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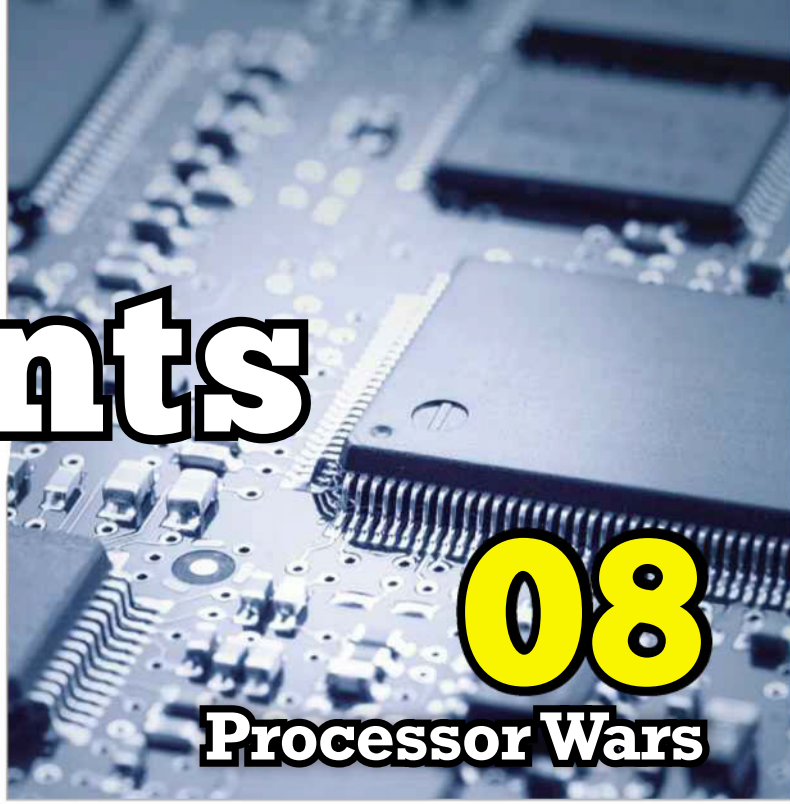

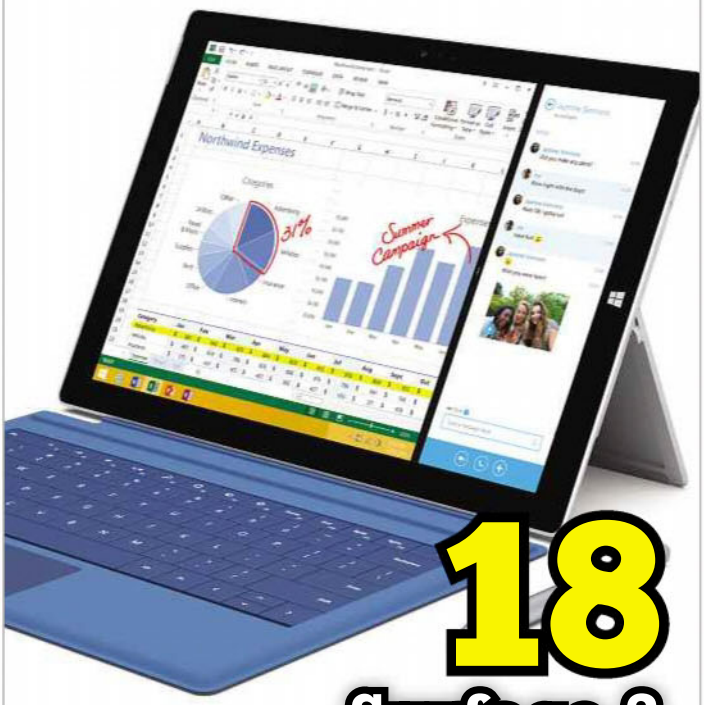

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58 Linux Video Editing

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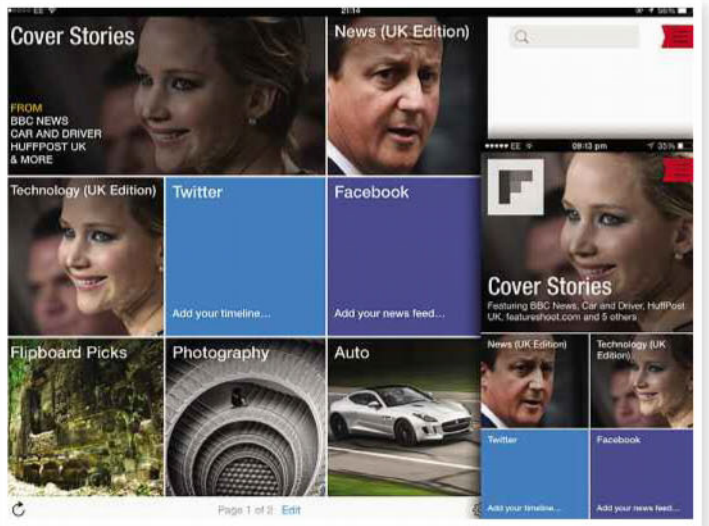

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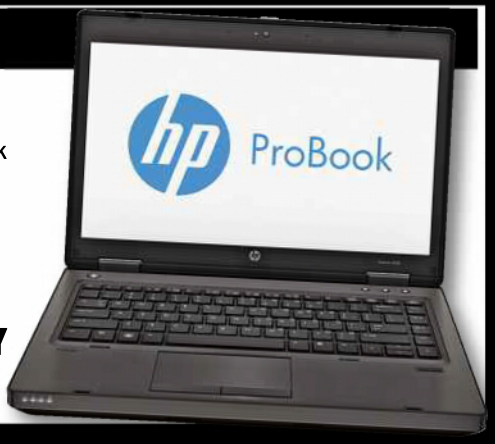

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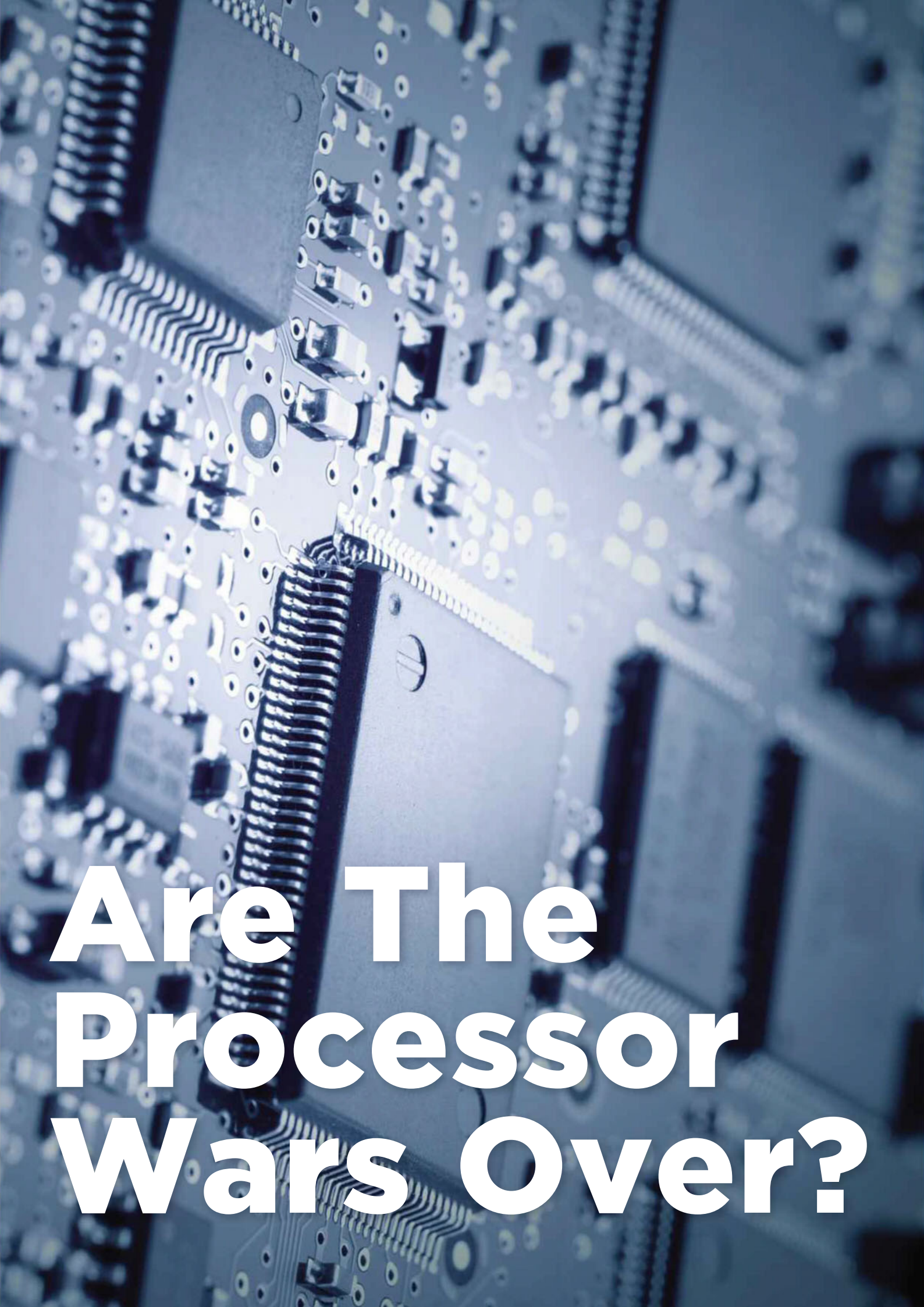


Are The Processor Wars Over?

Are Intel and AMD no longer direct competitors, wonders James Hunt

For 20 years, the desktop processor industry has largely been split between two names: Intel and AMD. At certain points, each manufacturer has taken the lead in price and performance, and while Intel is currently out in front, we've seen in the past that it only takes one good release to turn things on their head once more.

But as desktop computing becomes less and less important to our lives, replaced by smartphones, tablets, laptops and set-top boxes, the question arises: are the processor wars still going on? And even if they are, how relevant are they?

There's always going to be tribalism in computing – Sega or Nintendo, iOS or Android, Mac or PC – but although they're notionally operating in the same space, AMD and Intel's businesses are drifting further and further apart from one another. AMD's desktop processors service a low-price market and do particularly well with multi-threaded applications, while Intel's chips do better in high-performance systems where single-threaded processing and individual core performance matters. In today's market, it's relatively easy to see which processor suits your needs better, and neither seems to be encroaching on the other's territory.

But are the processor wars actually over? And if they are, is this a good thing for us, the consumers? We've taken a look at Intel and AMD's latest hardware releases to try to figure out what they say about each company's strategy and what that means for you.

Devil's Canyon

Although Intel has been at the top of the processor heap ever since 2011's Sandy Bridge release, some of its recent endeavours haven't been as strong as they could have been. Haswell offered strong performance improvements in its mobile incarnation and boasted a considerably improved GPU coprocessor, but as a desktop CPU, its performance hike failed to meet expectations. Haswell offered speeds just 5-8% better than its predecessor, Ivy Bridge, and the unlocked K-series chips were subject to considerable criticism for certain missing features found in locked versions.

By way of acknowledgement, Intel took the unusual step of releasing some noticeably reworked versions of its Haswell chips this July. Code-named Devil's Canyon, the revised chips improve on their line-mates, addressing previous criticism. For example, the Haswell Core i7-4770K's clock speeds were upped by 500MHz, giving a full 4GHz to the Devil's Canyon Core i7-4790K. To compensate for this change, it also includes new thermal interface material that improves cooling and support for Haswell's TSX instructions and VT-d virtualisation features that were previously left off K-series CPUs.

Devil's Canyon chips are supported on both Z87 and Z97 motherboards, both of which have been around for some time, but the refreshed technology is largely aimed at enthusiasts who stayed away from the previous Haswell chips due to the underperformance or even those who were on the fence about upgrading or waiting for Broadwell. While it's unlikely that even the most hardcore enthusiasts would upgrade from an existing Haswell chip to a Devil's Canyon chip so close to the release of Haswell-E and Broadwell, it's undeniable that overclockers will see reasons to get one – not least the clock speed overhead trumpeted by Intel, which claimed that it could reach 5GHz on air cooling alone. Impressive, if true.

However, the fight for the attention of overclockers is indicative of a change in the focus of the desktop CPU industry. Where once overclocking was barely acknowledged by processor manufacturers, Intel now actively courts them. It's true that tablets and other smart or mobile devices have lured people away from desktop computing, but the result is that niche users (HTPC builders, quiet system builders, gamers and performance fans) are all seeing more attention from the people in charge of the industry than they've seen in years.

> **“Without strong competition, Intel can and will make mistakes”**

Of course, the real story here isn't necessarily that the poor performance of Haswell has been corrected. What's important is that the need for Devil's Canyon chips arose at all. In many ways they're the chips that Haswell should've been, but the problem is that weak competition from AMD allowed Intel to get complacent. Although AMD's chips have their strong points, they're mainly focused on the budget end of the market. At the top end, it's a one-horse race, and the horse's name is Intel.

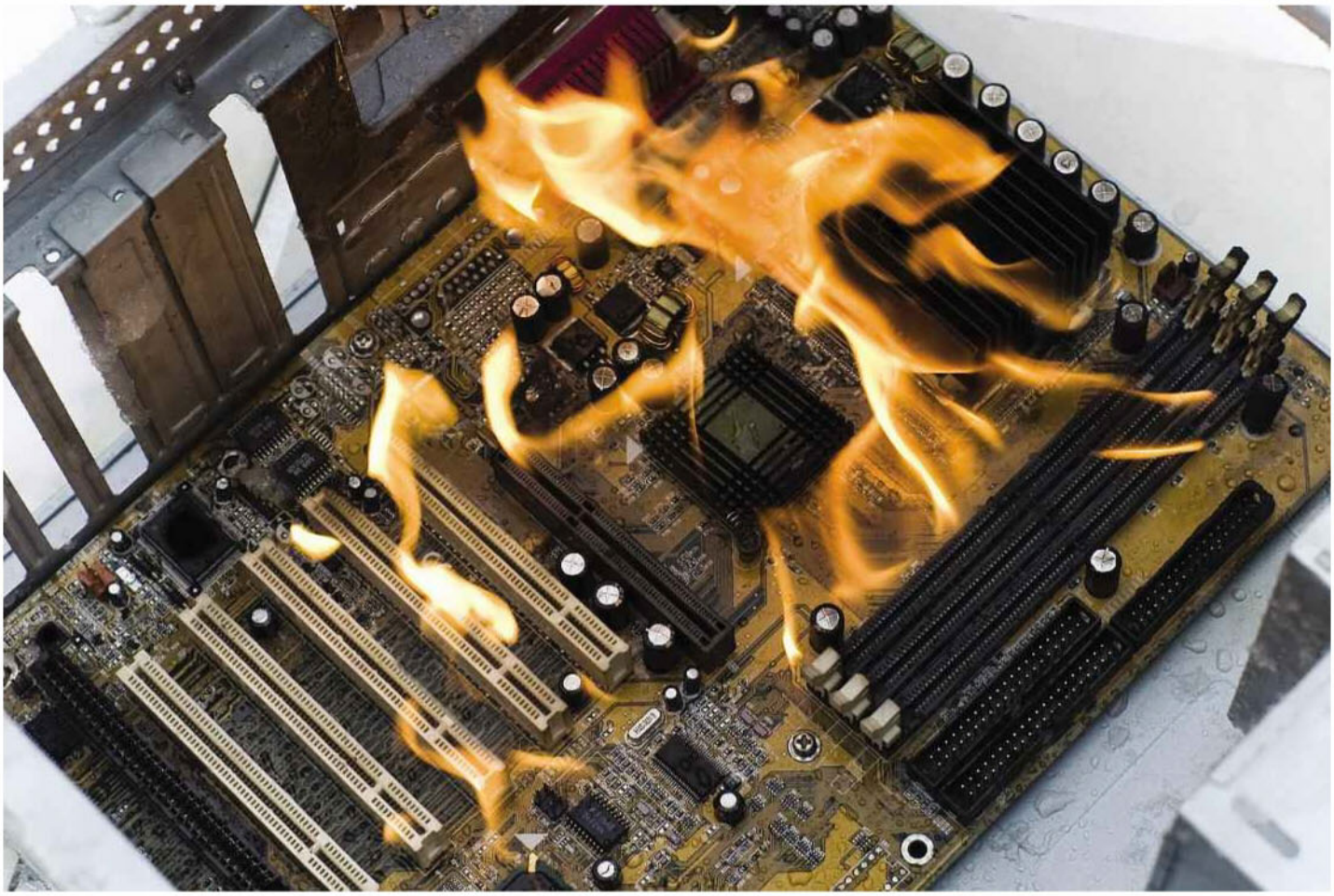
The lesson is that without strong competition, Intel can and will make mistakes. The development of Devil's Canyon chips was a correction of sorts, motivated by the customers rather than the wider market. And again, that's a good thing. It means Intel is listening. If the Steamroller-based Kaveri chips are any indication, AMD is heading in the right direction, and maybe the release of AMD's Excavator chips in 2015 will give Intel the encouragement it needs to put its best into every release once more.

Haswell-E

As with Haswell, it's fair to say that Intel got a little sloppy with Ivy Bridge-E in the face of decreased competition from AMD. That's something that was particularly visible at the extreme high end of the market occupied by its E series chips. Although aimed at the most hardcore performance enthusiasts and system customisers, Ivy Bridge-E wasn't particularly receptive to overclocking and failed to significantly improve on Sandy Bridge-E. And while welcome, the release of Devil's Canyon Haswell chips also had the effect of leaving Ivy Bridge-E flailing slightly, with performance that was only a little better than those chips but far more expensive.

It's been more than a year since the initial release of the first 22nm Haswell chips, but Intel has finally followed it up with the now-traditional 'enthusiast' E-series release. A replacement for Ivy Bridge-E, Haswell-E is a tock on Intel's tick-tock roadmap, meaning it has the same die size as its predecessor (22nm) but comes with refined performance and features.

Crucially, Haswell-E uses a new motherboard chipset. Ivy Bridge-E was married to the X79 chipset, which was originally



developed for Sandy Bridge-E way back in 2011. Clearly, it was long overdue an upgrade. Haswell-E also uses a new iteration of Socket LGA2011 called LGA2011-3 and pairs with Intel's new X99 motherboards, which drops Socket LGA2011 backwards compatibility with older E series chips but also adds new features such as support for up to ten SATA 6Gbps devices and six integrated USB 3.0 ports.

> **"As a platform, Haswell-E isn't really indicative of Intel's overall direction"**

Haswell-E itself also comes with some major overhauls. Chief among these is the eight-core architecture, which significantly expands on the six-core architecture that was only found in the best Sandy Bridge and Ivy Bridge E series chips. While previous iterations of the E-series also came in quad-core flavours with 10MB cache, the slowest Haswell-E chip (the Core i7-5820K) is a six-core chip with 15MB of cache, matching the best Ivy Bridge-E CPU. Haswell-E chips also have more PCI Express channels and double the RAM channels, making them ideal for multi-GPU systems.

The biggest change here, however, is inarguably the shift to DDR4-2133 RAM. Leaving DDR3 behind for good, Haswell-E is the first Intel platform to support DDR4. A new generation of memory is officially here, and Intel is the first to use it. Uptake is likely to be slow at the start, but from now on it's only a matter of time until DDR4 becomes standard for all Intel and AMD chips.

By comparison, the improved speed of RAM speed isn't such a big deal, since the X79 chipset was already comfortable running DDR3-2133 even though it was only rated for DDR3-1600 – but there is one piece of good news. Haswell-E's X99 chipset retains similar overhead, so you can use DDR4 at ever faster speeds than 2133MHz without sacrificing stability.

Of course, as a platform, Haswell-E isn't really indicative of Intel's overall direction. Like previous E series CPUs, it's out on a limb – a niche product aimed at a small section of the market. Particularly in the face of AMD's underperformance, it's almost surprising that Intel services the high-end of the consumer market at all. Haswell-E chips are only of any benefit to multi-GPU gamers and those running tasks well-suited to multi-threading, such as video encoding. Even for those uses, the combined cost of a new CPU, motherboard and RAM makes the platform hard to recommend in terms of value for money. It's specialist hardware by any metric.

Still, if you're a fan of overclocking and can afford to risk your costly new hardware, it's got a lot going for it. The Haswell-E chips have the most potential of anything Intel currently sells, and with the right high-end cooler you can push them to 4GHz on all eight cores for unprecedented speed. As chips go they're a niche product, but if you're the sort of person who can afford one, that's what you're looking for.

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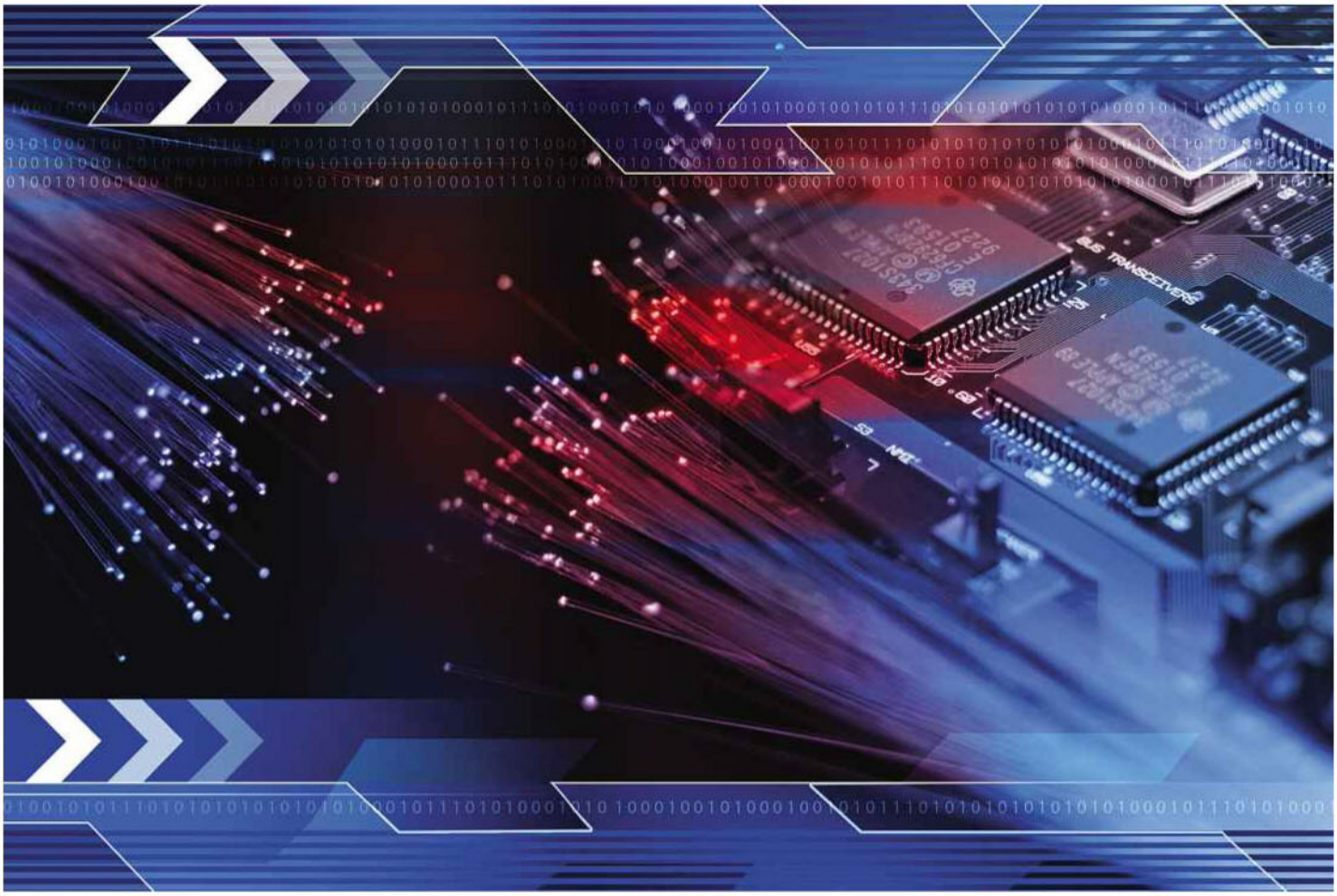

Broadwell

The 'tick' to Haswell's 'tock', Broadwell is the codename for Intel's 14nm die shrink of Haswell, due to arrive on the market at some point in the last quarter of 2014. Based on Intel's series 9 chipsets – Z97 and H97 – Broadwell will use Socket LGA1150, but crucially, it won't be compatible with Intel Series 8 boards, even though they may have the right socket. This is a major change for Intel, which has ensured for years that CPUs work in any socket they're capable of being plugged into.

> **"The goal of low-power Kaveri chips is to provide gaming-capable systems that use a fraction of the power"**

That's not the only change we'll see either. Broadwell is the first Intel chip since 2011 to use a full Multi-Chip Package design. Unlike any chip since Sandy Bridge, Broadwell CPUs will integrate the Platform Controller Hub onto the same module as the CPU and GPU. This aids the miniaturisation of the chip and decreases lag and bottlenecks that might arise when the two processor components of Broadwell communicate with one another. It's unlikely to be especially visible to the average consumer, but it does mean better processors in general.

How much better? Well, in September 2013 Intel's CEO, Brian Krzanich, claimed Broadwell would be 30% better on power, thanks to the 14nm die shrink, and offer a speed improvement of 7-10% on the CPU and up to 40% on the GPU. If true, this would vastly outclass Haswell and represent a return to form for Intel after the weak showing Haswell represented.

Broadwell will, of course, come with new features as well as the speed and power improvements associated with any die-shrink. New instructions come alongside improvements to Intel Quick Sync Video, which add VP8 hardware decoding two independent bit stream decoders that allow the GPU to run in full duplex when encoding and decoding.

Despite these improvements, it's too early to say whether Broadwell will be a solid leap forward in the way Sandy and Ivy Bridge were, and Haswell failed to be. AMD's strengthening in the mid-market over 2014 does very slightly close the goal for Intel, but the high-end is still there for the taking.

One thing Broadwell won't be picking up, however, is Haswell-E's support for DDR4. Support for next-generation RAM might be an inevitability, but right now you almost certainly won't see them on Intel's standard home computing processors until the release of Broadwell's successor, Skylake, in late 2015.

Still, there's a lot of optimism around Broadwell in general. Not just because Haswell was a weak showing, which Intel has been trying to correct, but because AMD is starting to recover its fight. If the processor wars ever mattered, they do now. Another weak entry from Intel could give AMD the opening it needs to pull back the share of the market it lost over the last few years. A strong one could encourage its rivals to do better. That's not

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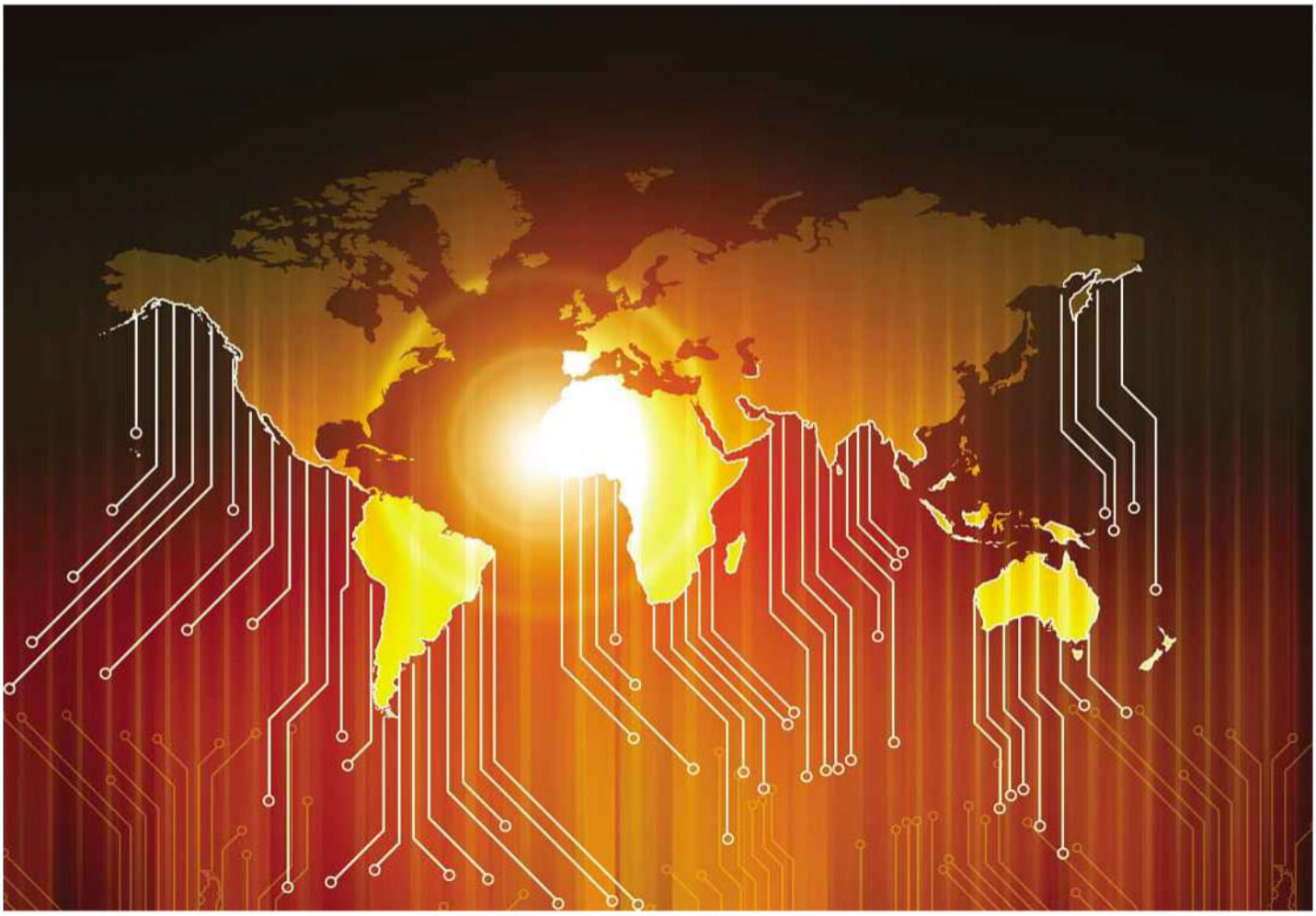


to say we'll be happy if Intel doesn't storm out of the gate with Broadwell, but at least we can say for certain that whatever it makes of Broadwell, it's going to lead to interesting times for the desktop processor industry – and that's one quality that's been lacking for some time now.

Kaveri

As recently as 2007, AMD's Phenom chips were considered a strong choice next to their Intel counterparts, the Core 2 Duos. But soon after that, things took a drastic downward turn. Anticipating a move towards true multi-threaded software, AMD based its chip architecture choices around providing more hardware cores. But things didn't go that way. Intel's architecture, which used fewer, faster cores won out, and since the release of Sandy Bridge, AMD has been a distant second place.

That changed with the release of the Kaveri A-series chips at the start of this year. Based on Steamroller architecture, Kaveri chips have up to four CPU cores and a Radeon-branded Graphics Core Next GPU. For the first time in a while, they were competitive again.

Don't get us wrong, Kaveri chips still lag behind Intel's in CPU performance, but the GPU is so good it almost makes up for that – especially when coupled with the low price. If you're a casual or light gamer who doesn't want to spend money on a separate GPU, Kaveri chips are formidable enough to play games with and cheaper than their Intel equivalents. AMD remains in second place, but it's not half as distant as it was.

More recently, AMD took another important step and announced that Kaveri APUs would be made available for the mobile market. Aimed at ultra-low voltage computing, some Kaveri chips' low-watt performance actually outclass Intel's low-power Core i7 CPUs in both synthetic and real-world testing. It's been a while since AMD had anything approximating Intel's line

> **“AMD's Phenom chips were considered a strong choice”**

of mobile chips in notebooks and other mobile systems, so this is a major change of direction for it.

AMD's current plan, it would seem, is to acknowledge its current architecture's inability to perform at the high-end of the market and instead find ways to perform at the low-end. The goal of low-power Kaveri chips is to provide gaming-capable systems that use a fraction of the power of a full-size desktop, while costing a fraction of the price.

If you think that sounds ambitious, we agree. But it's definitely possible in theory: the Graphics Core Next GPU found on Kaveri A10, A8 and A6 APUs is the same as that used in the Xbox One and PlayStation 4, so it wouldn't take much to get them performing as well as those systems. With a power draw

of 65 watts, they can use as little as half of what the average Intel gaming chip uses and still perform visually.

As an example of AMD playing to its strengths rather than taking on Intel at its own game, Kaveri is a good indicator that the processor wars are winding down slightly. Intel and AMD may no longer be playing for the same ground, but they're clearly not above trying to lure customers from one section to the other. Competition of a sort has returned to the CPU market, and that's providing more opportunities and possibilities for systems than we've seen in years.

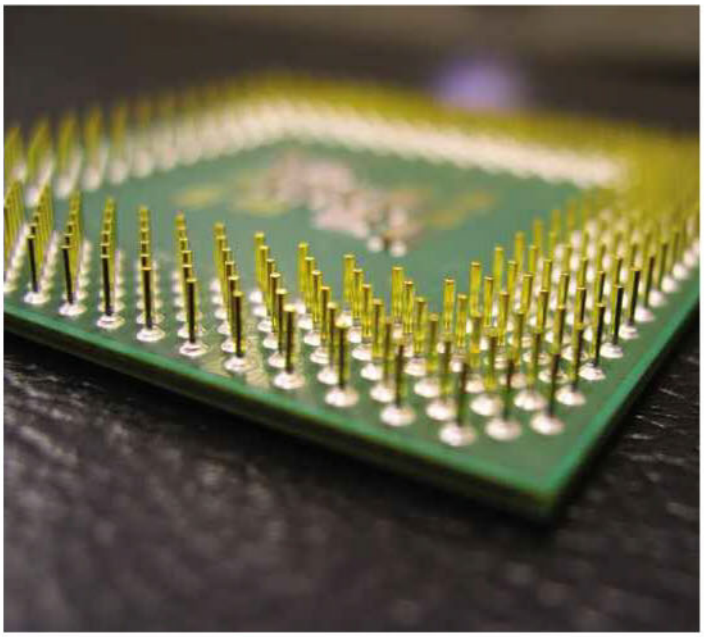
This doesn't mean that AMD is out of the woods completely. Kaveri is the first step to its recovery in the desktop market, rather than the end result of it. It's known that Steamroller's architecture doesn't scale well, which prevents its speeds rivalling Intel's outside of GPU-heavy software like games. If we want to see AMD continue to regain health, we might just have to wait until its next platform release…

Excavator

Very little is currently known about AMD's next set of chips, code-named Excavator, and much of what is known is the result of a leak that occurred months ago. Keep in mind that any details we report here could be subject to huge changes.

That said, a few things are certain. We know that desktop chips running the Excavator core will be released in 2015 and that they'll be code-named Carizzo. It's also widely believed that, like Kaveri, they'll use a 28nm die fabrication process. Socket FM2+ was only just developed for Kaveri APUs, so while it's highly probable that Carizzo chips will also make use of it as well, no confirmation has yet been made. At least one leak claimed that it'll use Socket FM3, which isn't due out until 2016.

