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JIM
MARTIN



Welcome to your new PC

The tablet is the new personal computer

I was one of a great many people who thought the iPad would be a flop. Along with every PC enthusiast the world over, I couldn't see how a 'toy' could encroach on the PC's territory.

What possible use had these slates? We already had PCs, laptops, netbooks and smartphones. Surely no-one would need a device that sat somewhere between a laptop and a smartphone.

Now, of course, it's easy to look back and see just how wrong we all were. The original iPad was announced a mere three months after Windows 7 shipped, ushering in the post-PC era in which we now live. The tablet is the new personal computer.

The days of sitting at your PC to check and send emails are gone. And tablets are pretty adept at other common PC tasks, too. On a tablet, browsing the web, posting on Facebook, and editing- and sharing photos isn't merely possible - it's better. Your tablet is now your e-reader, your catch-up TV portal and your portable video-calling device.

The best tablets are still more affordable than even a mid-range desktop PC or laptop, and have better-than-full-HD resolutions. Few PC monitors can match their pixel-perfect displays.

Naturally, PCs will remain the obvious choice for business, since even Apple has yet to figure out how to make a spreadsheet easier to use on a tablet than a laptop or desktop computer. But, for virtually everything else, a tablet is now the obvious choice. More portable than a laptop, and with a longer-lasting battery, what's not to like?

And I haven't even mentioned their intuitiveness. Even a toddler could find their way around iOS and Android, particularly if they're given a 'playpen' version with which they are locked into a sandboxed environment of kids' games, apps, videos and books.

I will always be one of the PC's most ardent supporters, but we've all got to accept that its future is sat on a desk in an office, or used by increasingly few gaming enthusiasts and creative pros.

We've reviewed a whopping 20 tablets in this issue, including 7- and 10in models, plus those aimed specifically at younger children. Turn to page 62 to read our reviews and buying advice. ☒

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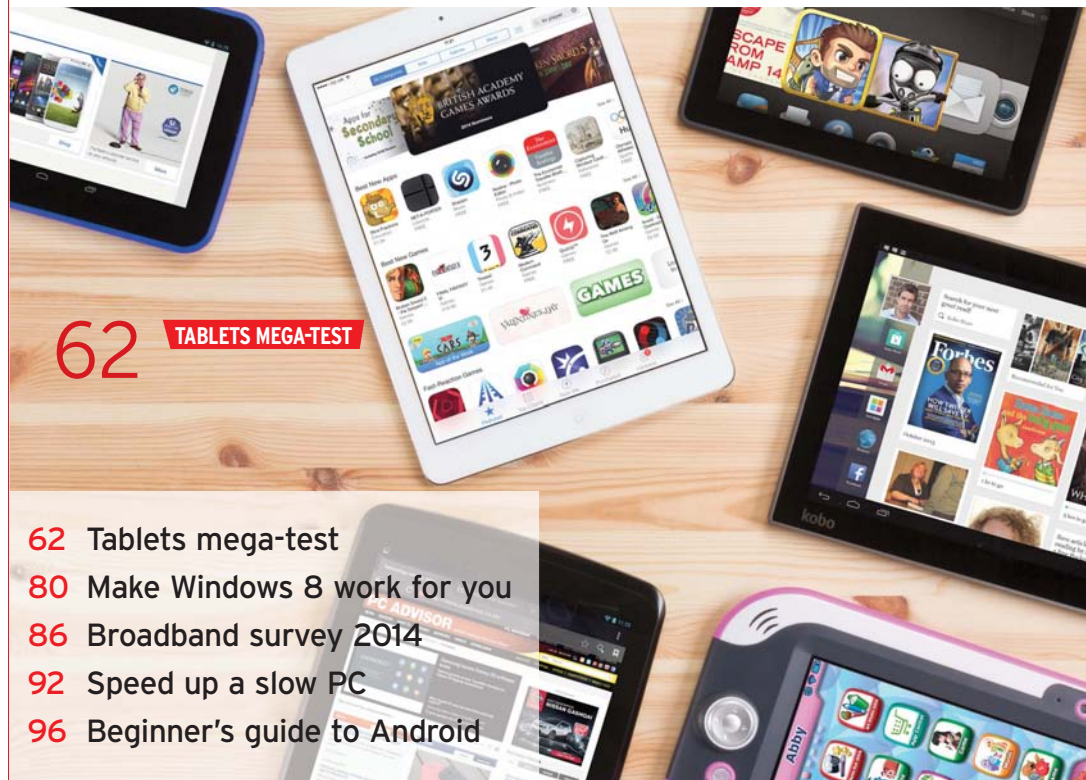


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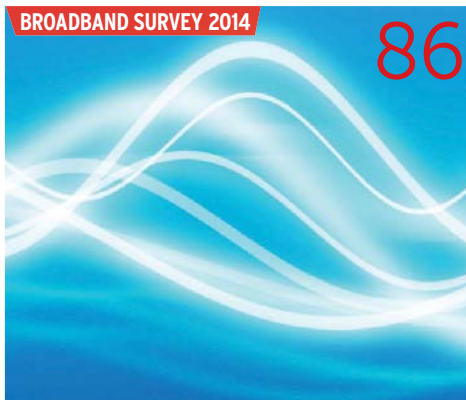
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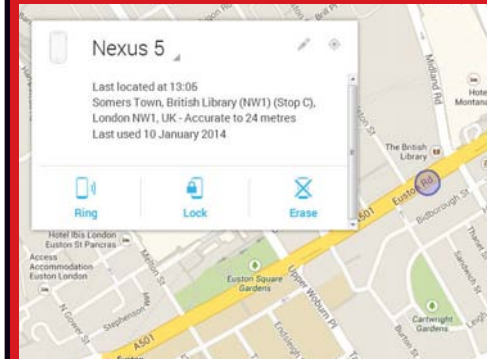
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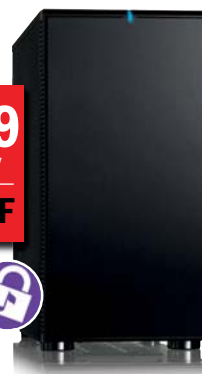
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NEW CEO AHEAD OF WINDOWS 9

As Windows 8 sales finally reach 200 million, CEO Nadella looks to the next chapter for Microsoft

Microsoft has announced Satya Nadella as Steve Ballmer's replacement and the third CEO of the company.

Nadella was made CEO of Microsoft by its board of directors with immediate effect on 4 February. He has been at the software giant for 22 years and was previously the executive vice president of Microsoft's Cloud and Enterprise group.

"Our industry does not respect tradition - it respects innovation," said Nadella. "The opportunity ahead for Microsoft is vast, but to seize it, we must move faster, focus and continue to transform. I see a big part of my job as accelerating ability to bring innovative products to customers more quickly."

Nadella will lead the firm on to Windows 9, which is expected to be announced at April's Build conference.

Microsoft said Nadella has "spearheaded" major strategy and technical shifts across the company's portfolio of products and services - most notably the move to cloud computing and the development of its infrastructure, supporting Bing, Xbox and Office. He has also overseen Microsoft's Server and Tools Business.

"During this time of transformation, there is no better person to lead Microsoft than Satya Nadella," said Bill Gates, Microsoft's founder and a member of the Board of Directors. "Satya is a proven leader with hard-core engineering skills, business vision and the ability to bring people together. His vision for how technology will be used and experienced around the world is exactly what Microsoft needs as the company enters its next chapter of expanded product innovation and growth."

Gates has also been given a new role as founder technology advisor on the board. He will devote more time to the company, supporting Nadella in shaping technology and product direction. John Thompson, lead independent director for the Board of Directors, will assume the role of chairman while remaining an independent director.

Ballmer said he's "pumped" about the decision. "Satya is a proven leader. He's got strong technical skills and great business



“

During this time of transformation, there is no better person to lead Microsoft than Satya Nadella

BILL GATES

”

insights. He has a remarkable ability to see what's going on in the market, to sense opportunity, and to really understand how we come together at Microsoft to execute against those opportunities in a collaborative way," he said.

Windows 8 sales trudge on

The announcement was followed by a confirmation that Windows 8 has crossed the 200-million-mark in licence sales.

It's been a while since the software giant reported any sales figures for its Windows 8 operating system but, after being received with mixed feelings, it has now reached the 200-million-milestone. The last time Microsoft gave sales figures was in May 2013 when Windows 8 had just reached 100 million licence sales.

"Windows 8 has surpassed 200 million licences sold, and we continue to see momentum," said a Microsoft spokesperson.

"This number includes Windows licences that ship on a new tablet or PC, as well as upgrades to Windows 8. The figure does not include volume licence sales to enterprise. Windows is a central part of life for more than 1.5 billion people around the world, and we are looking forward to the future."

While Microsoft is able to put a positive spin on the achievement, Windows 8 still isn't performing as well as its popular predecessor, Windows 7. The last version of the operating system reached 240 million sales in just 12 months.

That means Windows 8 is still 40 million off the mark, despite being on the market for nearly 16 months.

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SONY SELLS ITS VAIO PC BUSINESS TO FOCUS ON MOBILE TECH

5,000 job cuts expected as Sony restructures its TV operations and sells off its PC business



Sony has announced that it is selling its Vaio PC business and restructuring its TV sector, resulting in large job cuts.

The Japanese tech firm will sell its PC business, which uses the Vaio brand, to Japan Industrial Partners (JIP). The sum is undisclosed, but it is thought that the deal is worth £301m. The firm is aiming to reach a definitive agreement by the end of March.

Sony has described the move as an "optimal solution", following "drastic changes" in the PC market. It will now focus its efforts on the booming smartphone and

tablets sectors. Meanwhile, JIP will initially focus on the Japanese market, with possible geographic expansion in the future.

Around 250- to 300 employees are expected to move to the new company and, although Sony will stop design, development, manufacturing and sales of PC products, customers will continue to receive aftercare customer services.

While some employees will move to the new company, Sony is forecasting 5,000 job losses across its PC and TV divisions: 1,500 in Japan and 3,500 overseas.

As well as selling the Vaio PC business, Sony plans to split its TV business and operate it as a wholly owned subsidiary. It aims to do this by July 2014 and hopes the move will return the business to profitability.

"Sony plans to reinforce the company's leading position in the 4K market by strengthening its product line-up while also bolstering its 2K models with wide colour range and image-enhancing technologies. In emerging markets, Sony will develop and launch models tailored to specific local needs," it said.

MS tipped to bring Android apps to Windows Phone

Microsoft could be following BlackBerry's lead by bringing Android apps to Windows Phone 8

Windows Phone 8 is fighting an uphill battle to catch up with its rivals, but Microsoft's mobile OS could be getting a boost in the form of support for Android apps.

Plenty of good hardware is available running Windows Phone 8, but apps have always been its downfall. Developers continue to prioritise iOS and Android, and will continue to do so until Microsoft's mobile OS has a larger market share.

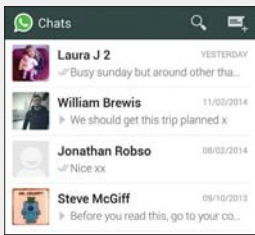
However, reports claim the company is "seriously considering allowing Android apps to run on Windows and Windows Phone". Sources familiar with Intel's plans have also indicated that the chipmaker has been pushing Microsoft to provide Android apps in its Windows Store.



Planning is reportedly in the early stages, and there are mixed feelings as to how Microsoft should go about the move. Some at the firm believe enabling Android apps inside the Windows and Windows Phone Stores is the answer; others think it could signal the death of the platform altogether.

The company wants to control the store from which consumers download Android apps, but it's unlikely that it will want to handle the tricky task that comes with supporting an additional platform and may instead turn to a third-party enabler. Software firm BlueStacks is one possibility, having been enabling Android apps on Windows for a long time.

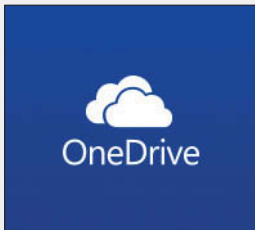
The move could make or break for Windows Phone. For it to work, customers would need a very simple way of understanding how to run Android apps on their device, and a method for developers to port apps must be devised. The danger is, of course, that developers will stop writing apps for Windows altogether.



Facebook buys WhatsApp

For a total sum of \$19bn, Facebook has bought popular instant-messaging app WhatsApp. Mark Zuckerberg, founder and CEO of Facebook, insists that the platform's 450-million-strong userbase won't be faced with advertising as a way of making money. The app will remain separate from Facebook's own Messenger.

MORE: tinyurl.com/ntsdfn9



Microsoft OneDrive service goes live

Following a legal battle with Sky, Microsoft has re-launched its SkyDrive cloud-storage service under a new brand. OneDrive is now available on Windows, iOS and Android devices, and customers can earn up to 5GB of extra storage by referring their friends.

MORE: tinyurl.com/kdlyt6z

BT offers films to buy and keep

BT already offers movie rentals via its Box Office service, but it will now become the first pay-TV provider to offer films to buy and keep. Prices start at £5.99 and include titles from 20th Century Fox and Sony Pictures Home Entertainment.

