, you can alter the key bindings to your own particular tastes, but these are the default entries that will get you up and running:

Ctrl-Shift-E: split the view vertically.

Ctrl-Shift-O: split the view horizontally.

Ctrl-Shift-P: focus will be active on the previous view.

Ctrl-Shift-N: focus will be active on the next view.

Ctrl-Shift-W: close the view where the focus is on.

Ctrl-Shift-Q: exit Terminator. F11: make Terminator go full screen.

#### Conclusion

Terminator is good fun. It can make your Linux desktop look 'cool', if you're into that kind of thing, and it's quite nice to show off in presentations. But it's the extra ability to have several terminals open and running in a single block that's more welcome than simple eye candy.

While Terminator may not set the world alight or convert swathes of Windows users to start using Linux, it's nonetheless a very handy application that's sure to become a must have for those of you who enjoy having lots of open terminals.



▲ Multiple terminal windows are easy to manage with Terminator

▲ With a little extra work, you can have some very cool effects on-screen



rs P and I have recently being refurbing Chez Picknmix, as it was well due for a lick of paint and a little TLC. During this exercise, we decided to simplify everything and banished lots of junk from our living space.

Why I'm mentioning all this here is because during this renovation I decided, probably a decade too late, that showing your CD and DVD collection off to visitors is so 1990s. I mean, who cares that you've got a *Star Wars* boxset? No, not even me.

What this rationalisation exercise really revealed was that digital media has its limitations, because I can't recall the last time I took a disc (music or video) from its shelf and played it. That's not to say that I don't listen to or watch any of that stuff, but it's all stored on the servers, so I don't need to go find the originals.

Once it was stored there, and that's been for some time, the usefulness of the originals is as a backup, and I don't display the last time I secured my computer in the lounge.

Having decluttered, I now have the new problem of what to do with piles of DVD and CD cases and where to store them.

Part of me feels like ditching the cases and dropping the discs in genre into plastic tubs, so they take up minimal space. However, considering the money that was spent on these things, that option seems a harsh one.

Having gone through the process of clearing out my family home, I'm also realistic about what happens to all this junk once I'm gone. Most will end up in at the dump, because unless it has sentimental value, who wants DVD quality these days? And if they did, how many would actually play perfectly, given the poor quality of many mass produced discs?

From a technological viewpoint, there is a fine irony to all these discs formats, as many of them contain relatively little data.

When each disc format arrives it seems huge, and then less so and eventually rather pitiful. DVD media, for example, is either 4.7GB or 8.5GB. Therefore, on a 1TB drive you might reasonably hold 150 movies, and I've recently covered a drive that would easily hold 900 full-length features.

All the music I've ever bought, at the best quality, represents about 100GB, which would fit on a couple of dual-layer Blurays. And that's today. If I look back ten years ago, I was reviewing the Maxtor Diamond Plus 9 160GB SATA drive, which

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cost a princely sum of £90. That same amount of money these days buys you a 3TB drive, roughly 20 times larger. If the same growth occurs in the next ten, and it might exceed that expansion, then in 2024, £90 should secure

you 60TB. That's a scale that could take 6,000 Blu-ray quality movies – or enough TV shows to watch 24 hours a day for eight solid months.

This knowledge is, in an odd way, the light at the end of this tunnel, because instead of passing on DVDs that have suffered oxidisation, what I'll actually do is leave a single USB key in a drawer that contains everything. For safe keeping, I might use a big envelope, to make sure it isn't accidentally tossed out with all my other junk.

## Mark Pickavance

#### LAST WEEK'S CROSSWORD

Across: 7 Accelerando, 8 Philby, 9 Offset, 10 Bizarre, 12 Cynic, 14 Overt, 16 OpenSSL, 19 UNICEF, 20 Lambda, 22 Opinion Poll.

**Down: 1** Path, **2** Scylla, **3** Players, **4** Error, **5** Sniffy, **6** Codebits, **11** Inventor, **13** Opulent, **15** Recoil, **17** Nimrod, **18** Affix, **21** Dole.