The known features of Excavator are fairly thin on the ground, but as well as new instruction sets, you can expect to see support for both DDR3 and DDR4. It's not currently clear whether every chip will support both types of memory or whether DDR4 support will only be available in high-end chips at the exclusion of DDR3. Of all of Excavator's announced qualities, this seems most likely to change. DDR4 uptake is going to be very slow, and there would seem to be little benefit in offering even basic support in the mid-range of the market.



In any case, Excavator is likely to be the last time AMD bases a line of chips on Bulldozer-family architecture, with a new micro-architecture to follow. Since it was the underperformance of Bulldozer that really put AMD on the back foot to begin with, there's a chance that the as-yet unnamed successor platform will give it the opportunity to make a play for Intel's ground.

But will it actually do it? That's less certain. As we've pointed out, AMD's current strategy isn't to try to outdo Intel; it's to cherry pick the areas Intel is neglecting and let it get on with what it does best. But whatever happens afterwards, Excavator will represent the end of an era for AMD – and not one the company will be in a hurry to remember, at least when it comes to desktop chips. From this point on, things can only improve for it.

> **“The known features of Excavator are fairly thin on the ground”**

What Next?

In an era of increased device fragmentation, the relevance of the processor wars will continue to shrink, at least in terms of the public's interest in them. Integrated computing means that whatever fight remains between AMD and Intel over the desktop market is fast becoming a niche concern as tablet and smartphone sales outnumber desktop sales.

And while mobile devices do have different CPUs available to them, the push-pull between the two isn't something that the person on the street really cares about. Indeed, when you can only get one processor in your Nexus, iPad or Kindle, does it really matter to buyers what they are? Admittedly, it may interest some of us on an intellectual level, but these days it's not the computing power of a machine that drives sales: it's battery life, screen resolution, software and form factor. Few people will be able to tell you what CPU powers their tablet or phone, much less why it's any better or worse than another.

It's for this reason that the last battleground for AMD and Intel might actually be the mobile market. Both manufacturers missed out on their chance to ride the wave caused by the tablet explosion and were particularly caught out by the surge in popularity of ARM-based processor experiences. We've already seen that AMD is pushing for better low-end performance, while Intel spent too much time making sure Haswell worked well for mobile processing to the extent that it had to release the Devil's Canyon chips to correct upwards.

So while the processor wars might be over now that Intel and AMD are in the same boat, the individual battles will continue to rumble on as both companies get used to their new position and figure out what the boundaries are. Ultimately, it's going to be a good thing. If both companies are strong, their products will be have to be stronger than the opposition's.

And if enthusiasts and specialists are becoming more and more prominent in the desktop market, both companies will do all they can to please them. The instability and uncertainty means that it's definitely a bad time to be making desktop processors, but if you're the one buying them? The choice might never have been this good. **mm**

Surface 3 Pro

Third Time Lucky?

Mark Pickavance looks at the arrival of the Microsoft Surface 3 Pro in the UK and wonders if this is the hybrid PC that anyone will want?

Last week, Microsoft launched its flagship Surface Pro 3 product in the UK, having already released it in the USA in late June. The expansion into an additional 35 markets was announced some time ago, and a few technical teething troubles experienced by the Americans have now been resolved.

So is the Surface Pro 3 the product that Microsoft always hoped it would bring to market, at the third attempt?

A Brief History

The Surface product line hasn't exactly set the world of mobile computing on fire since it first launched. Microsoft, always interested in telling a positive story, has so far shied away from mentioning real numbers when talking about Surface sales.

But however many it made of the first Surface and Surface Pro models, it cost the company $900m in write-downs in that financial year to account for them.

Surface 2 and 2 Pro sales were better, apparently, but not sufficiently impressive for Microsoft to release sales figures into the public domain.

The Surface Pro 3 was originally intended to be partnered with a Surface Mini that was shelved, even though Microsoft manufactured several thousand for a launch that was yanked in the final 48 hours before presentation.

Instead, Microsoft launched the Surface 3 Pro on its own, a significant revamp over the Surface Pro 2 design that proceeded it. What the new variant brings is wider performance options, longer battery life and a much improved display.

Are these enhancements enough to turn the Surface from computing curiosity to the must-have solution for mobile computing era?

It's probably too early to say definitively, but it's certainly a bigger beast.

Larger Footprint

Compared with the Surface Pro 2, the new Pro 3 model is noticeably thinner and a more elegant device, while retaining many of the signature features.

But it's also larger in both width and height to accommodate the new 12" 2160 x 1440 IPS panel which, unlike the Surface Pro 2, has a 3:2 ratio and not a 16:9 widescreen aspect. This ratio change gives the impression of being a very large iPad, and the exceptionally high resolution seems well suited to the tiled interface of Windows 8.

Being bigger, the Pro 3 requires a new Type Cover keyboard, though you can attach the smaller type 2 covers in a pinch. The new covers can connect as before or in a new folded way that supposedly provides extra stability when using it balanced on your knees.

The click stand is still part of the design, but it has now been enhanced to allow for any placement in a 150º arc, rather than the set positions it did previously.

Those are major changes, but other features seem less evolved. The number of ports is still very limited, and given the extra size, you might well be disappointed to discover that it still only offers a single USB 3.0 port, irrespective of how many devices you wish to attach. This can be addressed to a degree by the optional docking station (£164.99), which adds five USB ports and Ethernet to what you get as standard on the Pro 3.

The one accessory that's included is the new Surface Pen, made by N-trig. This is a far superior design to the one that Microsoft offered bundled from Wacom, even if it technically can't measure as many pressure levels. It's well leveraged on this system, where you can set the pen click to automatically wake the Pro 3 and run One-Note, ready to jot down an important detail.

The largely external changes are welcome, but it's under the skin where this machine has most radically changed from the Surface 2 Pro.

Power Variations

All of the Surface Pro 2 machines offered the same Core i5 CPU, though Microsoft did upgrade the original i5-4200U processor to the i5-4300U over the product life.

The Pro 3 delivers three different processors with various storage options, providing five models that go from an Intel i3-4020Y to the familiar i5-4300U and topping out with a new i7-4650U high-performance option. These are all dual-core processors and multi-threaded for four simultaneous threads, but they're differentiated by clock speed and cache sizes.

Correspondingly, the different CPU specs also adjust the GPU upwards, so the Core i7 models have additional graphical performance to match their CPU levels.

Microsoft didn't provide the Surface Pro 3 with AMD or Nvidia GPU powers, so the Surface Pro 3 won't be desirable to gamers, but they're more than powerful enough for smooth video playback and the occasional low-detail 3D title.

All versions can drive two external displays, with the Core-i3 model being limited to 1080p resolution, while the Core i5 and Core i7 designs drive 2880 x 1800 60Hz panels. Dropping to a single external display boosts resolution on all models, with the high-end designs supporting 4K Ultra HD through a single mini-DisplayPort and 2560x1600 at 60Hz on the i3.

RAM provided is 4GB or 8GB, with no options for upgrading those amounts. With the exception of the micro-SD slot, there aren't any possible user upgrades, as per the previous Surface designs.

A few people have noted that in testing the Core i7 models aren't appreciably faster than the Core i5 Surface Pro 2 machines, even though the CPU is theoretically clocked higher. According to multiple sources, once the machine starts working hard, it gets rather warm

inside the very thin chassis, and the system throttles back the processor to a lower clock to avoid it overheating.

Anyone using the device as a tablet will soon be aware that the Surface Pro 3 does have a fan, and it vents hot air along vents cut into the bevelled edge.

Despite getting hot on occasion, the Haswell fourth-generation processor delivers generally good battery life, although having a faster CPU is likely to negatively impact on how long it can run any task without mains power support. Unless you're determined to have the screen on the highest brightness and churn the system relentlessly, a working day entirely on battery isn't unrealistic. The Surface 2 could do this too, and most decent Ultrabooks can too.

More of an issue are the numerous reports that Core i7 customers are experiencing overheating and displaying the thermometer alert while booting. After a number of attempts to deny such a problem existed, Microsoft finally accepted one did, and in late August announced that a software fix was being developed and would be made available "as soon as possible".

UK users will be gratified to know that since it was released in June, the Surface Pro 3 has experienced at least five system firmware updates. These have addressed problems with the BIOS and Ethernet port, added support for the Power Cover, reduced power consumption and enhanced overall stability. On top of that, Windows 8.1 has also seen some fixes, all of which can be applied to this device.

New Wrinkles

Along with the general revamp of the hardware Microsoft undertook, it's included a few new features that owners might appreciate.

One of these is InstantGo, previously known as Connected Standby. This is a low-power mode where Windows Metro apps can be updated, but the power consumption is dramatically reduced, as people experience with smartphones. The only downside of this technology is that it doesn't support Hyper-V at this time. Those wanting to use that technology can use hibernation mode instead.

Power management is a big part of the Surface Pro 3 experience, though based on the number of firmware updates allocated to fix various battery draining scenarios, it's something that Microsoft is still grappling with.

Windows 8.1 Only

As you might reasonably expect, there's only one OS available on this platform, and it's Windows 8.1 64-bit that's preinstalled. While it might be possible to install Windows 7 on this hardware, Microsoft has tied down the UEFI BIOS tight, and it might require some real imagination to make work without official drivers. For those that need Windows 7 for corporate security, they might well be better served by running a virtual version of that OS under a hypervisor alongside Windows 8.

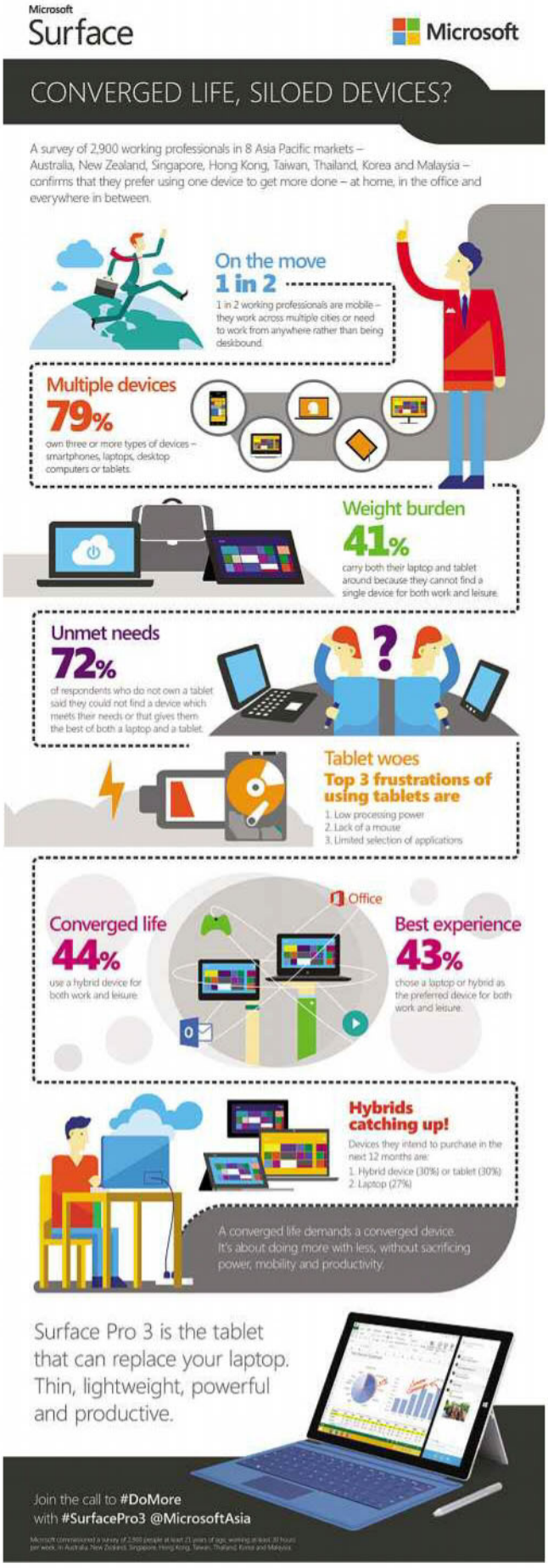
An upgrade to the next version of Windows would seem plausible, though Microsoft hasn't officially committed to providing that as of yet.

Prices

Depending on what specification you go with on Surface Pro 3, you could be looking at a big bill or a ginormous one. The entry-level Core i3 costs £639, and it's worth noting that for that you only get 64GB of storage and you don't get a keyboard included. Of that 64GB, just 36GB is available to use, as the space is occupied not only with the Windows 8.1 installation but various recovery partitions.

You can supplement the limited space on that model with micro-SD, though the performance of that compared with the built-in SSD isn't stunning, regardless of what class of module you use.

A Type Cover for the Pro 3 costs £109.99, and a docking station costs £164.99. Buy both those and you'll have waved goodbye to



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£913.98, to be on the lowest rung of the Surface Pro 3 ladder. At the other end of the scale is the flagship Core i7 model with 512GB of SSD storage which, once accessories have been added, will take the hole in your bank account closer to £2,000.

For those looking for a Surface bargain, Microsoft is still selling the discounted ARM-based Surface 2, and one high-end model of the Intel Core i5 Surface 2 Pro. That last item is the 8GB RAM and 512GB SSD variant, for which Microsoft wants £999, though it does throw in a free Type Cover 2.

In terms of price, the Surface Pro 3 steams straight past what Acer, Asus and Dell are asking for an Ultrabook at this performance level and heads directly for the equivalent Apple Macbook Pro hardware levels.

If you look at the performance specifications, Apple has more powerful Macbook Pros than the best Surface Pro 3, and there's some overlap on the Macbook Air range. For the most part, the Pro 3 sits between these two products, but is generally priced more like the higher-end Apple hardware.

Given the unproven market for these devices, that's either a gutsy move or commercial suicide, depending on how calculated you regard Microsoft's business acumen.

Final Thoughts

I might not garner any friends at Microsoft by saying this, but it should have stayed away from hardware. It's not like it wasn't warned by people with greater experience in this area, and having three stabs at Surface in less than two years goes suggest it's on a steep learning curve at best.

Without question, the Surface 3 Pro seems its best effort yet, but that doesn't definitively translate into something anyone might want to own at any price.

Where the first two Surface products had a lower entry point, this version is exclusively x86, and even the i3 version isn't inexpensive.

In removing the ARM derivatives from the latest order of battle, Microsoft has reduced the annoyance its hardware partners were feeling and decided instead to compete with Apple.

Why it think it has the knowledge and experience to take Apple on is totally beyond me, because that's like a new racing team turning up in Formula 1 and expecting to win the driver and constructor's championship at the very first outing.

But design and price aside, the Surface range has problems that the Pro 3 doesn't address – or at least not now.

The first of these I'll label the 'hybrid' issue, in respect of it representing a type of computing device that has yet to find a natural home. Since the first Surface arrived, I've reviewed a number of 'hybrid' devices that stand astride both the tablet and laptop markets, with something of an ungainly posture.

Microsoft's logic, as applied to its Surface designs, is that most people have a laptop and a tablet, when they could have a single device that performs both roles.

Surface Pro 3 Range			
CPU & GPU	**RAM**	**Storage**	**Cost**
Intel i3 with HD4200	4 GB	64 GB	£639.00
Intel i5 with HD4400	4 GB 8 GB	128 GB 256 GB	£849.00 £1,109.00
Intel i7 with HD5000	8 GB 8 GB	256 GB 512 GB	£1,339.00 £1,649.00

To this writer's mind, that harks back to a very old *Saturday Night Live* sketch with the late Gilda Radner, Dan Aykroyd and Chevy Chase. In this skit, they promote a floor wax called Shimmer that's also a desert topping, calling it the "greatest shine you've ever tasted".

And so far, that's precisely what hybrid machines are: an unrealistic combination of functions where you end up either with a laptop that fails to deliver a great tablet experience or a tablet that's no good to type on. Having tried a Surface system, it's not wonderful in either mode, entirely undermining the idea that you can dump two devices for one. Whatever Microsoft says, typing on your lap without a properly hinged keyboard is just inviting an expensive accident, and compared with a 10" tablet, it seems overly big and heavy for exclusive touch use.

And then there's the related Windows 8 perception issue, to which this hardware is inherently tied.

The fact that Microsoft is now peddling as fast as its OS development teams can go towards Windows 9 is indicative of what an unmitigated PR fiasco this operating system has been. Many have likened it to Windows Vista, but actually if it was as popular as that unloved product, perhaps Windows 8 might have survived.

People don't want Windows 8, and by association, they don't want systems built to run that specific OS. That's bad news for Surface, as it was the corporate cheerleader for Windows 8 from the outset.

You can already hear the PR people at Microsoft scrambling to rebrand Surface once Windows 9 comes along, even if it's spent the past two years trying to make people automatically associate it with Windows 8, like Simon Cowell and smugness.

What's really disappointing is that the engineering and design work that's gone into the Surface Pro 3 is undoubtedly something worth celebrating, had it not gone into such an ill-conceived plan.

The Surface 3 Pro is a beautifully engineered example of pursuing a failed idea to the very death while ignoring the patently obvious signs that this direction might not lead to success. **mm**

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The Best Money Can Buy: Storage

This week, we're going to have a look at the pricey side of hard disk storage...

One of the most essential PC components is the humble hard drive, and this storage has come a long way in a relatively short time. Today, we have devices that are capable of storing an insane amount of information and data, and operating at ever faster speeds. This is fortunate, because we've all at one time grabbed a new, larger hard disk and said "I'll never fill that up" only to quickly run out of space.

With a far greater focus on digital-only content, such as downloadable games, movies and music from an ever growing number of services, not to mention game installations needing more and more space, there's now a constant need for better storage options, not only in terms of space but also speed.

Hard drive capacities have grown rapidly over the years, moving from hundreds of megabytes to gigabytes and now terabytes. In fact, Seagate recently revealed an 8TB platter-based hard disk for enterprise backup usage, and this will no doubt eventually make the jump to the consumer market too.

Like all PC components, storage comes in a multitude of price brackets, and there's certainly no shortage of budget options. In fact, standard platter hard disks can be very cheap, and you can easily build a PC with masses of storage for low cost. Of course, these cheaper options may lack certain benefits, such as component quality, extra features and lower capacities per volume. It's also likely that you'll be limited to standard hard disks, missing out on the faster solid-state models.

Then there's network storage in the form of NAS units, which are very useful and flexible options. Some of these expensive drives are designed with business in mind, so they use different connections than normal consumer drives, but this doesn't stop enthusiasts with the money and know-how using them in their own systems. In the interest of delving into the really high end, we'll be featuring such units here.

With that in mind, this week we're going to look at the pricey options out there for those who want to splurge on storage. We're going to look at a varied collection of options, including platter and solid state, external and NAS. We'll also include some more business-focused units that can be bought readily online. These offer even more power if you can afford them. Be aware, though, this kind of storage doesn't come cheap.

Product: ioSafe 20TB 1513+ Fireproof and Waterproof NAS
Price: £8,150

We're going to kick things off at the top end, as we've done so far in the series, and for a legitimately ridiculous price in excess of £8,000 is the ioSafe 20TB 1513+ Fireproof and Waterproof NAS.

As the product name clearly indicates, this is a very durable network attached storage option that's resistant to both water and fire damage, meaning that your data will be safe and sound, even if the worst happens in the home or, more likely, in the office.

The unit ships with five 4TB drives, offering 20TB of storage out of the box. As it's a NAS unit, though, these can be swapped for even larger disks should you wish. Controlling all this storage is a dual-core Intel Atom 2.13GHz CPU and 2GB of DDR3 RAM (upgradable to 4GB).

The drives in the unit are hot-swappable, and the gigabit Ethernet connectivity ensures fast data transfer to and from the unit. The chassis also houses four USB 2.0 ports, two USB 3.0 ports and eSATA. The cabinet itself can be locked for added security and has two cooling fans built in.

It's a very impressive network storage solution, with the fire and waterproofing being of special interest to those with sensitive data that need to be protected.

ioSafe 20TB 1513+

Synology DS3612XS-10G 60TB NAS

SanDisk Enterprise 800GB Lightening SAS SSD

OCZ 1.6TB Z-Drive 4500

Product: Synology DS3612XS-10G 60TB NAS
Price: £6,750
This is another NAS and another large-scale model designed mainly for business, but if you've got the cash, it can be yours. It doesn't possess the fire and waterproofing of the ioSafe model, but it does feature a greater storage capacity, coming with a huge 60TB. This is achieved using 12 5TB disks, which can be hot swapped and replaced as you see fit.

The unit includes a 3.1GHz dual-core CPU and 2GB of DDR3 RAM (upgradable to 6GB), ten gigabit Ethernet, four USB 2.0 ports, serial port for management and built-in cooling. It also has full support for DLNA devices and UPnP, and has a host of security features, including a firewall, access control list support and SMS alerts.

Additionally, there's support for VPN, LDAP, VLAN, Wake On LAN, MySQL Server, DHCP, FTP and much more, making it a versatile beast and one that's well suited to large scale backups and storage, but with media server support, also one for serious home PC users who need masses of storage space.

Product: SanDisk Enterprise 800GB Lightening SAS SSD
Price: £4,750
We'll move away from the large-scale NAS for now and switch to the impressive storage solution that is SSD. The SanDisk Enterprise 800GB Lightening SAS SSD is a huge solid-state drive, offering, yes, 800GB of speedy storage.

With SSD storage still commanding high prices for space, it's no surprise that 800GB costs so much, and this is also very fast. The SAS-connected SSD can achieve 6Gbps performance. This allows the drive to thrive in an enterprise environment where it may be responsible for intensive tasks like virtual environments, 24/7 services and heavy duty backups. If you can afford it and can hook up the SAS connection, it would also make an impressive personal storage solution, make no mistake.

It uses a Serial Attached SCSI 2 connector, has an internal data rate of 450MB/s and has an MTBF (Mean Time Before Failure) of 2,000,000 hours, so it'll have a long and productive life.

Product: OCZ 1.6TB Z-Drive 4500
Price: £4,250
This is a different approach to internal storage, once again focused on large-scale networks and servers. The OCZ 1.6TB Z-Drive 4500 is a PCIe-mounted SSD hard disk that may not contain the sheer size of storage as non-SSD options, but when it comes to speed, few can beat it.

Eliminating the reliance on external cables to connect the drive to the system, the OCZ 1.6TB Z-Drive 4500 is plugged directly onto the motherboard via PCIe, so it can achieve very impressive data rates. Internal data read rates for the unit are billed as 2900MB/s, while write speed is 2200MB/s. That's fast. Very fast.

The 1.6TB is a massive amount of SSD space to utilise, and it can be used alongside other hard disks to create a mammoth storage solution.

Product: SanDisk Optimus Ultra+
Price: £2,600
This is an 800GB 2.5" SSD option from SanDisk, making it suitable for a wide range of uses. As it uses the SAS interface, special hardware is needed (as is always the case with a lot of high-end kit), but if you can overcome this hurdle, this is a small drive with a huge storage capacity.

The data transfer rate is 600MB/s, using a multi-level NAND cell (MLC). The MTBF is rated as 2,500,000 hours, and because it's an enterprise-focused unit, it has plenty of error checking, failure recovery and security features, including FlashGuard, DataGuard and 256-bit AES encryption.

Product: Netgear ReadyNAS 316
Price: £2,050
We're returning to the NAS with this entry, this time from a name many will be familiar with: Netgear. The Netgear ReadyNAS 316 is a six-bay unit that comes with 24TB of storage, which is expandable to 44TB using the optional EDA500 expansion chassis.

The Netgear ReadyNAS 316 uses Netgear's ReadyNAS OS, which allows for unlimited snapshots of data and also features real-time anti-virus protection. It excels when it comes to backup and is able to share data across multiple platforms, including Windows, Linux, Mac, Android and iOS.

As with most Netgear NAS units, this supports DLNA media server applications, and it's also fully compatible with the likes of iTunes and can stream content to mobile devices. It may be another business-targeted unit, but it has more than its fair share of consumer appeal too.

Product: Buffalo 24TB TeraStation 5600
Price: £1,650
Buffalo is another name that's synonymous with storage, and the Buffalo 24TB TeraStation 5600 is a great example as to why. It's a NAS unit that houses up to six 4TB drives, and it incorporates an Intel Atom D2700 CPU and 2GB of DDR3 RAM.

The maximum storage capacity of the unit is 24TB and, as expected, it supports the full gamut of RAID configurations, including 0, 1, 5, 6, 10, 50, JBOD, and 51. It has two gigabit Ethernet connections, two USB 2.0 ports, three USB 3.0 ports and has a lockable door to prevent tampering with the drives. Drives are hot-swappable, using SATA-300 units.

This is one of the highest-end options you'll find that's far more easily transferred from a

SanDisk Optimus Ultra+

NetGear ReadyNAS 316

Buffalo 24TB TeraStation 5600

LaCie 20TB 5big NAS Pro

Intel Solid-State Drive DC P3700

business environment to the home, and it's a superb option for home users who need expanded storage.

Product: Lacie 20TB 5big NAS Pro
Price: £1,250
Lacie is another name well known for network storage, and the Lacie 20TB 5big NAS Pro is a simple yet very good offering. It packs in 20TB of storage spread across five 4TB volumes, and it controls these and its network server functions with a 2.13GHz Intel Atom and 4GB DDR3 RAM.

As always, drives are hot-swappaple and can be used in various RAID configurations, including 0, 1, 5, and 5 hot spare. Like most NAS units, you can manage the storage locally or via remote access over the internet, and it supports UPnP, iTunes, BitTorent and Apple Time Machine.

Product: Intel Solid-State Drive DC P3700
Price: £900
Here's another PCIe solid-state drive, and it's from Intel. This particular model is a 400GB, 2.5" device, so it's very fast and offers ample SSD storage for less than £1,000. Read speeds are listed as 2.7GB/s, with a 1.08GB/s write speed, and it has the usual 2,000,000 hours MTBF. Intel has fitted the unit with a built-in temperature sensor, as well as ANSI, HET and S.M.A.R.T.

In benchmarking tests, the unit is very impressive, indeed, and it's one of the best options of its type. Of course, this is one for the enthusiast, as it's a server/enterprise unit designed for Windows Server. It will boot under Windows 8.1, though, and if you're an experienced home user who dabbles with high-end storage, this could be a very good buy.

Product: SanDisk CloudSpeed 1000
Price: £790
This is a drive that may suit the more casual home PC user, as it uses the standard SATA (Serial ATA-600) interface. It's a 2.5" 960GB SSD unit that has an internal read speed of 450MB/s and a 400MB/s write. The MTBF is 2,500,000 hours, so it's durable enough for even very heavy use. It features power failure recovery, as well as S.M.A.R.T., 256-bit AES encryption and Guardian Technology.

For the 960GB of SSD storage and the high data transfer speeds, this is a great drive if you're looking for a way to empower that home media server, and it'll ensure fast and dependable performance.

Product: Buffalo 1TB DriveStation Mini Thunderbolt
Price: £720
This is a 1TB SSD external desktop drive that's designed for use by creative professionals or demanding home users, and it's a great option if you need to add storage to a home PC but don't have the space to install internal storage. Buffalo states a read speed of approximately 615MB/s and write speed of 760MB/s.

If you want to further expand your storage, you can daisy-chain extra drives and this model has full support for Apple Mac. A simple, but fast and impressive external SSD.

Product: Seagate 6TB Enterprise Capacity
Price: £420
This 6TB drive from Seagate may be billed as enterprise capacity, but it's for home users who need far more storage, and it uses the standard SATA interface. It has a read speed of 600MB/s with a 128MB buffer and a 1,400,000 MTBF.

It's not SSD, so it's obviously slower, but for a standard spindle HDD, this is certainly speedy, and it has the space to handle large media collections.

Product: Kingston 480GB SSDNow KC100
Price: £415
This is one of the most popular SSD series for the consumer market (even though this is classed as a business model), and it comes from Kingston. It's one of the more affordable series of SSDs, although this one is a little pricey as it features 480GB of space.

It includes self-encryption and intelligent junk collection functions to help keep the drive in shape. There's a lower MTBF of 1,000,000, but for home use and even business, this is still nothing to worry about.

Product: Lacie 500GB Rugged SSD
Price: £390
Lacie's range of rugged external drives are very useful for those who need to carry around important data, and they're protected by a casing edged with a rubber bumper. It's a USB 3.0 unit and has a fast 500GB SDD volume within.

The drive casing is shock resistant, water resistant and dust-proof, and it comes with password protection and 256-bit AES encryption. The rubber cladding is also striking orange, so you're not likely to misplace it.

Product: iStorage 256GB DiskGenie
Price: £340
Our final drive is another external option and comes from iStorage. The iStorage DiskGenie is a storage unit designed for people who need to carry data around on a regular basis but who also need dependable security. As you can clearly see, this is the overriding feature of this drive, and the very case itself is a security keypad.

It's billed as "the world's most secure, compact and affordable" portable hard drive, and it uses PIN access alongside military grade 128-bit or 256-bit AES encryption. The PIN uses between six and 16 digits, as specified by the user, and data is encrypted in real time. **mm**

SanDisk CloudSpeed 1000

Buffalo 1TB DriveStation Mini Thunderbolt

Seagate 6TB Enterprise Capacity

Kingston 480GB SSDNow KC100

LaCie 500GB Rugged SSD

iStorage 256GB DiskGenie

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Your Letters

No Hiding

I've noticed lately that a lot of people are eager to push the idea of anonymity when using the internet, and the idea of keeping your data away from the government. On the face of it, it all sounds like good advice: install certain programs, use proxies, use the Tor browser, don't sign up to sites like Facebook or use services from Google.

What does any of that actually achieve in the long run, though? Does it really make you anonymous? As far as I can tell, everything the government wants to know about you, it already does. When you are born, it's recorded. When you get a driving licence, it's recorded. When you register to vote, it's recorded. When you go to hospital, they get all the details they could ever want. Your name, your address and more are all in a computer somewhere.

Beyond your basic data, you might worry that they're reading your emails and looking at what websites you've been looking at? Possibly, but does that matter? Do you think for a second that the CIA or MI5 care about what you what you get up to in your spare time or what adult material you might like to consume at home? No, probably not.

The only reason the government might want to look at your internet activity is relation to a crime (or perhaps to silence political dissidents). For most people, then, I see no reason for all the hiding. The convenience of web services like Gmail is too great to spend time worrying about government spies. And if Google wants to use my data to advertise to me in exchange for these services, then fine. I never buy anything I've seen advertised anyway.

Roger Martin

Used Goods

Walking past the local computer exchange shop, I noticed a heck of a lot of PlayStation 4s and Xbox Ones. It did rather make me wonder who exactly buys these things only to then sell them just a few months later. Did they not realise what they were buying? Surely they tried the thing out before spending several hundred pounds on it?

I also saw a lot of used hard drives. No thank you, I say. Who knows how old they are, right?

Ben Prince

Linux? No, Thanks

I, like many people, have tried and failed to get along with Linux. In the past, I've struggled with getting it installed in the first place, but more recently that's been less of a problem. Linux Mint was the last one I tried, and installing that was a easy peasy. The problem is just about everything else.

I'm not a computer dunce, I'm fully able to follow instructions that I find in forums and help websites. In fact, most things I wanted to do with Linux, I have been able to do, and most of the software I want or need is provided. What I take issue with is how difficult some it is to achieve. Something that might just require a couple of mouse clicks in Windows requires you to type a bunch of commands in a terminal window in Linux.

Linux fans will say that's good because it teaches you how the computer works or something. I disagree. I followed commands I found on the internet, but I didn't know why they worked, only that they did. That, at least to me, is no different from the mouse click. I don't know what's going on in the background, just that if I double-click a file, it opens. And I don't have to go on the internet to remind myself how to do it every time I want to repeat the command.

If you're strapped for cash or you have some kind of aversion to Microsoft, then by all means install Linux. It will do everything you need and more. Just don't expect it to be easy.

Dave Rosewood

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Component Watch

Component Watch

Five high-end Bluetooth speakers at cracking prices? Sound!

While we've looked at Bluetooth speakers before, we often concentrate on the low end of the market – but what if you don't mind spending a bit of extra money for quality sound and wireless connectivity? If that's you, you're in luck. In this week's component watch, we're looking at the best stand-alone Bluetooth speakers with an RRP over £100.

Deal 1: Pioneer XW-BTS5-K Speakers
RRP: £250 / Deal Price: £201

If you want a pair of wireless speakers that sound and look like a high-end audio product, you can't go wrong with these Pioneer XW-BTS5-K. A pair of 25-watt speakers with exterior wood panelling, they wll blend into the background of virtually any room, rather than screaming desktop as many cheaper models do. What's more, they offer huge bass and separate tweeters to help ensure great sound, while one-touch Bluetooth pairing ensures a simple setup. They aren't cheap, but with this deal you can get a near-£50 discount, which is pretty handy.
Where to get it: Ebuyer (**bit.ly/1poadiG**)

Deal 2: Creative Airwave HD
RRP: £130 / Deal Price: £80

An upgrade of the earlier Creative Airwave model, the Creative Airwave HD features Bluetooth pairing and one-touch NFC, allowing you to establish connections in seconds from any compatible device. A compact form factor and rechargeable battery allow you to take your speaker with you, as is common amongst some of the cheaper models you'll find), and Creative Multipoint means you can connect two devices at the same time, so there's no need to re-connect if you use more than one device. The cheapest price comes direct from the source at Creative's UK shop, which amounts to a discount of nearly 40% – and makes them a real bargain.
Where to get it: Creative UK (**bit.ly/1sZjDok**)

Deal 3: Soundfreaq SFQ-06I
RRP: £150 / Deal Price: £100

The Soundfreaq SFQ-06i is a Bluetooth compatible room speaker featuring a universal device mount for phones and MP3 players with USB-cable management, or a standard line-in port for devices too large to go on top. A remote control app is available on some platforms, so you can control the output from your phone or tablet. You can even buy two and use the proprietary Dual Streaming System to set them up in stereo! Tonnes of features at a low price.
Where to get it: Ebuyer (**bit.ly/1Bb8nKK**)

Deal 4: Sony SRS-X3
RRP: £130 / Deal Price: £100

Sony describes this speaker as "elegant", but all we know is that its 20-watt output, dual passive bass radiators and NFC connectivity can't help but impress. A 7-hour battery life and portable design allow you to take your music anywhere, while connectivity with the Sony Entertainment Network allows you to stream content out of the box. It even comes with a built-in microphone to allow hands-free calling. It comes in various colours but, as ever, black's the cheapest!
Where to get it: Ebuyer (**bit.ly/1pHSV66**)

Deal 5: TDK A360
RRP: £135 / Deal Price: £107

Slightly retro styling gives the TDK A360 a distinctive look, but the sound it produces is thoroughly modern. Certified to IPX3 for protection against water, it's ideal for outdoor use, and the built-in carrying handle practically encourages it. An integrated USB port allows you to use it as a charge point, and Bluetooth connectivity keeps it connect to your device wherever you take it.
Where to get it: Ebuyer (**bit.ly/1rMiOTX**)

What's going on with **Doctor Who** & **Torchwood**?
Is the **Transformers** film rubbish?
What's the best **kids' TV theme** tune of all time?
What's happening in **Heroes**?
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HP Recalls Power Cords

Worldwide order for returns of cords

Pay attention if you've not already heard this. HP has ordered a recall, right across the globe, on power cords sold with its laptops and other accessories. Affecting products sold between September 2010 and June 2012, the recall is as a result of the cord leading to burn injuries for some unfortunate users.

This is a very serious recall – some reports have suggested over six million affected cables sold in the US and Canada alone – and, to be more specific, the cords a marked LS-15 on their side and were sold along HP and Compaq notebook and mini-notebook PCs among hardware. The message on HP's website confirmed that: "HP customers affected by this program will be eligible to receive a replacement AC power cord for each verified, recalled AC power cord at no cost." which is just what's you'd expect.