MORE: tinyurl.com/kqcg3gf

SAMSUNG UNVEILS GALAXY S5 SMARTPHONE AT MWC

Flagship smartphone offers improved camera, battery, and new features



As expected, Samsung announced the Galaxy S5 at MWC in February. The S5 will be available on 11 April in four shimmery colours: Electric Blue, Copper Gold, Shimmer White and Charcoal Black. A little larger and heavier than the S4, at 142x72.5x8.1mm and 145g, its display is also 0.1in larger and the S5 is IP67 water- and dust-resistant.

The 5.1in full-HD (1920x1080) Super AMOLED display is backed with a 2.5GHz quad-core processor and the Android 4.4.2 'KitKat' OS.

There's a 16Mp rear camera with improved image stabilisation, HDR (which also works in video mode), plus selective- and fast autofocus - Samsung says you can focus your image in less than a third of a second. It retains the same 2Mp front-facing camera as the S4.

Battery life has received a boost, with Samsung claiming the 2800mAh cell will stretch to 12 hours of video playback. An Ultra Power Saving Mode can automatically turn your display to black and white and turn off all features apart from calls and texts when you're almost out of power. This should mean that 10 percent of battery will last up to 24 hours in this mode.

Connectivity options include both 4G LTE and 802.11ac Wi-Fi. A new Download Booster should enable you to download 1GB of data in 30 seconds.

A Finger Scanner will enable secure mobile payments and provide access to a Private Mode. There's also a Kids Mode, with dedicated children's apps. Also new is a heart-rate monitor.

We expect the S5 to launch at around £600 SIM-free in the UK.

1.4Tb/s broadband recorded in London

Fastest-ever broadband can transfer 44 HD films in a single second



If you thought your broadband was fast, get a load of the speeds reached by BT and Alcatel-Lucent in a recent trial in London.

The trial saw broadband speeds reach a whopping 1.4Tb/s (terabits per second). That's enough to transfer 44 HD films in a single second.

The speed is thought to be the fastest ever achieved using commercial-grade hardware in a real-world environment. The test was conducted over a 250-mile distance between the BT Tower in London and BT's Adastral Park campus in Suffolk.

Although consumers may not see the benefits for a while, the key takeaway point is that these speeds were achieved on an existing fibre core. This means that, in the future, ISPs will be able to offer faster download speeds without needing to spend large amounts on network upgrades.

"This could allow BT to more easily scale its core network capacity to meet consumer- and business demands for more bandwidth-hungry services such as streaming video, while more efficiently using its existing core fibre infrastructure," said a spokesperson for Alcatel-Lucent.

This is good news with the increasing popularity of internet services, especially video streaming such as Netflix and Sky's Now TV. Broadband will be under more strain as 4K tech is pushed to consumers.

The firms used a Flexgrid infrastructure to vary the gaps between transmission channels. The trial was conducted through the overlaying of an 'Alien Super Channel', comprised of seven 200Gb/s channels bundled together. The firms saw a record spectral efficiency of 5.7b/s/Hz (bits per second per Hertz). ☒



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Does the UK need a web filter?



In December last year BT turned on its internet filter, joining Sky, O2 and TalkTalk in blocking sites from users. This was in compliance with prime minister David Cameron's summer 2013 initiative to prevent children "stumbling across hardcore legal pornography". With Virgin soon to join the clampdown, around 95 percent of UK web traffic could be filtered by the end of 2014.

The filters do not block merely adult pornography. They are also intended to prevent paedophiles accessing child pornography, and to restrict exposure to graphic violence and extreme political views deemed in the realms of terrorism. The plan has received heavy criticism from those who see it as a sneaky way to gain control of the internet under the guise of protecting the public good.

Blanket censorship

Whereas most people would support the idea of preventing such material being freely available, filters are a blunt tool employed to do a delicate job. A number of high-profile sites, including ChildLine, the Samaritans, NSPCC, Refuge and a number of sex-education sites, became inaccessible when the filters were first turned on. Bizarrely, the government's own gov.uk and parliament.uk portals also fell victim, as did the personal website of MP Claire Perry, who has been a vocal supporter of the filter initiative.

It wasn't long before ISPs fixed the errant censoring of these legitimate organisations, but the fact it happened in the first place highlights how inaccurate the system can be. O2 was the most pilloried - but perhaps unfairly, given that the parental-control

filter it offers turns off most of the internet in an attempt to make the web a safe playground for under-12s.

An O2 spokesman said of the error: "Millions of sites exist and sometimes they can fall through the net to be categorised correctly. ChildLine, the NSPCC and the Samaritans have all been added to the 'allowed' list for Parental Control."

Can we trust the government?

The idea of internet censorship doesn't sit easily with many people. It requires trust between user and provider - something that has been eroded in this post-Snowden world. Governments have shown themselves happy to employ devious, potentially illegal, methods to surveil the public, with little or no apparent accountability to citizens.

Once a filter is in place, how will we know if the number of blocked sites is slowly increased to include politically embarrassing portals such as Wikileaks or Democracy Now? And who should take charge of what gets filtered out? While large ISPs will be at the front end of the process, the programming will likely be outsourced.

"Beyond those of commercial confidentiality, there are other reasons ISPs may be reluctant to tell you who makes the blocking decisions," wrote internet campaigner Jim Killock.

"Some ISPs buy filtering services from countries with differing religious or cultural values to the UK - attitudes to guns, alcohol, sex and discrimination may not match customer expectations. Some use services that use computer algorithms to do the bulk of their classification. Others may use cheap labour.



"What you can guarantee is that filtering is error-prone. The sheer number of classifications to make means costs have to be kept low. But without some level of transparency and accountability, not just to customers but to the internet at large, why should people trust the decisions ISPs make about what they or their children can see?"

How effective are filters?

The effectiveness of filters is highly questionable, which was illustrated with the recent release of a 'Go Away Cameron' Google Chrome extension that allowed users to bypass the restrictions.

The issue of child pornography has also been drawn into question, given that neither you - nor, more importantly, your child - can easily unearth offensive content with a simple web search.

Recent agreements by Microsoft and Google now mean that any searches for such content will instead serve up warnings that the subject matter is illegal, complete with links to organisations that can help you to battle your evident problems.

Protecting our children

It's easy to get caught up in the issues of government-influenced censorship and miss what's important here. With the prevalence of tablets and smartphones children have far more opportunities to access the internet than ever, and it's becoming increasingly challenging for parents to ensure their kids remain safe online.

A six-year-old is far more likely to stumble across Peppa Pig than anything hardcore, but without dedicated children's accounts

it can be confusing to set content filters without hampering your own experience. The filters can help here, but they might also mean adults will have access only to a child's version of the internet.

Like most things in life there isn't a simple one-size-fits-all solution. The filters remain optional, although new account holders are automatically opted in.

It's worth noting that BT offers three levels of filtering, starting with the usual suspects of pornography, alcohol and drugs, and increasing in severity to the strict setting, which prohibits anything vaguely adult, including fashion, gambling and gaming.

Various other low-cost solutions exist that can achieve similar results, such as CyberPatrol, Net Nanny and Norton Family.

What's the answer?

If parents are seriously concerned about how their children access information online, a filtering solution of some description should certainly be applied. The important thing to be stressed, though, is that a web filter is not a silver bullet.

Just as the television once played the babysitter for many kids, an internet filter has the potential to be viewed the same way - but with more serious flaws. TV, after all, is a one-way medium, while the internet is far more dynamic.

The safest way of teaching children about the internet is to do just that, sensibly and patiently. A filter can stop them seeing many inappropriate things, but only a parent can help them understand and process anything they accidentally (or otherwise) encounter. ☒

MATT EGAN



In defence of smartwatches

Wearable tech is the big buzz phrase of the moment. Alongside headline-grabbers such as Google Glass you may have noticed people starting to wear activity trackers such as the Fitbit, Misfit Shine or Nike Fuelband. Gadgets that sit on your wrist and quantify in how much activity you have partaken. Meanwhile, smartphone makers in particular are keen to sell the idea of so-called 'smartwatches': in effect smartphones that sit on your wrist.

Samsung launched its Galaxy Gear watch to great fanfare (and no great success), and even Apple is rumoured to be launching an Apple iWatch. (With Apple the rumours are almost as important as the facts - if people are talking about an iWatch it means there is interest.)

Such hype doesn't necessarily mean that smartwatches are a good thing. Hype-without-substance usually means that someone is trying to sell you something. And so it is with smartwatches.

Almost everyone who wants one owns a smartphone. What growth there is lies at the less-profitable bottom of the market, with budget phones such as the Lumia 520 and Motorola Moto G. So the makers of high-tech portable devices would like to sell you a new device. A new device that ties you even more to the smartphone they already sold you.

But that doesn't mean that there isn't some value in smartwatches. In fact, I think a wrist-based computer that offers broadly the same functionality as a smartphone could be great - especially if it pairs with your phone.

Feature-filled pocket watches

Consider this: smartphones have largely replaced watches. You carry them with you at all times, and they tell you what hour of the day it is. But they also connect you to the world around you and offer myriad features that your watch simply can't replicate.

But in taking us forward, smartphones are also a retrograde step. Because unlike your



wristwatch you have to pull your smartphone out of your pocket to view it. The ergonomic brilliance of placing the face of your watch on your wrist has to date not been replicated by your smartphone. So, as great as they are, smartphones have taken us back to the era of the pocket watch.

E-book readers became popular only when they could offer an experience as good as that of reading a paperback book. Smartphones blew straight past that phase because they offer so much more useful and fun functionality. But the ability to add in wristwatch convenience to the

functionality of your smartphone would be a good one. Great, even.

I wouldn't expect a smartwatch to replace a smartphone. That's not what I'm saying. It's unlikely you'd ever want to type out an email on your wrist. But consider the benefits if you could pair your phone's functionality with a wristwatch: you'd never have to fumble in your pocket to answer a call or change tracks. You could tell the time without opening your bag or reaching for your inside pocket. And you could do it all without draining your phone's battery by using the display, or advertising the presence of £700 worth of smartphone hardware, just waiting to be stolen.

The price will have to be right, and the user experience as good if not better than using a smartphone itself.

But smartwatches could well prove to more of a hit than a fad. Because they will take us out of the pocket watch era of smartphone usage. ☒

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The makers of high-tech portable devices would like to sell you a new device - one that ties you even more to the smartphone they already sold you

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ANDREW
HARRISON

Figure of fun, figure of eight

Twenty years was a fair old time for Windows' reign of error. With its star firmly in the descendent, we can now focus on the more fitting alternatives.

Just how poor is the current Windows experience was brought home to me over the past few weeks after being forced to use Windows 8.1. And by forced I mean a loaded pistol was held to my head. Along with a shotgun, assault rifle and climbing axe. Although the primary weapon that stakes out the latest Tomb Raider game must be the hunting longbow, wielded by a young Lara Croft with devastating effect (once I'd got the hang of the long draw technique...).

Back in the 90s Microsoft manoeuvred shrewdly once it was in its monopoly position, using dirty tricks to squash competition that were legally documented and put on the public record at the time of the US anti-trust trials of 1998-2001. So now we know how Microsoft falsified evidence, bullied PC manufacturers to preinstall only Windows, and conspired to ensure rival Apple made Internet Explorer the default web browser on the Mac.

It's payback time. Now Apple has demonstrated that it too is not above some underhand tactics to discourage people further from using Windows.

Apple embraces Windows

Since 2006 it's been a doddle to run Windows on an Apple Mac, thanks to a complete processor overhaul that put an x86 Intel chip into every Macintosh.

Prior to this, you could run Windows on a Mac using VirtualPC software, but the performance hit of emulating x86 on a PowerPC chip meant this approach was for masochists only – those thick-skinned enough to run Windows, coinciding with those who could tolerate the slo-mo interface.

Thanks to their use of the same Intel chips, and the arrival of the Boot Camp application in OS X, it's now easier to clean install Windows on a Mac than on any regular Windows PC, with all necessary up-to-date drivers installed in a single click.

Apple has made available these required drivers since the launch of OS X 10.4 'Tiger' – extending support first for Windows XP, then Vista, and finally Windows 7 and Windows 8. And this is where Cupertino's black-ops team really went for the jugular. The Mac Pro was



their chosen tool – Apple's new professional workstation PC now incarnate as gleaming gothic Pepsi can.

Apple extinguishes Windows

Remember, the Mac Pro is an expensive desktop system aimed principally at media and design professionals – but those who may be tempted or required to boot into Windows for a particular piece of software that's not available on OS X, or which won't run virtualised in VMware Fusion or Parallels.

Unlike all other current Apple Macs, though, for this machine of all machines Apple has not released Windows 7 drivers. Instead, it officially supports only Windows 8 on the Mac Pro.

Thanks to that decision, and my need to test Tomb Raider 2013 for DirectX 11 against its new counterpart of Tomb Raider 2013 for OpenGL 4.1, I found myself in the user-hostile world of Windows 8.1 – and

for far too long, given my slow-witted way of playing FPS games.