#### DISCLAIMER

The views expressed by contributors are not necessarily those of the publishers. Every care is taken to ensure that the contents of the magazine are accurate but the publishers cannot accept responsibility for errors. While reasonable care is taken when accepting advertisements, the publishers cannot accept any responsibility for any resulting unsatisfactory transactions. We've been thinking about sugar this week. Although we don't go overboard with it, we do like a little in our tea and coffee, because we most definitely are not sweet enough (by the way, saying "I'm sweet enough" when someone offers you sugar is not only unfunny and unoriginal, but it doesn't even make any sense. So stop

it). Apparently, your average can of soft drink (also known as 'pop' or 'soda') contains between eight and ten teaspoons of sugar. We all know these things are sweet, but this puts it in context. Imagine putting that much sugar in your tea. You wouldn't be able to move the teaspoon. Why are so concerned with this now, after years of scoffing doughnuts and chocolate? Well, our age is beginning to show, and it's mostly showing around the belly area. Not only does this mean some of our favourite trousers don't fit any more, but we're finding ourselves having to do the classic sucking in of the gut, so famously employed by William Shatner in Star Trek. Of course, he could get away with it. because he had a starship. Who's going to argue with that?

#### THIS WEEK'S CROSSWORD

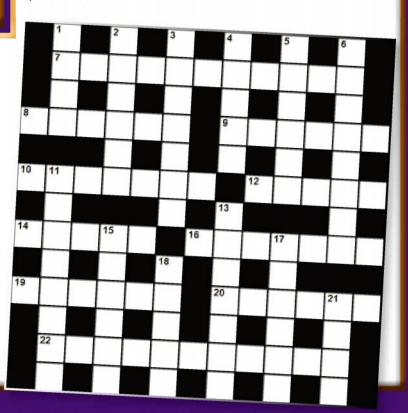
#### Across

- **7** A unit of capacitance equal to one millionth of a farad. (11)
- **8** UK 'oldies' radio station on the air between 1989 and 1998. It was broadcast to much of the West Midlands. (4-2)
- **9** In electronic communications, a symbol used to indicate that the writer is pleased or joking. (6)
- **10** UK PM. (7)
- **12** The interest rate on loans between banks. (Acronym) (5)
- 14 In cards, to arrange the order so as to increase one's winning chances. (5)
- **16** Lizards of the family Agamidae. (7)
- **19** In ethology, the world as it is experienced by a particular organism. (6)
- **20** A deciduous Chinese tree related to the conifers. It has a number of primitive features and is similar to some Jurassic fossils. (6)
- **22** A form of government in which scientists and technical experts are in control. (11)

#### Down

1 Give off, send forth or discharge; as of light, heat or radiation, vapour, etc. (4)

- **2** Really cold snap! The most recent was during the Pleistocene. (3,3)
- **3** A portable stereo player usually powerful and capable of annoying all those within earshot. (7)
- **4** A camera that automatically takes a photograph of road vehicles travelling over a certain speed. (5)
- **5** AMD's new entry-level platform. (6)
- **6** A relatively small, rocky body orbiting the sun. (8)
- 11 Convert a process or facility to operate without human intervention
- **13** Accentuations within musical phrases by slight lengthening of notes. (7)
- **15** To cause to do through pressure or necessity, by physical, moral or intellectual means. (6)
- **17** Instructional handbook that accompanies hardware or software applications. (6)
- **18** A sword belonging to Bilbo and Frodo Baggins in J.RR Tolkien's *The Hobbit* and *The Lord of the Rings*. (5)
- **21** The labelled buttons on a keyboard or keypad, used to enter particular characters or invoke particular functions. (4)



# In Next Wek's Issue\*

- » The worst computer bugs in history
- » Top Arduino projects in focus
- » Is a 4K display the upgrade you need?
- » Plus app tests, hardware reviews and more

\* May be subject to change

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