Snapchat Valued At Over $10bn

No, really

More focus on messaging now, and news that photo messaging service Snapchat is shaping up to be really something special. According to a Californian tech investment firm, the app is valued at $10bn, which essentially means it's a big, big company for a service that's only been around since 2011.

The service does have over 100 million monthly users so, who knows? Perhaps the valuation, the logic for which stems from the investment firm's pumping of $20m into the company, is about right.

Here's the thing, though: Snapchat hasn't actually generated any revenue as yet, according to reports. So, is this a realistic (albeit huge) valuation, or is it all just over-the-top speculation?

You decide.

QUICK BITS... **According to the Halifax, the kids in Britain are more likely to spend their pocket change on game and app**

School's are back in action across the country, and if you're studying – or just fancy a refresher – a particular institution has made some of its courses available online for free. Cambridge's independent Stephen Perse Foundation has very kindly made available dozens of A-level and GCSE courses to let pupils and teachers alike download them for better learning. As you might imagine, the school has taken to Apple's iTunes U service to do so and its provision of digital textbooks will form a nice library of digital materials for pupils to follow in class and during revision.

Is digital education the future? Will the school run be a thing of the past? No, of course not. But, interesting news nonetheless.

If you touched something and it gave you an electric shock, would you try to touch it a second or even a third time? Or would you think 'Actually, I'll just leave that alone'?

Well, that's what most sane people would do, so that tells you pretty much everything about Microsoft's less than stellar forays into the tablet computer market.

For numerous reasons, many of which Mark Pickavance reminds us of this week, the Surface range wasn't right the first time, and it wasn't really right the second. Why, then, does Microsoft think the third attempt will be any better received by consumers?

Again, the biggest barrier to ownership is the ludicrous price. It's as if Microsoft is trying to disourage take-up of its product by making it so expensive. While there are people whose wallets can accommodate such huge cost, they'd probably rather spend their money on an iPad – but it looks like Microsoft is going to need a few more shocks to understand that.

Until next time...

Anthony

Editor

Messenger Powered Down For Good

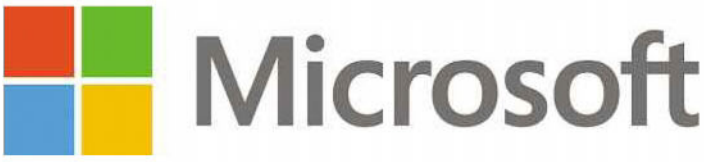
Farewell, old friend

So, after 15 years of service Microsoft will be switching off its Windows Live Messenger client in October.

What's that you say? Yes, it's still live in China, but it's coming to an end in a month's time when any users will be transferred to Skype by 31st October. Bear in mind that Windows Live had a whopping 300 million users by 2009, so it was a major service in its day, but there was a sharp-ish decline over ensuing years as Skype's own userbase saw a rise. Having bought Skype in 2012, Windows Live Messenger's days were clearly numbered.

As for China, fact is that alternatives have now eroded the user base of Microsoft's service, and the company reckons it's just not required anymore. Users in the Far East have received emails from Microsoft with regards to the closure – and that, as they say, is that.

We'll always have Paris...



Meanwhile... On The Internet...

Well, no prizes for guessing what we're going to be talking about this week. Yes, the massive 'leak' (or, 'theft' as it should really be known) of seemingly iCloud-derived photos that began appearing across the internet on 31st August.

Described by some media outlets as 'Celebgate' and by the less caring elements of the internet as 'The Fappening' (no, we're not going to explain that; you'll have to look it up... On the other hand: dont), the emergence of the images, a story that quickly became a *cause célèbre*, has since been traced back to AnonIB's /stol/ board, a particularly distasteful corner of an anonymous imageboard site that specialises in the appropriation of private photos from phone accounts and online storage.

Chatter across AnonIB as far back as 26th August (**tinyurl.com/MotI1328a**) records discussion of a haul of images that are being 'hoarded' by members of its /stol/ community, amassed it seems via hacking – apparently using a mix of social engineering techniques and software like Elcomsoft's Phone Password Breaker 3 (**tinyurl.com/MotI1328b**) – and trading among themselves. Presumably this is the cache of images from which nearly 200 eventually made their way onto the infamous /b/ image board of 4Chan on 31st August. The rest, as they say, is history (and under investigation by the FBI).

A few things immediately spring to our collective mind: the first is the speed with which the authorities, and tech firms like Apple – that now has the integrity of its flagship iCloud service right under the spotlight – Twitter and even 4Chan (which we'll come back to in a moment) sprung into action over this. It's an attitude that's in stark contrast to the seemingly languid (many would say disinterested) reaction to similar cases involving less famous women, such as those who fell victim to the revenge porn trend, epitomised by sites like IsAnyoneUp? (**tinyurl.com/MotI1328c**) and the horrible 'slut shaming' that can follow (**tinyurl.com/MotI1328d**). Even 4Chan, a notorious Wild West, even in the ever more sanitised world of the wide web, has been forced to pull up its socks a little, and pledge to comply with US Digital Millenium Copyright Act legislation in the future (**tinyurl.com/MotI1328e**). How genuine this change of heart proves to be, remains to be seen, though.

The second is the polarising reactions to the story, both in the media and beyond. It's not the first time we've come across this; Scarlett Johanssen was famously hacked a few years back – and the man responsible for that (and quite a few other hacks) received a long prison sentence (**tinyurl.com/MotI1328f**) – and some seem keen to throw out the 'they bought it upon themselves' accusations and bemoan that lessons haven't been learned (**tinyurl.com/MotI1328g**). It's an accusation that's being widely and healthily rounded upon, though. While some older generations, and technology writers, may wonder about the motivations behind the proliferation and rise of the nude selfie (**tinyurl.com/MotI1328h**), and tut-tut profusely about the image-conscious, social media powered world that creates perfect storm news stories like this one, we should never lose sight of the fact that what has happened is a crime. These women (and, with the exception of a couple of partners making co-star appearances, they were all women) have every right to take whatever pictures they want of themselves in their own homes, and do not deserve to be blamed or shamed for the illegal actions of the (one would presume) man, or men, that did this.

Talking of the man that did this, Reddit (predictably) immediately went into CSI mode and began the hunt for 4Chan OP (original poster), dubbing him 'Original Guy'. As if the collective Reddit hivemind hadn't proved sociopathic enough in its slavering response to the photos themselves (which are still being hotly debated, celebrated and even commemorated in T-shirt form by certain subredditors), it immediately started dissecting posts to ascertain who was responsible for the leak in the first place (**tinyurl.com/MotI1328i**). Quickly, collectively, squarely, and with little more than circumstantial proof, it pointed the finger at a man called Bryan Hamade, a programmer, who denies the allegation, claiming instead that he was just one of a few 4Chan users who tried to make a quick buck by selling the images in bulk for Bitcoin.

Who knows whether this is true or not? Either way, the idea that there is an organised group actively hacking and trading images of celebrities seems to have caught the collective imaginations of the press (**tinyurl.com/MotI1328j**). Unfortunately, anyone who is a little more familiar with some of the darker corners of the internet will know that it's not just celebrities that are party to such intrusions. Perhaps one good thing that can come from all of this is a change of attitude with regards to the dissemination of private images, though. A quick browse of Reddit or Twitter doesn't give you much hope of that, mind.

A day before this magazine hits shelves (10th September), a group of large tech firms intend to hold a 'go slow' day, to highlight the ongoing battle over net neutrality in the US (**tinyurl.com/MotI1328k**). Among the sites taking part, and intending to use a widget in order to illustrate how changes in net neutrality rules could effect their users experiences, are KickStarter, Reddit, Mozilla, Vimeo. All are sceptical of how new Federal Communications Commision guidelines may allow ISPs to offer preferential treatment to certain sites, thus breaking one of the basic rules that has always governed online life: the idea that all data is treated equally, no matter where it comes from or where it's heading.

We'll leave you to debate just how significant or important such protests are and just use it as another excuse to point you in the direction of this brilliant, lucid rant by British comedian John Oliver, who now plies his trade in the US (**tinyurl.com/MotI1328l**).

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

Picking out these videos is not the hardest job in the world, we'll admit, but sometimes it really just does it for itself, y'know. While we have had to resist the temptation to post more John Oliver spam **(tinyurl.com/MotI1328m)**, the video we feature this week is quite possibly the best holiday video you'll have seen in a while. It features a Grenadier guard, no less, adding a little pizazz to his duties outside Buckingham Palace – a little bit of fun that is also a little bit outside his duties and could end up getting him in a little bit of trouble (tinyurl.com/MotI1328n)

QUICK BITS... Microsoft has refused to turn over customer email data stored on its Ireland data centre, despite a US court order

Caption Competition

Once again, it's time for the caption competition, where we provide the pictures and you provide the laughs. Let's see what you made of this:

- "doctoryorkie: "Heels for the first day was a bad choice."
- "The agency asked if I was scared of heights and introverted - "doctoryorkie: "I ticked the 'NO' box."
- PlaneMan:"Fire Wire failed, Fire Rope isn't going to do much better."
- **JayCeeDee:** "I knew I shouldn't have used Apple Maps!!"
- wyliecoyoteuk: "Sue hadn't realised what they meant at the interview when they said she would need "a good work/life balance."
- wyliecoyoteuk: "New cloud services are becoming a litlle stretched"
- pesukarhu: "Just about to go wireless!"
- isdaritden: "Some folks just don't get *on line*
- isdaritden: "How'd you get up there? " easy I got a ladder in my tights"
- Out Of CurioCity: "Barney, I told you she was Line Dancing, but I didn't realise she was Sky Line Dancing."
- Thomas Turnbull: "As usual Microsoft are stringing me along until I upgrade to Windows 8.2"

Thanks to everyone who sent in an entry. Our winner this week is pesukarhu, who came up with "Just about to go wireless!"

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

US Mass Outage Affects Millions

And we thought we had it bad...

A great many Americans were left without their Internet access last week as Time Warner Cable's network suffered a major fault that knocked them offline.

The thing is, Time Warner Cable services rather a lot of users in the States, epecially on the Eastern half, and these were the customers affected; something in the region of 11 million of them, in fact. Most of them did get back online within hours of the initial service cut. Well done for sorting it, then. Not so well done for the problem in the first place.

The reason for the outage? An "erroneous configuration was propagated throughout our national backbone", according to a company spokesperson. Naturally. With Time Warner Cable due to be bought by Comcast in the near future, this isn't the best of starts on that front.

Apple Reveals Reasons For App Rejects

Weekly breakdown in the running

Following in the footsteps of Microsoft, Apple plas to release clearer explanations as to why developer apps don't find their way past its guidelines.

Plans are apparently underway to reveal a weekly breakdown of the top ten reasons apps don't make the grade and there's also a web page 'Common App Rejections' listing reasons such as crashes and bugs, broken links, placeholder content, incomplete information and substandard user interface.

Interestingly, aside from the ten most common reasons there are 42 percent of apps that fail for 'other' reasons. What these reasons are, we'll never know. Still, this is useful stuff for fresh developers to know in advance.

Snippets!

Fuji's Robotic Printer

In what is surely the world's first printer that can physically bring your documents to you, first-hand (or should that be first-mechanics?), Fuji Xerox has proudly shown the world its new robotic printer.

Designed to be used in public places to keep sensitive documents safe, it does seem rather a convoluted way of going about things. In our day, you had an office junior employed for just such as this.

Still, we can imagine that there would be some form of fun to be had with this. Somehow.

Nintendo Updates 3DS

While it may not be exactly pulling up any trees in the console wars, Nintendo continues to show faith in its 3DS handheld line, updating it again next month for Japanese consumers. The new model 3DS will feature an improved CPU, support existing 3DS and DS titles as well as exclusive games, house a second analog c-stick like the good old GameCube days and a couple of new shoulder buttons to bring it more in line with the Wii U system. Plus, there's also a new screen featuring stereoscopic 3D. Lovely.

Google Builds Drones

Intended for delivering items to eager customers everywhere, Google has only gone and built some autonomous aerial vehicles – drones, to you and us. Put together by its Google X research division, the Project Wing drones have been a two-year initiative and the company's top-line goal for this is to deliver disaster relief for affected areas at the likes of earthquakes and floods.

The tests have reportedly taken place down under in Australia and fair play to Google for putting some collective heads together to work on this one.

Naked Celebrity Photos Leaked Online

iCloud hack reported as to blame

The horrible side of the web reared its head on 1st September when news emerged of naked photos finding their way online. Now, we all know that these sorts of photos are many and varied on the Internet but these were nude images of celebrities which should not have found their way into the public domain. In the aftermath of the news breaking, some celebrities claimed fakery, while others threatened legal action against anyone found to be sharing them.

Particularly interesting on this is the news that a hack on Apple's iCloud service has been said to blame for this, with a potential cause at the time of writing being mooted as a possible brute force attack. Other reports have suggested issues outside of iCloud's control. Whatever the reason this is big news, all the more so as some of the Hollywood celebrities involved have spoken out. At the time of writing Apple was investigating, as was the FBI, no less.

Samsung To Use Nokia's Here Mapping Service

Smartphones sign up to test deal

Nokia and Samsung have signed an agreement to allow the Nokia Here maps on Samsung's smartphones, as well as its Gear S smartwatch. The agreement means a test or beta version of an Android app relating to the maps will be included and it means Samsung could longer term join the likes of Garmin and Yahoo in using Nokia's map data. For the Gear S watch, this will be a specially-prepared version of the service called Here for Gear – nice – optimised for its smaller display and this is obviously seen as something of a dissing of Google as a consequence.

Will this have a wider impact on Google, then? Samsung has become the popular alternative to Apple, after all?

As you were.

QUICK BITS... **An online gamer was visited by a US SWAT team as a hoax call brought the cops to his door.**

Copyright-Free Photos In The Making

Thank Kalev Leetaru for his troubles

Kalev Leetaru isn't a name that exactly trips off the tongue. You've probably not heard of him and you have no reason to. Except that this academic from America is attempting to do something pretty remarkable.

Leetaru is aiming to create a searchable database of copyright-free images, some 12 million of them in fact, to Flickr. He's made a pretty good start with close to three million photos already uploaded and tags added to them to ensure users can search through. What they are searching though are photos and drawings from over 600 million library book pages that have been scanned by the Internet Archive organisation and Leetaru is pretty excited about his project. "For all these years all the libraries have been digitising their books, but they have been putting them up as PDFs or text searchable works," the BBC quoted him. "They have been focusing on the books as a collection of words. This inverts that."

Well done Kalev. You're a far more patient man than us. We wish you well.

Intel Updates Core i7 Line

Eight-core desktop chip added

We're suckers for a good processor story, so it's lovely to be able to write on a new line of Core i7 processors from Intel.

Most notable about this update is the line's first eight-core desktop chip, which essentially means that this is aimed primarily at gamers and enthusiasts, as these major chips tend to be. You know what? They're available right now under the Core i7 Extreme Edition moniker and they will also be the first desktop processors to support DDR4 memory.

Offering nearly 80% better multi-threaded performance compared with four-core chips, plus a performance boost of 20% for 4K video editing, the processor that's of particular interest here is the top-end Core i7-5960X promising a base clock speed of 3GHz, or 3.5GHz with Intel's Turbo Boost Technology. Expect to pay around £600 for this fella.

Wi-fi Routers Vulnerable

Offline attack exploits problem

A chipset flaw present in common wi-fi routers means that they are vulnerable to attack, as has been proven by a researcher over at Swiss security outfit 0xcite.

The issue seems to revolve around badly implemented versions of wi-fi Protected Setup allowing for quick access to a router's network, specifically a lack of randomisation in the authentication key for the hardware PIN. This effectively means that those clever enough can guess the PIN, rather than implement brute-force attacks. Indeed, according to the researcher in question this form of attack requires a single guess alongside a series of offline calculations. Yikes.

This problem is concentrated to routers provided by a couple of chipset makers, one of whom is Broadcom and the other is... well, we don't know as the researcher didn't say. The advice seems to be not to implement WPS if you want to remain secure.

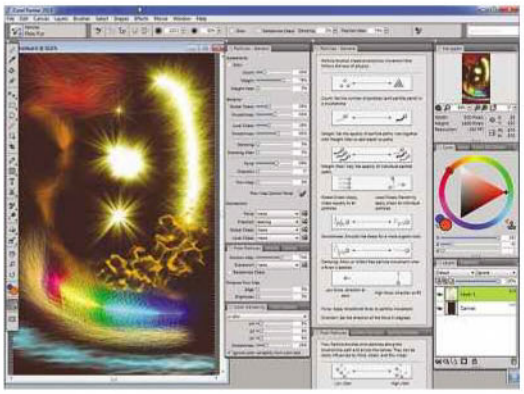
It was all captured on streaming site Twitch.tv

Corel Painter 2015

The latest version of Corel's Digital Art Studio

EDITOR'S CHOICE micro mart

DETAILS
- **Price: £ 315**
- **Manufacturer: Corel Corp.**
- **Website: www.corel.com**
- **Required spec: Windows 8.1 (64-bit) or Windows 7 (32-bit or 64-bit editions), with the latest Service Packs Intel Pentium 4, AMD Athlon 64 or Opteron 2 GB of RAM**



The new particle effects are pretty spectacular.

Clouds based on a cloned image

If like me you're unfamiliar with Corel's Painter program, I'll quickly explain what it is and how it differs from other graphic editors. Firstly it's not a traditional image editor like Photoshop, nor one used for illustrations like CorelDraw. Although technically it can be used to edit bitmaps, it's primarily based on natural media, like paint, inks and pastels; using real brushes on real art materials. All this is done in a digital form, allowing the artist much more freedom; while giving them the ability to change just about anything on the fly. So for example you could change from oil to watercolour, working on canvas, board or various types of paper, all on the same document; albeit on different layers.

With this release Corel has extended the existing media elements, with new brushes, new paper and texture types. They've also introduced some quite revolutionary tools for digital artists. The main one being Particle Brushes, which are physics inspired brushes that seem to have a life of their own. You can easily create the wispiest ethereal effects, which would take hours to paint individually; yet with the same tool, (using different settings) you can paint very realistic fur or grass at a single stroke.

These particle effects work best on a dark background, where the glow they produce can looks like a distant nebula or perhaps a psychedelic bolt of lightning; or maybe even the wisp of smoke left in the air, after a match has been struck. The settings and options available for these are limitless and beckon users down the "what if I try that" rabbit-hole. You really need to see it in action to realise what a powerful set of tools these are.

Painter doesn't limit users to to the tools provided, either; it's a simple matter to create your own. Just start with a brush that's close to the effect you're after, then adjust the settings until it's perfect and save it into the appropriate category.

I understand the previous version introduced the Jitter effect to your brush strokes, randomising the result of each. Now, a new Jitter Smoothing option allows you to change the size and smoothness of the effect, making results more natural. This is particularly useful for creating clouds and waves.

This version also comes with a range of pre-defined user interface palettes, designed to address particular workflows. One of these is a simple interface displaying the bare minimum toolset, an arrangement very useful for tablet users, who don't have the luxury of space on their displays. Another, added at the request of existing users, deals with the reality that an illustrator doesn't need the same tools as a watercolour artist. The facility still remains to create your own workspaces to suit specific needs.

I believe to get the best from Painter you really need a graphics tablet, like those sold by Wacom. It's not essential, yet it adds the element of pressure sensitivity to your brushes, pencils or whatever medium you happen to be using. This means you can vary the amount of paint or the thickness of the pencil by the pressure you apply to the tablet; which is a more natural way of working. In fact the new Real Bristle brushes work particularly well with a tablet, because they respond to pressure, speed, tilt, bearing and rotation. So you can change the look of a stroke by the way you hold the pen and the direction and pressure you apply.

Painter is a complex program, with dialogues containing potentially thousands variations. It can be overwhelming at first, but don't let that put you off as there are plenty of tutorials to lean on; both within the program and on YouTube. It's expensive, but also an amazing piece of software that has the potential to revolutionise digital art, allowing anyone to create excellent work in a range of mediums with a modicum of skill. If you want to try it for yourself, you can download a fully working trial version from the Corel website.

mm Joe Lavery

An innovative product that provides art materials for digital painters

micro mart
9 Quality
8 Value
9 Overall

Sandisk Extreme USB 3.0 Flash Drive 64GB

EDITOR'S CHOICE micro mart

When is a USB more than it appears to be?

DETAILS
- **Price: £54 (Ebuyer)**
- **Manufacturer: Sandisk**
- **Website: www.sandisk.co.uk**
- **Required spec: Device with full-sized USB port, preferable USB 3.0**
- **Product Code SDCZ80-064G-G46**

It's been a while since I've gotten enthusiastic about a USB drive, but the latest Sandisk Extreme is something a bit special. From the outside it doesn't really sell these abilities, being built around the tried and tested switch-blade mechanics we've become so familiar with. The other physical feature is a hole for securing it on a loop; sadly there's no actual lanyard. Yet, even before I plugged it in there were tiny hints of quality – like the lovely, sprung locking action of the blade extension.

Once it is connected to a PC, using USB 3.0, then suddenly this device suddenly reveals what amazing powers Sandisk imbued it. I've previously derided storage makers who insist on using 'x300' speed specifications, referencing how much faster their device is over a x1 CD-ROM, and thankfully Sandisk doesn't make that mistake here. Instead, it's decided to go for stats people can relate to and claim this drive can read and write at up to 245MB/s and 190MB/s respectively.

Those are impressive numbers, but, as often happens with performance claims, a minor caveat applies. In my initial tests, I was only able to get around 199MB/s read and 187MB/s write out of the module. That's not shabby, but not what Sandisk had quoted. To reach those levels and better, it is necessary to have a USB 3.0 chipset that can have the 'Turbo' mode switch thrown. Then a decent chunk of extra speed can be yours.

My final scores showed that the Extreme is actuallu significantly quicker than Sandisk assumes, and I was genuinely shocked how rapidly it went. Read speeds of 271.4MB/s and write of 201MB/s are remarkably good. Even without Turbo, this is one of the fastest USB 3.0 modules I've ever seen and delivers very similar performance to what you get if you place an SSD in a USB caddy. This model comes with 64GB, and Sandisk provides it in both 32GB and 16GB for those with less data to move – though, as Sandisk have duly noted – write speeds on the smaller modules won't reach same levels as the 64GB one, understandably.

Business users might be disappointed that the unit isn't hardware encryptable, but SanDisk SecureAccess Software is included, for password securing a specific folder. In this writer's mind that only leaves two important questions; could it have been better and how much is it?

In terms of being better it's built to the very reasonable price Sandisk is asking. The rather thin plastic shell might get cracked if it got caught between two heavy metal objects. And, being long, it's exactly the sort of USB device that ends up damaging a USB port in an accident. If you treat it will a little respect, though, you should be fine.

The RRP of the 64GB model is nearly £75, but it can be found for much less with the minimum amount of search effort. For the speed on offer here, anything less than RRP is a solid bargain and a genuine file transfer time saver.

mm **Mark Pickavance**

A stunningly fast USB 3.0 key with plenty of capacity for most tasks

Details
Available capacities: 16GB, 32GB and 64GB
Performance/speed: Up to 245 MB/s; write speed lower and varies by capacity.
Dimensions: 70.87 mm x 21.34 mm x 11.43 mm
Operating temperature: 0°C to 45 °C
Storage temperature: -10°C to 70°CE
Compatibility: USB 3.0 and 2.0

Western Digital My Passport Pro Thunderbolt RAID

Mark is struck by a heavy object sporting a distinctive lightning symbol

DETAILS
- **Price: £219.49 (Amazon)**
- **Manufacturer: Western Digital**
- **Website: www.wdc.com**
- **Required spec: Mac OS X Mavericks or Mountain Lion, Thunderbolt port**

A few months back I reviewed the Seagate Fast Backup Plus drive; this, in many respects, is Western Digital's version of that exact concept. The My Passport Pro Thunderbolt RAID, or 'Pro' as I'll call it from here, takes two laptop drives and makes them work together. They can be organised using either RAID 0 for performance striping or RAID 1 for drive redundant mirroring. That makes this a very chunky 700g drive that's three times the weight and thickness of the standard My Passport Slim models.

As with Seagate's drive, if you choose RAID 0 you can see a dramatic improvement over single drive systems. That allows a backup to be secured more rapidly or snappier software installations. You can also access each drive independently (JBOD), if that provides some special comfort. There is, however, a snag: if you own a PC you're very unlikely to ever be able to take advantage of this technology, because Western Digital made this exclusively for the Apple Mac. And, not just any Apple Mac either. Those made since its makers introduced the Thunderbolt port are needed, because that's the only port it supports.

To test the Pro I originally intended to get a Thunderbolt card for my PC test rig, as Asus made much about launching one before last Christmas. Alas, my attempts to get a fabled ASUS ThunderboltEX II failed. Some high end motherboards do have the Thunderbolt ports, though, as it's Intel's technology, but not any of the models sitting on my spares shelf. Thus, I was forced to borrow a Mac Book Pro to find out what I'd already guessed from the Western Digital promotional material.

That being: in real use, a speed of around 200MB/s in both reading and writing is possible, a decent performance jump over a single drive under USB 3.0, though not anything like you can get with a single SSD or dual drives (provided by Seagate) on the same port – and that's the critical point to absorb.

Researching this product and the technology it utilises, I waded through many fan-infested Apple forums, where users waxed very lyrically about how many times quicker Thunderbolt was than sad old USB v3. What they largely failed, or refused, to consider is that when it comes to external storage the connection technology can only be as good as the drive to which it connects.

Therefore, what Western Digital did was build something similar to Seagate, but for a very much smaller market. Only that can fully explain why the 2TB model of its product costs the same as the 4TB version of the Seagate drive. Thunderbolt fans will also be slightly disappointed that this unit doesn't have a second port, so it can only be the last device in a chain.

If you own a Mac with Thunderbolt and you don't like waiting for Time Machine, then this product might be right for you. Unless you intend to work with an Apple Mac made before 2011 (or a PC) at any point. The view from the PC side of the fence is that Thunderbolt has failed to ignite any disruptive technology fires, and this product fails to justify its use conclusively.

mm Mark Pickavance

A rapid external drive made exclusively for Apple Mac owners

OrangeWebsite Web Hosting

The best oranges are from Iceland, apparently

DETAILS
- **Price: Basic Plans from £2.73 per month**
- **Manufacturer: OrangeWebsite**
- **Website: http://goo.gl/aRUQ1m**
- **Services: Web Hosting, Virtual Private Servers, Dedicated Servers, Domain Registration, SSL Certificates**

OrangeWebsite is a Reykjavik-born company, founded in 2009 by Henri K. Johannes to help Icelandic small businesses kickstart a presence on the internet. Since those early days, it has grown into an established worldwide community of both personal and business users who require information security, ecological power use and an excellent service.

Its web hosting plans are varied and cover almost every internet focused walks of life. The Basic Plan, for example, offers 1GB of web space, 100GB traffic, a free site builder and a 30-day money back guarantee – all for just €3.40 (£2.73) per month. The plans then increase to include more web space, rising from 3Gb from the Silver Plan through to 20GB for the Ultra Plan, more traffic allowance and naturally costing more in the process. However, the Ultra Plan, which can be seen as the total business solution, only costs €29 (£23.28) per month and represents excellent value for money.

Each plan allows multiple sub-domains, FTP accounts (unlimited on the higher end plans) and MySQL databases. The Basic Plan has three available mailboxes, Silver has five, and the Gold and Ultra Plans offer unlimited mailboxes, along with built-in virus and anti-spam scanners. There's also support for Wordpress, Joomla!, Drupal, Open Cart and many more Content Management Systems.

cPanel is a good choice of management console

Another attractive feature and one that is certainly worth mentioning, is the fact that all the OrangeWebsite's dedicated servers and facilities are running from 100% green energy. Iceland's commendable use of renewable energy is leagues ahead of the rest of the world, and as a result its entire infrastructure makes for the cleanest approach to web hosting available. In addition its stability and up time is rated at 99.9%, and customer support has been rated as one of the best in the web hosting market.

Iceland is also an independent country that doesn't suffer from draconian censorship and adheres to the Icelandic Modern Media Initiative, which provides a safe haven for freedom of speech, investigative journalism, and expression. OrangeWebsite therefore is an ideal hosting platform for protecting your privacy, either through the policies of the host country or through the company's 256-bit SSL protected systems.

OrangeWebsite's Plans are varied and good value for money too

New users are helped through OrangeWebsite's tech support and through the Getting Started Wizard that auto-loads when you log in to the control panel, cPanel – a good choice of front-end web hosting management, that offers a more complete solution than Webmin, Ajenti, InterWorx or Plesk. The various settings, preferences, access to mailboxes, domains, logs, and databases are clearly labelled and often include a video tutorial to explain any technicalities.

The structure and setup of OrangeWebsite is without fault. Our test domain and site were easy to setup, manage and maintain, and payment for the hosting can be handled via Paypal, wire transfer or even Bitcoin to eliminate transfer fees and maintain your privacy.

We were impressed with the service, stability and hosting plans on offer from OrangeWebsite. Its customer feedback, across a number of external sites is exceedingly good and the company attracts numerous highly recommended ratings from a variety of different customers both private and business. These factors mean OrangeWebsite is certainly worth looking more into when considering your next, or new, hosting solution.

mm David Hayward

Plenty of options, with great support and customer service

Zotac GeForce GTX 750 ZONE Edition

Mark checks out the latest attempt at silent video card technology

DETAILS
- Price: £94.99
- Manufacturer: Zotac
- Website: www.zotac.com
- Required spec: PCI Express 3.0 x16 (Compatible with 1.1) slot, system running DirectX or OpenGL 4.4
- Part number: ZT-70707-20M

I'm always fascinated by passively cooled computer gear, because it generally attempts – and fails – to snub the first law of thermodynamics.

When a processor or GPU computes something, a portion of what power is consumed is converted into heat, and unless it's relocated, that part will get hot.

The solution as offered by Zotac's GeForce GTX 750 ZONE Edition is that a huge surface area of aluminium fins enables that heat to dissipate to the surrounding air.

However, that's only going to work for a short time, as the air will heat up. That begs the question of why you wouldn't just put fans on the video card, if you need some anyway.

You can put larger and therefore slower rotating fans on a case, but it doesn't make the system 'silent', however it's represented.

Accepting that thermodynamic reality, this is a 'silent' video card, built around the Nvidia GM107 GPU that features a whopping 1870 million transistors, organised into 512 unified shaders, 16 ROPs and 32 TMUs.

That's marginally down on what the GTX 750 Ti models are offering, and at 80GB/s it's also light by about 10% on bandwidth over its bigger brother. The stock clocks for this GPU model are 1020MH, boosting to 1085MHz, and Zotac has tweaked them for a very modest increase to a 1333MHz base and 1111MHz boost. The 1GB of memory is configured to run at a stock speed of 1250MHz, being quad ramped to 5000MHz by the use of GDDR5 memory.

In terms of performance, the overall profile here is close but not equivalent to the cheaper AMD R7 260X, though this design manages to deliver those GPU cycles for about half the power consumption. To prove that categorically, this card doesn't require a PCIe power line of any type and can be run on a system with just a 300W PSU.

When you consider that this is equivalent to the old flagship AMD HD 7790 level of performance but consumes just 32.5 watts and not the 180 watts of that design, I can't help but be very impressed.

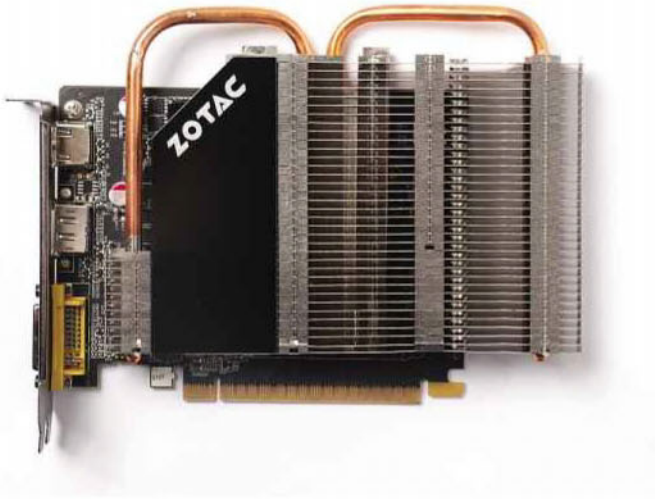
It's obvious now that the power efficiency of the GM107 has tempted Zotac to build a passive card. Other card markers have come to the same conclusion, even choosing to use the GTX 750 Ti spec GPU, but with less predictable results.

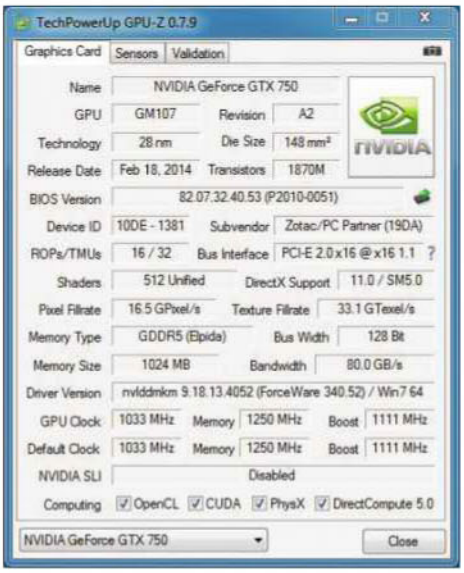
I think Zotac called this spec right, because as efficient as the GPU

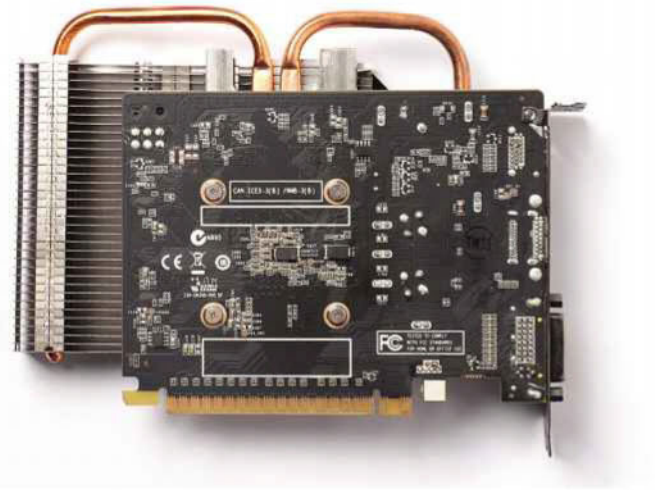
Benchmarks

Test	Details	Zotac GTX 750 Zone	Sapphire R7 260X OC
3DMark 11	Default Res	P5130	P6398
3DMark Fire Strike	Default Res	P3597	P3868
Batman:AA	1080p Avg. FPS	159	162
Heaven 4.0	8xAA @1080p Tess Norm	576	559

Benchmark's performed with an Intel DX79 chipset motherboard, Core i7-3960X CPU, 16GB DDR3 quad-channel memory, Crucial M4 128GB SSD, Windows 7 64-bit







technology is in this design, there are realistic limits to what it can achieve and what heat can be passively distributed. Take it too far, as some have, and the GPU ends up getting too hot and then clocks itself down, nullifying the advantages of the higher specification.

What can't be argued with is the feature set that's on offer here, with pretty much everything that the modern gamer might openly desire.