Contrary to what some authorities told me, the lip-service upgrade called Windows 8.1 is little different to Windows 8. Booting directly to 'classic desktop' and adding a button that still zips you off to Metro, sorry, Modern UI hell does not a new and improved operating system make.

There's still the painfully sharp-cornered interface, bereft of subtle depth cues such as drop shadows, and with screaming block capitals as a textual interface. Tinkering with the settings and Googling for solutions to everyday computing tasks even kept me from quality gaming time.

Clever Apple knew that by forcing people to use Windows 8, and especially more discerning pros using the Mac Pro, it was a surefire way to keep them returning to the OS X fold, probably vowing never to touch Windows again. ☒

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It's payback time. Now Apple has demonstrated that it too is not above some underhand tactics to discourage people further from using Windows

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CHRIS
MARTIN

Curved screens are a passing fad



If you follow the latest developments in tech, you can't have failed to notice an increasing number of curved-screen devices, especially TVs and smartphones. It seems everyone has forgotten how, not so long ago, they were in a rush to upgrade from their old curved- (albeit convex rather than concave)-screen TV to a flatscreen as soon as they could afford the latest Sony or Toshiba.

So why the return to curved screens – and were we wrong to turn our backs on them in the first place?

Marketing hype

I've seen plenty of examples of big-screen curved sets at computing tradeshows. But while their design and thin profile impress, there's no real benefit to the curve.

You might have seen LG's advert for its OLED curved TV. It claims it is "reflecting how we see the world". Hang on, wasn't that the idea behind 3D? This must be an admission that 3D was a flop, leaving manufacturers without an innovation to flog.

As far as I can see, curved TVs exist only for the marketing hype. Having seen plenty of demo footage, I'm at a loss to work out how it looks any better on a curved screen. I'm sure the only people who say it's more immersive are sitting bang in front of the screen, in the sweet spot. Even then, I'm convinced the effect is merely psychological.

And what about everyone else? Viewing these curved screens from the side puts you at a noticeable disadvantage, since you can't see the image properly. So don't bother inviting people round for a movie night to show off your new purchase.

The latest development from LG and Samsung is TVs that convert from flat- to curved screen at the touch of a button. That's an awesome trick, but good luck affording one of those televisions.

“ 3D was a flop, leaving manufacturers without an innovation to flog ”

Curved screens aren't limited to TVs, with several smartphones and other devices such as smartwatches sporting them. Later this year, Archos will launch a smart wristwatch with a curved (albeit E Ink) screen.

There are two key smartphones with a curved screen: the Samsung Galaxy Round and LG G Flex. The cynic in me didn't expect either would reach UK shores; it seemed more likely that the Korean tech giants would trial the phones on home soil to gauge reaction. However, you can already pick up a G Flex at Carphone Warehouse.

At around £700 on a SIM-free basis or £57 per month on a contract, the G Flex is far from cheap; you've got to really want one to buy it. Showing off a phone with a curved screen would earn you plenty of kudos, but it's a trick you could pull off only once.

Improved ergonomics

I saw the G Flex at January's CES tradeshow in Las Vegas and asked LG what is the benefit of its curved screen. The rep could give me only one answer: ergonomics. The device is said to sit better in your hand when held, or to your face during a call. In my experience, neither argument is true.

Curved screens are also claimed to enhance your experience when interacting with the phone. But in portrait mode it makes no difference, and in landscape the screen just isn't large enough for the curve to make gaming or watching videos any more immersive than on a flatscreen.

I haven't yet seen the Galaxy Round, but its design seems even dafter: curved from side to side, rather than top to bottom. There's no benefit in portrait mode, and I expect using the Galaxy Round in landscape mode will be worse than using a flatscreen.

I'm sure some people with more money than sense will buy a curved-screen phone, but it will be a passing fad. It's an answer to a question nobody is asking. Show me a roll-up smartphone, and then we'll talk. ☒

Why Lenovo has bought Motorola

Matt Egan examines what the acquisition means for Google, Android and the smartphone market

Lenovo has agreed to buy Motorola from Google for \$2.91bn. On the face of it that's a big loss for Google, given that it spent \$12.5bn buying Motorola in 2011. So what's going on? Here we'll look at why Lenovo has bought Motorola, why Google has sold it, and what it means for Android and the smartphone market as a whole.

Lenovo has operational scale, access to components, and a strong brand name in the important emerging markets of Asia and Africa. Motorola makes great products such as the Moto X and Moto G, and brings a very close relationship with Google. Lenovo is buying the soft- and hardware engineering expertise required to make great phones, and bringing the ability to punt them out cheaply and at scale.

Then there is the sympathies between the brands. Motorola is a strong brand in the US and south America, Lenovo in Asia. The joint venture could be a potent mix, as the two brands are quickly merged.

With the capture of Motorola Lenovo just became the third biggest smartphone maker in the world. According to Strategy Analytics the combination of Lenovo and Motorola accounted for 6 percent of global smartphone shipments in 2013. Lenovo alone shipped 45 million smartphones last year, according to IDC. Furthermore, Lenovo is huge in China, which is a major source for smartphone growth. And it has that ability to manufacture and roll out products on a huge scale (did we mention that?).

Motorola's engineers can design great phones, and Lenovo can make sure they reach every corner of the world. Motorola has a full version of Android that is fully featured and easy to use, and as a huge PC- and laptop vendor Lenovo can access all the components it needs. It has one of

the biggest channels to market of any tech company, and the scale to make cheaply the great things Motorola designs.

This matters because there are only two ways in which the global smartphone market will grow. Number one: first-time purchasers in Asia and Africa. And secondly: budget smartphone purchasers in the

sat easy with Google's other Android partners, who must have felt as though they were competing with their partner.

Of course, buying something for \$12.5bn and then selling it for \$2.91bn isn't great business. But it's also not the full story.

You'll read a lot about how Google has kept hold of Motorola's patents, which will generate revenues in the future. Many analysts are arguing that Google only ever wanted Motorola's patents – the vast majority it is keeping for itself and licensing back to Lenovo. The value of those patents to Google is known only to Google.

More hard news is that Google in fact divested of Motorola for \$5.3bn, as it sold the set-top part of Motorola to IBM for \$2.4bn some months ago. That leaves a \$7bn loss on a loss-making business offset only by some patents of dubious value. It starts to make more sense, but what's the real game here?

Ultimately, a strong

Lenovo/Motorola hybrid selling large volumes of Android phones can only be good news for Google.

The African and Asian markets are dominated by Android, but mostly by cut-down flavours of Google's 'open' OS that don't generate the data, or media and app sales, via which Google monetises Android. A successful Lenovo will sell Android handsets in western markets, too, increasing Android market share there.

Motorola's expertise could ensure that those people who get new Android phones spend money on using them, too, and use them for all the web-based activities via which Google generates data and therefore ad revenue. The Android market is hopelessly fragmented right now, but it will consolidate around a few big brands. Samsung and Sony have the high-end sewn up, albeit in a fight with an ailing HTC. Lenovo/Motorola could Hoover up the bottom end of the market.

In the long run fewer, better Android manufacturers is good for Google. So the strategy of selling Motorola to the right company makes sense.

Then there's the Samsung question. Samsung is the most successful Android phone maker, but famously never mentioned 'Android' when it launched the Galaxy S4.



saturated Western markets. A combined Motorola/Lenovo will be able to make cheaply great handsets, and ship them to every market. That's great news for them and for consumers, and poor news for the likes of Huawei, ZTE and LG.

Why Google has sold Motorola

In the short term Google has divested itself of a loss-making division. Moreover, running Motorola was a distraction from Google's core business of getting consumers to use its services and then using the data generated to sell advertising. Running Motorola never

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With the capture of Motorola Lenovo just became the third biggest smartphone maker in the world

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Using a Samsung phone is very much a 'Samsung' rather than a 'Google' experience, complete with Samsung stores and services. Samsung has even hinted at moving away from Android and on to the Tizen platform, which would be disastrous for Google. Should Lenovo and Motorola perform as expected, Samsung becomes less important for Android. It would be a blow to lose Samsung, but it would no longer be a terminal blow. The purchase and sale of Motorola could be seen as a \$7bn insurance policy against the big phone makers jumping from the good ship Android.

Finally, it's worth looking at the economics of Google buying Motorola in the first place, and then selling it for a loss.

Google is incredibly cash rich. In this period of the company's history it has money to spend, and strategic goals to fulfil in a rapidly developing market. We won't know for a while if buying and selling Motorola makes sense, but it certainly doesn't put Google in financial difficulty. It's prepared to buy its strategic goals.

Google bought Motorola to keep an important Android player in the smartphone- and tablet market. It bought it for its manufacturing and design expertise, for its patents, and to ensure Google had a stake in

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Motorola's engineers can design great phones, and Lenovo can make sure they reach every corner of the world

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the nascent Android hardware market. It didn't buy it to make money.

Given that the Nexus products Google sells in partnership with other hardware vendors have continued to sell in great numbers during Motorola's entire time in the Google fold, it seems highly unlikely that Google ever looked to run Motorola as a going concern. Which is good because it never did.

No. We think Motorola has served its purpose for Google. By selling it to a strong manufacturer such as Lenovo, Google will calculate that it stands to make up its losses in future market share and revenue, as well as shoring up the future of Android in a smartphone world that at least hints at further fragmentation. And it is taking up a small amount of shares in the new Lenovo/Motorola business to indicate exactly that.

What this means for the market

Lenovo/Motorola means good, cheap, full-Android smartphones at scale in all corners of the world. It means a powerful large-scale budget phone maker dedicated in the long-term to Android.

Already the third-biggest smartphone company on the planet, combined Lenovo and Motorola will be able to rapidly increase market share by offering quality handsets to first-time smartphone buyers in Africa and Asia, as well as the West. It has the brands to do so, the expertise and the manufacturing clout. And it has a visible brand on every continent.

In the long term this is good news for Google, Lenovo and Motorola, and potentially bad news for the smaller commodity phone makers and those who wish to see a more fragmented budget phone market. ☒



Ask the experts: curved phones

Are curved phones better than their flat predecessors? Florence Ion canvasses expert opinion

Smartphones can't get any bigger. Talking on today's 5in-plus models borders on trying to hold a tablet up to the side of your head. So what's a phone maker to do to differentiate its phones from all the others? Bend them! These new curved phones might seem gimmicky, but if early models catch on, they'll become the next hot commodity.

LG and Samsung are first to market with their curved mobile devices, the G Flex and the Galaxy Round, the latter of which is available only in South Korea. While we're glad they're not evangelising even bigger phones, we're still left pondering the practicality of a phone with a curve in it.

So what is the deal with these new phones? Does their unusual shape make the phone better to use, or is it all just a marketing ploy to sell more devices? We talked to the experts to find out whether curved smartphones really have a place in your pocket.

Two phones, both curved

Samsung and LG are currently the only mobile manufacturers that sell smartphones with curved displays, and they have entirely different design approaches. LG's 6in G Flex is curved vertically, while Samsung's 5.7in Galaxy Round is curved horizontally. Also, while both display components are technically flexible displays, they're actually placed underneath a curved panel of glass.

If you delve into the specifications, you'll notice that the Galaxy Round is a tuned-up version of Samsung's phablet-sized Galaxy Note 3, while the G Flex is a rounder LG G2 smartphone, complete with volume and power buttons on the rear. Both displays are OLED.

Do they fit your face better?

Remember what talking on the phone was like? Smartphones have been long advertised as app-based mini computers, with the voice functionality taking a backseat, but LG says it curved the G Flex specifically to fit the shape of the average person's face – just like a regular phone.

"The average length of a person's cheek is 107.97mm," wrote Kwan-woo Park, team leader for the G Flex Product Planning team. "We curved each end of the phone to suit this



measurement and reduced the distance between one's mouth to the microphone."

The bend in the phone also helps solves the problem that many large-sized phones have: being too big to talk on. Rather than position the mouthpiece against the side of the chin, which is what usually happens with a smartphone larger than 5.5in, the curved body is meant to help position the mouthpiece by your mouth.

For comparison's sake, the G Flex is 22mm longer than its predecessor, the G2. I held the G Flex up to make a call and while

the bottom of the handset was technically closer to my mouth, it shot past my chin. It's possible that my head size isn't the one LG intended for its handset, but the G2 felt much more comfortable to hold, regardless.

The Samsung Galaxy Round appears to have been designed for a better viewing experience. Some early reviews of the device mention that call quality is only sub-par, but it's unclear whether that's because of its shape or because Samsung didn't put much emphasis on that feature of the phone.

Do curved phones look better?

One of the most persuasive arguments in favour of curved smartphones is that they simply look better. It may be difficult to imagine why, considering a curved display is in essence just a flexible OLED panel, but that gentle curve helps reduce the amount of ambient light reflections off the screen, which in turn makes it easier to see the display.