By default, the Zone Edition supports OpenCL, DirectCompute 5.0, DirectX 11.2 and OpenGL 4.4, demonstrating that the system is designed to work best with Windows 7 or 8, though Linux drivers are also available directly from Nvidia.

Most modern cards support those features, but it also supports some special Nvidia options like CUDA, PhysX, Adaptive Vertical Sync and GeForce ShadowPlay. Shadowplay is a technology that allows you to video capture the last 20 minutes of play without suffering a major performance overhead and is popular with the most modest gamers.

Display connection is also comprehensive, with DL-DVI, HDMI and DisplayPort all provided, and VGA is also supported through an included adapter.

I have only one major concern, surrounding the huge cooler that Zotac welded to the GPU. While the card is only 18cm deep from the backplate, the copper heatpipes stand a good 4cm above the plate top – a clearance that many compact cases just don't offer. I'd recommend you measure your target system before making an investment.

The other catch is that you can pick a perfectly good AMD R7 206X 1GB card if you don't need CUDA or PhysX for about £15 less and get marginally better frame rates in return. That choice won't be 'silent', and the system will consume more power, but your games will be slightly smoother.

If I was building a gaming/media system for deployment to my lounge, I'd seriously consider one of these, though it's far from being the only silent option available.

mm Mark Pickavance

A powerful, efficient and passively cooled video card

PagePlus X8

Serif introduces some useful new features to its PagePlus DTP program

DETAILS
- **Price: £90**
- **Manufacturer: Serif**
- **Website: www.serif.com**
- **Required spec: Windows 8, 7, Vista or XP SP3 (32-bit), 512MB RAM (XP), 1GB RAM (32-bit Windows) or 2GB RAM (64-bit), 510MB free hard disk space**

When we first encountered Serif's PagePlus, its only serious competitor was Adobe's PageMaker, which was designed mainly for the printing industry and was thus horrendously expensive. Even that far back PagePlus was a well rounded product that introduced a lot of people to the world of DTP, giving just about anyone the facility to create professional looking documents at home.

This latest version builds on this legacy with many new features and enhancements. To begin with, the program now supports the EPUB 3 standard, so any documents you create will appear as designed regardless of the device they're viewed on. This is very important for things like brochures or technical documents, where the layout is an integral part of the message you're trying to convey. If the pages become fragmented when viewed on a tablet or smartphone, it's not only difficult to navigate, it often loses impact.

I should mention here that not all ebook readers support the EPUB 3 standard, so if your publication doesn't look as it does in the PagePlus, it's very likely to be the reader program you're using. This is particularly true of Android readers, yet I understand that iPad and Kindle devices are fine.

Another very useful addition to this release is the ability to edit the majority of PDF files. Clearly this does not include protected files or those created from a purely bitmapped source (for example where a page has been produced as an image). However, files like forms or other mainly text-based PDF documents are as easy to edit as any other text file.

I also noticed that PagePlus does a very good job of interpreting the PDF files, using sensible font substitutions where needed and retaining the original layout far better than other products I've used. This is more important where forms are concerned, because you can end up with answers not lining up with questions or text disappearing under graphics. I didn't however encounter any such problems with PagePlus.

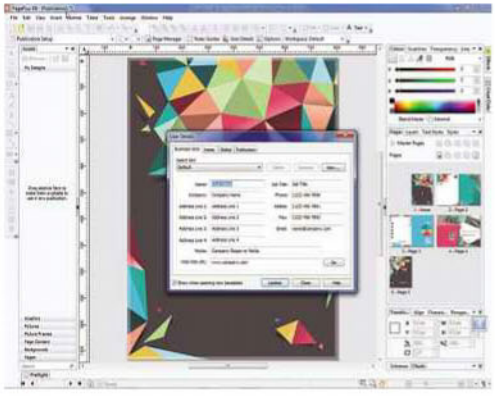
If you're creating multi column documents, like flyers, brochures or ebooks, the new text alignment tool will not only save you time, it creates a symmetry that makes your publications look far more professional. As you move a frame or column around the page, red alignment lines appear as you approach any existing elements, allowing you to easily snap to sides, corners or even text within another column or frame. You also get finer control over columns of text, with variable gutter settings within a single frame. So you don't need to create a new frame just to make a column wider, perhaps to fit below a graphic for example.

As you would expect this version comes with an expanded range of effects, templates and filters – something that Serif has always been generous with. PhotoLab now includes Vibrance, Split Tone, Tilt Shift and Clarity filters. The most impressive of these is Tilt Shift, it turns a normal photo into what appears to be a miniaturised version of the scene. It's very effective with things like distant towns or villages. The effect is created by tilting the point where the image appears to be sharp, without reducing the depth of field. If you also change the Shift element, it stops the convergence distortion that happens on tall buildings.

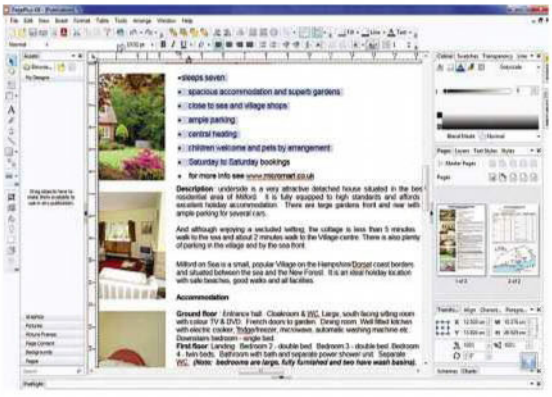
Other new features include new styles for the readymade tables and calendars. The Pantone Plus colour range has been extended by 84 new colours. You can also access any image editor directly from within PagePlus using a menu button. Finally, the interface now includes High DPI Support, which basically means it's much clearer for those that use particularly high resolution screens, where the toolbars are naturally smaller.

mm Joe Lavery

A worthwhile update to what was already a superb DTP Package



This version supports the EPUB 3 standard



The facility to edit PDF files is a welcome addition

The Terminal 2

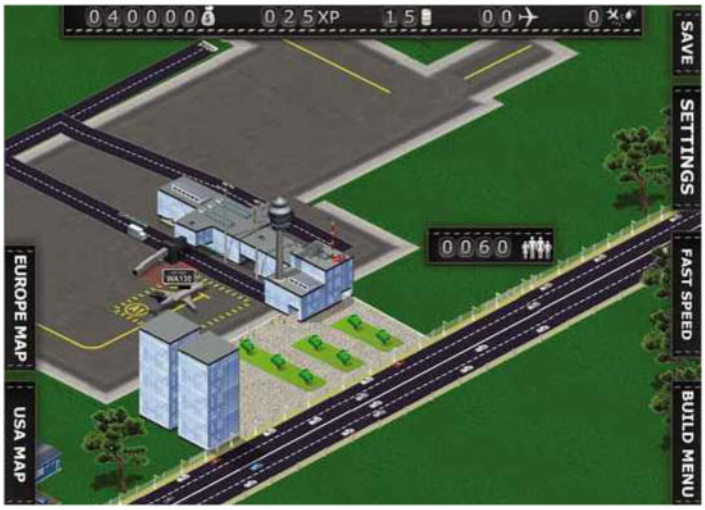
A real budget airline simulator...

DETAILS
- **Price: £2.79**
- **Required spec: 2GHz processor or faster, 1MB RAM, 150MB HD space, Windows XP or later**
- **Developer: FrameLineNetwork**

If you can find a physical shop that still sells that many PC games, then browsing the budget racks you'll find no shortage of strategy and 'Tycoon'-style titles. *The Terminal 2* happily jumps aboard that particular bus, and at first glance, it appears to be a low-priced simulation about managing an airport.

Unfortunately, it's not a very good one, and it turns out to be less strategic than it first appears. The basic idea, on the surface, is that you manage your resources, build up your airport, plan plane routes and generally try and improve your lot. Sadly though, it suffers from two problems. Firstly, it's not user friendly. Secondly, it feels like a glorified iPad game, ported to a PC.

it's the first of those observations that's the real killer. When you load up for the first time, you're dumped into the game proper, without anything appoaching an intuitive interface to work with. Everything's where it should be, certainly, it just doesn't seem to work as it ought. Clicking on the tutorials doesn't help much either. You're given two to work with at the start, and these are just videos to follow. There's no interactivity to them, and there's no real sense that much is being taught. It's watch and learn, rather than getting you involved.



As such, you find yourself battling the game more than playing it, and as you get to grips with *The Terminal 2*, you come up against other issues. The AI, for a start, is clearly limited. Avoidable accidents happen, whilst route planning itself is something of a dark art. The promise of expanding your airport soon becomes forgotten, as you struggle just to get the basics right. Furthermore, it's not an awful lot of fun making your way up the learning curve.

The very low asking price does, as you might expect, cover up for a few of the problems here. However, it's hard to shake the feeling that the game has been released long before it's ready. As an iPad download or something of that ilk it would be a more logical fit, but *The Terminal 2* is fighting for space alongside a vast raft of strategy games that call the PC home. And its insistence of multiple clicks to get you do straightforward things and its desire to take things the long way around at most opportunities means it's more frustrating than entertaining. A pity.

mm David Hayward

A missed opportunity

GROUP TEST

Mini-ITX cases

Mini-ITX is currently enjoying a new lease of life, with motherboards that have same the sort of computing power as bigger form factors. Because of this, case designers are starting to get a little more creative in their designs, which is driving up the small form's popularity.

David Hayward delves into six mini-ITX cases to see which are worth looking into.

Mini-ITX cases

Antec ISK300-150

DETAILS
- **Price: £71.30**
- **Manufacturer: Antec**
- **Website: goo.gl/X3LY9c**
- **Required spec: Mini-ITX motherboard**

The mini-ITX form factor has been around long enough now for many case makers to come up with innovative designs where these small but often very powerful boards can fit.

Antec is one such case maker, which has taken the mini-ITX form and shoehorned it into a more compact micro media centre design. Its previous model, the ISK300-65, proved to be a generally decent enough mini-ITX case with an external power supply. However, since then it's upped its game and come up with the ISK300-150, complete with an internal 150W power supply.

The advantage of an internal PSU is you can install a more overall powerful system, and it's good at keeping the setup a little neater; neatness is something you'll come to appreciate with the ISK300-150, since it measures just 96 x 222 x 328mm and weighs 2.4kg.

There's just enough room inside for a 5.25" slim optical drive and two 2.5" hard drive bays. The 150W PSU is actually mounted at the front of the case, with a pass-through cable attached to the rear power plug. This gives the remainder of the case enough room to fit the motherboard and suspend the drives from the mounting bracket above. Plus, there's just enough room for a low-profile (no more than 7" long) expansion card.

It's something a squash and a squeeze once you get everything in place, which naturally means the internals are going to get a little warm. To help combat this, Antec has included an 80mm side-mounted TriCool, double ball bearing, three speed exhaust fan. Unfortunately, though, we found this to make a bit of a racket when running under full steam and, to be honest, the inside of the case didn't feel all that much cooler, despite the best possible cable management we could muster. There is, though, a place for a second fan to be installed, next to the already placed 80mm fan, which may improve the temperature issue somewhat.

There's also the problem with CPU cooling. Due to the lack of height in this case, you'll only be able to install CPU coolers up to 2.5", so there's only really the stock cooling available – although there are some low-profile coolers available.

The front of the case includes two USB 3.0 ports, a single eSATA and audio in and out, along with the power button. There's a mesh bezel sort of effect around the optical drive and front face plate, which makes for quite a nice effect. The sides and part of the top of the case also have grill air flow sections, and the rear contains the backplate for the motherboard, with the upper section housing the power plug, speed control for the internal fan and a hole that's left over from the ISK300-65 case, where the external power supply used to fit.

In the end, it's really the situation you have planned for your PC that will dictate whether or not you'll buy the Antec ISK300-150 case. If you're sitting it discretely in a well-ventilated area under the TV as an ultra-small media centre and you won't require heaps of awesome power, then this case would generally work. If however, you want a little more from your setup, in terms of upgrading components or better cooling,

▲ *It's remarkably small and would make a great media centre PC*

▲ *Unfortunately, cooling is a problem*

BitFenix Prodigy

DETAILS
- Price: £69.95
- Manufacturer: BitFenix
- Website: goo.gl/n3AXcI
- Required spec: Mini-ITX motherboard, PSU

BitFenix produces a wealth of cases for all form factors that incorporate both style and functionality. Its Prodigy range, both the Prodigy M (for ATX forms) and Prodigy (mini-ITX form) are particularly eye-catching and very reminiscent of an Apple case design.

The Prodigy is therefore a splendid looking mini-ITX case available in a range of colours, from black and white, through orange, red, blue and green, all of which are quite vivid.

The case itself a little bigger than the standard ITX cube variant, which is because BitFenix added two sets of flexible but very sturdy feet and handles. Both sets are made from a composite technology BitFenix refers to as FyberFlex, and they absorb shock, reduce vibration and allow you carry the case around. They're very flexible and allow you to push and pull the case around with some degree of force without fear of breaking anything. However, they do make the case wobble slightly, and if you place it on a desk, you'll soon begin to notice this when you're wildly hammering away on the keyboard.

> **"The internal structure is very well organised and designed"**

The designs do differ slightly from the black version, in that the black Prodigy is actually a mesh-fronted case, which increases the airflow significantly, since it's quite a large area to expel or intake air. The coloured versions of the Prodigy, however, are plastic covers that restrict the airflow when compared to the black version. Naturally, the coloured plastic cases look better, but if your main concern is ventilation, then the black version may be preferable.

The Prodigy's dimensions are 250 x 404 x 359mm, with it weighing a not too considerable 7kg. There's room inside for a single 5.25" optical drive (which is removeable), five 3.5" drives and nine 2.5" drives, although not all at the same time. The case comes with two large 120mm fans, one at the front with room for another and one at the rear of the case, which can be swapped out for an even larger 140mm fan, should you wish. There's also enough room for a couple of 120mm fans in the top of the case as well.

The internal structure is very well organised and designed, with plenty of room to accommodate the various components beyond the motherboard. This means there's also enough internal space for better cable management and airflow, and to add to the internal design, BitFenix provides a removable PSU cage for easy swapping out – provided you're using a modular PSU design, of course.

Added benefits of the BitFenix Prodigy include the ability to fit full-sized expansion cards, just enough space for advanced cooling, plenty of motherboard clearance for high-end CPU cooling and a front pair of USB 3.0 and HD audio ports.

We really liked the BitFenix Prodigy, especially since ours was a decidedly impressive Ferrari red version. The exterior design of the case looks fantastic, the interior design is extremely well constructed, and the overall feeling is one of quality and engineered perfection. Okay, so it's a little bigger than most of the ITX cases available, and the FyberFlex feet make it wobble a bit if you touch the case, but these are only nit-picking niggles that are easily overlooked when compared to the overall product. In short, then, a great ITX case.

It's a stunning looking case, available in a range of colours

It's also very practical and easy to build into

micro mart
Quality 9
Value 8
Overall 8

Cooler Master Elite 130

DETAILS
- Price: £45.95
- Manufacturer: Cooler Master
- Website: goo.gl/L0yXOG
- Required spec: Mini-ITX motherboard, PSU

Cooler Master's first mini-ITX case, the Elite 120, proved to be a decent enough case for PC enthusiasts and, to some degree, case modders. However, out of the box it wasn't great at keeping the internal components very cool. The Elite 130, though, is a step in the right direction and addresses many of the flaws the Elite 120 suffered from.

The Elite 130 is a little smaller than its older sibling, measuring 240 x 207 x 398mm and weighing 3.1kg, compared to the Elite 120, which measured 240 x 209 x 401mm and weighed 3.4kg. Despite the smaller dimensions, though, the engineering involved has proved to be more effective at cooling the internal components significantly.

With a front 120mm fan installed behind the black front panel mesh and a further 80mm side-mounted fan behind a large grill cut into the case, there's enough airflow to keep all but overclocked components reasonably cool.

The front of the case houses two USB 3.0 ports, a single USB 2.0 port, headphone and mic audio, power reset and rocker-switch design power button. The sides and top are all vented and finished in a matt-black steel, as is the rest of the case, with the exception of the front button and port panels, which are glossy black plastic.

It's a more classic looking mini case but well put together

Plenty of room inside for expansion cards and extra cooling

> "With everything in place, there's still a surprising amount of space available"

Inside, the layout and design is very well thought out, with enough room for a full-sized PSU and graphics card if needs be. There's a single 5.25" optical drive bay, three 3.5" drive bays and room for five 2.5" drives – provided you use three on the 5.25" bay, one in a side-mounted bracket and one bolted to the bottom of the case.

With everything in place, there's still a surprising amount of space available, as we've seen in the past from the Falcon Media Centre PC as featured in our media centre PC group test a few weeks ago. With some clever cable management and placement of the drives, you can easily have enough stock cooling with the Elite 130 to build a reasonably powered PC.

Saying that, though, there's not a lot of room for more advanced cooling methods. There are a few examples of individuals modding the Elite 130 to accommodate more outré cooling solutions, but without having to significantly enhance the case, you're going to be a little limited with what you can achieve.

You could limit the number of components inside the case to improve the airflow and cooling, but in those extreme cases you'll probably want to use a bigger chassis. For the most part, though, the Cooler Master Elite 130 does a really good job of housing quality components at a reasonable cost. And with a little creative internal management you can pack a pretty powerful PC into this reasonably small area.

Unless you require something a little more unique in our design, the Cooler Master Elite 130 will be an ideal mini-ITX case that will see you well into the future.

Corsair Obsidian 250D

DETAILS
- Price: £71.99
- Manufacturer: Corsair
- Website: goo.gl/8YokFG
- Required spec: Mini-ITX motherboard, PSU

This is Corsair's first leap into the mini-ITX case market, which spent much time in the limelight at CES 2014 at the beginning of the year, amid the fawning attention of technology journalists the world over.

The case design is certainly unique. There's a mixture of opinion as to whether it's visually appealing or downright ugly. Obviously, beauty is in the eye of the beholder, and despite looking a bit like a safe (or a small fridge, as one colleague noted), there are some decent incentives to use this case.

It measures 290 x 277 x 351mm and weighs 4.42kg, which makes it a little too big to sit on a desk and a little too small to sit on the floor next to a pair of wayward size nines. In many respects, it's a little like the BitFenix Prodigy – without the wobble.

It's a fairly striking design, mind you, one you won't forget in a hurry. The black, anodised brushed metal finish, together with the top window and side grills, is quite appealing, and the sides sweep down to form large feet, which gives it a fair amount of clearance off the floor.

The front panel is kept extremely simple, with just a pair of USB 3.0 ports, joined by the pair of HD audio ports on the right-hand side of the optical drive bay, and the power and reset buttons inhabit the upper-left corner. This makes the case feel more minimal, and due to the brushed metal finish continuing over the buttons and port mounts, there's a better sense of style involved.

Not a bad mini-ITX case, despite looking like a mini fridge

The gaming elements mean there's enough room for powerful graphics cards

This is designed, though, as a gaming mini-ITX case, and with that in mind, you'll find enough room inside for a single 5.25" optical drive, two 2.5" drives and two 3.5/2.5" drive combos. The case includes a front-mounted 140mm fan, a 120mm side fan and allocated space for an additional rear mounted 80mm fan. There's also space set aside for radiator mount locations, both on the front and the side, and the H55, H60 and H100i Corsair Liquid Coolers are fully supported.

A full-size PSU and full-size graphics card can be fitted with relative ease, and the interior is arranged so that the front fan will draw cool air over an installed GPU with more than enough clearance for larger CPU cooling solutions.

Opening the case is easy enough and requires the minimum of fuss. Another feature we liked is the fact that the entire case can be dismantled down to the barebones structure for easy access. This means you can better manage component and cable placing to a higher degree than most other ITX cases.

In essence, all of this means you can have a relatively powerful PC without sacrificing the overall style of the PC. In other words, you could comfortably have this as a living room media and gaming PC without it actually looking too much like a media or gaming PC.

The only downside we found was the noise. While it wasn't as loud as the previously reviewed Antec ISK300-150, the fans did kick out a fair amount of volume when the case was placed nearer.

On the whole though, an impressive if a little odd-looking mini-ITX case.

EVGA Hadron Air

DETAILS
- **Price: £149.99**
- **Manufacturer: EVGA**
- **Website: goo.gl/w3qoVK**
- **Required spec: Mini-ITX motherboard**

Mini-ITX case makers are pulling out all the stops these days, it seems. Not content with simply producing limited rectangular blocks of plastic and metal, they're instead coming up with all manner of extreme and interesting concepts. The EVGA Hadron Air is one such example, with a cosmetically impressive design that's sure to appeal to case builders and ITX modders alike.

The Hadron Air is a significantly sized ITX case, measuring 169 x 305 x 308mm and weighing something in the region of around 6kg. This means it's more than capable of sitting on the floor under the desk. In fact, it's more like a smaller tower than a mini-ITX case.

It comes with either a polished black or brushed aluminium effect finish with logo and large square power button, with a kickstand located at the front of the case to tilt it up slightly. The left-hand panel features a large side panel window, so you can show off your PC building powers with the included lighting effects, and the right-hand panel has a grill vent along the bottom, with a surprising slot loading optical drive access, a pair of USB 3.0 ports and the usual HD audio duo.

Inside you'll find two 3.5/2.5" drive bays, a slot loading 5.25" optical drive bay and a pair of top mounted 120mm fans. There's enough space for expansion cards up to 267mm in length and, to some degree, you'll be able to install something better than a stock CPU cooler, but you're ultimately limited by the height.

The slight angle provides cooling from the bottom, and the side window offers a view of your building skills

The slot-loading optical disc around the side is an odd placement

EVGA has taken the decision to include a slimline 500W PSU, with 40A, 12V rail, 6+2-pin PCI-E connectors, two SATA and four Molex connections, fitted to the bottom of the case with a tiny fan protruding from the rear of the case. In most cases, due to the positioning of the motherboard, the PSU is really close to the GPU, especially if you've fitted a dual-slot sized card, which means the combined heat generated from the PSU and GPU effectively created a superheated zone in the bottom of the case. This is where the kickstand comes into play, and rather than being a design feature, it actually allows most of the heat to be forced out through the bottom of the case thanks to the slight clearance of the angle. It's not a huge amount, granted, but it's probably just enough for non-overclocked components to dissipate their heat.

The internal space is fairly accommodating for good cable management, although you'll always end up with SATA cables bending sharply over the top of the drive bays and even more so if you opt to install the side-loading optical drive. Either way, it can be fairly fiddly to get everything perfect while trying to keep airflow to a maximum.

The EVGA Hadron Air makes for a stylish and reasonably well-designed mini-ITX case. There's just enough room for extra cooling, should you go for overclocking, but the stock cooling should be more than ample for most setups. The only downside to it is the price. At £149.99 we would expect something spectacular compared to the previously reviewed cases, but in the end it's just above average.

In-Win H Frame Mini

DETAILS
- Price: £144.98
- Manufacturer: In-Win
- Website: goo.gl/T4n9B0
- Required spec: Mini-ITX motherboard

Since we've mentioned a number of times so far that the varying styles of mini-ITX cases are innovative, aesthetically pleasing and superbly designed, it seems only fair to include one of the most incredible designs we've ever come across: the In-Win H Frame Mini.

In-Win has come up with something pretty spectacular with the H Frame Mini. This is an aluminium and glass case that could easily be mistaken for a next-gen console or some kind of elaborate air-conditioning unit.

For starters, its dimensions are 262 x 108 x 287mm, and it weighs a tad under 5kg. It's built from aluminium plates that act as a kind of heatsink for the cut-out section where the motherboard, PSU and components sit. Along the front of the case, you'll find a pair of USB 3.0 ports, along with HD audio ports, power and reset buttons. Around the back there's the power plug that fits into an included 180W slimline PSU and the cut-out for the motherboard backplate.

Airflow is handled through the side gaps between the layers of aluminium plates, with an added mesh to prevent too much dust or something larger, falling through the gaps in the plates. And the finish can include either a glass panel or a solid aluminium, coloured panel, with additional rubber feet to allow it to either stand upright or lie down flat.

Naturally, aside from the design and style, what really matters is the interior engineering and what exactly can be squeezed into place. As you'd expect, it's rather a tight fit, but there are ample slots to allow for cable management, and a metal strip also keeps the power cables and PSU from sight, as well as other cables that you decide to feed through and under it.

Surprisingly, there's enough space for two 2.5" drives and a further 5.25" slim optical drive, as well as support for a low-profile expansion card (183mm long and 72mm in height). Stock CPU coolers and some of the high-performance, low-profile solutions should fit well enough, although you may also need to consider low-profile RAM. Anything bigger than 74mm from the CPU won't fit. And to add to these points, actually fitting anything is something of a chore, as there's very little room to play around with.

With this being an open-air case, there's ample cooling on offer, especially if you store it in a well ventilated area, and the added style is certainly a bonus as well. But with such an open design, you're also subjected to the combined noise from the CPU and PSU fans, which after a while can begin to grate on you if you're working in an otherwise quiet environment.

The other negative aspect here is the price: at just shy of £145, this is a very expensive case for very little room and upgradability. That said, you're paying for the unique design and aesthetic appeal rather than pure functionality.

Clearly the In-Win H Frame Mini isn't designed for the mass mini-ITX market; it's something of a niche product. While this is interesting and has a 'cool' appeal, as a working, day-to-day PC case, it's not all that good really.

It certainly has an extremely stylish, futuristic look to it

Ultimately, there's not a lot you can do with it

micro mart
Quality 7
Value 4
Overall 5

BitFenix Prodigy

The BitFenix Prodigy combines style, functionality and cost into one a single neat package. It's easy to work with, easy to install components into and above all else, it allows for a good range of expansion over time.

Cooler Master Elite 130

We've used the Cooler Master Elite 130 a number of times in the past for system builds, and it's proved itself time and time again.

A steady, solid and easy system to work with, which can accommodate bigger expansion cards and future proofing.

How We Tested

We tested each case with an Asus H971-Plus motherboard, fitted with a stock cooler, stock RAM, an Nvidia GTX 750Ti and, where possible, a low-profile Asus GeForce GT210. We used a slimline generic DVD writer and a Kingston HyperX Fury 240GB SSD.

	Antec ISK300-150	BitFenix Prodigy	Cooler Master Elite 130	Corsair Obsidian 250D	EVGA Hadron Air	In-Win H Frame Mini
Price	£71.30	£69.95	£45.95	£71.99	£149.99	£144.98
Dimensions	96 x 222 x 328mm	250 x 404 x 359mm	240 x 205 x 398mm	290 x 277 x 351mm	169 x 305 x 308mm	108 x 262 x 287mm
Weight	3.8kg	7kg	3.1kg	4.42kg	6kg	4.9kg
Stock Cooling	1x 80mm fan	2x 120mm fans	1x 120mm, 1x 80mm fans	1x 140mm, 1x 120mm fans	2x 120mm fans	None
PSU Included?	150W PSU	No	No	No	500W slimline PSU	180W PSU
No 5.25" Bays	1	1 – removable	1	1	1	1
No 3.5" Bays	1 – using 5.25" bay	5	3	1/combo with 2.5" bay	2	0
No 2.5" Bays	2	9	5 – using 5.25" bay	1/combo with 3.5" bay	2	2

Tech Origins
Global Positioning System

David Briddock explains how GPS went from top secret to a public service

Today we take for granted our ability to communicate with satellites that form the Global Positioning System (GPS). But in the beginning, GPS was a highly classified military secret.

Cold War Driven

It was the Cold War that drove the US military to require extreme positional accuracy anywhere on the planet. To achieve this goal they employed the services of Ivan Getting, who had performed advanced 3D positional system research during his time at Raytheon Corporation.

The initial setup, called Transit, involved just five relatively basic communication satellites orbiting at a specific height, typically around 20,180 kilometres (12,540 miles) above the earth's surface.

Stationed at carefully planned locations, these satellites beamed time-coded signals down to earth-bound GPS receivers. These signals, when processed by some mathematical software, allowed the receiver to pinpoint their exact position. The whole system was tested by the US Navy in the 1960s.

Accurate Time Keeping

To operate at maximum resolution, GPS satellites must maintain time with incredible accuracy. Unfortunately, the technology installed in the first generation of GPS satellites couldn't match the aspirations of engineers.

However, the second generation of GPS satellites, known as Timation, incorporated atomic clocks specially designed to operate in space.

In testing, these atomic clocks proved to be a huge success. So the US prepared an upgrade plan, which launched 11 Timation-style satellites into orbit between 1978 and 1985.

Opening Up

During this time, the GPS programme was firmly under the control of the US military and shrouded in secrecy. But one of the tensest moments in the Cold War period caused a sea-change in policy.

In 1983, the USSR shot down Korean passenger flight 007, on route from New York City to Seoul via Anchorage, after the jet strayed into its airspace – an event triggered by the heightened tension of the period, combined with an unusual set of airborne manoeuvres.

Back in the US, the Reagan administration discussed how they could avoid similar events in future. It was decided the answer was to open up the GPS system for civilian use, namely aircraft, shipping and other forms of transportation.

Limited Resolution

Unsurprisingly, there were a few restrictions. The rollout included software patches that ensured the resolution of general-use receivers would be significantly less than that enjoyed by the military. However, the resolution was easily enough to stop planes and ships straying into foreign territorial airspace and water.

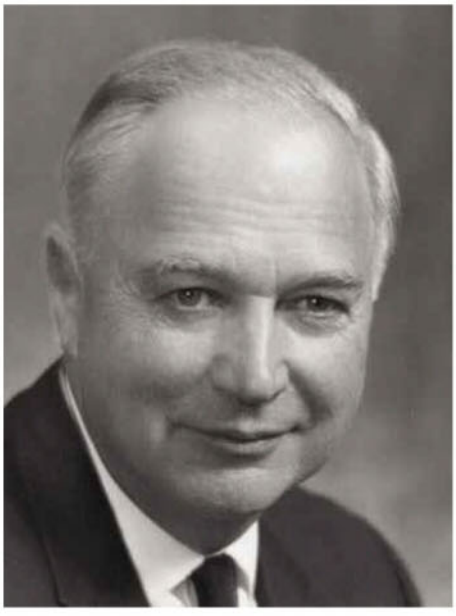
But over time the technology has been steadily declassified, so the capability of public domain receivers is now at least as good as that used by the military in the Cold War period.

Multitude Of Uses

Ever since the Reagan administration decision, GPS has become an essential tool for planes, ships and all kinds of motor vehicles around the world.

But it also plays an important role in a wide range of non-transport scenarios. Examples include astronomy, cartography, meteorology, earthquake research, disaster relief, security and photo tagging.

Today's GPS network consists of around 30 active satellites, and technology advances have lowered the cost of receivers to just a few pounds. Now just about every smartphone includes GPS functionality, powering a huge collection of location-sensitive apps, along with outdoor augmented reality scenarios and treasure hunting games.



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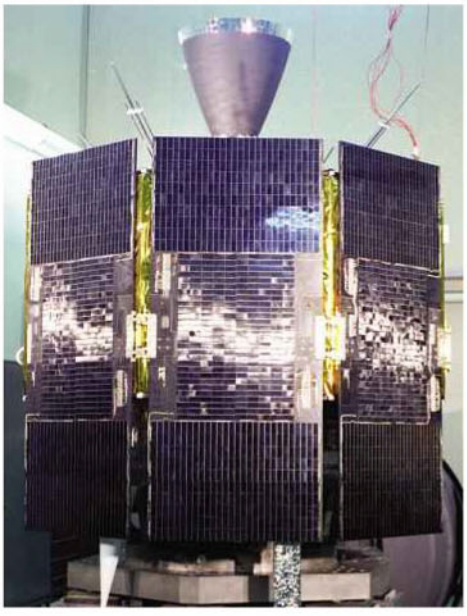

Timation-style satellites

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How-to Basics

Networking Your Printer In XP

Accessing a printer attached to another PC is remarkably easy, even if the PC is XP based

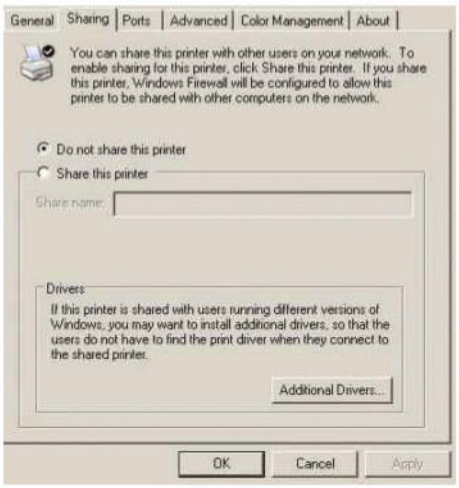
Believe it or not, despite Microsoft's best efforts, people are still using Windows XP. Who would have thought that the OS that caused so many people so much grief all those years ago and who complained bitterly that it's wasn't as good as Windows 98SE or 2000 would still be alive and kicking today?

Anyway, the point of this week's how-to is purely based on an email received from a reader who asked if it was possible to gain access to his XP-installed printer via another computer on his local network without having to continually transfer files with a USB stick.

Staring Off

In the case of our reader, his main PC is Windows XP attached to his router, connected to the internet and working either through the magic of wireless or wired connectivity.

He can browse the internet perfectly fine, which is a good indication that the networking side of things is working and that his XP-attached printer is performing as it should.



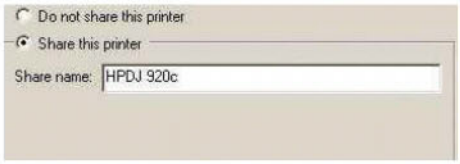
Another PC

His second PC, a Windows 7 laptop, is similarly connected, but he bought this from a popular high-street electrical retailer, so he's not convinced it can 'see' his other networked devices.

To make sure both PCs are contactable, we need to check that both the computers are on the same Workgroup, and by this we mean Microsoft's definition of a Workgroup as being a group of mixed Windows PCs on the same local area network.

To check this in Windows XP, click Start, then right-click My Computer and then click Properties. In the System Properties window, click the Computer Name tab to see the Workgroup name. By default, this is set to 'Workgroup', which is adequate for our means. If the workgroup is different on an XP computer, then click the Change button, type in the new name and click OK. To check the Workgroup name on a Windows 7 PC, click on the Start Button, right-click Computer, then select Properties. The workgroup name is displayed under 'Computer Name, Domain and Workgroup Settings'. The same goes for Vista as well.

If you need to change the Workgroup settings, then click the Change Settings link to the right of the computer information. In the System Properties window, on the Computer Name tab, click the Change button and enter the name of the Workgroup you want in the relevant text box. Be prepared to restart the PC after completing these tasks.



Or just identify it as the make and model

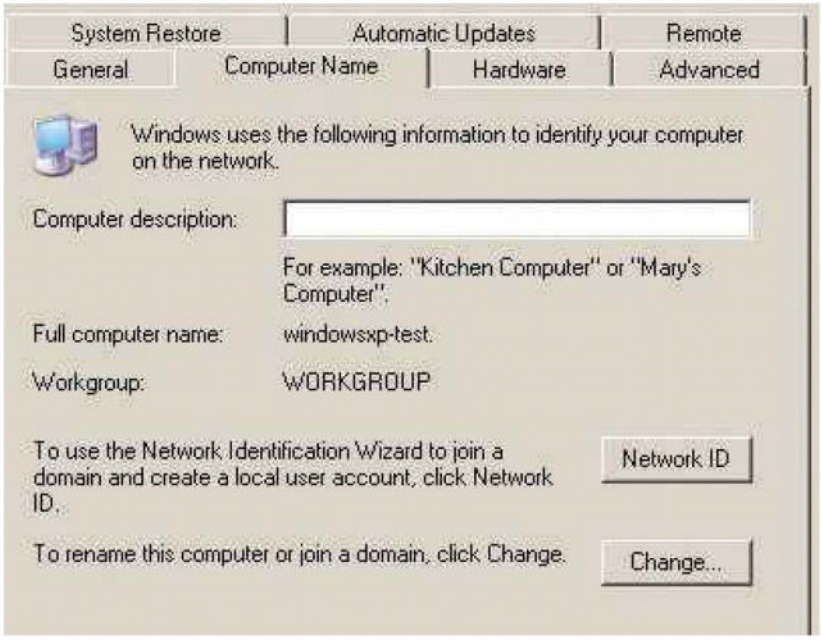
When shared you'll notice a hand icon appear

When you share your printer, come up with a name you'll instantly recognise on the network

Printer Sharing For Windows XP

Starting with your Windows XP PC, click on Start > Printer and Faxes, then right-click the printer to be shared; scroll down through the context menu to Sharing and left click. If you haven't set up any sharing on the first PC before, then you'll probably see a hyperlinked message saying 'If you understand the security risks but want to share printers without running the wizard, click here'. Don't worry about the Network Setup Wizard the message refers to; instead click the link, followed by the 'Just enable printer sharing' radio button, then click OK when you're ready.

Now click on the radio button next to 'Share this printer' and enter a name that you'll easily recognise on the network in the text box. When you've typed in a name, click OK and click 'Yes' to the pop-up box that warns you that the printer share name won't be accessible from some MS-DOS workstations. Now you should see your standard printer icon but with a hand



If the Workgroups are the same on all your PCs, then sharing shouldn't be an issue

Sharing in Windows 7 is roughly the same as with XP

Useful Resources

Microsoft has a few online resources that go into more detail than we can possibly accomplish here, and it includes remote administration and lists many of the potential problems that may occur when you're networking printers.

Anyway, the links to these resources are as follows:

technet.microsoft.com/en-gb/library/bb457001.aspx

windows.microsoft.com/en-us/windows-vista/share-a-printer

And a video…

windows.microsoft.com/en-gb/windows7/help/videos/sharing-a-printer

underneath it. This means that the printer is now shared through your XP computer.

To be able to access and print to this newly shared printer, you're going to have to find out the computer name of the first PC. This is the unique name that identifies it on the network. You can easily find out your computer name by going to Start > Right-click My Computer > click Properties > click the Computer Name tab, then next to 'Full computer name:' is the network name of your PC.

There are a couple of ways of accessing the shared printer on the first PC, but either way may result in the computer asking you for permission to the shared resource. However, be aware that you may have to type in the username and password of the account you used to set up the printer and the sharing.

You can either press the Windows button on your keyboard (or Windows key + R for the Run command box) to bring up the Windows search window. In there you can type the following:

\\networkcomputername\sharedprintername

Here, networkcomputername is the network name of the XP PC and sharedprintername is the name you gave the printer.

After you've typed in the correct network and shared names, press Enter, and Windows will connect to the shared printer and either install the drivers that are already being used in XP (if the printer has a universal Windows driver) or, depending on the OS of the second PC, the drivers may be identified and downloaded from the Windows Update site.

The other method is to open up the Printers and Faxes control window, accessible through Start > Devices and Printers for both Visa and Windows 7. Once in the printer control window, click Add Printer > Next > A Network Printer, then Next > Connect to this printer, and type in the same network address as above. Then Next > Do you want to use this printer as the default? Next > Finish.

You'll notice that when you're typing the first computer's network name into the box, after the third '\' the correct printer should pop up, making it easy for you to select the right one.

It may seem a little weighty to begin with, but once you get used to the fact that you're telling the second PC to look at the name of the first PC, then attach to the shared resource, you'll soon work out that's all that ever really needs doing.

Printer Sharing For Vista/ Windows 7

Sharing the printer on a Vista and Windows 7 PC is just as easy; for this example we'll use a Windows 7 setup on the first computer. Assuming everything is as it was before, with the first and second machines connected to the home router and the printer attached, loaded up with the correct drivers and functioning as it should, simply open up the Devices and Printers control window, right-click on the desired printer and select Printer Properties. Open the Sharing tab and, as before, type in a share name that's easy to recognise on the network.

When you're ready, click on the OK button, and the printer icon will have a little extra graphic in the form of a couple of people next to it. All that's needed to do now is to set up the printer on the second PC, which can be done by following the same routine as the one we described above. mm

Using Openshot In Linux For Video Editing

David Hayward attempts to give George Lucas a run for his money

Video editing is a subject I've always approached with a certain amount of caution. I'm not that artistically inclined, to be honest.

Take, for example, the hash I once made of a wedding video. The original was safe, but I decided to cut out one or two aspects; put in a couple of titles; add some tasteful, gentle music at the appropriate moment – that type of thing.

The result was far from what I envisaged; in fact, it was pretty dire. Had the board of film makers ever witnessed it, they would have no doubt condemned it to the Mexican desert alongside lost cartridges of E.T.

Tools Of The Trade

Clearly, the problem back then was the poor application I used and nothing whatsoever to do with my editing or artistic skills. These days we have more powerful, user friendly and fool-proof apps to help us create the home version of *Schindler's List*. Unfortunately, the majority tend to cost an arm and a leg, but open source may have the answer.

Linux used to be sadly lacking in decent video editing applications, the lion's share belonging to the Mac, with a sprinkling in the Windows family, but times are a-changing.

Jonathan Thomas, a clever programmer who was also sick of the lack of Linux video editing apps, took it upon himself to code a project that would see the creation of a stable, easy to use and (in his words) awesome video editor, OpenShot.

Lights

Thankfully, OpenShot is fairly easy to use and get to grips with. If you've ever used a timeline-type of editing process, then OpenShot

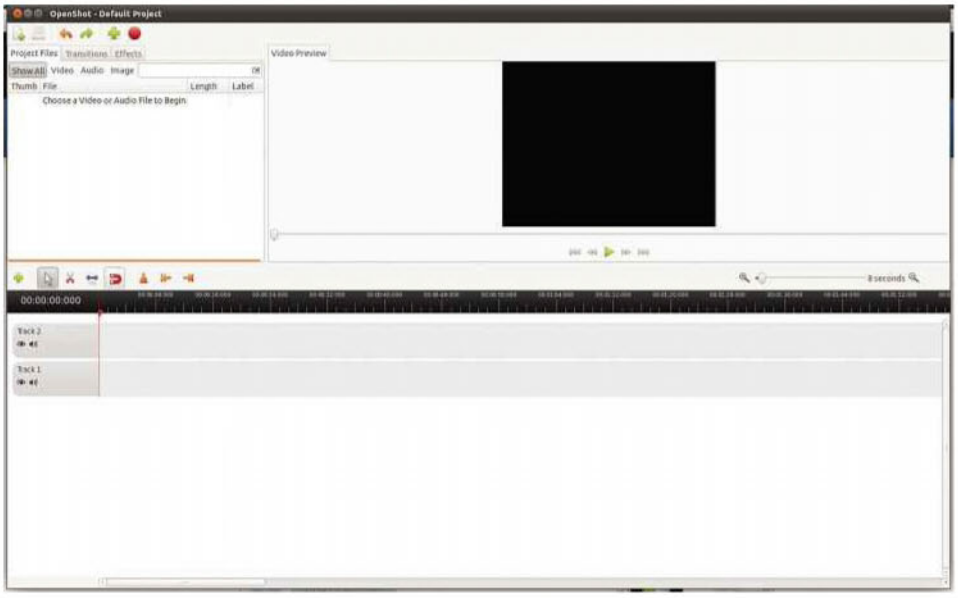


Fig. 1

Fig. 2

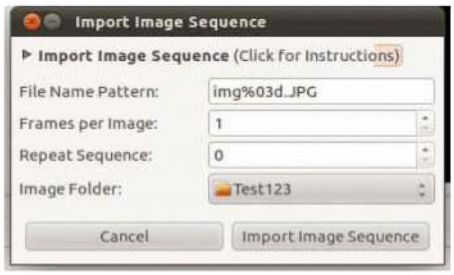


Fig. 3

will be familiar. Here we'll look at how to import pictures as an image sequence, import video clips, export to a movie file, add titles and effects, cut, snip and include sound effects and music.

For this example, I'm using an older but very stable Ubuntu 11.04 build on a fairly decent i3. However, if you don't have a Linux distro installed, then luckily for you OpenShot comes as a live DVD. By navigating to **goo.gl/zDH0U2** and following the link to the live DVD button, you'll find the .iso and the relevant instructions.

You can then either burn the .iso to disc or, alternatively, to a USB stick and boot into a customised multi-media focused distro that won't tamper with your Windows installation.

For the majority of current Linux users, OpenShot is often bundled as part of the distro these days, and you'll find it in the Multimedia section of your Linux installation. If not though, installing via the PPA will keep you up to date with new releases and bug fixes. To do this, simply drop into a terminal window and type in the following:

```
sudo add-apt-repository ppa:openshot.developers/ppa
sudo apt-get update
sudo apt-get install openshot openshot-doc
```

Once installed, you should be able to either search via the dashboard for OpenShot or find it in your distro's Multimedia section.

Camera

I've already established that Steven Spielberg I am not; thankfully OpenShot doesn't know that, so at least I can avoid an electronic sneer while I play with the features of this impressive video editor.

By now you will most likely have launched OpenShot and you'll be looking at something resembling Fig. 1, with the vaguely familiar timeline setup. Together with a cast of Lego bricks and people, I then shot several stills of a *Star Wars* nature using a basic digital camera (see Fig. 2).

After 30 or so individual shots, I copied them into a blank and newly created folder in the Home directory.

Action

The next step is to import them as sequential images, so they play one frame at a time (as opposed to a slideshow).

This element of the process often proves to be tiresome, as the images have to be numbered and labelled accordingly, otherwise OpenShot just displays an error. What worked best, I discovered, was to rename the files as img001.jpg, img002.jpg and so on. Whether it's just down to a bug or the process being slightly oversensitive I'm not sure, but it worked out in the end.

> **“Had the board of film makers ever witnessed it, they would have no doubt condemned it to the Mexican desert alongside lost cartridges of E.T.”**

Import Images

With the images now renamed and in the correct order, you can do one of the following: you can import an image sequence by either clicking on File > Import Image Sequence or (and this is the method I'll use here), you can simply drag the first image of the sequence into the Project Files window (the one in the top left).

When you do this you'll be presented with a box asking if you'd like to import img001.jpg as an image sequence. Click 'Yes' and you'll see the window as shown in Fig. 3. If you followed the File > Import route, then you'll be at this point already, but the File Name Pattern will be an example and not pre-filled for you.

If you click on the arrow next to Import Image Sequence, a set of instructions will expand into the present window detailing the preferred naming conventions that OpenShot will import for image sequencing and, as I've already mentioned, the pre-filled input boxes (see Fig. 4).

The File Name Pattern is the key to a successful import here: the start of the file name (img in this case) followed by a %03d then the file extension. The %03d is a string formatting command that will add each file in sequence, and the numbers between the % and the 'd' represent the number of digits that pad out the file name. As I named the files img001.jpg, the File Pattern Name will be img%03d.jpg.

Don't worry if this seems confusing at first; according to the OpenShot forums it's the cause of many bug reports and user frustration, but it does make sense after the first few attempts.

The other input boxes, Frames per Image and Repeat Sequence, allow you to change the number of frames that each image represents: the larger the number, the slower the image sequence will appear and the number of times to repeat the image sequence from the start. An option that worked well with my image sequence was 5 Frames per Image and 0 for the Repeat Sequence.

When you're ready, click on the Import Image Sequence button, and the entire sequence of images should appear as one JPG in the Project Files window with, depending on the amount of images that you imported, a length of around five or six seconds.

Create A Movie

With the image sequence imported, the process begins to get a little easier from this point on.

Drag and drop the image from the Project File window onto the Track 1 timeline, as shown in Fig. 5. Clicking the play button (the green arrow) in the Video Preview window will show off your work of art as a sequence until the red line that covers the Track 1 and 2 timelines reaches the end of the yellow box. In other words, the video will only play while there's something on the timeline to play, regardless of whether that's video or audio.

At this point, I'm going to export the image sequence as a video file, the reason being is that if I import any audio, then it will stutter along with each change of image in the sequence. That being the case, click File > Export Video, and the box as shown in Fig. 6 will appear.

First name your video and select a destination to save it to, then click on the Profile drop-down box and select DVD. Change the Target drop-down to DVD-PAL and choose High for the Quality drop-down.

These options will export a working and decent-looking video based on the image sequence you just imported. Click on the Export Video button when you're ready and the result will be available to add to the timeline.

Adding A Video And Creating A Title

Now right-click the yellow image sequence that's on the Track 1 timeline, and select Remove Clip to delete the sequence from the timeline, but still keep it in the Project Files window. Next, drag the newly created video file into the Project Files window, then onto the Track 1 timeline.

As you've no doubt noticed, there are eight control buttons between the timeline and the Project Files window. These are add track, arrow tool, razor tool, resize tool, snapping tool, add marker, previous marker and next marker. With the arrow tool highlighted, drag your yellow boxed video clip from the start of the timeline and

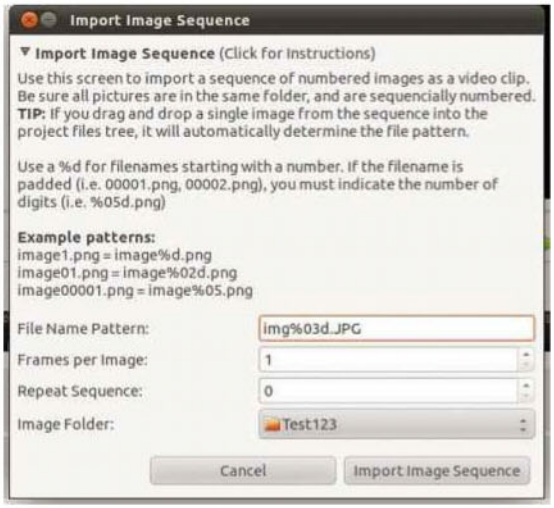


Fig. 4

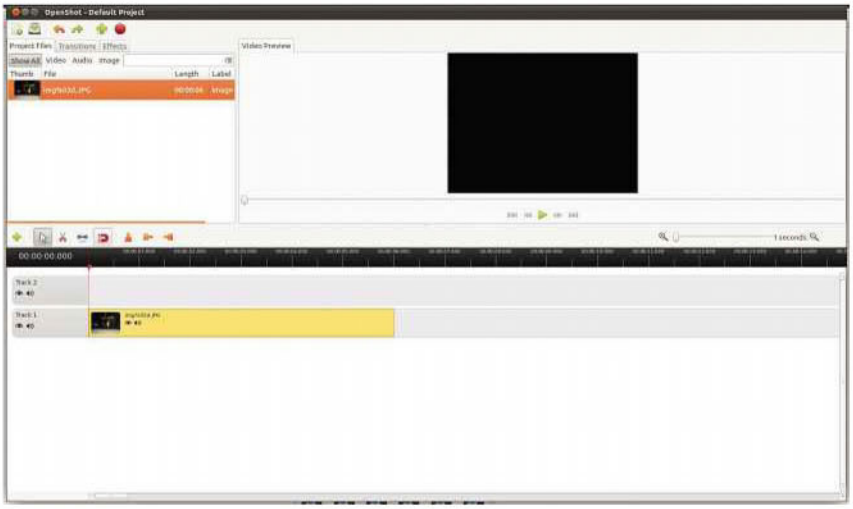


Fig. 5

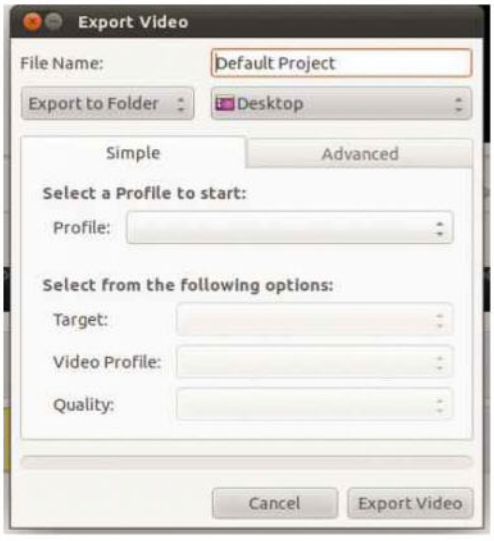


Fig. 6

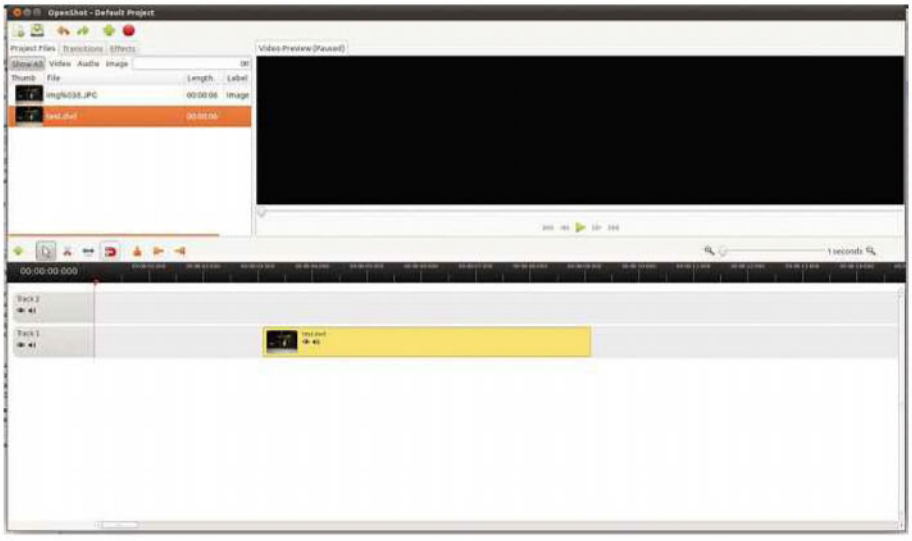


Fig. 7

Fig. 8

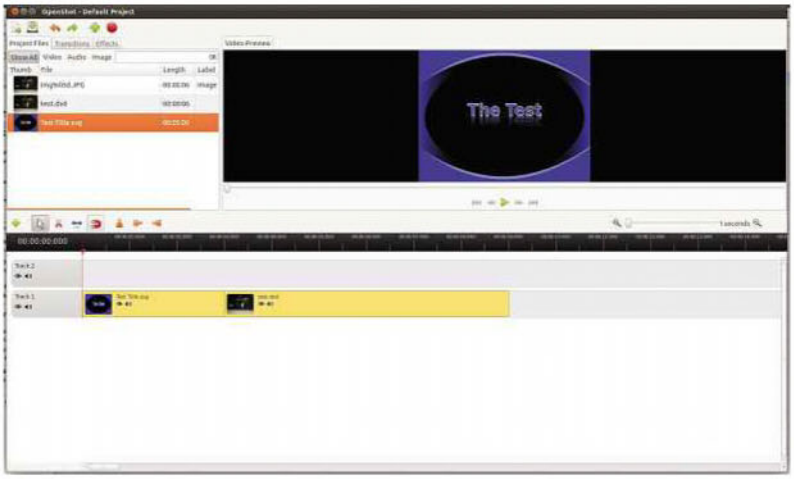


Fig. 9

drop it roughly three seconds along. You can tell the timings by looking at the timeline above the tracks, so the screen should look something like Fig. 7.

Next, select Title > New Title to open the title screen options, but don't click New Animated Title, because you'll need Blender to manipulate the animations, which we won't go into at this time. With the New Title window open, select Oval 4, for example, from the drop-down box on the right under 'Start Here'. Click the Create New Title button and enter a name for your title graphic, and click OK when ready. Then enter the text that will be displayed on screen, followed by a click on the Apply button.

As you can see from Fig. 8, you now have a basic title, which can be altered according to your colour and font preferences. If you want to use the Advanced Editor function, though, you'll have to install Inkscape.

"Where would any good movie be without an accompanying musical score?"

When you've finished putting the finishing touches to your title, click Apply to be taken back to the main OpenShot screen with the new title now added to the Project Files window. As before, click and drag the title to the Track 1 timeline, at the start of the line, before the video file.

You'll obviously notice the title is huge (the default is something like seven seconds); if you're okay with that, then leave it as it is. Otherwise click the resize tool, click and hold the right hand end of the title's yellow box in the timeline and drag it, or resize it to the desired length of time. In my case, I used three seconds of title coverage.

Drag the yellow box containing the video file over so it snaps (with the snapping tool highlighted by default) next to the title as shown in Fig. 9, and press the play button again to see what you've done so far.

Give It A Shave

You now have the beginnings of your very own edited video – a title and content – but it's a little short, only running at nine seconds at present. That being the case, let's see how you can slice the video and add a little extra filling to help pad it out a bit.

In my video file, there's a brief Lightsaber battle between a couple of Lego Jedis. Rather than going back to the camera setup, I decided to re-add a portion of the fight as another image sequence but this time use the Repeat function to allow it to cycle through a few times.

To do this, I selected the original pictures I uploaded from the camera, the ones that contained just the 'fight scene', and imported them as another image sequence as before. Then with the newly created fight scene added to the Project Files, I could add the new image sequence to the timeline and export that as a video. However, I needed to remove the current title and video before that.

Right-click the yellow boxes that contain the title and video, and select Remove Clip. With the previous title and video removed, add the new image sequence by dragging and dropping the file onto the timeline, then export it as a video, and choose the same options as previous, obviously giving it a different name.

Once that's completed, you can remove the clip from the timeline and from the Project Files window (by right-clicking the image sequence and selecting 'Remove From Project'), and drag the new video file into the Project Files window.

An easy way to add the new video clip into the original video is to start by dragging the new clip onto Track 2 and the original clip onto Track 1 as shown in Fig. 10.

Blender And Inkscape

To enable the Animated Title function and Advanced Editor for normal titles, you'll need to install both Blender and Inkscape.

To do this, if you're not familiar, open up the Ubuntu Software Centre and type in either Blender and install, followed by Inkscape and install. If you don't want to use the Software Centre or you can't for some reason, then drop into a terminal and type in the following:

```
sudo apt-get update
sudo apt-get install blender
sudo apt-get install inkscape
```

If, however, you're using the live DVD version of OpenShot, then the Debian-based AV Linux distro on the .iso already has Blender and Inkscape installed.

In fact, AV Linux is a really good distro and contains absolutely loads of multimedia applications. it's worth a look at even if you don't want to use OpenShot.

Move the red line along the original video until you reach the point where you want to insert the new clip. Select the Razor Tool (the scissors icon), and place the cut on the red line, which will cut the original video in two.

Change back to the Arrow Tool and separate the two sections of the original video. Now drag the new video clip between the two cut sections, and using the Snapping Tool, close up the gaps to join the video as one. The final result is a single video clip that is in three sections without any gaps, see Fig. 11. You can now export this video, as you've done previously, to make a single video file by clicking on the Export Video option and renaming it.

Drag the new, longer video onto the Project Files and right-click the two previous video clips, selecting 'Remove From Project'. This may seem a little convoluted, but in practice it cleans up the viewing area and lessens the chances of the wrong clips being added to the timeline, plus it gives us a saved history of clips in case anything goes wrong or the computer crashes.

Sound Effects

With the title and new extended video added to the timeline, let's have a look at adding some sound effects.

In the video used for this tutorial, I have a decent length Lightsaber battle, so that being the case, I downloaded some Lightsaber sound effects as MP3s and dumped them in a temporary folder on the computer.

The first sound bite downloaded is a Lightsaber firing up and a single 'swish', which I dragged onto the Project Files window. But as I have a battle and two Lightsabers in action, I needed significantly more, so I managed to get hold of some sound files that incorporated different effects of clashing Lightsabers. There were six in total and all were dragged onto the Project Files window.

During the video, the first character draws his Lightsaber, then the second, so I included the first sound bite on the timeline twice, but at slightly different timings by clicking on the plus icon, the Add Track button, to add an additional track, Track 3 (see Fig. 12).

It's now just a case of locating the exact moment when the Lightsaber is powered up by the first character, by sliding the red line along the timeline and dragging the correct sound bite onto Track 2. Then, using the red line again, locate the second Lightsaber power up and drag the same sound bite onto Track 3 (see Fig. 13).

With the other sound bites, I filled up both Tracks 2 and 3 along the timeline for as long as the sound effect was required, for the remainder of the video. If you end up with the sound effect becoming longer than the video portion, then select the Resize Tool from the available icons, and click/hold the end of the sound effect yellow box to reduce the timing, and match it up with the portion of video you want it to fit into.

Eventually, you'll have something resembling Fig. 14. Of course it depends on the video you have and what sounds you want to add, but you get the general idea. By adding more tracks, you can add more sound effects on top of each other if necessary; just don't make it too confusing or get carried away with multiple tracks.

Adding A Musical Score

Where would any good movie be without an accompanying musical score? Most of the time, it's the music behind the video that makes the impression more than the actual video itself.

By now you've got the hang of OpenShot, and as you've probably already guessed, by clicking on the Add Track icon, which brings the track count up to 4, you can include an extra musical score that will play throughout the entire video in the background.

First, find the music you want to add (I found a portion of the music from a battle on a *Star Wars*-themed site). Either download or convert the music to a portable format, and drag it onto the Project Files window. From there, you can drag the music onto Track 4 and either resize it or cut it with the Razor Tool.

The video timeline now looks like Fig. 15, and despite the simplistic nature of the test video, it's already becoming rather cluttered and full. To further improve the musical score, right-click the yellow box that contains the music and select Fade > In and Out (slow). There are

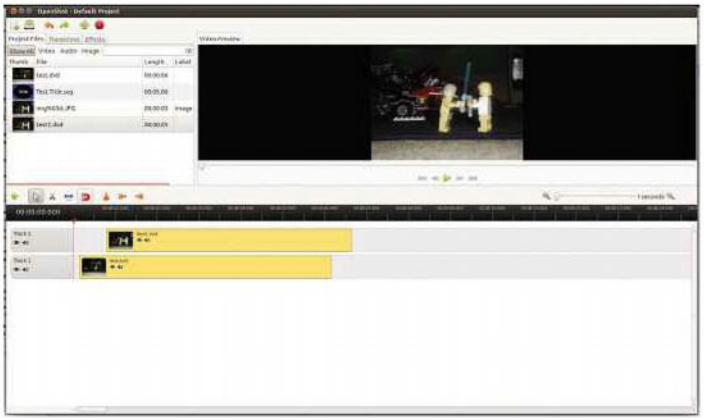


Fig. 10

Fig. 11

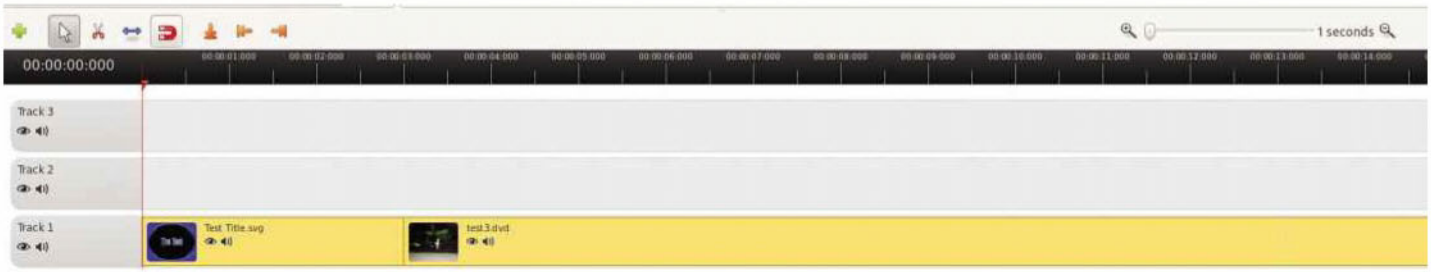


Fig. 12

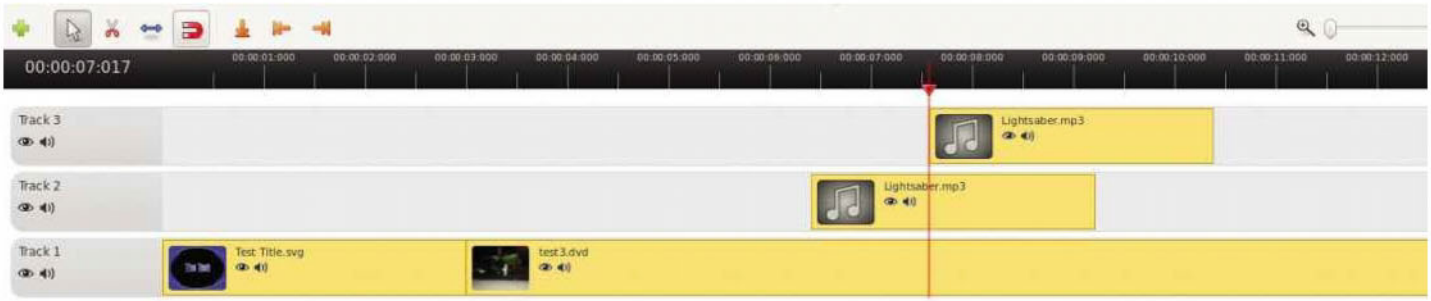


Fig. 13

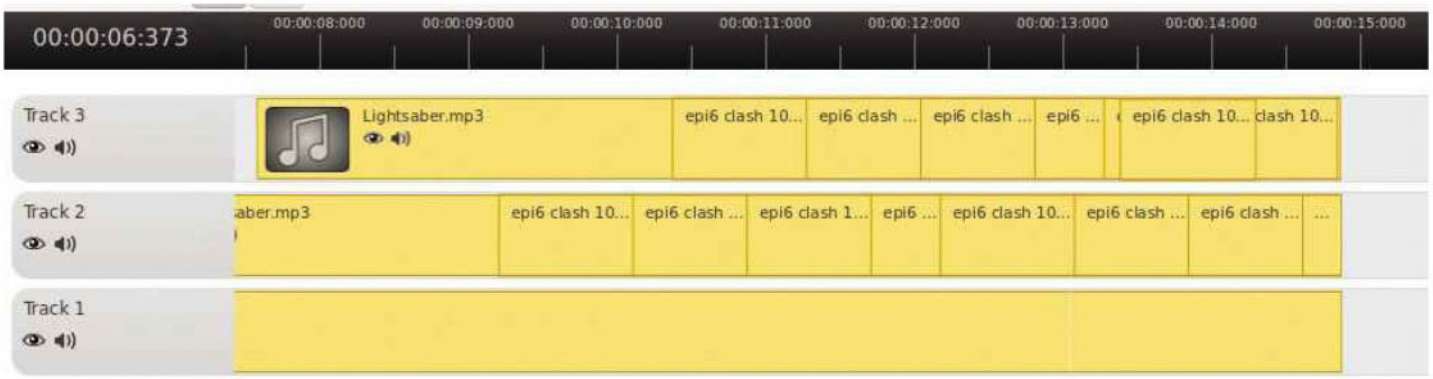


Fig. 14

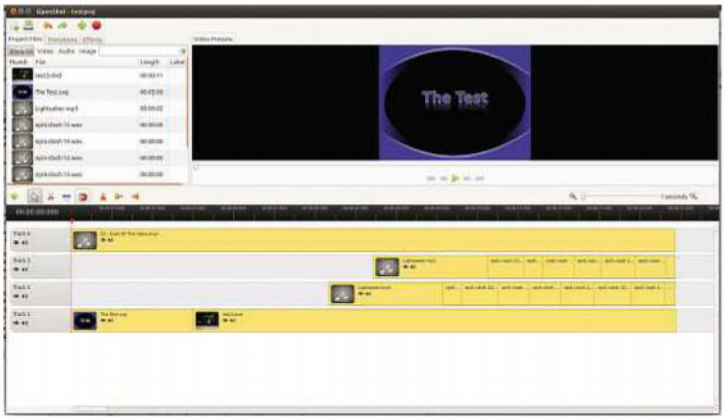


Fig. 15

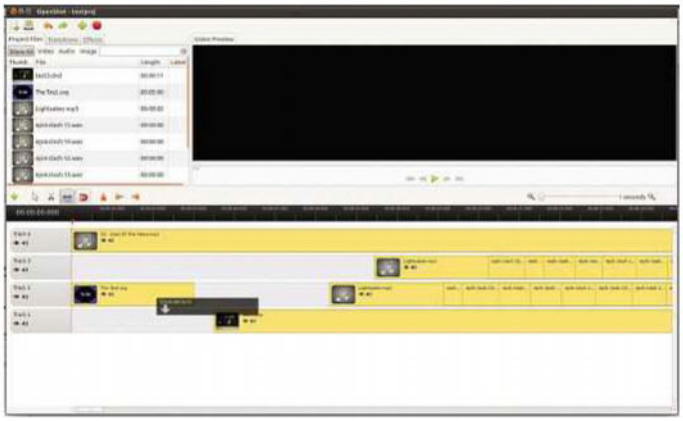


Fig. 16

loads of other options, but the slow fade makes a nice overall effect to the whole video.

Extras

The aforementioned fade in/out is one extra you can add from the right-click menu. For example, on the title yellow box, right-click and select Animate > Bottom to Top. This will scroll the title from the bottom of the screen to the top during the amount of time allocated to that clip, which reminds me of the scrolling introduction story that you see at the start of the *Star Wars* films.

After a quick adjustment to the title, I now had a very rough but vaguely similar effect on my video as well.

Transitions And Effects

The Transitions and Effects tabs, next to the Project Files window, contains a number of interesting animations that can be added to the video to help change scenes or roll in another shot, for example.

As you can see on Fig. 16, I changed the title from Track 1 to 2 and separated it from the main video, then from the Transitions tab I selected the 'Circle out to in' function and dropped it between the title and main video.

The added transition shows the title, which expands to a circle, then into the video while the music fades in. The same goes for the Effects tab: by selecting an effect, such as the cartoon, for instance, and dragging it onto one of the video clips (either the title or the main video), you can alter the presentation.

There are plenty to choose from, but make sure you save before playing around too much, as the temptation to fiddle with the video and turn it into an old sepia footage look-a-like can be too much to resist.

Other than going through each of the effects and transitions, the only thing left to do now is export your finished video, following the same method as you previously used for the sequences of stills to video, and run it on your favourite player. **mm**

Microsoft

Will Windows 9 Be Free?

Mark Pickavance discusses the idea that Microsoft might do something radical with Windows 9 pricing in an attempt to reverse its decline

The fact that I'm openly discussing this idea is an epochal moment, because at no previous point in the history of Windows has making it free been so seriously mooted.

Technically, in certain circumstances, Windows 8.1 is already free: if you're a system builder and your phone/tablet has a retail cost of less than $300 and a screen size smaller than nine inches or if you ship a system with Windows 8.1 for Bing.

For the rest of us and PC makers, Windows has never been free, and the retail cost of adding it to your system isn't a minor expense.

So what's changed? A number of critical things, not least that in the past few years Microsoft Windows has fallen from being the most common computer OS in use.

Part of that story is the rise of the mobile computing device and the corresponding decline of the desktop PC, but also Microsoft has made some versions of Windows that haven't been successful in the way the company wanted or predicted.

For probably the first time in the last 30 years, the graphs of sales, costs and market penetration are all sloped the wrong way for Microsoft. People are talking about the 'post PC era' and how after a couple of major stumbles, Microsoft isn't the relevant force in technology it once was.