Reflections from bright lights around you may prompt you to turn up the brightness on your screen, but in doing so you're also using up more battery power. With less screen reflectance, you won't have to worry so much about the ambient lighting around you, or crank up the brightness just to read a text.

The Samsung Galaxy Round is curved specifically to help with this particular scenario. Dr Raymond Soneira, the president





LG G FLEX

of DisplayMate Technologies, explains:

"The concave screen shape on the Galaxy Round cuts down on reflections from the surrounding ambient light in two ways: first, by reducing the screen's 180-degree opening angle, which eliminates reflections from some ambient light coming from the sides; second, from specular mirror reflections off the concave screen, because the curvature directs reflected ambient light coming from behind away from the viewer's line of sight."

LG added that it also curved the display for a "more natural viewing experience" and the G Flex's shape is meant to reduce glare and distortion. It certainly helps, but its screen is glossy, and it doesn't completely negate reflections - if there's an overhead light above you, you'll still have to turn the phone so you're not staring at a reflection of it.

Do curved phones feel better?

There's a reason old landline phone handsets were curved - they were easier to hold. "A curved phone such as the Galaxy

Round is more comfortable to hold because the hand nicely fits the entire curved back instead of just holding it along the left and right edges," said Dr Soneira. "It also improves screen privacy because the curvature makes it harder for other people to see the screen."

Kevin Costello, a Certified Professional Ergonomist (or CPE) and president of US Ergonomics, a firm that focuses on workplace ergonomics, hasn't had a chance to use either of the devices himself, but he appreciates their form factor.

"If you look at an iPhone or a lot of these 'bricks', they're square or rectangular, and the [human] body is not necessarily square or rectangular."

Costello added that a device that is a little softer in appearance and is formed to fit the body more naturally offers some advantages, and "demonstrates some sensitivity to the fact that we're not all robots". Indeed, the G Flex felt more comfortable to type with two-handed and, despite its large size, wasn't as difficult to grip as other large handsets.

Still a few kinks to work out

As is often the case with new tech, it takes a couple of iterations to get all the kinks worked out. Curved smartphones are so nascent that there are mixed opinions on the quality of the plastic OLED displays.

Although the LG G Flex is comfortable to hold, reviewers have complained that its plastic display is wrought with issues - most notably the worst-in-class 245ppi resolution.

There's also the matter of whether consumers are interested in using a curved phone. Ramon Llamas, a research manager with IDC's Mobile Phones team, doesn't think there's much of a demand for it in the current smartphone landscape.

"I don't hear too many people out there saying I can't hear or be heard very well on my smartphone," he said, citing LG's marketing take on its G Flex. Llamas added that rather than highlighting the hardware, companies should try shifting the focus on the media that can take advantage of the new screens. "Having the curved screen face you is a much more immersive experience... that to me is the silver bullet that vendors are still trying to figure out."

If manufacturers can't get consumers onboard, curved smartphones will likely go the way of the dodo. "Not every display is intended for everybody, or to last long. For this curved display stuff, it's going to take some time," said Llamas.

For more opinion on curved-screen smartphones, turn to page 16. [✉](#)

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Not every display is intended for everybody, or to last long. For this curved-display stuff, it's going to take some time

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Apps must be more expensive

We all like a freebie, but sometimes it's worth remembering you get what you pay for, explains David Price

I was recently involved in a Twitter discussion with a couple of tech fans. Twitter User A recommended an Android game. Twitter User B tutted that it "looked expensive". The game cost £1.49.

Is it possible that smartphone- and tablet users have developed something of an entitlement problem? It's difficult to think of a time when good-quality software has been more widely available or cheaper, but this has made us purse our lips when asked to cough up the price of half a pint for an app that took months to create.

The race to the bottom

When did we get so tight with money? Or, to approach it from another angle, when did software developers get so generous?

It hasn't always been this way, and in certain segments prices have remained relatively stable. During the console wars of the 90s it was normal to spend around £40 for a new game for the SNES, and we're in the same ballpark today: Super Mario 3D World for the Wii U costs £39 on Amazon.

Desktop software varies wildly, and far more software is now distributed for free – Apple, for example, lets Mac users upgrade to OS X Mavericks for nothing – but there are still plenty of higher-priced exceptions. Adobe charges more than £1,000 for the latest version of Creative Suite. And triple-A PC games cost £30 or so when they first come out. It's not as though we're afraid to spend money on software. It's just that when it's called an 'app', the wallet shrinks with fear.

App stores weren't always the bargain-hunter's paradises they are today. But as the number of apps has rocketed and supply outpaces demand, market forces cast their spell, and prices have dropped.

Other than insane competition between thousands of apps, developers are encouraged to pitch their prices low by the importance of the charts; if you can get to the top, success becomes self-perpetuating. It makes more sense for devs to aim for a huge number of low-margin sales than a sensible number at a sensible price. But for every Flappy Bird there are thousands of zombie apps that are never downloaded.

How much do apps cost to build?

We asked some developers about current prices on the various app stores, and if they are enough to make back the costs of an app project.

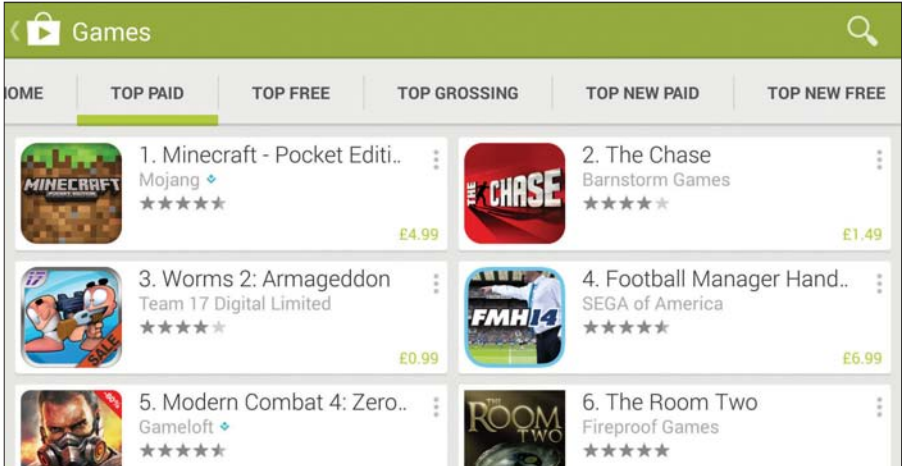
Garry Partington, CEO of Apadmi, stressed that app development shouldn't be viewed as a 'get rich quick' scheme. "With app production costs averaging at £30- to £60k, it takes a lot of downloads at £1- to £3.50 to recoup the costs," he pointed out. "Hit apps recoup their costs and more, but there is an enormous number of apps that will never make a profit."







Is the answer to cut corners in the development process? "Developers in Silicon Valley/San Francisco are known to be notoriously expensive," Partington added,

Play. These are legitimate concerns. But this affects all of us. It's a question of the sort of apps market we're creating.

Dino Patti, the CEO and co-founder of Playdead, believes that developers are pricing their wares about right, but argues that pricing trends in the mobile market mean its games are unlikely to match the experience you can get on PC and console.

"The lower pricing is causing most developers to do projects with a low financial risk," Patti explains. "And the result of that is what we now see in the app stores. I have



HOME	TOP PAID	TOP FREE	TOP GROSSING	TOP NEW PAID	TOP NEW FREE
	 1. Minecraft - Pocket Editi.. Mojang ★★★★★ £4.99		 2. The Chase Barnstorm Games ★★★★★ £1.49		
	 3. Worms 2: Armageddon Team 17 Digital Limited ★★★★★ £0.99		 4. Football Manager Hand.. SEGA of America ★★★★★ £6.99		
	 5. Modern Combat 4: Zero.. Gameloft ★★★★★		 6. The Room Two Fireproof Games ★★★★★		

“

It's not as though we're afraid to spend money on software, but when it's called an 'app' the wallet shrinks with fear

”

“but the counter argument is that you get what you pay for with app development.”

The truth is that, despite the much-heralded lower barriers to entry that accompanied the rise of mobile, creating quality software is just as costly as ever. And lower development spending is likely to result in a drop in quality, as we will see later.

A risk-averse market

Bargain-basement prices may not be good news for developers, but why should we care? I could have written an article about fairness – and I don't see how anyone could seriously argue that 69p is a fair price for a fully realised game – and the effects on small development companies of the brutal price wars on the App Store and Google

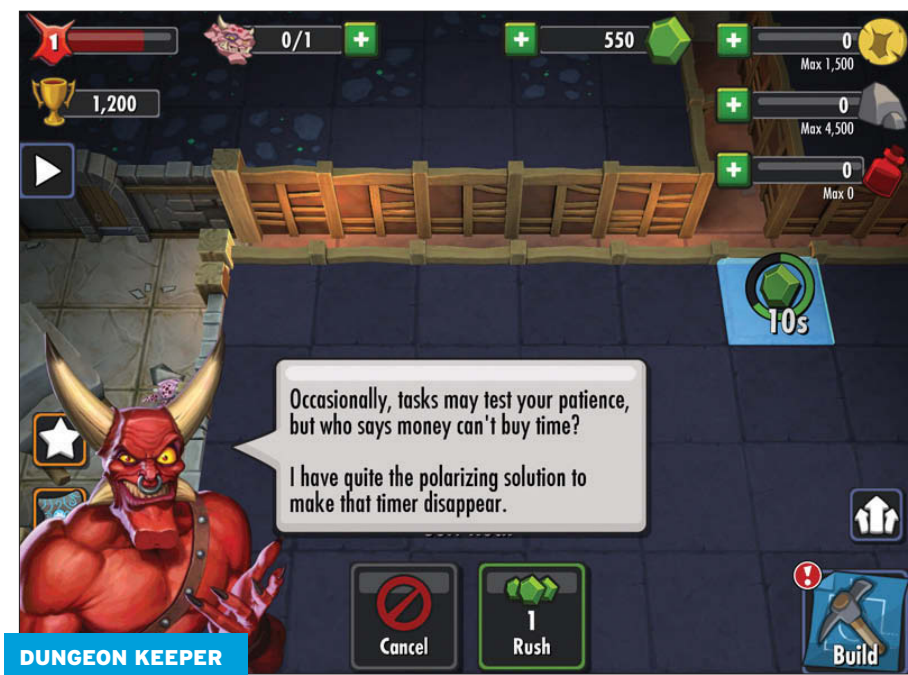
never had an experience even close to those I've had on a PC or console. These two things are almost incomparable.

“Is this sustainable? If you are making free-to-play and small games suitable for mobile devices it's very sustainable. If you are trying to make a quality experience on a bigger budget you wouldn't aim for this market in the first place.”

Bad games

Making good software is expensive, difficult and, above all, risky, because you don't know if anyone is going to like what you've created. And when the returns are so thin, there's little incentive to innovate.

The mobile games market is notoriously prone to cloning, with a tendency to



unoriginality that runs the gamut from respectable homage to outright plagiarism, and this is at least partially attributable to the low margins in the app market. Developers such as Zynga and most recently King.com churn out carbon copies of existing games, because making groundbreaking software isn't worth the effort. Unoriginality afflicts PC and Mac software, too, but the scale of the problem on the App Store and Google Play is unprecedented.

And the mobile games that aren't thinly veiled copies of previous successes are free-to-play abominations. Freemium is the logical endpoint of a market in which nobody is allowed to charge a realistic price up front. If you won't spend money on app downloads, you force software makers to find other ways to get your money. And in the case of freemium, that means games that totally subvert the very idea of gaming in the name of profit.

Let's take an example. The current (and deserved) punching bag for mobile gamers is EA's desecration of the beloved 90s classic *Dungeon Keeper*. *Dungeon Keeper* on mobile is free, but absolutely everything is done to hamper and slow down your experience until you crack and pay for in-app purchases.

Instead of trying to make the game as fun as possible, so that you buy future releases by the designers, and tell your friends how good the game is so they buy it too, freemium designers aim to make your life as unpleasant as possible. It's gaming as

a chore. This is what we get if we don't pay. We get crap, and we end up paying anyway.

Porting

One solution to the lack of adventure among developers is porting. Take Playdead's *Limbo*, for example - an astonishing artful and visually ambitious game that couldn't be further from the world of *Candy Crush Saga*. *Limbo* made its name on the PC, a market where prices are higher and innovation is more likely to be rewarded. Once it succeeded in that environment, Playdead made the transition to mobile at £2.99.

That is also where Curve Digital pitched *Stealth Inc.*, another superb PC game that appeared in iOS form.

Rob Clarke, Curve's PR and marketing manager, comments: "*Stealth Inc* started life as a PC game, moved to the PlayStation and came to iOS most recently as a premium game with a single piece of IAP. We've always priced the game differently in the various markets but, as is 'expected', the iOS version works out about half the price of the PC version.

“

For every Flappy Bird there are thousands of zombie apps that are never even downloaded

”

"We're new to the App Store as a publisher, but I think we got the price right. We stuck with a premium model because we feel that freemium games work only if that's your goal from the design stage, and we're glad to see that there's a healthy appetite for premium titles that have a fairly 'hardcore' appeal on the store."