This level of difficulty requires a radical rethink of the ways that Microsoft makes money and involves its customers. One possibility

is to make the next version of Windows free, removing one of the barriers to widespread acceptance.

But that isn't the only possibility open to Microsoft that might shake up the new status quo, which sees it becoming increasingly marginalised.

Let's look at the various scenarios and see what the implication of each is in the overall scheme of things.

Windows 9 Free To Windows 8 Users

This option I'd categorise as the 'apology approach', where those people saddled with the last abomination get to be first in the queue for the next one. Typically, when Microsoft launches a new OS, it usually provides upgrades to people who recently bought its previous release.

Given that Windows 8 wasn't a big success, the actual number of licences it would be giving away wouldn't be huge, and by converting all of them to Windows 9, it would make this new OS look like it's doing better than is actually the case.

It would also allow Microsoft to curtail Windows 8 support, saying that users have a free upgrade to Windows 9, which will be supported. It did something similar with 8.1 recently, where you needed to install 'update 1' to continue getting patches.

However magnanimous this might sound, it still might cause problems, dependent on what features from Windows 8 Microsoft decides not to retain with the next release.

> **"The way that expectations are being managed, Windows 9 looks more like Windows 7.1, and not Windows 8.2, even if that isn't really the situation"**

The current consensus is that Windows 9 won't have the charms bar any longer, and it also might radically alter some things a few people actually use.

The historical precedent for this type of activity is good, as Microsoft has often added much promoted features and then quietly forgotten them down the line. Yet Windows 8 flew in the face of previous Windows releases, where it maintained old models (like Program and File Manager in Windows 95.x) to help users migrate.

The way that expectations are being managed, Windows 9 looks more like Windows 7.1 and not Windows 8.2, even if that isn't really the situation.

In sales terms, that opens up a chasm between the seller and purchaser, as you're offering the customer something he/she probably thinks they should have had first time around. Windows 7 was often described as 'Vista as it should have been', and asking people to pay for Windows 8 fixed might be a real challenge.

Making it free is also an admission of failure – something corporate entities find it remarkably difficult to make, instead usually choosing to pin that tail on previous management.

The difficulty of framing this option is probably why it won't be offered, even if it is probably justified in this instance.

There's also an argument that Microsoft didn't offer this with Vista, so it's unlikely to offer it this time around.

Windows - The Hard Facts

Microsoft is remarkably cagey about Windows sales figures, so much of what is known about sales is interpreted from web browsing data. This tells us what operating systems are being used by those surfing and if their relative volumes are increasing or decreasing.

What confuses matters somewhat is that many corporate customers have a licensing scheme where they can buy a PC with a 'licence' that Microsoft assumes is Windows 8.1, but then the company can downgrade to whatever it would like to use.

Because of that, the web logistics provide a more accurate picture, even if they don't include computers that never connect to the internet or are used exclusively for a specific application.

Here are some of the important details of what we know about Windows usage and what part it plays in Microsoft's commercial profile:

- 60% of PCs are sold without an OS installed.
- Microsoft made $77.8 billion last year, Windows and Office representing 78% of the company profit.
- The largest growth markets in the world, like Brazil and China, account for less than 2% of Microsoft's turnover.
- In the past two months, both XP and Windows 7 grew their market share, and Windows 8.x shrank by a tiny amount.
- Nearly two years after launch, Windows 8.x (8.0 and 8.1) has 13.29% of the market, whereas XP still has 24.82% and Windows 7 a whopping 51.22% share of the desktop OS market.
- In the past six months, Windows 8.x desktop share has only increased by 2.73%, while Windows 7 grew by a percentage point more than that.
- The percentage of tablets using Windows is so low (less than 0.1%) that it doesn't appear in general statistics.
- Desktop use of Windows is at 91.68%, but most of that is made up of versions you can't currently buy installed on a PC or in retail.
- The removal of support from XP has had little appreciable impact on its popularity.
- A year after Windows 8.1 came out, more than 70% of Windows 8 users are still using that release and chose not to upgrade.

Should it happen, it will be a strong indicator of how seriously Microsoft is taking the public reaction to Windows 8 and how far it's willing to go to address it. It might offer a very cheap upgrade option as a compromise, but that might not be enough to redeem it in some quarters.

Windows 9 Is Also Free To Windows 7 Users

This is the equivalent of the 'better together' campaign, bringing most Windows users to a new starting point.

However, it's a very expensive choice, and it could backfire badly. The danger is that those who use Windows 7 (like this writer) will feel that they're being conned out of the OS they wanted for one they don't. A rebuff by Windows 7 users would be very damaging to both Microsoft and Windows 9, and it probably wouldn't work in unifying the majority of Windows user under a common platform.

Fragmentation of any underlying user base is a problem for all system makers, and as Windows 7 users are the most numerous group then, they're the people you need to convince if unification is to be possible or practical.

What makes this writer think this isn't a possibility is that the Windows 7 users represent the untapped market for future OS sales, and bringing them to Windows 9 for free would be relinquishing that income unnecessarily.

While not all Windows 7 users will upgrade to a future version of Windows, many might if they felt it addressed their concerns about Windows 8, like Windows 7 did with Vista. Traditional Windows 7 users want a Start menu and a desktop, and they're not remotely interested in full-screen Metro applications. If Windows 9 can give them that and some other advantages, then they might happily accept it, especially for free. Otherwise they'll let the new OS spin in the wind, just like they've done with Windows 8 for the most part.

The logical extension of offering free upgrades to Windows 7 is to extend it back to XP users, but that's a very big step. Along with the cost implications, there are two major problems with that notion.

For one, a great number of XP users are using that OS on the PC it came pre-installed on, so this hardware isn't really ready for Windows 7, 8 or 9. Offering users a free OS that they can't install on their PC might well upset them, especially when they've trashed their working system trying to upgrade.

The other point about XP is that there are a very large number of users who are running this OS pirated, and there's a question about if these would be upgraded or only properly activated installations. But seeing as you can't even upgrade from XP to Windows 7 using Microsoft's own tools, this wouldn't be an upgrade that most users would be capable of performing.

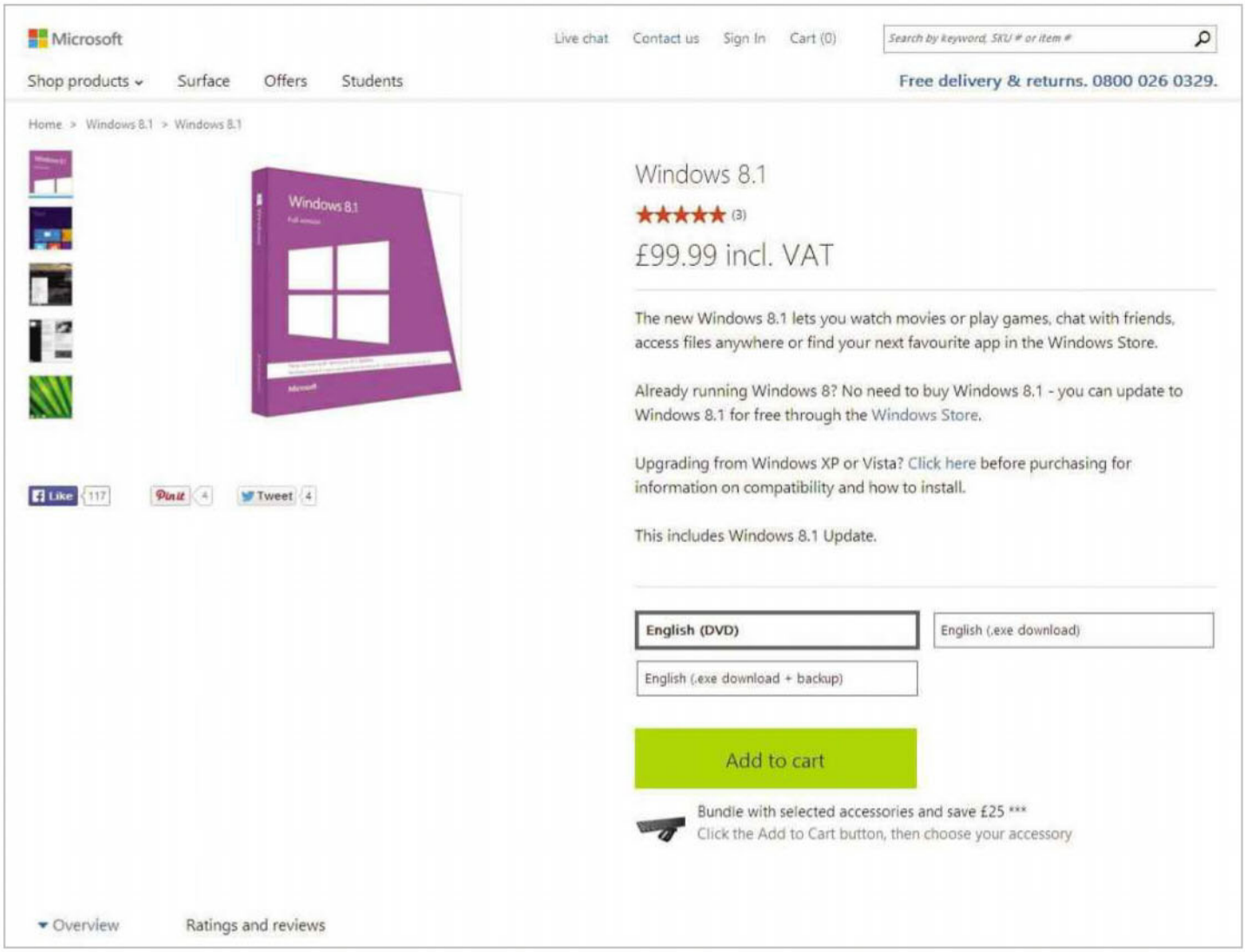
A geographic location where Microsoft isn't succeeding currently is China, which has a very high level of pirated XP use. Bringing those users into future plans would be a major coup for Microsoft, but that would probably mean that it would need to forgive past sins.

Therefore, a free upgrade from Windows 7 is a stretch, and from XP is well beyond a reasonable expectation.

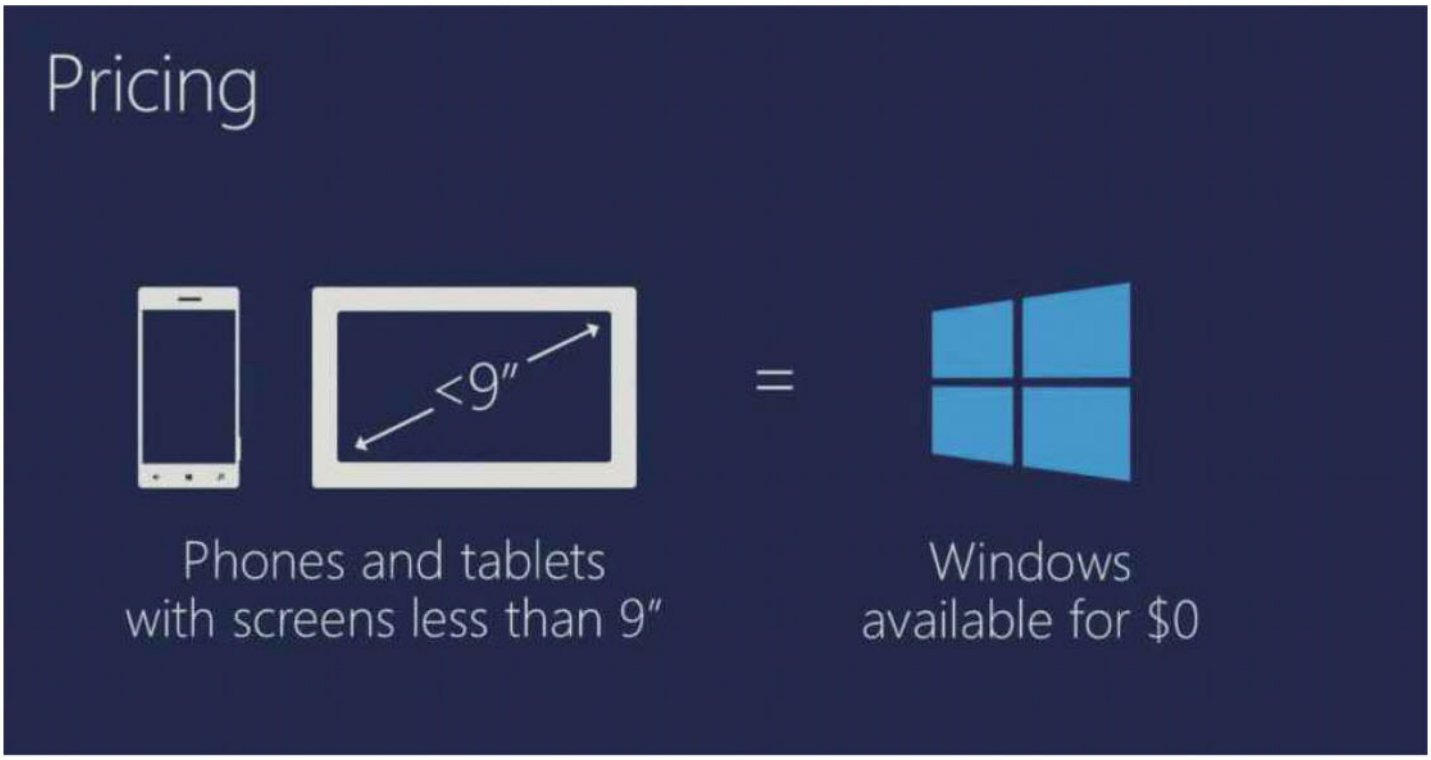
Windows Is Free From 9 Onwards

This is a bit like the M.A.D. (Mutually Assured Destruction) plan that those with nuclear weapons worked with under the cold war. Under it, Microsoft gives up any pretence that Windows is a commercial proposition and instead makes it freely available in an attempt to control the ecosystem and have a natural place to sell Office.

I can't see the Microsoft shareholders accepting this option, because it would cost a huge chunk of revenue and massively devalue the intellectual property of the company. It would also hint at the true scale of the difficulties the company is facing from Android, and those concerns combined could slash the stock value overnight.



Windows 8.1 costs the best part of £100 today, but will Microsoft offer a refund to you if it becomes free tomorrow?



A slide at Microsoft's Build 2014 hinted that the gloves might be coming off in the Windows vs Android war

On the flipside, it would no longer need to maintain the painfully annoying activation model, Windows user numbers would soar, and PC makers would be able to slash the cost of their systems that include a Windows licence. If the pirating of Microsoft's most popular products ended almost overnight, it might also finally call time on the seemingly immortal OS Windows XP.

Or it would, if there wasn't an inherent problem with Windows 9 working on systems that were designed a decade or more ago. People would be tempted to try to stick the free release on all manner of old PC equipment it was never designed to work with and then share their pain with customer support.

> **"If the pirating of Microsoft's most popular products ended almost overnight, it might also finally call time on the seemingly immortal Windows XP"**

That's one problem, and there are others. When comparing Windows to the likes of Android, it's worth noting that, in general, Google doesn't provide a version you can install on your home PC. Instead, it provides a development environment that allows device specific versions to be cooked up by people who can then address any stability and performance issues before the public uses the final product.

There are people skilled enough to make their own distro, and it's possible to run Android on PC hardware, but that's not where Google is commercially.

Making a product that's user friendly enough to install on the very wide range of PC architecture is a wholly different problem and one that Microsoft hires a very large software engineering team to solve.

Having all those people working away to deliver a totally free product wouldn't make business sense, unless you somehow managed to get others to sponsor the effort either with advertising or other monetisation.

Microsoft recently tied Bing to Windows with 'Windows for Bing', the free version that it's licensing to system builders for cheap devices. However, Bing has been a vast money pit for Microsoft, and it doesn't really want any more of those.

Of all the options, this seems the least likely, mostly because it would be trading one uncertain future for another that is more difficult to predict. It also wouldn't stop the rise of Android in the mobile space, because Windows Mobile is free, and that hasn't helped that OS gain any significant market share.

Doing this would be a huge gamble, as the whole future of the company would entirely swing on the public embracing the move or not.

Windows Is Free To Emerging Markets

I've thrown this one in because it's another idea that's been widely floated. There has long been a problem in countries where the cost of Windows is several months' average wages.

Making it free to emerging markets would increase the popularity in those locations, but it wouldn't do much to fix the greater problems elsewhere. The backlash in developing countries might also be substantial, because people might wonder why they have to pay while others across a nearby border get it free.

How this would be managed would also need to be considered, because free activation by region wouldn't take long to circumvent, I suspect.

Windows 9 Won't Be Free To Anyone

It's worth noting that the rumours circulating Windows 9 are just that, until they turn into some form of reality. Based on the past 25

or so years, Microsoft expects money for Windows, and breaking that tradition seems unlikely.

The problem that Microsoft watchers have is that the company can make some very erratic changes in direction as it moves towards a big announcement, with very little notice.

There have been two big examples of this recently, one of which Microsoft now admits and the other that it's tried to spin never occurred.

The first of these was the launch of the Surface Mini, which until two days before the reveal of the Surface Pro 3 was going to happen. The machines were created in large numbers, at least thousands, and prepared to be given to the US journalists at the launch.

> **Microsoft is in the midst of fighting a rear-guard action, where it's already seen Windows' dominant position substantially eroded**

And then supposedly, Satya Nadella went cold on the product and stopped the whole launch dead. Normally, we wouldn't hear about this sort of mess outside Microsoft, but it was forced to admit this one because of the write-down of manufacturing costs in its latest SEC stock market paperwork.

Only a few weeks later, it had a repeat of this type of tactical swerve, when it downgraded a group of updates that had previously been labelled as 'Windows 8.1 update 2' into arbitrary patch-Tuesday changes. It did this because originally some important changes were in this bundle, including the return of the Start menu proper. But this is now being held back for Windows 9, as a lure to get people to use that release.

What was super-annoying about that change was that Microsoft had the temerity to suggest on their Windows 8 blog that those who had reported the imminent release of 'update 2' were making the story up. However, multiple internal sources have verified that the reported plan was exactly that until Microsoft suddenly decided not to execute it. Spinning things into the best possible light is one thing, but rewriting events to make you seem more organised isn't very credible.

Because of its lack of general conviction, probably due to some of the very poor choices it's made in the past few years, a strong rumour that it will offer Windows 9 cheaply or free might not make it through corporate discussions to becoming reality. Or, as has been suggested by a few, it's Microsoft that is initiating this discussion, to see how people might react to 'free Windows'.

If it happened, then many people would salute Satya Nadella for doing something radical, though the impact on the profitability of Microsoft in the short/medium term could be huge.

Windows As A Service

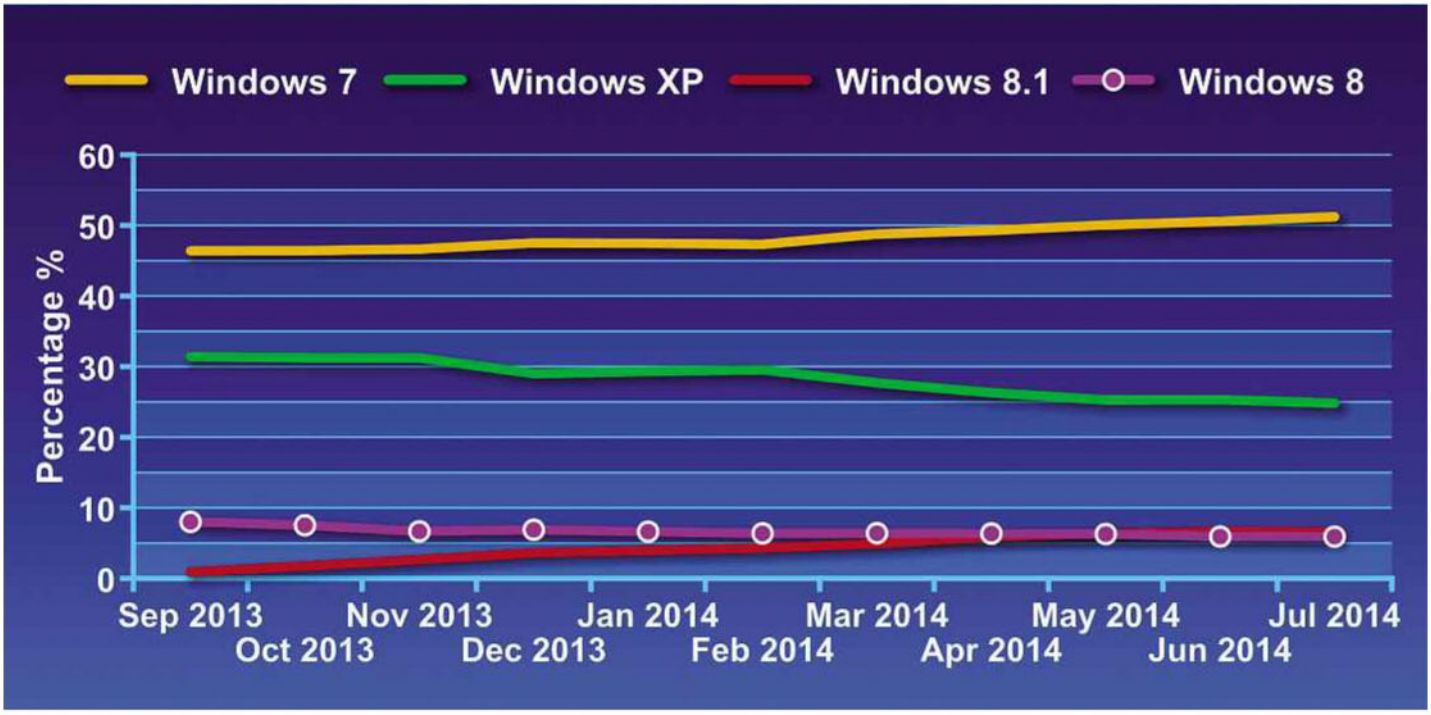
Much has been made about Microsoft's ambitions to become a 'devices and services' company, though very little solid information has been forthcoming about what that actually means in reality.

What we do know is that it's made efforts to shift Office users from the traditional point release model to a subscription solution in the form of Office 365.

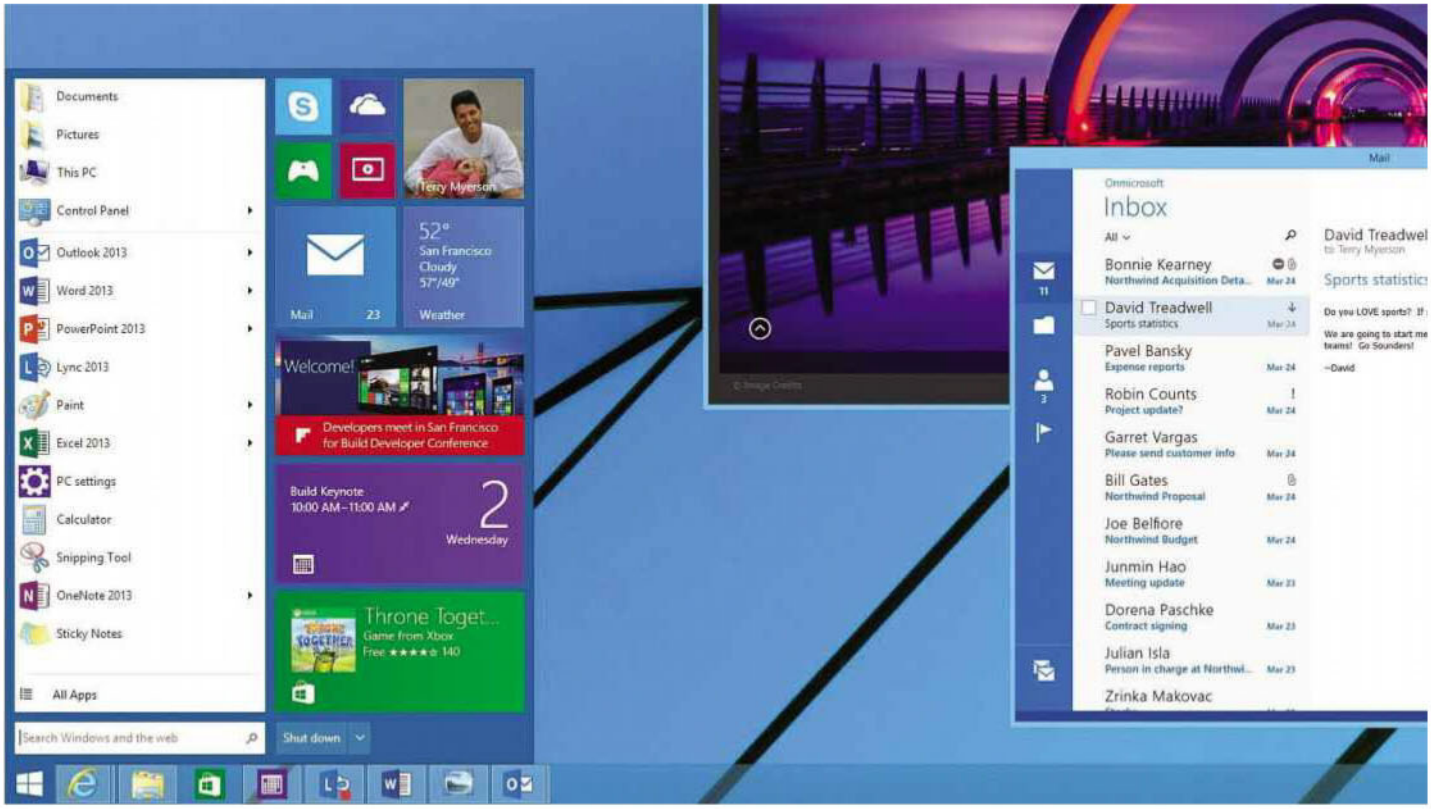
This works well for business users, who can tailor their subscription costs to the number of users, should they wish to expand or contract their workforce. Where it's less compelling is for home use, where most people don't like monthly bills for something they might only use occasionally.

What Microsoft hasn't been brave enough to do is grasp the subscription model in the way that, say, Adobe has, making it the only option for future product releases.

So Windows as a service: would that work? Again, for business users it might, though it's worth accepting that they've almost entirely rejected Windows 8.x, and therefore the lure of always having the latest release could actually work against it in a corporate IT



The trend for Windows 8 shows that it died almost out of the blocks, and Microsoft will need to do something drastic to avoid long-term damage



▲ *Various demo images of Windows 9 prototypes have appeared on the Internet. Many show that while Stardock was able to add this feature with Start8 while Windows 8 was in preview. It's taken Microsoft two years after launch to get to roughly the same place.*

environment. Business users don't want change; they want solutions they can support long term without retraining.

For home users, the idea that if you can't pay your bills your PC, which you bought and paid for, then it stops working seems problematic. It's also a problem if you don't often have access to the internet, a brick wall that Microsoft previously ran headlong into with the Xbox One.

What might be plausible is a small cover charge for updates and upgrades that you don't get if you don't pay it. But that's a long way from getting people to pay £5 a month or so for the privilege of having the latest release, when most of the time all you're using is the web browser.

If anything, this scenario reveals the complexity of the Windows problem, because one solution might work for one customer and not for another.

Final Thoughts

Microsoft is in the middle of fighting a rear-guard action, where it's already seen Windows' dominant position substantially eroded. Because of that, the 'do nothing option' isn't one it can really take any longer. It's time for action, and to turn this around will require a very bold move.

The direction it does choose will be directly influenced by how it sees things progressing from this point, and if Microsoft truly believes that Windows' dominance can be restored. If it thinks it can, then it won't want to devalue it by making it cheap, even if it thinks Windows 8 customers deserve some sort or recompense.

Conversely, if it thinks that the marginalisation of Windows is inevitable, then Windows only serves the purpose to keep Office income streams alive, so it's effectively disposable to that objective. Up till now Microsoft has had two cash-cows, Windows and Office, and it might be time to choose which one the future of the company depends on and sacrifice the other.

While making Office free would make Microsoft very popular, it wouldn't address the fragmentation it's seen in its user base or help sell a future version of Windows. Therefore the only real choice is to offer up Windows as the loss leader and hope it keeps Microsoft relevant for a few more years.

The nightmare scenario for Satya Nadella is choosing to make Windows free or very cheap and still having the customer base reject it for an OS agnostic future. It comes down to competing against 'free' and how that works in the long term.

Microsoft might have been lulled into a false sense of security by the general failure of Linux to gain much traction in the desktop space, while it ran rampant in the mobile sector, which it almost entirely ignored.

The argument against making it free is that it's still delivering billions of dollars in revenue to the Microsoft coffers each year, even when it's not doing very well. Even a managed decline is worth something, where making it free only guarantees that it becomes an expense, not an income generator.

Whatever it does, there isn't any going back from this choice, because once Windows is free, it can't suddenly revert to being a retail product again. Once customers get something for free, they won't be inclined to pay for it again if they can avoid that.

If anyone thinks you can do that, then consider what would happen if Microsoft made Internet Explorer a paid-for application. It wouldn't be pretty.

Having written about Microsoft for approaching 30 years, I can say with some certainty that whatever it does, it won't fit into any of the neat boxes I've presented. And it's unlikely to be the complete answer to the challenges that confront the company.

I'm confident that at some point Windows will be free, though I've yet to be convinced that Windows 9 is likely to be that version.

Microsoft just isn't desperate enough – yet. **mm**

Magazine Apps For iOS

Catch up with the net's most interesting stuff, with this week's selection of six reader/magazine apps

This week's group test is odd in that it's about a type of app for which there isn't an agreed nomenclature. Some people call them magazine apps, because their goal is to present the most interesting content the internet has to offer in a layout that's similar to traditional print magazines. Pictures are typically big, text is usually arranged into columns, and there's little if any other on-screen clutter such as adverts. However, the apps don't provide access to actual print magazines, which are an entirely separate affair and catered for via apps like Newsstand.

Some people refer to them as reader apps, because that's what they're designed to let you do. However, for veteran computer users, this raises memories of apps designed to hook onto a website's RSS/Atom list of latest articles. Indeed, some apps below do allow this, but mostly the stories you see are determined by an arcane mixture of popularity, human editorialisation and computer learning. It's the mix of these components that can make or break an app, in fact.

As usual, the apps below are available in the App Store and are free of charge, although some offer in-app purchases.

Flipboard

The original magazine app that's since been cloned by others, Flipboard is one of many apps that couldn't exist were it not for the ergonomic designs of phones and tablets. It relies on the touch interface of a tablet to turn virtual pages, for example, and the content it delivers is designed to be read at leisure while lounging around.

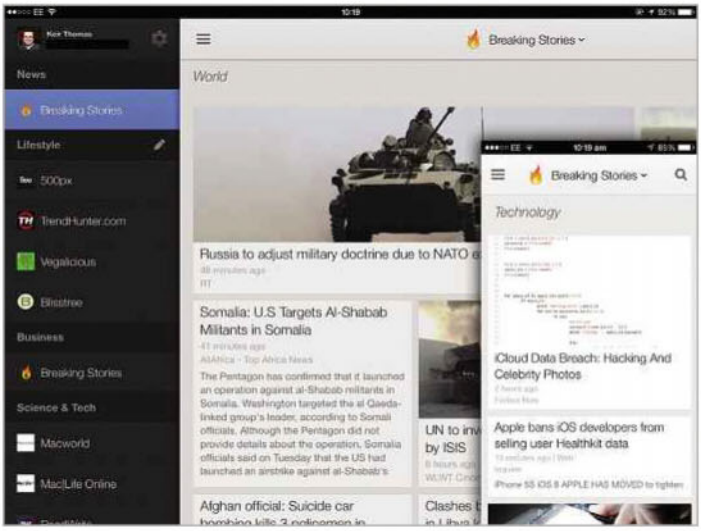
On start-up Flipboard asks you to choose broad interest areas, such as Politics, Food, Photography, Design, Science, cars and more. The News category is rather sensibly already selected, as is a special category called Flipboard Picks, which is the articles that Flipboard staff themselves think are worthy or that have proved popular with other users. You can also integrate your Facebook and Twitter feeds by signing in through the app.

Once you've created an account or signed in via Facebook, every time the app starts, a large illustrated tile represents each topic area. If there are more than enough tiles to fill a screen, then the user can 'flip' between screens by swiping from right to left on a tablet or from bottom to top on a phone. This is accompanied by an animated page turn, and the gesture is key to using Flipboard.

Instead of selecting an interest tile, users can also tap Cover Stories, which takes the best of all the chosen interest categories.

Once you're viewing a category, headlines are shown alongside images. Some stories are shown alongside excerpts, while others have no excerpts at all, and this appears to be decided

Flipboard is one of the rare apps that gives an entirely new use for a tablet or phone, and it's lots of fun to boot



Google Currents lets you browse the content of hundreds of sites in an easy-to-follow magazine-style layout

via complicated design algorithms that make what you see look attractive. Once again, you can flip through multiple screens of headlines, and once you select a story you can flip through pages of its content. Once you reach the final paragraph of a story, flipping again will move you to the next story. A progress display is shown at the bottom of the screen.

The content you discover is usually text articles but can include photo slideshows or videos.

> **Flipboard is a clever piece of work, yet it keeps things very simple**

If you've signed into Facebook or Twitter, then updates appear alongside the headlines, which is slightly surreal. You might see a headline about the war in the Ukraine alongside a headline of your friend talking about how clever his new kitten is.

In addition to interest areas, tapping the red ribbon icon lets you select individual sites and real-life magazines or newspaper websites to add to your feed. Via the menu, specific interest areas can also be subscribed to. Rather than simply subscribing to sport, for example, you might choose to subscribe to tennis or bicycling.

A handy feature is the ability to add stories to your own 'magazine' for reading later, even if you're offline.

Flipboard is a clever piece of work, yet it keeps things very simple for users. Like all classic apps, it offers a new way of using your phone or tablet.

Google Currents

The status of this app is a little unclear. The Android version of Currents no longer exists, having been replaced with Google Play Newsstand, which combines the same 'magazine' experience found in Flipboard with the ability to subscribe to the electronic editions of real-life magazines. On iOS, however, an app like that is problematic because of Apple's request for a revenue split on purchases and subscriptions, so iPhone and iPad users are still stuck with the older Currents. Not only that, but the app hasn't been updated for iOS7, which pushes it perilously close to abandonware.

And that's a shame, because this is a solid app. Unsurprisingly it ties into your Google account, and on first use it subscribes you to a handful of online news sources, referred to as Editions, including The Guardian, The Telegraph, New Scientist and talkSPORT. Other editions can be added by tapping the Add Subscriptions button, where you'll find literally hundreds of additional websites listed (although not interest areas, as with Flipboard). We're not sure, but we suspect Currents works by tapping into the RSS/Atom feeds of sites, which would make it a traditional news reader at its most basic (and it was blamed for the death of Google Reader a few years ago). However, adding your own choice of RSS/Atom feed to Currents appears to be impossible, and you're stuck with Google's predefined list.

In addition to news sources there's a handful of Breaking Stories feeds in each category that pull information from the major news sites, even if you're not subscribed to them.