The upward curve

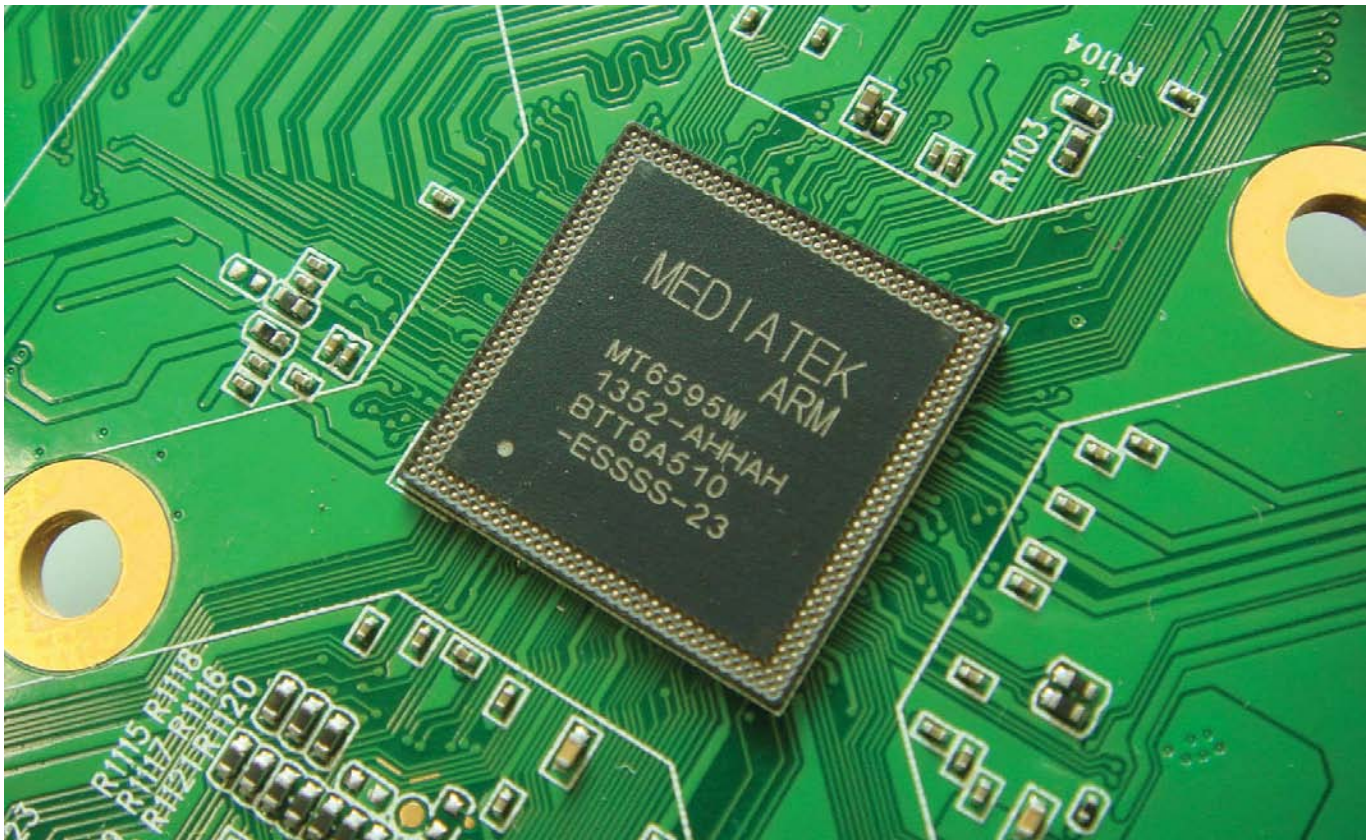
What's the future of app pricing? As Partington puts it, "consumers have now been conditioned to expect the current price point for mobile apps and will, most likely, not be prepared to pay prices more commonly associated with desktop software". Is this a market that can go only downward? Once the price drops, will anyone pay a 'fair' price again?

Well, maybe they will. Trent Oster, director of business development at *Baldur's Gate* publisher Beamdog, believes brand recognition helped his games, but his story makes us feel optimistic.

"We've been lucky," he says. "By bringing such well-known games as the *Baldur's Gate* series to the iPad we managed to get a great deal of attention despite our 'premium' price of £6.99 for the first game and £10.49 for the second. We've moved down in the standings since our launches, but the initial attention got us into the top 10 and was very positive for sales.

"Our subsequent sales were strong and now we're settling down. Our daily numbers are wonderfully stable as fans, old and new, discover our work. When you look at the big picture, between the two apps, we're offering a massive package of more than 200 awesome hours of RPG entertainment, for less than you pay to go to a few movies or a decent dinner out. I feel we represent great and clear value to game fans."

It baffles me that gamers would rather put up with intrusive adverts or a hobbled user experience rather than cough up a few quid. But as long as we continue to pick the free alternative, even when it's horribly flawed, app designers are going to be motivated to race to the bottom. ☒



MediaTek chip to bring powerful budget phones

MT6595 SoC brings Octa-core, 4G LTE, 4k video and more to budget smartphones, writes Chris Martin

MediaTek has announced its MT6595 system on a chip (SoC), which will pave the way for budget smartphones with a high-end specification. Here's why the processor will lead to a sub-£200 iPhone rival.

The firm has announced its latest chip, based on ARM technology, will give smartphone makers the chance to offer a premium device at an affordable price. MediaTek said that it expects devices with the advanced SoC to arrive at between \$200 and \$300, or sub-£200, meaning these devices will rival the iPhone 5s and other flagship devices. The firm expects devices with the chip to be available in the second half of 2014.

Jeffrey Ju, general manager of MediaTek's smartphone business, said: "MediaTek is focused on delivering a full range of 4G LTE platforms. The MT6595 will enable our customers to deliver

premium products with advanced features in growing markets."

Octa-core, battery life and graphics

The MT6595 is powered by ARM's freshly announced Cortex-A17 CPUs. It's got four of

the lower-power cores to keep things ticking over. This helps performance and battery life.

MediaTek sums it up like this: "A scheduler algorithm with adaptive thermal and interactive power management delivers superior multitasking performance and

“


The MT6595 will enable MediaTek's customers to deliver premium products with advanced features

”

those cores, but it also has four Cortex-A7 ones. Put them together and you've got eight cores, or an Octa-core processor.

ARM's big.LITTLE architecture means the processor is efficient, waking up the more powerful cores for bigger tasks and

excellent sustained performance-per-watt for a premium mobile experience."

Also included is a PowerVR Series6 graphics processor for high-performance graphics. This is the same GPU as found inside the iPhone 5s. 

You are being watched

Neil Bennett outlines three ways you didn't know you were being tracked



We all know we're being tracked online, but you might not be aware of just how pervasive is the snooping, and how the biggest data trawlermen are tracking what you're doing when visiting even the most obscure of blogs. We're not talking about government snooping, but commercial companies that are using sophisticated tactics to learn your interests to better target ads.

A key tactic is the offering of free tools to those creating websites, which may make them more aesthetically appealing, easier with which to interact, or simpler for sharing content. These might increase traffic to sites that rely on advertising, brand awareness or the sale of goods of services.

These tools usually include free assets that can be embedded in websites. These are hosted by the company and, when used on your site, can provide their host with information on visitors to your site. If you happen to be logged into one of the provider's sites it will even know who you are. From this it can build up an increasingly detailed profile of your interests.

Google Fonts

Google offers a wide selection of free fonts that is used by everyone from leading news sites to your aunt on her knitting WordPress blog because they're a) free and b) help site designers make their project stand out aside those using the standard Ariel, Verdana and Courier sets. Large sites can host their own fonts, but the WordPress blog your aunt uses

for free is almost certainly using versions of the fonts hosted by Google. The same is true of many similar blogging services.

If you're logged into any Google service - from Gmail and Google Maps to Google+ and YouTube - and you visit a site using Google Fonts, Google knows what you're doing.

Social share buttons

Facebook, Twitter, Pinterest and Google+ have easy-to-add widgets that make it easy for a web developer to install social sharing buttons on a site. These make it easy for you to share articles with your friends, and help promote the site to a wider audience.

Some major sites create their own buttons, but most are happy to use those provided since they can provide counters of how many times an article has been shared.

These buttons include graphics hosted by the social network. If you're logged into Facebook and you visit a site with a 'Share on Facebook' button, Facebook knows.

Buy it on Amazon

Companies can place a 'Buy from Amazon' button on certain articles when the product in question is sold on Amazon. This could be a simple graphic that links to Amazon's site, or they could use a customised button tailored to the design of the site, which may also let the reader set variables such as the size of a piece of clothing or number of items required before being redirected to Amazon.

You probably won't be surprised to learn that these custom buttons include images

hosted - and tracked - by Amazon. You also shouldn't be surprised to find the retailer will likely offer you that same product the next time you visit Amazon to get your Mum that baking book she wants for her birthday.

So what can we do?

To avoid this type of tracking you could ensure you log out of Google services, Facebook, Twitter, Pinterest, Amazon et al when you've finished using them. Or you could use separate browsers for web surfing, social networking and shopping. Either approach can be tricky, given that the line between these various online activities is increasingly blurred as we click on links posted on social-networking sites and within search-engine results, and share online articles via social media.

Perhaps you don't care that Google knows you looked at a pan last Thursday and will keep offering you ads for pans, even after you bought one from Tesco on Saturday. But we've all accidentally clicked on innocent-looking links that were anything but, then hastily shut them down before anyone looked over our shoulder and thought that's our thing (we don't need to spell it out). Imagine getting ads for that the next time your mum visits and asks if she can borrow your laptop to look at something online.

Maybe we should just install that browser extension that opens random sites to add noise to our profiles, so we start receiving random ads. You know, like back when the internet was all about dancing hamsters. ☒

XP support ends: what now?

Should XP users upgrade to Windows 8? Matt Egan explains XP users' options

Microsoft seems determined to undermine Windows 8 all on its own. Not content with running that awful 'Honestly, Windows 8 isn't as bad as you think' ad campaign, in early February Microsoft posted a blog urging readers to 'help' their friends upgrade from Windows XP to Windows 8.1.

After a bit of crawling about how nobody who reads Microsoft blogs could possibly be so pea-brained as to still run XP, we get to the meat of the matter: Microsoft is going to stop supporting Windows XP on 8 April, and it has created this page to explain the options for Windows XP users when the support deadline passes. And what are those options, according to Microsoft? Upgrade to Windows 8 or buy a new PC.

The more cynical of you may have noticed that the two options outlined by Microsoft share in common the fact that they help to line Microsoft pockets. It won't have escaped the more sharp-brained that there is a third option: to keep running XP.

I like Windows 8. It is stable and fast, and the irritations of the Modern UI Start Screen are more than countered by the benefits of Windows 8, such as baked-in antivirus. Given the latter, I think the world would be a better place if everyone running XP upgraded to Windows 8. And many could, given the light system requirements of the OS.

But I don't think they have to. And I don't like Microsoft's messaging around this. So let's look at what is going on.

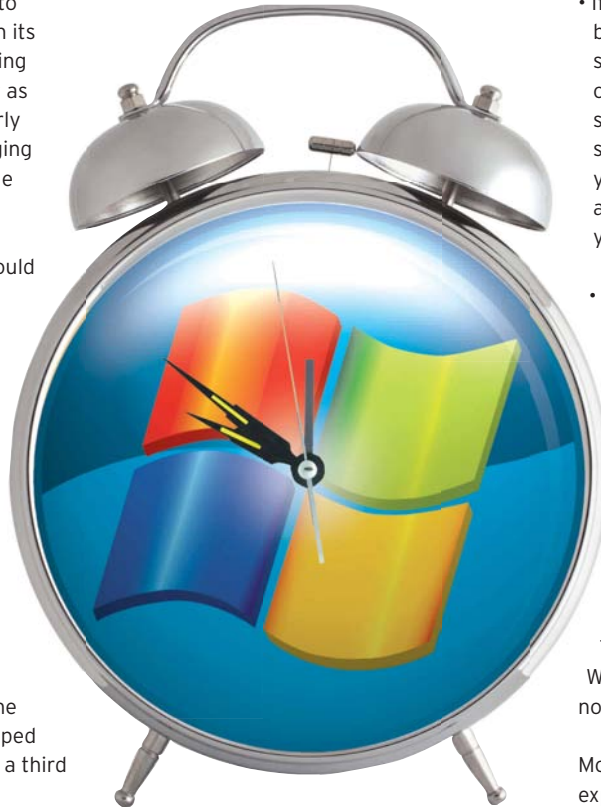
Why is Microsoft killing XP?

It's Microsoft's own (perfectly fair) decision to stop supporting XP. It has supported it free of charge for 13 years, and we are now three iterations beyond XP. It is reasonable to say that Microsoft has fulfilled its contract to users of XP. After all, Windows Vista came out seven years ago, so the end of XP can hardly be said to be a surprise.

Furthermore, stopping support for XP is not the same thing as killing it. XP will still work fine on 9 April. All that is happening is that Microsoft will no longer provide free software patches for XP.

Why are people still using XP?

There are reasons good and bad for people still running XP. On the one hand the car



crash that was Vista may well have put off people from buying new PCs or upgrading the OS. The economic climate over the past six years will have affected this, too.

But it is a good thing that a PC from at least seven years ago is still fulfilling its purpose. It's entirely possible that one of the reasons for the slow-down in PC sales is that older PCs are still working well. And that should be something Microsoft is talking positively about.

Windows XP remains a stable and feature-filled operating system. And for many XP users it is still fit for service.

Should Windows XP users upgrade?

I wish Microsoft would stop being defensive about Windows 8. Upgrading to Windows 8 is a good thing, if your PC can handle it. You won't regret upgrading - if you want to.

More disconcerting is Microsoft's slightly desperate message, replete with a hint of blackmail, that we should 'tell our friends and family' that they need to upgrade or buy a new PC. It's just not true, and it reflects badly on Microsoft to punt out this message.

Here are the facts about the XP-to-Windows 8 question:

- If you are okay running XP now, you will still be okay running XP the day after Microsoft stops supporting it. You will become less okay over time, however. This relates to security and the availability of third-party software and hardware. (Whatever OS you use you should be running up to date antivirus, antispyware and a firewall, and you should keep all software up to date.)
- If you can upgrade your hardware it would probably make sense to do so, but that depends on how easy it is to find the £99 to buy a Windows 8.1 licence. If you are on a budget you don't need to upgrade.
- If you simply can't upgrade your PC, you have to weigh up just how much you need or want a new PC - 8 April is not the deadline for you to decide.

What 'end of support' means

The end of support for XP doesn't mean Windows Update will stop working. It means no new Windows updates will appear.

This has implications for stability. More importantly, it means that any exploits found in newer versions of Windows are likely to be tested to see whether they can also be adapted to attack Windows XP; if they're successful, Microsoft won't help in fixing the problem.

It's possible that some nefarious individuals are holding back exploits so they can unleash them once XP support ends - in effect ensuring these yet-to-be-exploited vulnerabilities never become fixed. Thus, similar to continued use of Internet Explorer 6 in the enterprise space, XP will be more vulnerable than newer OSes to attack.

Indeed, Microsoft has helpfully given its own take on this. It says that Windows XP infections will rise 66 percent after 8 April. But then again, it would.

As I have said above, whatever OS you use you should be running up-to-date antivirus, antispyware and a firewall, and you should keep all software as up to date as you can. No connected PC is safe from attack, so the question is degrees of vulnerability. An XP machine is, in principle, less secure than is a Windows 8 PC. But that doesn't mean you will be a victim any more than it means Windows 8 is invulnerable.

Upgrade your OS if you want to and can afford to. Buy a new PC if you want to. But don't be bullied into making an expensive change on 8 April. ☒

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**Samsung Ativ Book 9 2014 <<****Laptop**

Samsung's latest addition to the Ativ line-up is the 2014 edition of its Book 9 laptop. This 15.6in Full HD portable PC has been upgraded with a touchscreen among other things. A Haswell Core i5 or Core i7 processor means it comes with Intel's latest chips, and it offers up to 14 hours of battery life.

Price TBC

samsung.com/uk



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CHRIS
MARTIN**LG G Pro 2** <<*Phablet*

LG is becoming a big player in the smartphone world. Its latest entry, the G Pro 2, has a 5.9in screen that puts it in 'phablet' territory. The Android handset can record video in 4k quality and offers unique software such as Mini View, which allows the user to change the screen size down to 3.4in.

Price TBC

lg.com/uk

**KEF V720W** <<*Soundbar*

KEF has added to its digital TV sound system range with the V720W. This kit, consisting of a soundbar and wireless subwoofer, aims to boost the audio performance coming from your lounge. The HDMI plug-and-play system utilises KEF's 'tangerine' waveguide tweeters.

£800 inc VAT

kef.com/html/gb





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£6.99 inc VAT (monthly rental), £249 inc VAT (outright)

tado.com/de-en

>> Tokyoflash Kisai Rorschach

Wristwatch

Can you tell the time on this watch*? It might not be a smartwatch, but this device has something a little different to your plain old wristwatch. It's got an E Ink display commonly found on e-readers, which means it's always on. Available in various colours, the Kisai has three difficulty modes for its unique way of displaying the time.

£127 inc VAT

tokyoflash.com/en



Sony Xperia E1 <<

Smartphone

Sony's latest smartphone is aimed at music lovers and comes with Walkman controls. It might be small with a 4in screen, but it has a 'super-clear 100dB speaker'. The E1 also comes with 30 days' free access to music on the Sony Entertainment Network. It should mean you can leave your Bluetooth speaker at home and annoy everyone on the bus even more.

Price TBC

sonymobile.com/global-en



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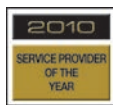
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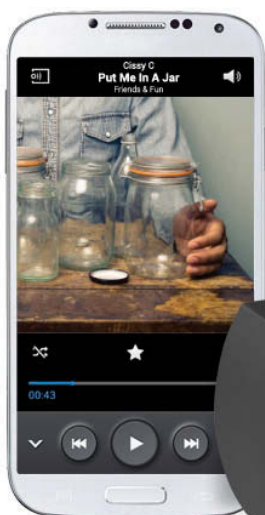
>> Archos Activity Tracker

Fitness tracker

The latest addition to the wearable-tech sector is the Activity Tracker. This affordable wristband will track your steps and calories burned over a week, before needing a recharge. It's also got a clock, you can set goals for yourself and information will all be presented by way of an app.

£49 inc VAT

archos.com



<< Fresh 'n' Rebel Rockbox Curve

Bluetooth speaker

A new player in the Bluetooth speaker market is Fresh 'n' Rebel. The Rockbox Curve comes in two colours and offers stereo audio over Bluetooth or line-in. It's also got a microphone for handling phone calls.

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freshnrebel.com

>> Hanns G HT271HPB

Monitor

Super-size your PC with this 27in monitor. It also supports 10-point multi-touch input, making it great for Windows 8 users. The HT271HPB is LED backlit and uses a Full HD (1920x1080) resolution. It also has four different video modes and VGA and HDMI inputs.

£269 inc VAT

hannspree.co.uk



XSeries U-Shot Monochrome DIRT Edition

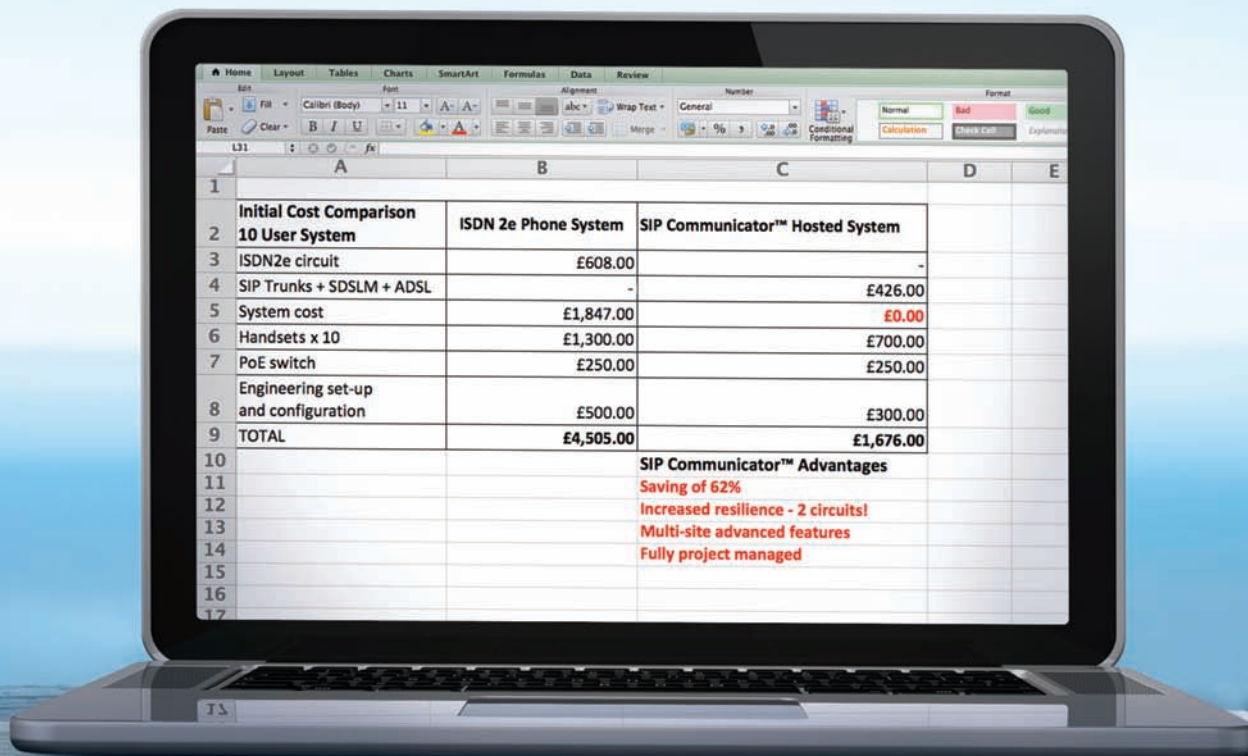
Camera mount

A 1/4 universal screw means you can attach most cameras to the U-Shot, enabling you to film better in various situations, particularly extreme sports. The telescopic design is lightweight at 105g and includes a swivel ball head, thumb screw, wrist strap, foam handle and carabiner. It comes in four new colours 'inspired by the seasons'.

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Specification

1GHz AMD A4-1200;
Windows 8.1 (64-bit); 4GB
DDR3L SDRAM; 500GB
hard disk (5400rpm);
10.1in (1366x768) touch-
sensitive LCD; integrated
AMD Radeon HD 8180;
802.11b/g/n; Bluetooth 4.0;
1x HDMI, 1x VGA; 2x USB
2.0, 1x USB 3.0; 10/100
ethernet; SDXC card slot;
720p webcam with built-
in mic; headphone socket;
33Wh lithium-ion battery;
266x185x29mm; 1.1kg

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★



LAPTOP

Asus X102BA

With a typical online price of around £299, the new X102BA from Asus is one of the most affordable Windows 8 laptops we've seen. It's obviously not going to be a top performer at this price, and its compact 10in screen and downsized keyboard won't suit everyone. But it does provide good value for money if you just want a light, affordable laptop for basic web browsing and running Microsoft Office.

Asus describes the X102BA as "thin and light", which is marketing-speak for 'not quite an Ultrabook'. And since Intel coined the Ultrabook name, this AMD-powered laptop won't do.

In fact, its 10.1in display puts it directly in netbook territory, and while it weighs a highly portable 1.1kg, it also measures a distinctly un-Ultra 29mm thick along the back edge where the keyboard and screen panels hinge together.

Even so, the lightweight design and compact screen mean that the X102BA is easy to carry around when you're on the move. It's solidly built, and Asus is clearly targeting the handbag/manbag audience by offering the laptop in a variety of different colours, including a rather lurid 'hot pink' (see below).

The screen is often a weakness on low-cost laptops, but Asus does a good job here. The 1366x768-pixel resolution is perfectly acceptable on a screen of this size, and images are bright and colourful. Viewing angles are a little limited - around 120 degrees - but the X102BA works well for browsing the web or watching video.



It's touch-sensitive, too, which is a bargain at this price - although we're still not convinced that touchscreens provide any real benefit on laptops.

The speakers are reasonably loud, given the size of the device, but they do sound thin and tinny, so you'll want to plug in some headphones for listening to music. We also found the keyboard and trackpad rather small, and they slowed us down when trying to tap away at full speed while writing this.

The X102BA is well connected, though. It has three USB ports - although just one is USB 3.0 - an SD card slot, and both HDMI and VGA ports for connecting to a larger monitor. And along with 802.11n Wi-Fi and Bluetooth 4.0, Asus has also included an ethernet port for wired networks, albeit the slow 10/100 type. It even throws in a full copy of Microsoft Office Home and Student Edition 2013 as well, which is a nice bonus at this price.

But, as you might expect, performance is modest. The X102BA is currently available only in a single configuration, with a dual-core AMD A4-1200 processor running at 1GHz, integrated Radeon HD 8180 graphics, 4GB of memory and 500GB hard drive.

That combination produced a score of just 1100 points when running the general-purpose PCMark 7 benchmark. That puts

it in the same bracket as Intel's netbook-oriented Atom processor. But, to be fair, it's still not bad for such an inexpensive laptop, and the X102BA can still handle routine web browsing and word processing perfectly well.

Our main complaint is more to do with the speed of the 5400rpm hard drive. Even when using the 'fast start' option in Windows 8, it takes 20 seconds to return from sleep mode into the Windows 8 Start screen, followed by another 20 seconds of cursor-spinning before it really gets going.