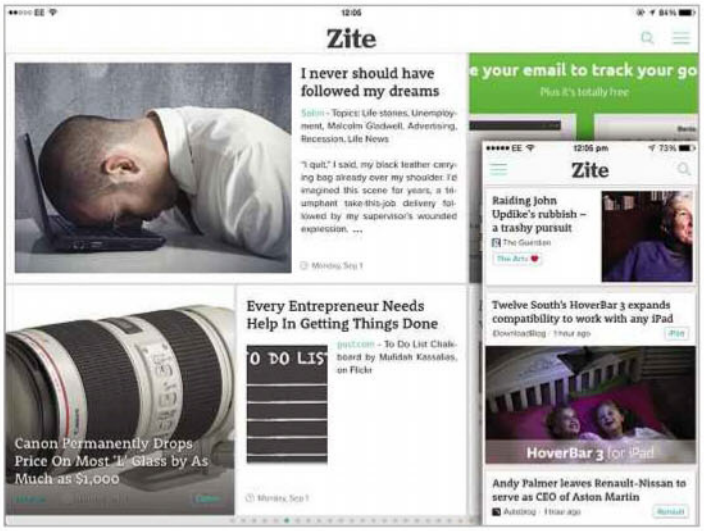
Although the concept for the app might be stolen from Flipboard, the actual flip gesture to navigate wasn't part of the haul. Instead, you must drag up and down to move to the next page when reading a story. For reasons best known to Google's developers, you can't scroll line by line, as you might on a website. Instead the entire page scrolls up, to reveal the next page. It's a little jarring. Why change a user interface rule that's been well established since the birth of computing 30 years ago?

When reading a story, a toolbar appears at the top of the screen when you tap the area or scroll up, offering the ability to share the article, although this only shares a small summary and a link (plus an advert for Google Currents, of course). On the iPad, you can also tap a star icon to save a story for reading later, although on the iPhone this doesn't appear, and although there's a 'Saved' category in the list of sources, we couldn't figure out how to add anything to it.

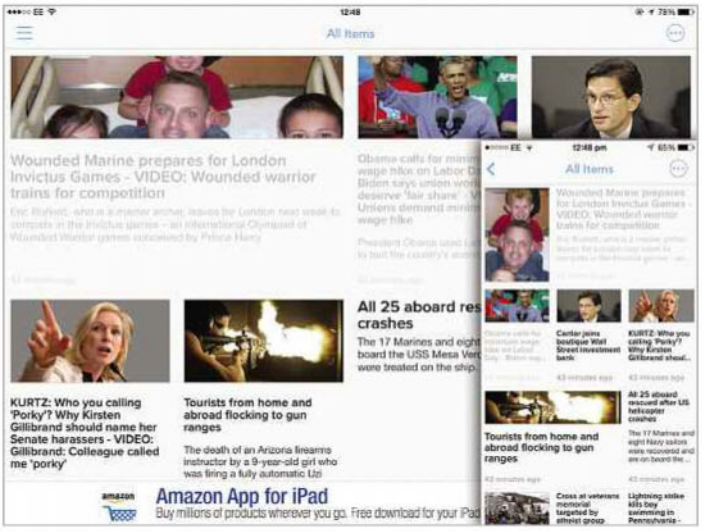
Compared to Flipboard, which is the leader in this app category, Currents offers a more surgical approach to reading actual sites in a magazine-style layout. Some people will love this, but the organic experience of discovery provided by Flipboard is arguably more effective.

Zite

As with Currents, one gets the impression that the Grim Reaper has Zite installed on his iPhone. The app was purchased by Flipboard in March this year, and its maker says it now has a strictly limited lifespan, while it slowly merges into the parent company:



With its machine-based learning principles, Zite should be one of the better apps here, but it's let down by poor article layout



Newsify takes the traditional route of hooking into RSS/Atom feed,s but still aims to magazine-ify headline listings

"at least six months," it said, so the end is near. However, Zite is still available now, likely for a little longer at least, and it's certainly worth a look.

Starting the app for the first time involves choosing Topics (interest areas), and this is one of Zite's main boasts: rather than simply letting you view website stories in a magazine layout, like Currents or, to a lesser extent, Flipboard, Zite aims to collate together any and all interesting online articles related to your interests. That story might be from a major news source or a barely read blog. Rather cleverly, during this setup stage you can link in Twitter, Facebook or Pocket, and Zite will scan your old postings and suggest Topics.

This cleverness extends to reading stories, because Zite aims to learn the kind of thing you like. When viewing an article, tapping the thumbs-up icon on the toolbar at the bottom of the screen lets you tap heart icons alongside tags that have been attached to the article. Read a story about the iPhone, for example, and you'll probably see tags for iOS, iPhone, Apple, mobile technology and so on. Tapping any will steer Zite's future selection of articles.

Headlines are shown as a series of tiles, as is the case with most magazine apps reviewed here, and tapping any will open it for viewing. Perhaps surprisingly, the story is then displayed in almost exactly the same way as a web page, with a large picture at the top and text beneath that's not arranged into columns. This is fine, I guess, but perhaps indicates that Zite's interest is in tailoring news feeds, rather than presenting stories in a beautiful fashion.

Indeed, this is Zite's biggest problem. Often it simply grabs the wrong pictures from the source web page, meaning that strange images appear. Sometime pages don't appear at all – tapping the headline in the list simply opens a blank page with a headline and a button that lets you jump straight to the website concerned. This can be frustrating in everyday use – a little like eating popcorn and crunching down on an unpopped kernel every now and again. It makes you want to stop eating popcorn.

In other ways, the app has some useful features, including the ability to share stories with others via email, Facebook, Twitter and so on.

Newsify

Of all the apps here, Newsify is the most traditional in that it's essentially an RSS/Atom feed reader, although it takes a leaf out of the magazine app's book in that headlines are presented in a tiled list, and a ready made and very extensive list of RSS/Atom subscriptions is available, avoiding the need to mess around inputting URLs (although you can still do so if you wish). The list is arranged under the usual category headings, such as News, Technology, Gadgets, Sports, Business, Finance and so on.

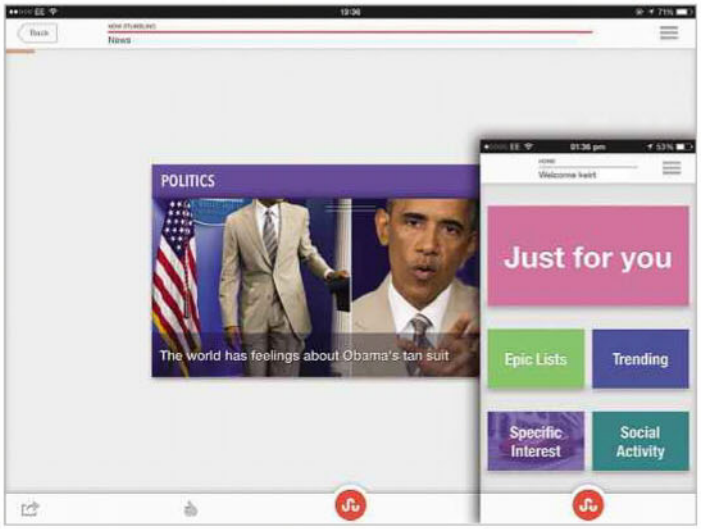
> **"You too can be part of the community by voting up or down what you see"**

Alas, the use of news feeds has a serious downside in that few websites offer the full text of each story via their feed. Usually an image and summary are offered, with the idea that users then click (or tap) through to the website to view the whole thing. The result of this in Newsify is that when you tap a headline in the tiled listing of stories that appears when you select a source in the list at the left, you then typically see only the summary and a large photo and must tap the headline again to open the actual story. No attempt is made to 'magazine-ify' the page you then see; it looks just like it would in any browser. However, a concession to ease of use is that you can simply swipe from left to right to view the story, rather than tap the headline.

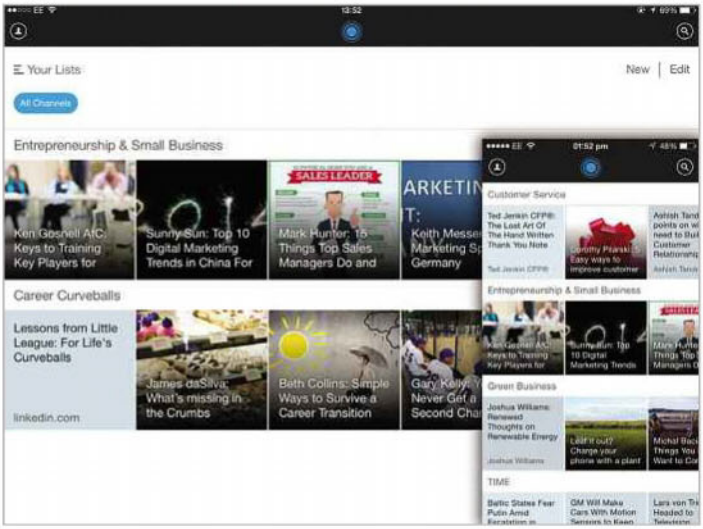
Stories that you've already viewed become greyed out on the main headline list, which is a welcome touch, although tapping the circle icon on the toolbar at the bottom of the screen when viewing a story lets you mark the story as unread – useful if you start reading but get interrupted. You can also star stories to add them to a reading list and share them with others in the usual way via email and Facebook.

All unread items, regardless of their source, can be viewed by selecting a heading in the column at the left. However, this is the only way to mix stories from the different sites you're subscribed to. Usually you're limited to viewing headlines organised by the site they come from.

A nice touch is that your list of subscribed feeds syncs automatically via iCloud. Just install the app on another device and, hey presto, it'll automatically sync without the need to sign in or register.



StumbleUpon lets you find random yet popular sites and stories that match your interest areas



LinkedIn Pulse takes the magazine app concept and bends it around to show mostly business-oriented stories and info

This is the only app here to use advertising, which appears as a bar along the bottom of the screen. Perhaps it's just me, but I always feel this cheapens the feel of an app and makes me less likely to use it.

StumbleUpon

Irritatingly difficult to encapsulate, StumbleUpon (**www.stumbleupon.com**) is one of the oldest and most popular website rating services in existence. In addition to voting up or down sites, users can 'stumble on' sites or stories proving popular with others, so StumbleUpon is a popular jumping off destination for those who want to see what the web has to offer – or who are simply a little bored.

The StumbleUpon app accidentally treads into magazine territory by letting you choose from a series of interest areas and then presenting to you the most interesting stories pages or sites therein. The big difference compared to magazine apps is that no attempt is made to reformat the content of each article to 'magazine-ify' it. Clicking a headline takes you to the site itself, still within StumbleUpon, although the page is often reformatted for mobile devices so includes less clutter compared to viewing on a standard browser.

Once the app starts, you're invited to tap interest areas and then create an account. Following this, a small image from a page or site appears in the centre of the screen, alongside its headline. The page loads automatically in the background. Tapping the image lets you read the story, while swiping left or right will switch to the next 'stumbled on' story, and you can keep doing this until you find something you're interested in reading. Alternatively, rather than swiping, you can tap the SU icon at the bottom, which does the same thing.

The sites and stories shown to you are based on your interests, but you can also filter specifically by interest by tapping the menu icon at the top right and selecting the filter option. Also, you can switch to viewing trending sites and stories from all interest areas or switch solely to photos, videos or news stories.

You too can be part of the community by voting up or down what you see, and you can also share it via the usual methods, including Facebook, iMessage and email. All this is achieved by a small toolbar at the bottom of the screen.

There's a lot to recommend StumbleUpon for as a service for those who need their internet fix in as pure a form as possible. The StumbleUpon app somehow makes it even more fun and accessible and is highly recommended.

LinkedIn Pulse

Formerly a magazine style app in much the same vein as Flipboard, Pulse was recently purchased by LinkedIn and now has a slightly different focus. This is apparent as soon as you're invited to choose your interest areas when the app first starts, because many are business-oriented or at least professional in nature. For example, Ted Talks: Business heads the list of topics, displayed as a series of tiles, and other choices include Big Data, Career Curveballs and Entrepreneur. Also included in the list are popular websites like Business Insider and even more casual sites like Gizmodo, Engadget and National Geographic. The entire list is ultimately short, however, and nowhere near as extensive as other apps reviewed here.

On the iPhone, the list of topics appears as a tile grid alongside descriptions, but for some reason these descriptions are omitted on the iPad. Instead you're expected to guess from the icon what the topic represents. A baseball icon represents the aforementioned Career Curveballs, for example, but what about a man in a white suit sitting in a chair using his laptop? That one would be Entrepreneurship.

The tile-based approach is carried through to the headlines list, and a welcome design touch compared to other apps is how the stories are arranged under the topics list you chose earlier. Tapping a tile opens that story for viewing full screen, and the layout approximates a particularly clean and clutter-free website in that a large picture is displayed, beneath which is the body of the article.

Users can create Lists as a further way of organising topic headings. You could create a list for work-related topics and a second list for break time reading. Once a list is created, it appears as a button and filters the list accordingly.

Each story can be voted up and commented on, although this requires you to log in with your LinkedIn account. You can also share the article via your LinkedIn profile, as well as Facebook, Twitter, email and iMessage.

Some of the content comes from LinkedIn itself, with particular reference to the series of LinkedIn Influencers – interviews with VIPs and celebrities.

In some ways LinkedIn Pulse feels like The Economist of magazine apps and, who knows, using it might give you the business advantage you require. **mm**

PC Tip Of The Week

Virtual Wi-fi in Windows 7

A request for software based wireless routing this week

We had someone ask us recently how to set up a virtual wi-fi hotspot, so we thought we cover it here.

Creating a software-based wi-fi router can be a tricky business. There's plenty to take into consideration, and the overall effect isn't too brilliant once you've spent the time getting it all up and running.

Largely this is due to the problems that many third-party programs heap on the network controller and protocol stack in Windows, but if you're running Windows 7, then there could be an alternative.

Virtual Wi-fi

There's a generally unknown feature in Windows 7 called Virtual WiFi, where the operating system can create a number of virtual wireless adapters, provided you have the right drivers in place to begin with. The end result is any wireless device being able to attach to your virtual wi-fi and having access to the internet through your PC.

Granted it may not be too relevant in this day and age, but it's an interesting project and one that can have some uses.

What To Do

Start off by dropping into an administrative Command Prompt by clicking the Start button, typing in cmd, then right-clicking the CMD.exe link and selecting 'Run as Administrator'.

Next enter the following into the Command Prompt:

```
netsh wlan set hostednetwork mode=allow ssid=EnterNetName key=EnterPassword
```

Replace the EnterNetName with your own wi-fi network name, as well as the EnterPassword with a password of your own creation.

Once you've done that, enter the following:

```
netsh wlan start hostednetwork
```

This will now activate the Virtual WiFi Adapter. Next, enter the Network Connections window, via the Control Panel > Network and Internet > Network Connections, and right-click to enter the properties box and enable sharing through the appropriate tab.

After that, any wi-fi device should be able to see your newly created network and connect through the settings you typed out with the 'netsh' command earlier.

But...

Most of the time this will work without any problems, but as with most computing tasks, there are going to be some who can't get this running no matter what they do. In most cases, the problem is basically down to drivers. While you may have you network card driver set up and running, there could be a motherboard driver that's not present or up to date, especially in the case of a laptop. Likewise, there's also the problem of 32-bit or 64-bit drivers running in a 64-bit Windows setup. Sometimes it'll work okay, other times it won't.

Also, sometimes the virtual wi-fi device is disabled by default in Device Manager and will need to be enabled. And there are posts related to power management, so the device might require 'Windows can turn this device off to save power' to be disabled.

Finally, if it just won't work, then there's a pretty good chance that your existing wireless device just isn't compatible with the virtual wi-fi setup, and no matter what you do you'll never be able to get it up and running. However, there have been times when a simple disable and enable of the physical wireless device will bring it up.

Conclusion

There's a good chance that a fair few of you may have problems getting this working. On the other hand, though, you may not. Either way, give it a try and see what you can do with it.

Problems

If you need any additional help with problems that can arise, then try having a browse through the Microsoft Knowledge Base relating to the Virtual WiFi in Windows 7, which can be found at **goo.gl/vsGoYe**. Or try this, if you haven't already:

- Click on the Start button and select Control Panel.
- Select System and Security.
- Select Device Manager under System.
- Select and expand the Network adapters from the list of devices.
- Find the wireless network adapter and right-click on it to enable the disabled adapter
- Go back to command prompt to run the command again "netsh wlan start HostedNetwork"

Enter your network name and pass key with an admin command prompt

Don't forget to enable sharing on the virtual wi-fi

The Things That Frustrate Us About... BBC iPlayer

Don't give up your TV just yet... Sarah looks at the annoying things about iPlayer

There used to be a clichéd joke about old people not knowing how to work their VHS players. Now, no-one does – or needs to, because between the likes of Sky Plus and on-demand TV services, you don't need to remember to set the video for your favourite show if you're going out. You just series link it, or search for it online when it's more convenient. Brilliant!

Mind you, we're not here to celebrate stuff; we're here to moan about it. So let's take a look at some of the little niggles we still have with the biggest of the on-demand services, BBC iPlayer…

Argh! Time limits

Content on iPlayer isn't available forever, as it would be if you'd recorded it onto a video. There are time limits on all programmes and, if you're not careful, you can easily find you've passed the deadline for watching. Also, it means you can't do a DVD boxset style binge on a series, because by the time the last episodes are available, the first ones probably won't be.

Fix it: Although iPlayer lets you download programmes to watch later, these are also subject to expiry dates – 30 days from the date of downloading – so that's not terribly helpful, either. Basically, you're just gonna have to get organised and watch things before they expire (when I say "you", I mean "me", obviously).

Not All Devices Are Equal

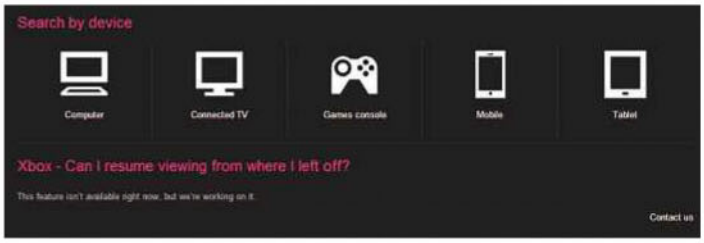
I can't speak for anyone else, obviously, but my telly screen is a lot bigger than my laptop screen – and definitely a lot bigger than my tablet or mobile phone, so it tends to be my preferred way of watching things. Since iPlayer is available for all kinds of devices, it should be totally possible to stream content to my TV – using Xbox Live, for instance. That's where a truly petty and truly infuriating issue kicks in, though: not all iPlayer apps offer all iPlayer features. The Xbox app, for instance, doesn't offer the ability to pick up a programme where you left off. So if, for some reason, a programme gets interrupted, iPlayer will start playing it again from the very beginning (the search function is far from being good, too, but that's a rant for another time).

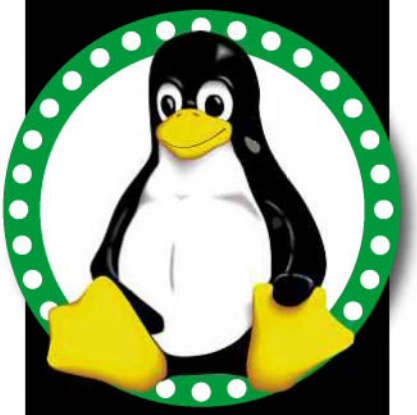
Fix it: To get the best iPlayer experience, you're gonna have to use a proper computer. Which means either watching TV on your monitor, or hooking your computer up to your TV. Possible, but a bit annoying.

Bah! Buffering

No matter how fast your internet connection, at some point you're gonna have to wait for your programme to buffer. Why is this so annoying, considering how fast and useful and convenient streaming services are compared with every other way of watching telly? I can't tell you, but it's really annoying.

Fix it: Go and make a cup of tea, check Twitter or learn to stop being so impatient. Whichever's easiest (probably Twitter, then). **mm**





MakuluLinux KDE 6.0: A Review

The 'Big Chief' gets a fresh KDE look in this newest distribution

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

MakuluLinux has been rising steadily through the ranks of other distros these past few months thanks to the diligence of its main developer, Jacque Raymer.

There are a number of flavours of Makulu (which, incidentally, means Big Chief in Zulu), consisting of Mate, XFCE, Enlightenment and the newest version KDE. Each naturally has its own unique desktop environment, but the core theme behind Makulu is the creation of a stable, sleek, speedy and enjoyable distro that's loaded with packages galore.

MakuluLinux doesn't simply offer the user a fancy desktop sat on the standard build; it goes several steps further to offer a more rounded, easy to use and pleasurable experience for both the advanced and beginner Linux user. For example, when installing to the hard drive, two choices are offered. There's a Classic installation routine, which asks the usual set of questions and allows you to configure the system to your own particular tastes, with the help of Gparted. And the other choice is a New installation routine, which limits the number of questions asked and sorts out the hassles of Gparted for the uninitiated.

Beyond the installation, the next phase that separates Makulu from the rest kicks into life. This involves some heavily adapted and customised scripts that will allow the user to select from a number of choices to configure the desktop. You can change the root password, set up the repository location, check for system updates, set up the dock manager, check for drivers and install additional recommended software – all of which can help ease you into the distro, regardless of whether you're a new Linux user or not.

A Deluge Of Popcorn

For the most part, the scripts run perfectly; the only problem we experienced when performing the post-install setup was the fact that our wired network card failed to start up. However, we feel this may well be an upstream Debian issue as opposed to something untoward within Makulu itself.

MakuluLinux, the Big Chief of open source

There are plenty of out-of-the-box packages available in Makulu to get your teeth into. PlayOnLinux makes a welcome appearance, as does Chromium, Handbrake and Gimp. But there are also some rather odd default package selections, in particular the Kingsoft Office suite, as opposed to LibreOffice; Kmail is also the only email client; and there's the dubious addition of Popcorn Time and Deluge.

In addition, as we previously mentioned, the PlayOnLinux package utilises the patched version of Wine with full CMST support, so gaming performance is significantly improved overall. Couple this with a Steam Client installation, and you'll have yourself a good looking and very capable Linux gaming PC.

In terms of the stability and speed, we didn't have any issues with Makulu. It ran suitably quick, never froze or crashed on us unexpectedly, and it looked amazing as well.

The slogan for MakuluLinux is "A whole world of possibilities…" and we're inclined to agree with the developer in that respect. It's a fun distro, with plenty going on and would make an ideal beginner's choice as well as being just something a little different and fun for the more experienced user.

How long it may last as your main distro, though, is questionable. Fun and packed full of programs it may be, but there's a limit to how much you can digest before you feel the need to branch out to a distro that's perhaps not quite as customised or as heavily themed. Saying that, and from the point of view of a self-proclaimed distro junkie, MakuluLinux is a breath of fresh air and something new to get into.

Incremental

People still whine most Apple updates don't upend an industry. Well, welcome to the world of technology

At the time of writing, the rumour mill's churning itself into a frenzy about the future of Apple. New devices supposedly waiting in the wings include the iPhone 6, the iPhone 6L, new iPads, revised MacBook Airs and a Retina iMac. But these are now all being summarily dismissed as boring, because they're merely incremental updates – Apple is no longer innovative, apparently. (We're told Apple can only buck this trend by creating an iWatch, thereby following in the footsteps of companies trying to second-guess Apple's next attempt at industry disruption by making their own wearables. No, it makes no sense to me either.)

If you've detected more than a whiff of sarcasm there, it's entirely deliberate. The notion that a company should reinvent an industry every other month in order to remain innovative is idiotic. In fact, the best advances in technology have often evolved carefully and slowly, to the point you don't really notice when you end up with something totally amazing – and innovative – because by that point it somehow seems obvious; certainly, the impact of such perfect devices is rarely imagined at the time.

A case in point is the MacBook Air. On release, that device was, admittedly, hugely expensive; and it was 'only' a laptop, albeit an absurdly thin one that was surprisingly nippy considering the repetitively low spec. The Apple faithful dutifully cooed when Steve Jobs theatrically pulled the MacBook Air out of an envelope, but the tech industry – press and fans alike – were quick to dismiss what they saw. "Where's the innovation?" they barked. "It's just an incremental update!"

Naturally, the MacBook Air almost immediately became the template for every other laptop manufacturer and also heavily informed the rest of Apple's range. The MacBook Pro is now far more svelte and has plenty of nods to the MacBook Air – an SSD by default, no optical drive and so on. iMacs increasingly make use of similar hardware. But better products that arrive after a number of years aren't exciting. People want change! Revolution!

Only that's not really the case either. When the new Mac Pro was unveiled, that too was slammed by many parties (although, tellingly, less often by the pros it was primarily aimed at). In creating a tiny, quiet desktop powerhouse that didn't get absurdly hot, Apple omitted optical drives and the means to update internal storage, resulting in a pro machine that wasn't terribly extensible unless you used external devices. This was at odds with people's expectations and starkly highlighted how Apple's damned if it does and damned if it doesn't.

My take is although I'm quite happy to see an industry upended once in a while, I don't need that to happen often in order to recognise innovation. And plenty of innovation nuggets (a new reversible cable here; a revamped, clever UI redesign there) can often do a whole lot more to improve people's lives than foisting a new range of gadgets on us that we don't really need.

▼ *If you didn't consider this innovative in 2008, seek help*

App Spotlight: Web Snapper

An oldie but a goodie, Web Snapper's recent bug-fix release caused it to cross my path and get reinstalled on my Mac. I didn't realise how much I'd missed it. Although OS X can save any document to a PDF, Web Snapper works wonders with web pages, enabling you to save them as continuous or paginated PDFs that retain the original layouts and links. It stumbles occasionally on responsive sites that rework themselves for mobile but is nonetheless a great buy for stashing pages offline, retaining not only their content but also design context. Web Snapper costs $15. For more info, visit **www.tastyapps.com/websnapper**.

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**

Accessorise!

You've got the tablet, now get the add-ons. Ian McGurren has some suggestions

Be it a tablet, a phone or pretty much any other kind of portable technology, buying the actual device isn't usually the last purchase you make concerning it. There's a wealth of accessories for phones and especially tablets that do anything from keeping it safe to using it in different ways, or even just making the most of its capabilities.

Keyboard: There are many, many Bluetooth keyboards available, from £5 to £150. Some are really good, such as the Logitech Ultrathin series, but they're for one device, so getting a new device needs a new keyboard. The recommendation instead goes to the excellent Microsoft Wedge keyboard, a small, well made, Apple-esque design that comes with a cover that doubles as a very sturdy tablet stand. What's more, being from MS, it's ideal for Windows 8 tablets too.

Mouse: The Windows 8 crowd may also cry out for a decent mouse when using a keyboard instead of the touch-screen, and Logitech's gorgeous Ultrathin T630 fits that bill. Tiny yet ergonomic, rechargeable and gesture responsive, it's small enough to carry but good enough to use. Plus it can be paired with two Bluetooth devices, meaning it's useful on the home computer too. £40 isn't cheap, but sometimes quality is worth the cost.

Stylus: It's no longer unusual to see people using their tablets like others would have used paper for note taking only five years ago. However, as easy as it is to do this, the touch interface isn't the same as holding a pen. So why not get a pen? Like real pens, styli come in a ton of shapes and sizes, and like real pens it comes down to feel and balance. Top of the line comes the Adonit range with a series of tips to suit your use, though you're looking at £25+. Otherwise, Wacom's Bamboo stylus is around £10, though it's more suited to drawing than writing.

Cables: While tablets are pretty much cable free for most of their lives, the good old cable isn't always far away. In some cases, the humble wire can augment a tablet's use immeasurably. Got an Android or Windows 8 tablet? There's every chance you can use a USB on-the-go cable to give you access to USB storage, such as large SD cards or even drives (power probably needed here). Another cable worth keeping to hand – if usable – is the micro-HDMI to HDMI cable, especially if you find yourself in hotel rooms with HDTVs often.

USB multi-charger: If you're like me or any other tech-lover, there's a very good chance you regularly find yourself swapping one charger out for another in the wall or even running out of sockets to charge everything at once. There is an alternative in multi-port USB chargers such as the 50W six-port chargers from Anker or Tecknet. Unsurprisingly they have six ports and can charge a multitude of devices at one time. Great at home and a boon for travelling too and good value at around £15.

Stand: If you didn't get the Wedge Keyboard, then you're probably still after a nice stand on which to perch your tablet for typing or even just viewing or perching next to your main machine. Well, before you order some fancy number off of the internet for £5 + p&p, take a wander down to Poundland and grab one of their very capable and easy to assemble little stands for – wait for it – a whole pound! Dirt cheap and good at its job. Can't ask for more than that.

Case: It's all well and good having a great tablet and all these accessories, but frankly carrying them all around is a bit hit and miss. You can get a laptop bag, but then you may as well have a laptop really, so how about a proper accessories carry case, like Cocoon's Grid It case. Built to take cables, multi outlet chargers, hard drives, batteries, cards, even cameras, the Grid It cases are essential for the tablet power user on the move. They even come in a variety of sizes for those of you with a load of kit or just a few extras here and there, and they start at around £15.

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

Mass Storage

Shaun reports on a couple of mass storage devices for one of your favourite 8-bit computers

One of the best ways to utilise a PC is to install an emulator or two onto it, faithfully replicating the features of your favourite 8-bit computers (including the loading times, if you like), but obviously you'll get a more complete experience by using the real machines and hardware. With many legally downloadable games being archived on the internet, one problem often faced by those looking for this sort of full-on dose of nostalgia is getting these archives to load into the computer in the first place.

Solutions have been available for a while, and as time has passed, these have become easier and more user-friendly, also adding more powerful features such as fast or almost instant loading and utilising more modern storage solutions such as SD cards.

One such device for the Sinclair ZX Spectrum is the DivIDE Plus, which uses either Compact Flash or IDE technologies, both of which are still easily available and will provide ample storage for your Speccy software.

The DivIDE will work with all models of the Speccy and contains its own DOS and a battery backed-up RAM disk for even faster loading. The details for this product are available from **tinyurl.com/mm-divide-plus**.

Of the solutions available for the Commodore 64, there's a new one in progress called the C64SD 3.0 'Princess' which uses SD card technology for its main form of storage. This will emulate the standard Commodore disk drive as well as a 'Datasette' player (Commodore's tape device). To find out more about this, head over to **tinyurl.com/p27bj28**.

Demigods

A new game hs been released and developed by Apsis for the Sinclair ZX Spectrum 128K, which is called *Godkiller* and is set nearly 13,000 years ago. A demigod has claimed the life and soul of your significant other, and you have the opportunity to take your revenge.

Starting in the temple of Mnar in the land of Mu, your task is to find ten lost souls and three sacred objects to open the gates of time to travel back to the time and place to prevent the demigod from taking the life of your loved one. But the land of Mu is strewn with supernatural beings that will take your life forces.

This game has been developed with the Mojon Twin's LaChurrera engine, with music provided by Neil Parsons. The game is currently in Spanish (but it's still very playable), with the English version in its final testing stages, with all of the information available from **tinyurl.com/klhyuvz**.

The DivIDE upgrade for the Sinclair ZX Spectrum adds fast storage

A new arcade adventure game for the Sinclair ZX Spectrum 128K

A Real Gem

Ernst Neubeck has sent me some information about his upcoming arcade puzzle game for the Commodore 64 called *Gem*. This project is a follow-up to Phase Out, which was developed thoughout 2013 and released earlier this year, with *Gem* being a collaboration with the well-known C64 pixel artist Steve Day, Dan Dee of the group Laxity, and Federico Sesler who is developing *Maze of the Mummy* for the mighty 64K micro computer.

The game involves 'smashing' coloured precious gemstones together to create explosive effects, with the aim being to manoeuvre each piece so that the play area is cleared, a concept that will be familiar to puzzle game fans. Ernst's web page has more information about this release, including a special offer for *Phase Out* (for the downloadable version) – head over to **inc-x.jimdo.com** for more.

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

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*

Clash Of The Titans

Infuriatingly difficult yet unusually addictive, the Ludum Dare indie game Titan Souls is being made into a full retail game by its creators Acid Nerve

This week, Ryan checks out the infuriatingly addictive indie game Titan Souls, and looks at the new multiplayer mode and improvements on the way for Titanfall...

Plug & Play

What do you get if you mix the sumptuous pixel art of *The Legend Of Zelda: A Link To The Past*, the eerie boss battles of classic console adventure *Shadow Of The Colossus*, and the horrifying difficulty of *Dark Souls*? The answer could well be the forthcoming *Titan Souls*. The product of a three-man indie dev team called Acid Nerve, *Titan Souls* is a top-down arcade adventure that began life as an entry for Ludum Dare in 2013.

In case you've never heard of it before, Ludum Dare sets fledgling game designers the tough challenge of creating a game in just 48 hours. Originally set up in 2002, the competition provides participants with a theme based around a familiar phrase or subject and lets entrants provide their own interpretation of it in video game form – 2013's theme being "You only get one"

Viewed from a top-down perspective, *Titan Souls* sees a lone player roam a desolate fantasy environment in search of titans – huge, deadly bosses with but one exploitable weakness. The player's only weapon in these David-and-Goliath battles is a single arrow, which can be charged up and blasted in any direction. Once it's been discharged, the player then has to hold the fire button down again to reel it back in - imagine firing off a grappling hook, and then having to wind the rope connected to it back up again, and you'll have a vague idea of the principle.

This firing mechanic is both absorbing and frustrating in equal measure. Absorbing because, if you're fast and accurate enough, you can take down a titan with a single, well-positioned shot. Predictably, the frustration comes when you inevitably miss, the titan charges at you, and you're killed in an instant. Oddly, however, the process of wandering the landscape, finding the titans and taking them out becomes all the more addictive because of this split-second, kill-or-be-killed scenario. Even in its stripped-down, Ludum Dare form, *Titan Souls* was challenging and nerve-wracking in the best retro sense, so it's great to hear that Acid Nerve is currently readying a beefed-up, retail version.

The updated take will apparently add a greater variety of giant monsters to kill; big plants with killer vines, statues with deadly stone fists and very angry-looking yetis, to name but three. Also, there will be more detailed pixel graphics, and a huge game map to explore.

Titan Souls garnered plenty of attention at E3 – several publications gave it a 'best in show award' – and at the time of writing, it's attracting positive buzz at the Penny Arcade Expo, too. The game's concept may be a simple one, but its immaculately drawn pixel graphics (courtesy of Andrew Gleeson) and stern challenge make it one of the most exciting indie games on the horizon.

You can play the original version of *Titan Souls* for free at **clawmark.itch.io/titan-souls**. The full version is due to appear on Steam in early 2015.

Online

We go from indie pixel titans to those of a far more expensive kind, with Respawn Entertainment's big-budget FPS, *Titanfall*. Released earlier this year to considerable anticipation from audiences looking for the next leap forward in shooters, the game received positive if not ecstatic reviews.

Titanfall's chief selling point is, of course, its colossal mecha, which vulnerable pilots can clamber into for greater protection and firepower – albeit at the expense of maneuverability. However, while the giant robots are fun to thunder about in, many players

If you find bouncing around as a pilot in Titanfall more fun than helming a mech, Respawn has good news. A forthcoming update will add an 8v8 Pilot Skirmish mode, without a giant robot in sight

have discovered that simply running around on foot as a plain old pilot is equally entertaining - you can, after all, double jump and bounce off walls like a Tizer-addled Mario.

Respawn has clearly understood this, since its sixth patch update will add a new mode called Pilot Skirmish. As you've probably gathered, this will remove all the big mechs from the play area entirely (along with the oft-maligned AI characters), leaving two teams of eight pilots to battle one another in a straight-ahead deathmatch.

Given that one of the criticisms levelled at *Titanfall* was that its range of multiplayer modes were somewhat lacking, it's pleasing to see that Respawn are still adding and improving this area of the game. One of the earlier modes added to *Titanfall* – the paranoid assassination jamboree Marked For Death – has even proved popular enough that it'll be made a permanent part of the line-up when the sixth patch update goes live. The patch will add a range of other improvements, too, including faster match-making and optimised visual effects to reduce strain on our CPUs.