But while the A4-1200 may not be particularly fast, it is also one of AMD's supposedly power-efficient 'Temash' processors. Unfortunately, in our battery test, the X102BA managed to get just four hours, 20 minutes of streaming video from its 33Wh lithium battery. Different use may allow you to reach AMD's claimed five hours of battery life. It certainly won't have Intel's power-efficient Haswell chips quaking in their silicon wafers, though.

Verdict

The Asus X102BA offers modest performance, but could still be good value for money. Its screen and build quality are above average for a cheap Windows laptop, and added extras such as MS Office mean it's a basic, but functional laptop at a very competitive price. **Cliff Joseph**



£699 inc VAT**Contact**■ hp.com/uk**Read more**■ tinyurl.com/L2jaxh7**Specification**

1.6GHz Intel i5-4200U (2.6GHz Turbo); Windows 8.1 (64-bit); 8GB DDR3 SDRAM; 750GB hard drive (5400rpm); 15.6in (1366x768) touch-sensitive LCD; 802.11b/g/n; 1x HDMI; 2x USB 3.0, 1x USB 2.0; SDXC card slot; 10/100 ethernet; 720p webcam/microphone; SuperMulti DVD burner; headphone socket; 41Wh lithium-ion battery; 386x258x24.7mm; 2.6kg

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★

**LAPTOP****HP Pavilion TouchSmart 15**

HP's Pavilion laptops have traditionally been the company's affordable 'everyday computing' range. But the new HP Pavilion TouchSmart 15 shows signs of starting to move upmarket a bit.

Last year's model (tinyurl.com/qfdpqsf) is still on sale for around £475 with an AMD A10 processor. However, this new laptop – so new that it hadn't been added to HP's website at the time of writing – jumps up to a more mid-range £699 with a Haswell-generation Intel Core i5 processor running at 1.6GHz, 8GB of memory, 750GB hard disk. For graphics, it adds an nVidia GeForce GT 740M to the Intel CPU's integrated HD Graphics 4400.

That's the only configuration currently available for the 15in model, although there's a 14in version also available for a reasonable £449 – albeit without the nVidia graphics and with just 4GB of memory.

It's not particularly exciting to look at, with a plain matt-black keyboard panel and a few bits of silvery trim here and there. However, it's solidly built with a firm, comfortable keyboard and large trackpad (110x53mm).

The downside of the sturdy build is that the TouchSmart 15 weighs 2.6kg, which is heavy even for a 15in laptop such as this with a built-in DVD drive. This means it's not the sort of thing you'd want to carry around in a



backpack too often, and is more suited to life at home or in an office.

As the TouchSmart name implies, the screen is touch-sensitive, and it provides a bright, colourful image with good viewing angles. However, the resolution is just 1366x768 pixels, which might have been acceptable in one of its more affordable predecessors but is a sign of corner cutting at this price. The display is also glossy, and throws off a lot of glare and reflection.

The speakers work well – they're a little tinny on higher frequencies, but they produce a pleasantly full sound so that you can listen to some music without having to wear headphones or use external speakers.

Performance is respectable, too. Admittedly, a score of 2860 points on the PCMark 7 benchmark isn't going to win any awards, but it's not at all bad for a laptop that uses an ageing 5400rpm hard disk.


The Core i5 processor provides enough horsepower to handle Microsoft Office and web browsing with ease, while that 8GB of memory ensures that it can tackle more demanding tasks such as video editing as well. One place you'll really notice the sluggish hard drive is when you perform a

cold Windows boot, which involves about 45 seconds of warming up followed by another 15 seconds of cursor-spinning before the laptop fully comes to life. However, using the Windows 8 'fast start' option – another name for sleep hibernation – cut the boot time down to a more respectable 15 seconds.

And, of course, there's that nVidia GeForce GT 740M graphics card. This allowed the TouchSmart 15 to hit 60fps when running our Stalker test at the laptop's native 1366x768 resolution. And if you can live without the DirectX 11 eye-candy effects, it can run the more demanding Batman: Arkham City at a playable 30fps as well, so it's certainly capable of some casual gaming action when the need arises.

Battery life isn't too bad either. Switching to the integrated HD 4400 graphics allowed the laptop to run five hours, 45 minutes of streaming video via Wi-Fi.

Verdict

The lack of decent screen resolution is disappointing in a laptop costing almost £700, but the HP Pavilion TouchSmart 15 is a solid workhorse for a reasonable mid-range price. It's not particularly portable, but it's a solid choice for people who want a powerful all-round Windows laptop that can be used as a desktop-replacement system at home.  **Cliff Joseph**



£1,926 inc VAT

Contact

■ dell.co.uk

Read more

■ tinyurl.com/nthyu44

Specification

2.2GHz Intel Core i7 4702HQ quad-core processor; 15.6in (3200x1880) QHD+ touchscreen display; 16GB DDR3 memory; nVidia Quadro K1100M GPU with 2GB memory, Intel HD Graphics 4600; 256GB LiteOn mSATA SSD; 500GB Seagate hybrid hard disk with 8GB flash; 802.11ac 2x2 MIMO, Intel Dual-band Wireless AC 7260; Bluetooth 4.0; stereo microphone; 372x254x18mm; 1.88kg

Build: ★★★★★
Features: ★★★★★
Performance: ★★★★★
Value: ★★★★★



LAPTOP

Dell Precision M3800

The Precision M3800 is a mobile workstation that closely resembles Dell's XPS 13 and 15 Touch gaming laptops (tinyurl.com/orzby6L). We looked at the top-of-the-range model, which has a QHD+ resolution display, with a whopping resolution of 3200x1880 pixels. Although this is short of 4K, the M3800 still has more pixels-per-inch than the Retina display on the MacBook Pro (tinyurl.com/L6hauze). It's also touch-sensitive for use with Windows 8, and is able to recognise 10 simultaneous presses.

The M3800's chassis is built from aluminium, with a black carbon-fibre base. The surface around the Scrabble-style keyboard is covered in a soft rubbery material that feels especially comfortable during long periods of use.

There's also a large trackpad with plenty of room for swiping and pinching. Thanks to Dell's proprietary input software, multitouch gestures are supported. It feels natural: sliding two fingers up and down scrolls through web pages, while a single light tap creates mouse clicks by default.

There are three USB 3.0 ports and a USB 2.0 socket, as well as a battery life indicator, Mini DisplayPort and HDMI connectors. A USB-to-ethernet adaptor is supplied, and the Windows recovery files are bundled on a memory stick. The lack of built-in ethernet is partly mitigated by 802.11ac wireless capability, although this is a low-cost version featuring just two antennae.

A single component defines the M3800 as a mobile workstation - its graphics processor, here an nVidia Quadro K1100M with 2GB of video

memory. This professional graphics fitting is intended for use with design software that supports nVidia's CUDA hardware acceleration, such as Adobe After Effects.

There's a Haswell-generation Intel Core i7-4702HQ processor, running at 2.2GHz, with a maximum Turbo frequency of 3.2GHz. Coupled with 16GB of DDR3 memory, the M3800 should represent a powerhouse for video editing, audio production and 3D design.

Impressive processor benchmark results support this claim. A CPU score of 6.36 points in Cinebench R15 is about 10 percent fewer points than the score achieved by a 3.5GHz Intel Core i7-3770K desktop processor. The Dell M3800's rendering times in Autodesk 3ds Max were similarly close.

The Quadro K1100M is a mid-range workstation graphics card, with less memory, bandwidth and shaders than the high-end Quadros and FirePro mobile GPUs fitted in 17in mobile workstations.

In Cinebench R15, we recorded an OpenGL score of 50.55fps, which is roughly half that achieved by a desktop workstation with an AMD FirePro W5000.

Our review model came with two storage drives - a 500GB Seagate hybrid hard disk and 256GB LiteOn mSATA SSD. During testing, the SSD managed 478MB/s burst write speeds, but its 4K QD32 speed of 216MB/s indicates middling IOPS performance of around 55,000.

In use, the M3800 offers one of the best experiences available from a Windows laptop. Applications start and run quickly. Even under load from demanding software, it carried on without getting bogged down. The spinning fans are audible, but no more than with other laptops.




Unfortunately, there's a problem with the QHD+ display. Windows doesn't handle scaling of text and graphics particularly well. It's fine in Modern UI, and with Windows 8.1, the system automatically adjusts the desktop DPI, so the text and graphics used in the operating system appear normal, with the crisp font rendering you expect with a high-PPI display.

But that scaling isn't applied to every piece of graphics or text. In Photoshop, for example, the menus and pop-overs are rendered at regular DPI, regardless of the setting in Windows, making them unreadable, and the same is true in many other programs.

Dell isn't to blame, and it's up to Microsoft to improve the DPI options in Windows, and push application vendors to provide additional support. Until then, the only way to avoid this is to opt for the lower-end model and its 1080p display.

Another issue is its battery life. It's logical that with high performance and a thin chassis, a hardware sacrifice must be made elsewhere, and it seems that battery longevity is it. We set VLC to loop *Avatar* at 80 percent brightness, but the M3800 ran out of power at two hours, 58 minutes. Since nVidia Optimus should switch between the Quadro and integrated Intel HD4600 GPU depending on demand, we ran the test again to check, after manually switching off the Quadro in the nVidia Control Panel, but there wasn't any improvement.

Verdict

The Dell M3800 squeezes incredible performance into a thin and light chassis, with superb build quality, but its poor battery life is unacceptable, and there's no easy fix for the DPI issues in some Windows desktop software.  **Orestis Bastounis**



£449 inc VAT**Contact**■ toshiba.co.uk**Read more**■ tinyurl.com/otk6uzd**Specification**

1.7GHz Intel i3-4005U;
Intel HD 4400; Windows
8.1 (64-bit); 8GB DDR3L
SDRAM; 1TB hard drive
(5400rpm); 15.6in
(1366x768) gloss TN
display; 802.11b/g/n; 1x
HDMI; 2x USB 3.0, 1x USB
2.0; SDXC card slot;
gigabit ethernet; 720p
webcam and microphone;
headphone socket; 41Wh
lithium-ion battery;
378x250x21.3mm; 2.2kg

Build: ★★★★★☆

Features: ★★★★★☆

Performance: ★★★★★☆

Value: ★★★★★☆

**LAPTOP****Toshiba Satellite M50-A-11Q**

Most low-cost laptops tend to be big, heavy 15in models, but while Toshiba's Satellite M50 has a 15in screen, it's also an impressive attempt to produce something a little more elegant, while still offering very affordable prices.

There are several options in the M50 range, equipped with a variety of both Intel and AMD processors, and with prices varying from £400 to £600. Our review model, the M50-A-11Q, includes a 1.7GHz Intel Core i3-4005U processor, along with 8GB of memory and a 1TB hard drive. That's very good value for money, and the M50 is also smarter and more portable than many of its low-cost rivals.

It makes a good impression straightaway, as the brushed metal casing of the M50 measures just 21.3mm thick, and the laptop weighs 2.2kg. That's slimmer and lighter than most 15in laptops, and you can pick it up with one hand or carry it around in a backpack without too much trouble. The build quality is good, too, with a firm, comfortable keyboard and trackpad, and the M50 certainly doesn't look or feel like a budget laptop.

It's well connected, too, with gigabit ethernet, HDMI and a pair of USB 3.0 ports, along with one additional USB 2.0, memory-card slot and headphone socket. There's no DVD drive, though, so you'll need to provide an external drive of your own if you want to watch DVD films or install software from a disc.



The overall speed is average for a laptop in this price range. The Intel Core i3-4005U processor lacks the Turbo Boost option found in most current Intel processors and produced a low score of 2511 points when running the PCMark 7 benchmark. That's as much a reflection on the laptop's hard drive than on the processor, and the M50 is more than adequate for basic web browsing and running Microsoft Office applications.

Its 8GB of memory will also help when working with large photo or video files, so an occasional spot of photo- or video editing isn't completely out of the question.

It can even handle some casual gaming, hitting a playable 30fps when running our Stalker benchmark at 1280x720 resolution.

Slow start

The one area where the sluggish hard disk affects performance is during the initial startup process. A cold boot takes about 30 seconds to get you to the Windows 8 Start screen, although using the Windows 'fast start' option shaves about 10 seconds off that time.

However, in both cases there's still a further 15-20 seconds of cursor-spinning while the laptop gathers its wits and gets

itself fully up to speed.

Battery life turned out to be a pleasant surprise,


though. Toshiba quotes a maximum of seven hours, 15 minutes, and we recorded a full seven hours (420 minutes) from the Satellite M50 in our streaming video test.