The jury seems to be out as to whether *Titanfall* has been the success EA was hoping for. Back in May, Forbes noticed that EA had mysteriously failed to disclose exactly how well *Titanfall* had sold, which is quite uncommon for such a high-profile game. What we do know, though, is that EA's currently keen to get new players strapped into *Titanfall* - head over to Origin, and you download a demo, which is time-limited to 48 hours.

Whether Titanfall counts as a hit or not, it's clear that Respawn will be supporting the shooter for some time to come. At the time of writing, the developer hasn't revealed when update six will be available, but its range of fixes, plus the allure of Pilot Skirmish, could see its user base swell over the coming months through positive word of mouth alone. You can read the full list of *Titanfall* changes at **www.titanfall.com/game-update-six**.

Incoming

The *Assassin's Creed* franchise may be ubiquitous now, thanks to its annual updates, but *Unity* remains one of the most anticipated big releases of the autumn. There's the promise of its four-player co-op mode for one thing, and for those with an architectural fetish, there's also a near-perfect digital replica of Paris to sneak around in.

Unfortunately, we'll have to wait a little longer to play Unity than originally advertised. Once scheduled for release on the 28th October, *Unity*'s now been moved back to the 13th November. "As we got close to the finish," explained Ubisoft's Vincent Pontbriand, "we realised we were near the target but still needed a bit more time to hone some of the details to make sure *Assassin's Creed Unity* is exceptional."

Worryingly, Ubisoft's *Watch Dogs* was also subject to delays, and then became embroiled in controversy when the finished version looked far less detailed than a demo version shown off at E3 in 2012. With *Assassin's Creed* now one of the most treasured properties in Ubisoft's cabinet, the company will need to be sure that a similar debacle doesn't reoccur in November.

Ubisoft's autumn blockbuster, Assassin's Creed: Unity, has been pushed back two weeks to the 13th November

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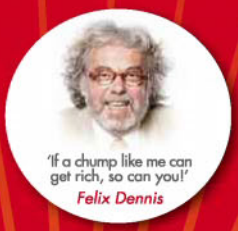

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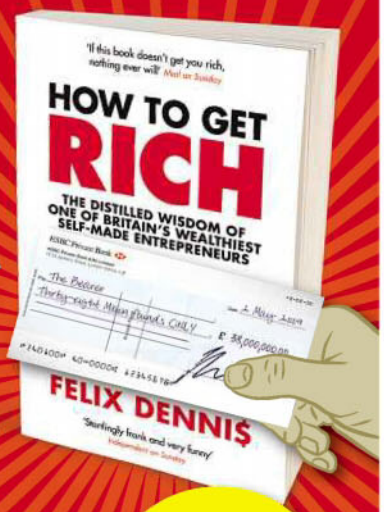

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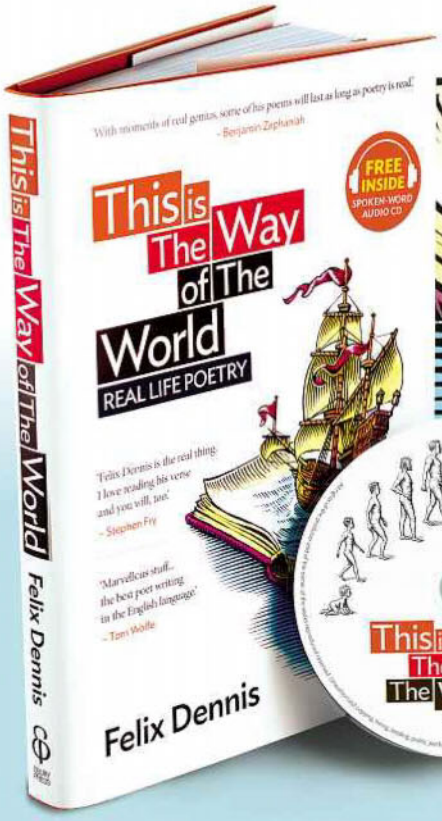

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Toshiba Satellite L350-159 17 inch screen laptop. 320GB HDD, Vista license, 4GB memory. Restore disks, charger, WED lightly. Wireless excellent, long battery life, excellent condition. £165 with free postage.
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Intel Core i3 3220 3.30GHz processor. Pulled from working PC due to upgrade. Will be provided in anti static packaging. £50.
Tel: Mark Sullivan (01142) 745864 Email: mark.sullivan34@aol.com

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Tel: John Beech (01928) 733622. Email: johnbeech@dsl.pipex.com

Intel Core i3 3220 3.30GHz processor. Pulled from working PC due to upgrade. Will be provided in anti-static packaging. £50.
Tel: Mark Sullivan (01142) 745864 Email: mark.sullivan34@aol.co.uk

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Email: Brian bmorgant@yahoo.co.uk

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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.
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Wanted: One Series Printer HP DESKJET 610c in good working order. One servicing manual (Not Users Instruction Manual) for the HP DESKJET 610c Printer. Old Zip Discs.
Tel: (01214) 777691

Wanted: A socket LGA 775 motherboard to enable me to build a computer for a local Royal British Legion member. He's able to pay for a 2nd hand board as long as it's not too expensive. I've got the other components.
Tel: Ken Driver (01890) 820295

Wanted: Gigabyte G41MT-D3 1.3 motherboard in good condition. Please notify price and postage.
Tel: 0121 455 8526 Email: j.cleary@virgin.net

Wanted: I am looking for 2gb (2x 1gb) of Muskin Redline PC3200 at 500Mhz.
Tel: (07817) 861011

Wanted: 2 sticks of 2GB - PC2-4200 (533MHz) desktop memory, 2 of 1GB. To complete a computer for a disabled ex-serviceman who has little money. Any other donations of bits & pieces of computers would be most welcome as I put together units for hard up ex-service people. Free of charge.
Tel: Ken Driver (01890) 820295 Email: ken@branxton.plus.com

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Tel: Steve Wilson (01617) 939906 Email: sb.wilson1@ntlworld.com

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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.
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Wanted: Motherboard with 3GB CPU or higher wanted. Must have AGP interface.
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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).
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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

SOFTWARE WANTED

Wanted: LG GSA 2164 D software disc to replace broken original.
Tel: Glen Fremantle (01387)248976 Email:bldamsys@yahoo.co.uk

Wanted: Nero 9 reloaded for Windows 7. £80 given.
Tel: (01629) 732623

Wanted: SmartDisk HD250 Installation CD. Novice Linux CDs with instruction manuals reasonable prices will be paid.
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Please try to keep your queries brief and limit them to just one question per letter, simply so we can squeeze in as many as we can each week. Please include relevant technical information too.

Aaron

Metro Mayhem

I've been having problems with the applications that come with Windows 8. Regularly, I've noticed that a couple of the apps simply freeze when I try to load them. The program icon appears onscreen, but the application itself never opens. Windows just goes back to the Start screen again. It's happened a few times with different apps, but mainly with the email app.

I've tried uninstalling the apps and then reinstalling them, but this has made no difference, at least nothing I've noticed. The programs seem just as unstable. It's even harder to deal with, as there's seemingly no pattern, and sometimes the applications will run fine, and can do for days, but then I'll go through a period of issues.

Can you possibly suggest another course of action I can take to try and solve this problem. I actually like the apps that come with Windows, including the email client, and would like to be able to use them properly, without any issues getting in the way.

Mel

The Metro apps that come with Windows 8 divide opinion, while many don't like them, and instantly move to their own favourite third-party alternatives, others find the built-in options perfectly suitable. Sadly, there have been a lot of problems noted with some of these apps, and you're certainly not alone when it comes to experiencing such issues. Luckily, Microsoft is aware of these problems, and you can use a handy automated tool that's able to solve a good deal of problems with Metro apps for you. This is what I'd recommend you try.

*You can grab the app from **go.microsoft.com/fwlink/p/?LinkId=268423** (or **tinyurl.com/krj7n8o** for a shortened version). Don't save the file to your machine, but instead choose to open it when you click the link. The tool will open up, and you can use it to scan for any problems, as well as resetting the Windows Store, clearing the cache and any corrupt licenses. This is a good idea to do, and can further help prevent any problems.*

> **The Metro apps that come with Windows 8 divide opinion**

Once run, the tool will provide you with a report of the actions it's taken, as well as any problems it couldn't remedy and which may require further attention from you. Hopefully, this will help with your situation. Be aware, however, that Microsoft will only support its own apps, and third-party Metro titles are not covered, so you'll need to consult the software vendor for specific help if you need it.

Microsoft's Metro app troubleshooter can be a great help if you're having problems with Windows 8 apps

Auto Power Down

I have a laptop running Windows 8.1 and I have a rather odd problem, one that's also very annoying. I've noticed that the laptop keeps shutting down my wireless card, which causes me to lose the connection to my wireless network, or to public ones when I'm out and about. I don't actually choose to do this, but I've noticed that it does happen, and I'm not sure why.

I'd really rather control this myself if possible, and I hope it's not some permanent feature of Windows 8 that I have to put up with.

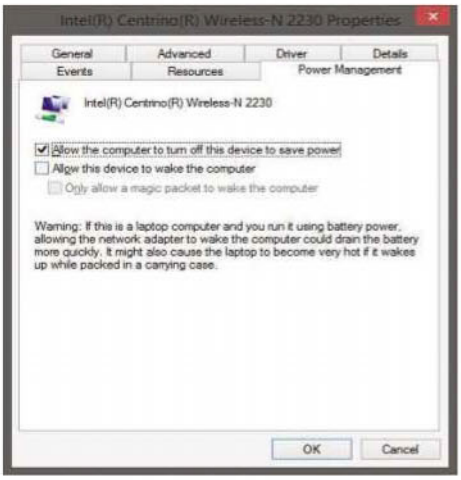
Nate

This sounds like a bit of an odd one, but it's not totally unknown for this to happen, and the cause is likely down to Windows' ability to allow various components within a PC to be shut own by the system to save power. It's mainly used by mobile computing users who want a hand when it comes to extending their battery life.

I suspect your problem isn't actually a fault at all, but simply this feature being run without your knowledge. To check this, go to Control Panel > Hardware and Sound, and then open up Device Manager. Now, locate the wi-fi adapter and right-click it. Select Properties, and click the Power Management tab. Here you'll see the option 'Allow the computer to turn off this device to save power'. Ensure that you remove the tick next to this option, and then click OK.

Now Windows and the system shouldn't attempt to shut down the hardware to save power, and with luck, this will remedy your problem.

If you notice some devices, such as your wi-fi turning off on their own, check the power saving options in Windows



Display Despair

I've got a brand new gaming PC, which I bought from an online retailer. It's a powerful system that uses a Geforce graphics card and has 16GB of RAM. The motherboard is an Asus Formula. When it comes to performance, it's great. I can run games at full detail, and everything is smooth, except for black lines that appear all over the place.

When I'm playing a game, I can see various thin black lines popping in and out of the display. It doesn't matter what graphical levels I select, it always happens, even on low settings. I know that this can often happen due to overheating (which other people have told me), but this system has very good cooling, as it's a power PC, as does the graphics card, so I'm not so sure. Can you help?

Carl

The symptoms you're experiencing with your display would usually lead me to suspect overheating as the likely culprit, as it sounds just like the kind of glitch you can experience when a GPU overheats. As your PC has good cooling, I admit this may not be the case, but I wouldn't rule it out. Even a PC with excellent cooling can suffer from overheating, and your problem could even be that your cooling devices (fans, heat sinks and so on) aren't functioning correctly, or are not installed properly.

This can be hard to check without opening up the PC, and as you say the system is brand new, this may also void your warranty, so it's really up to you. If you do check inside, make sure the cooling fans are all spinning, and facing the right direction (front-mounted need to draw cool air inward, rear one draw hot air out), and that any heat sinks are fitted snugly, properly affixed (ensure the PC is off when doing this). This all may be a stab in the dark, but poorly-fitted or installed components have been known to cause all sorts of problems, including overheating.

*To further rule out overheating, make sure you use a heat monitor program to truly eliminate it as the cause. Asus has its own tool for this called Asus Probe, found at the support site (**support.asus.com**). You can also use any of the various third-party tools, like HWMonitor (**www.cpuid.com**). Use these to check overheating, just to eliminate it as the cause.*

Next, you should try updating your graphic card drivers, making sure you have the latest available. Install these, reboot, and then try playing a couple of games to see if the visual glitches still persist.

If all of this doesn't help, then there's a very good chance the problem lies with the graphics card itself. I've seen many faulty cards demonstrate this kind of problem, and the only thing you can do is return the faulty hardware. As your system is still new, this shouldn't be a problem, and they may be able to send you a new card to install, so give your system vendor a call. Good luck.

Visual glitches come in all shapes and sizes, including black lines, and can be the sign of overheating or a faulty graphics card

ASK JASON

Meet Jason D'Allison, a veteran of Micro Mart's panel of experts. He's here to help with any technical questions, including anything to do with tablets or smartphones, as well as PCs

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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

Putting The Boot In

I'm repairing an old PC for a friend – a Socket A job. It was overheating terribly, but I solved that easily enough by pointing a can of compressed air at the CPU cooler – half a ton of dust fell out of it. I've installed a new PSU, and now I need to sort out the failed hard drive. The PC's specs are as follows.

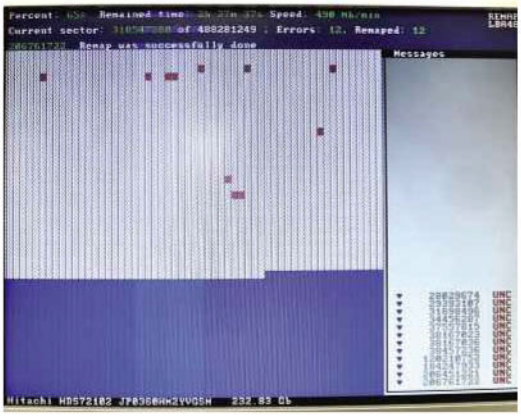
- CPU: Athlon XP 2500+ (1.83GHz)
- Motherboard: Gigabyte GA-7N400 Pro (nForce2 Ultra 400)
- Memory: 2 × 512MB DDR400
- Graphics: 256MB GeForce 7600 GS
- OS: Windows XP Professional

The 120GB IDE hard drive was as dead as Elvis, so I've fitted an almost identical replacement. It's detected just fine, but XP setup, even after it's formatted it, says it can't use it. I've done a full read-write scan in ViVARD (a tool you recommended some months back), and it passes that with flying colours. Swapping IDE ports and ribbon cables has made no difference.

I'm beginning to think the motherboard's faulty. Or do you think it's the drive? I don't want to fork out on yet more parts until I'm certain what's what. Any thoughts? Have you encountered such a problem before?

Michael Timms, Gloucestershire

I have indeed encountered such a problem before. And I've not the slightest doubt that the fault lies with the drive, Mike, not with the motherboard or any other component. Exactly what that fault is, I'm not sure, but I suspect the boot sector's damaged. This is a special area at the start of the drive that carries the boot loader. If Windows can't write to it, it's game over. I'm surprised ViVARD didn't get so much as a sniff of any trouble – it's a terrific program, and also reliable.



This drive looks well and truly shafted, but sometimes even a drive that passes all tests can prove to be problematic

Anyway, I think you'll be on solid ground by purchasing yet another drive. If the motherboard's to blame, I'll eat my sandals (and I'm quite sure ViVARD would easily get a sniff of those!). How much did you pay for the last one, though? By the sound of it, it wasn't a trivial amount, yet tested ATA/IDE drives from honest sellers on eBay can be had for peanuts. I bought a 160GB unit a few weeks ago for just £5.73, including delivery. That was an exceptionally good deal, admittedly, but you should be able to pick one up for around double that amount any day of the week.

Note – For anyone else interested in ViVARD, it's found on the Ultimate Boot CD (UBCD). Grab that here: ***bit.do/qgzP****. Burn it to a CD as an image, boot up your machine with it, and look under the HDD menu.*

Power Games

In issue 1,326 you recommended Corsair's CX600 as a good-value, good-performing PSU for most single-card gaming rigs. As you say, it delivers a solid 46A/552W at +12V, but unfortunately there's a gotcha. It's an oldish design, and it doesn't support the C6 and C7 sleep states of Intel's Haswell chips. A while ago I built a PC using a Core i5-4670K, but with a CX600 (confirmed as working) it wouldn't even boot. I had to exchange it for a GS600 (49A/588W at +12V), costing £60, a tenner more than the CX600. Worth knowing, I think you'll agree.

Rick Smith, Virgin Media

Hats off to you, Rick. You're quite right, and I should have picked up on this. I guess I made the assumption that Corsair had updated all of its product lines to ensure full Haswell compatibility, and clearly it was a false assumption.

Even so, lack of Haswell support isn't usually a biggy. Almost all Socket 1150 motherboards feature a BIOS setting allowing a Haswell CPU's C6 and C7 sleep states to be disabled. You lose the power savings they bring, but to be honest, on a desktop system those savings are virtually non-existent. In your situation, of course, the system wouldn't even boot, so getting into the BIOS wasn't an option. That was unusual, and a

bit of bad luck. Many boards, if not most, have the new sleep states disabled by default.

Anyway, for ease of reference, here's Corsair's official list of which of its PSUs are Haswell-compliant and which ones aren't: ***bit.do/N7hX****. It's a little out-of-date, but all newer models will be compliant without question. Other PSU makers provide similar lists, and over at Tech Report there's an overview of models from a whole raft of makers: http://bit.ly/164YLA3. This list is even more out-of-date, but it's a great resource for users wanting to know if what they currently own can be carried forward to an upgrade.*

➤ ***Is your PSU Haswell-compliant? (I'm not sure this example is even Athlon-compliant!)***

Casting The Net Far And Wide

Now that the price has tumbled to £18, I've invested in a Chromecast. I've popped it into the HDMI port on my telly, set it up via the Chromecast app, and now I'm streaming Netflix via my Galaxy S4. Magic! However, while Netflix is great, along with YouTube and the BBC iPlayer, why doesn't the Chromecast support the ITV Player or the streaming of content already on my phone?

Alex, Gmail

Any lack of support isn't really Google's fault. The Chromecast SDK – the software-development kit – has been widely available since February, and it's up to individual app makers to add Chromecast functionality. But I agree: it's shocking that the likes of ITV still haven't got with the programme (if you'll excuse the pun).

Thankfully, Alex, the Chromecast app now supports mirroring. This means you can duplicate on your telly whatever's already showing on your phone (or tablet). You need to be running Android 4.4.2 or later, but that's no problem for the Galaxy S4 (update it if necessary). Mirroring is only in beta, sadly, and performance can be hit-and-miss. To activate it, launch the Chromecast app, open the menu drawer (hit the icon at top-left or slide in from the left), and tap Cast Screen.

As for video stored locally, visit the Play store and download AllCast. One way to use this is to fire it up directly, select the desired video from the Gallery menu, then choose Chromecast as the device to stream to. However, the only videos listed will be those in your phone's DCIM/camera folders (though you can also connect to other devices on the network, including NAS boxes).

To stream videos stored elsewhere, you need a video app with streaming support. One such app is the delightfully named Video Player installed on most Android devices as standard. It lets you browse for videos anywhere. Find the video you want, load it up, and open the app's settings. Hit 'Share via', choose AllCast, and select your Chromecast. Then sit back and enjoy!

Now, the free version of AllCast puts a massive logo at bottom-right of the telly. To lift that, Alex, you'll have to stump up £3 for the premium version. I'd say that's good value. The free version apparently also limits playback time – some say to five minutes, others say to one minute – but personally I've not encountered any limit at all.

AllCast isn't the only game in town, of course, but merely the best-known. See what's out there and try them all. In particular, consider LocalCast, which is similar to AllCast but totally free.

Note – A mostly complete list of apps with Chromecast support can be found at ***bit.do/N6Qy****.*

➤ ***At only £18, it would be rude not to***

Bits And PCs

This week I have been mostly...

...reading the instruction manual for my Nissan Jukebox to find out how to disable the safety locks (I've followed things to the letter but the rear doors and passenger door *still* won't open when I click the key-fob).

...playing *Lego The Hobbit* on the Wii U (there's a monumental glitch in co-op mode, where one of the players gets trapped behind a door, so my lad and I have had to start the whole bloomin' game again).

...watching the big reveal of the Galaxy Note 4 and Galaxy Note Edge (if the octa-core Edge doesn't make it to the UK, I might just cry).

...listening to the heavy-metal dynamic duo that is Royal Blood (how on earth does singer Mike Kerr make his bass sound simultaneously like a lead guitar?).

...trying to salvage data from a friend's dying 1TB laptop HDD (24hours in and Recuva hasn't even completed its initial scan).

Crowdfunding Corner

Enhance your Internet connection with this pair of plug-in devices, available exclusively through Kickstarter

iGuardian

Protecting our hardware from online attack is a concern for many of us. If you don't feel that your router is doing enough (or if you don't use a router at all) then the iGuardian is what you need. It's a device with an embedded Linux system running OpenWRT-based firmware, which is designed to secure any Internet connection comprehensively and quickly.

The makers claim that, while installation is easy, the device can provide advanced threat prevention against a wide variety of attacks: viruses, phishing scams, malicious websites, browser exploits, drive-by-downloads, botnets, Trojans and more, in fact! It does this by inspecting all traffic on its way in and out of your home network in search of known attack patterns. If no problems are detected, the traffic continues as normal, but if it recognises a threat it's neutralised before it gets anywhere near your hardware, dropping the data packets completely.

The idea is to provide business-grade security for home Internet users at a fraction of the price and with no technical knowledge required. Customers also receive lifetime access to free community security updates. Promotional tiers have already gone, but you can still get a unit by backing the project for $149, plus $25 shipping outside the US. The projected retail price is $179, so it's still a bargain! With more than a week to go the team behind iGuardian has breezed past its $125,000 target, so from now on things can only get better.

URL: tinyurl.com/kjw4b9b
Funding Ends: Friday, September 12th 2014

WebCurfew

If, for any reason, you're trying to limit access to the web at specific times – maybe because you're trying to ensure some offline time in your household, or because you're a business trying to keep your Internet connection secure out of hours – you're going to need to set a curfew. Very few routers have built-in curfew protection, so here's a piece of hardware that can add it to literally any network connection you like.

Sitting between the modem/router and the Internet socket, WebCurfew has several main tools to help you monitor usage and prevent any inappropriate use. A simple control panel gives you the power to activate and deactivate your Internet connection, allowing you to turn the Internet on and off as easily as you would a light switch. It supports hundreds of router models seamlessly, giving you full control of your traffic and usage. The device comes with an Ethernet cable that plugs into the back of your router, and a USB cable for a power supply which can be plugged into any USB port – even one on your router!

For $49 you can get a WebCurfew unit with a free year's subscription (worth $72) or you can pay $99 for a unit and a two-year subscription worth $119. At the time of writing, it was looking touch-and-go as to whether the project will meet its target of $25,000, but if you think the device looks interesting, back it now and maybe they'll be lucky.

URL: tinyurl.com/qgltsjv
Funding Ends: Saturday, September 13th 2014

Disclaimer: Images shown may be prototypes and Micro Mart does not formally endorse or guarantee any of the projects listed. Back them at your own risk!

App Of The Week

CyberGhost VPN Chrome Plug-in

At last, a browser addition that keeps a watchful eye on your privacy

CyberGhost can never be accused of taking it easy in the fight against internet privacy. Aside from developing the best VPN we've ever had the pleasure of testing, hosting a number of free and very secure proxy servers and keeping the world informed of the latest trends in the invasion of our online privacy, it's only gone and developed a Chrome plug-in.

Chrome Proxy Plug-in

CyberGhost was inundated with requests from its users regarding the creation of a Chrome plug-in, and since Chrome is used by over 59% of all internet users, it makes perfect sense.

The CyberGhost VPN plug-in works as any other Chrome plug-in, in that you pay a visit to the Chrome Web Store, and click on the +Free icon to install it (at **goo.gl/hKRaLV**). Once it's part of Chrome, it will encrypt most of your browser traffic and allow you to surf safely without too much fear of anyone spying on you or attempting to hack the content that passes between you and the internet.

Features At A Glance

- Free.
- Easy to install.
- Good for unblocking online content.
- Gives you a new IP within seconds.
- Encrypts your online browsing data, with 256-bit AES encryption.
- Gives you unlimited access to YouTube, Hulu, BBC, Netflix, SoundCloud, Pandora, Spotify, BBC, Last FM, Instagram, Facebook, Youtube, Steam origin, Amazon and many, many more.

Anonymity is the key word here, and with a 256-bit AES encrypted connection, the ability to change your IP location (which in turn unlocks online country-specific content) and notifications that warn you of potential plug-ins that can compromise your privacy and expose your identity, the CyberGhost Chrome Plugin is the fastest and easiest way to instantly become anonymous during casual browsing.

Of course, as a plug-in it does have its limits, with Flash content still having the ability to potentially be unsecure. In this case CyberGhost recommends its total VPN solution, which will secure your entire computer's communications with the outside world. But for the sake of a quick click of the Plugin Power Button, you'll become anonymous enough for most browsing activities.

Conclusion

CyberGhost enables an SPDY proxy within Chrome itself, so all HTTP and HTTPS traffic requests are forwarded through the encryption layers installed on the CyberGhost proxy servers, which will then be executed on behalf of you and your request. This means that any traffic that's not HTTP-based can be transmitted without the encryption layer and is thus susceptible to those who have the means to monitor traffic data.

Naturally, this is where the full force CyberGhost VPN will come into play and protect your privacy. However, the CyberGhost plug-in is certainly more than capable of offering the user a level of privacy they wouldn't normally have when using the browser without protection.

Therefore, based on that alone, we think it's a necessary plug-in that all Chrome users should have installed by default. In fact, it would do Google some good to bundle the plug-in with the browser anyway, especially considering the bad privacy press it frequently receives.

All in all, CyberGhost VPN is a must have addition to an already great browser, so if you're concerned about your privacy, then this is one step closer to attaining complete anonymity online. **mm**

Once installed, a simple click of the switch enables your privacy

You can change IP instantly and unlock blocked content

Best of all, it's free

Logging Off

I'm not usually at the front of any queue to pat Microsoft on the back, but amazingly this week I'd like to be.

It's not exactly a company renowned for doing the right thing by its customers, but in refusing to comply with a recent court order, it is flirting with that sort of petulance.

The legal action that it's at the sticky end of relates to data of Irish nationals held on a Microsoft server in the Irish Republic. A US court decided, probably without really thinking through the implications, that data held on the computers of a US registered company, wherever it is geographically located and irrespective of the data ownership, can be demanded by US federal authorities.

The US seems determined to go down the road of trampling the sovereign rights of other nation's citizens in an attempt to own every byte on the internet, but even Microsoft thought this was the thin end of the wedge.

"Microsoft will not be turning over the email and plans to appeal," a Microsoft statement notes. "Everyone agrees this case can and will proceed to the appeals court. This is simply about finding the appropriate procedure for that to happen."

What seems apparent is that federal prosecutors in this case somehow convinced New York, US District judge, Loretta Preska that her initial order demanding Microsoft hand over the data wasn't appealable and that US issued search and seize orders don't need to consider international borders or even common sense.

The counter argument is that it doesn't matter where the data resides, as it's all controlled from the US. The point that it's not data that belongs to US citizens doesn't appear to have even surfaced, as US law is patently omnipotent.

This is yet another thread in the rich tapestry that together the NSA and CIA wove in regard to abusing the world's information systems for the benefit of the US, both geopolitically and commercially.

However, Microsoft is one of the US companies now starting to feel the commercial heat, from the sort of unilateral decisions that the likes of Judge Preska take. Not normally a big advocate of privacy, Microsoft can see that should this not go unchallenged, then the US security services are going to demand all Microsoft's data by default.

That it would probably accept if it didn't have massive implications for the future success of the company's infrastructure. What it desperately needs to have happen is a very wide and general

EDITORIAL
Editor: Anthony Enticknap
theeditor@micromart.co.uk
Designer: Laura Jane Gunnion
Designer: Kevin Kamal
Bonus John: John Moore
Contributors: Mark Pickavance, Shaun Green, Jason D'Allison, Joe Lavery, Sven Harvey, Simon Brew, Shaun Bebbington, Ryan Lambie, James Hunt, Mark Oakley, Ian Jackson, Roland Waddilove, Sarah Dobbs, David Hayward, Leo Waldock, Ian McGurren, Fish Fingers, Ice Cream, Aaron Birch, David Briddock, Ian Marks, Craig Grannell, Kevin Pocock

Caricatures: Cheryl Lillie

ADVERTISING
Group Ad Manager:
Andrea Mason
Tel: 020 7907 6662
andrea_mason@dennis.co.uk

Sales Executive:
Finan Tesfay
Tel: 0207 907 6898
finan_tesfay@dennis.co.uk
Sales Executive:
Karl Taylor
Tel: 0207 907 6706
karl_taylor@dennis.co.uk
US Advertising Manager
Matthew Sullivan-Pond
matthew_sullivan@dennis.co.uk

MARKETING
Marketing Manager:
Paul Goodhead
Tel: 0207 907 6393

PRODUCTION
Production Controller:
Emma Corbett
0207 907 6042
Emma_Corbett@dennis.co.uk
Digital Production Manager:
Nicky Baker

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Newstrade Director:
David Barker

DENNIS PUBLISHING
Group Publisher:
Paul Rayner
paul_rayner@dennis.co.uk
Managing Director:
John Garewal
Group Managing Director:
Ian Westwood

COO: Brett Reynolds
CEO: James Tye
Company Founder: Felix Dennis

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acceptance of One-Drive, Microsoft Store, the Azure Cloud services and Office 365.

That's not going to happen if in the terms it has to say, 'All your data is freely accessible to the US Federal authorities, for whatever purpose they see fit', especially if you're a European company competing against US companies, with federal connections.

As I've mentioned earlier, the backlash has already begun, and while companies love cloud services, they're less keen on handing their information over to the US government.

This could impact on Amazon, Google, Yahoo and Cisco, among others, if it hasn't already. But Microsoft digging its heals in might be the start of a general revolt among tech companies. It will be interesting to see how far it's prepared to go, as these assertions have the possibility of trashing all its businesses in the medium term.

Mark Pickavance

LAST WEEK'S CROSSWORD

Across: **7** Audio Follow, **8** Adhere, **9** Render, **10** Deltoid, **12** Brief, **14** Black, **16** Impulse, **19** Octavo, **20** Listed, **22** In Good Faith.
Down: **1** Band, **2** Advent, **3** Homeric, **4** Moiré, **5** Planar, **6** Tweezers, **11** Eclectic, **13** Amplify, **15** Charge, **17** Upspin, **18** Robot, **21** Echo.

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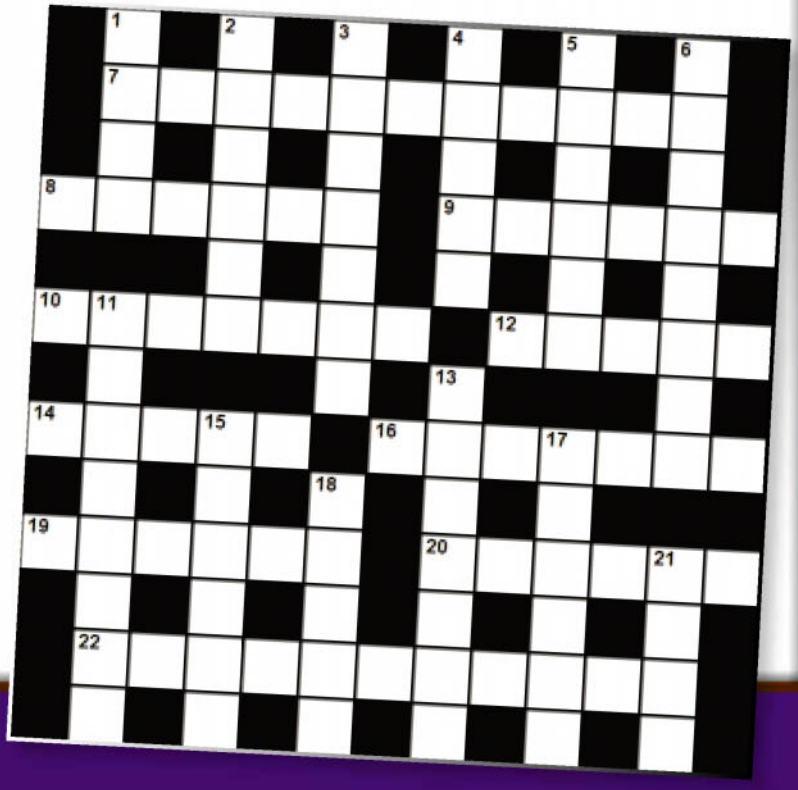
This week, we found ourselves laughing heartily at the suggestion by Will Self, the UK's most prominent purveyor of very long and obscure words, that George Orwell (who undoubtedly wrote some of the most important political novels of the 20th century) was a 'Supreme Mediocrity'. Why?

Because of his love of plain English, which obviously flies in the face of Self's indigestible, dictionary-requiring prose. Obviously, there's nothing wrong with using fancy words if you're writing a novel or a poem, but what Mr Self failed to grasp is that Orwell was talking about political writing, an area where clarity of meaning is vital and where people shouldn't be allowed to hide behind a wall of decorative language. What might they be hiding? Well, as it seems, in Self's case, a complete abscence of anything interesting to say. We can't stay angry with Will, though, because he was on Shooting Stars with Vic Reeves and Bob Mortimer. Oh, and he has such a wonderful smile.

THIS WEEK'S CROSSWORD

Across
7 Large enough to be visible with the naked eye. (11)
8 A mischievous, ugly, dwarf-like creature of folklore. (6)
9 Something that acts as a stimulus or boost to an activity. (6)
10 Graphical representation of the spatial distribution of radiation from an antenna as a function of angle. (7)
12 American company specialising in audio noise reduction and audio encoding/compression. (5)
14 The button with the flag on at the bottom left of the Windows desktop – not sure about 8 though! (5)
16 A set of five similar things considered as a unit. (7)
19 A massive and extremely remote celestial object, emitting exceptionally large amounts of energy, which typically has a starlike image in a telescope. (6)
20 Refuse to accept, and send back an email. (6)
22 Electronic equipment consisting of a small crystal semiconductor fabricated to carry out a number of electronic functions in an integrated circuit. (7,4)

Down
1 UK publishers of official government documents and legislation. (Abbr) (4)
2 A free lightweight, mobile first, responsive HTML, CSS (and SASS) framework for small screen devices. (6)
3 Factory where metal castings are produced. (7)
4 Treat with contemptuous disregard. (5)
5 Son of Zeus and Leto; twin brother of Artemis. (6)
6 A term used in software design circles to mean a quickly drawn representation of a computer program or website layout. (8)
11 The quality of unselfish concern for the welfare of others. (8)
13 Miscellaneous unspecified items whose names are either forgotten or not known. (7)
15 An item of information obtained by experiment or some other scientific method. (6)
17 A mathematical element that when added to another number yields the same number. (6)
18 Inject liquid into a subterranean rock formation at high pressure so as to force open existing fissures and extract oil or gas. (5)
21 A clamp fastened across all the strings of a guitar to raise the tuning by a chosen amount. (4)



In Next Week's Micro Mart

- Graphics cards to suit every budget
- What is Intel X99, and what does it mean for you?
- How to save money by avoiding unnecessary upgrades
- Plus the usual mix of news, reviews and advice

* May be subject to change

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