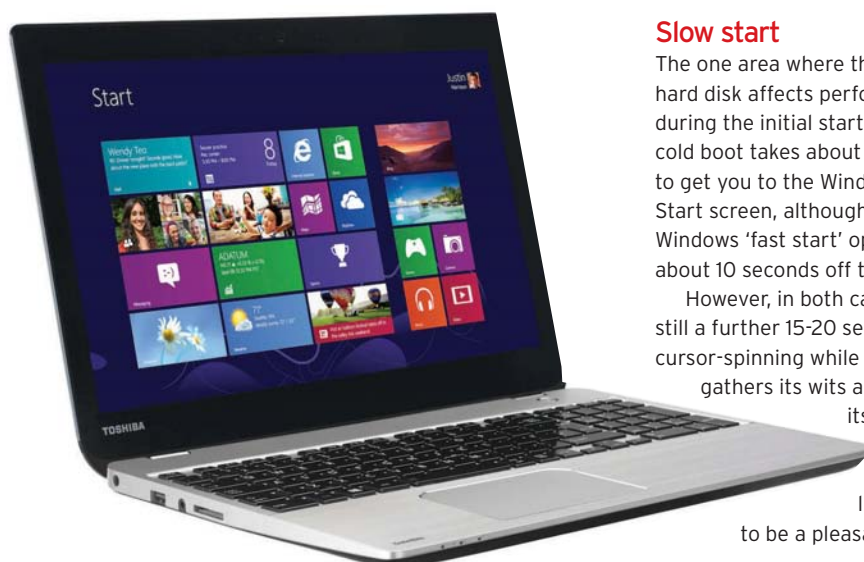
So far, at least, the Toshiba looks like an absolute bargain, but there's one aspect that shows clear signs of cost-cutting. The 1366x768 resolution of the 15.6in screen may be an acceptable compromise at this price, and it does produce a bright, colourful image that works for web browsing or watching video.

However, the viewing angles are very limited, and the image darkens sharply as soon as you move your head more than about 45 degrees either vertically or horizontally. The screen is also very glossy and throws off a lot of glare and reflection in bright sunlight.

That's disappointing, but the M50 can still allow you to enjoy web browsing or watching films once you've moved yourself and the laptop into the best position.

Verdict

The Toshiba Satellite M50-A-11Q provides very respectable performance, battery life and build quality at a competitive price. It's not perfect, and the screen's limited viewing angles are a clear weakness. Even so, it's well worth considering if you're on a tight budget and looking for a good, basic laptop that can handle most day-to-day computing tasks for less than £500.  **Cliff Joseph**



£1,627 inc VAT**Contact**■ computerplanet.co.uk**Read more**■ tinyurl.com/m5hL66v**Specification**

3.4GHz Intel i5-4670K; Gigabyte GA-Z87N-WIFI motherboard; 16GB Corsair Vengeance LP DDR3 RAM; Windows 7 64-bit; 2TB Seagate ST2000DM hard drive; 240GB Corsair Force LS SSD; BitFenix Prodigy Mini ITX case; 550W Corsair VS550 PSU; Corsair H80i Liquid Cooler; MSI nVidia GeForce GTX 770 (HD 4600) with 2GB memory; 6x USB 3.0; 2x USB 2.0; 2x DVI; 3x HDMI; DisplayPort; gigabit ethernet; 23.6in AOC e2450Swh display; Logitech Z313 speakers; 16x LG BH16NS40 Blu-ray writer; Corsair Raptor K50 gaming keyboard; Corsair Raptor M40 gaming mouse

Build: ★★★★★☆

Features: ★★★★★★

Performance: ★★★★★☆

Value: ★★★★★☆

**GAMING SYSTEM****Computer Planet nVidia Ultimate**

Gaming PCs have a nasty knack of turning up as brash, oversized, poundingly loud thunder boxes with batteries of flashing lights and demonic glows emanating from within. This Computer Planet PC seems to have broken that spell.

The first shock is the case, a mini-ITX BitFenix Prodigy. Rather squat and low-hung, it's not the towering overpowering slab we've come to expect from gaming PCs. And while it's hardly the prettiest of cases, its handles make it relatively simple to carry around - even if we're not impressed by the way it wobbles from side to side.

Given the limited size under the lid, the BitFenix does a good job of fitting everything in, although you wouldn't want to run a dual graphics card setup with this PC.

Drive slots are also rather lacking, and there isn't much room for additional 3.5in drives. Ventilation is good, though, and the 550W Corsair PSU and H80i liquid cooler do an excellent job of keeping temperatures down.

We saw it reach 256W of power consumption during testing, so it's pretty modest on power given the hardware on board, although it's still not the quietest system.

The Intel Core i5-4670K is a common choice right now, and Computer Planet hasn't come up with any twist on this most ubiquitous of processors. Mind you, it's paired with 16GB of low-profile Corsair Vengeance memory, and that probably helped propel it to a mighty PCMark 7 score of 6875

points - not on a par with the best pixel-poppers from Chillblast, but a quietly impressive achievement nonetheless. In Geekbench 3, the system averaged 17,253 points.

The storage drives are good, too. A 240GB Corsair SSD drive gives the PC a great gulp of speed to kick everything off, while a Seagate hard disk supplies the capacity - a useful 2TB of it. There's also a 16x LG Blu-ray writer to ratchet up the storage options.

The GTX 770 graphics card isn't perhaps the last word in high-octane gaming, but this 2GB MSI Lightning rendition is overclocked and primed to push the GPU to its absolute limit.

Little surprise that it turned up some eye-catching figures in our benchmarks. Its score of 124fps in Aliens vs Predator is impressive at 720p, and it keeps up the firepower with a comfortably playable 69fps at the highest resolution. Sniper is equally ravishing, and its top score of 299fps is barely slower than that of GTX 780 systems. It fell to 151fps in the Medium settings, and even managed an acceptable 38fps at the Very High level.

All of this is set against the



balanced palette of the 23.6in AOC e2450Swh, an LCD monitor that injects good colour into its smoothly refreshed graphics, despite a lack of the decent viewing angles.

The multimedia extravaganza is topped off by the speakers, a set of Logitech Z313s, which add extra punch to the bass.

Not that Computer Planet let it rest merely at the components. The keyboard and mouse are both gaming peripherals - a Corsair Raptor K50 keyboard and M40 gaming mouse, respectively. The keyboard is particularly nice, and while the strange layout takes some getting used to - it comes with 18 macro keys - the keys have a longer travel and a more positive feel than the spongy keyboards often bundled with modern PCs. It's no Cherry substitute, but will do very well while you save up for a mechanical keyboard. The mouse is also highly accurate, and the unorthodox shape became second-nature very quickly.

Verdict

The Computer Planet offers a healthy dose of just about everything, from multimedia, to searing gaming peripherals and well-specified drives. Its price holds it back slightly, and the Chillblast systems remain better at the very high end. Nonetheless, this is a highly capable system that has no real weakness that we found. ❑ **Robin Morris**



£499 inc VAT**Contact**■ parrot.com/uk**Read more**■ tinyurl.com/nc8nzh7**Specification**

Double-DIN head unit;
6.2in (800x480)
capacitive touchscreen;
Bluetooth 3.0; 802.11n
Wi-Fi, 4x USB (iPod port
5V/2A); Android 2.3
Gingerbread; 512MB RAM;
8GB SD card supplied
(approx 5GB free); 4x55W
internal amp with six 6V
pre-outs; Supports: MP3
and WMA audio (FLAC via
VLC), H.264 video

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★

**DOUBLE-DIN HEAD UNIT****Parrot Asteroid Smart**

Parrot is well-known for its Bluetooth hands-free kits, and the Asteroid range is really an extension of those. The Smart is the flagship model: a double-DIN head unit that replaces your existing stereo.

The 6in, 800x480 touchscreen displays a familiar Android interface, albeit one that's tailored for in-car use with big icons and text.

Don't expect the latest KitKat version of Android, though. The Smart runs a modified version of Gingerbread 2.3. In fact, it's almost better to think of it as a proprietary system since there's no access to Google Play: apps are downloaded from Parrot's own Asteroid Market.

Unlike many double-DIN head units that use the older resistive technology, favoured by older standalone satnavs, the screen is capacitive. It's responsive, but the glossy finish meant we couldn't see anything except reflections when the sun shone directly on to it. We also had a slight problem with condensation inside the screen.

The Asteroid has built-in Bluetooth and Wi-Fi, and comes with a USB GPS receiver and dual-microphone for hands-free calling. To get an internet connection, you can either tether a smartphone or 3G tablet, or use a USB 3G dongle.

The Smart also has an FM/AM radio and an audio player for your music needs. Although there's no CD player, you probably already have your music ripped to MP3 anyway.

Bear in mind that the default player supports only MP3 or WMA tracks. You can play uncompressed FLAC if you install VLC. Assuming you're happy to listen to MP3, the stock player is pretty good. The track and album names are shown with a progress bar, and you can also display album art.



Swiping up and down changes the volume and left or right skips tracks. The snag there is that the volume controls adjust only the main volume. You have to dig into the options for adjusting, for example, navigation volume.

Another way to play music is from your smartphone. The Smart had no problem playing music from an iPhone 5c and will also charge your handset when it's connected.

It's unlikely that you'll use the Smart for watching videos, though, since like most apps, Gallery functions only work when you're stopped. Also, videos can be played only from an SD card and swapping these is a tricky business since the slot is deeply recessed behind a removable panel on the left-hand side of the Smart.

Plus, you'll need to use the included 8GB SD card if you want the satnav app to work since the maps aren't transferable to a bigger-capacity card; at least there's roughly 5GB of free storage for any apps and videos you want to store.

Phone functions

As you'd expect, the Smart works well for hands-free calls. You can have two phones connected via Bluetooth simultaneously, with one set as the 'primary' phone. We found the mic worked well (or at least that's what callers told us) and we could hear the other party clearly on the car's speaker system.

The pre-installed iGO satnav is good, although by no means the best. It's easy to enter a destination as well as follow a route using the screen and spoken directions. You also get realistic junction views and lane advice on motorways.

The routes it calculated during our testing were decent, and you can configure it to plan routes that avoid motorways, tolls and other

common options. By default it warns you when you exceed the speed limit: you can either increase the threshold or disable it altogether.

You can install the Asteroid Smart yourself, but you'll need some competent car-stereo skills to do so. Even with the help of a professional installer, the system was left half working in our test car – a Ford Focus – after a five-hour slog.

Unfortunately, our installer forgot to hook up a wire to the handbrake, meaning we were locked out of virtually every app as the Smart thought we were driving.


You'll also need an ISO harness, so you can plug the Smart into your car's existing wiring and radio aerial, a fascia adapter and possible a double-DIN cage in which to mount the unit. For our Focus, this cost a not-insignificant £60.

The good news is that the Smart isn't too deep, so should fit in just about all cars that have space for a double-DIN stereo. There are four USB ports on the rear of the unit, one of which is used by the GPS receiver. Two USB extension cables are included along with a 30-pin Apple cable – all are designed to be routed into your glovebox.

Should you need it, there's also a minijack socket and cable for connecting older music players.

There are six amplifier pre-outs – front, rear and subwoofer – but we were more than happy with the built-in amp to drive our car's eight-speaker system. There's plenty of scope to tweak the sound with the equalizer and fade/balance controls as we found the Loudness and Soundstage options gave music all the boost they needed.

Verdict

The Asteroid Smart is a decent system, but the total cost makes it expensive.  **Jim Martin**



£243 inc VAT

Contact

■ dell.co.uk

Read more

■ tinyurl.com/po6ga8j

Specification

19.5in viewable size;
5-point multi-touch
function; 1600x900-pixel
resolution; TN panel
technology; 16.7M colours;
White LED backlight;
glossy screen coating;
Stand adjustments: tilt (31
degrees); rated
brightness 225cd/m²;
rated contrast ratio 1000:1
(typical), 8000000:1
(dynamic); Viewing angles
(H/V) 160/170 degrees;
2ms response time (grey-
to-grey with overdrive);
Video connections:
DisplayPort 1.2, HDMI
with MHL, VGA; Audio
line-out; USB 2.0 hub;
506x376x165mm; 4.89kg;
3-year warranty

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★



TOUCHSCREEN MONITOR

Dell 20 Touch Monitor E2014T

Dell's 20 Touch Monitor E2014T is the smallest of a range of touch-enabled displays aimed at Windows 8 users. It's a relatively compact display with a budget price, aimed at educational and home use or information displays in public or retail environments.

Its glossy 19.5in screen supports up to five simultaneous touch points detected by six infrared cameras, which will continue to work even if you're wearing thin gloves. Featuring a 1600x900-pixel resolution, it falls short of the Full HD specification of 1920x1080 pixels, but is more than adequate for running a Windows desktop.

If you're buying this display specifically because you want a small monitor, then you'll find it's not as compact as you might think. The actual viewable portion of the screen takes up a relatively small proportion of the overall size: there's nearly an inch-and-a-half further to go before you reach the edge of the monitor.

Just over half of this thickness is taken up by a flat blank space between the viewable portion and the raised outer frame. This extra space allows you to swipe a finger inwards from beyond the edge of the screen, such as when you want to bring up the charms bar or close an app by sliding it down from the top of the display. This design feature is required in order for the monitor to achieve its Windows 8 Touch certification as it doesn't have a flush edge-to-edge glass front panel.

At 4.9kg, the E2014T is also rather heavier than you might



imagine, which is no bad thing as it needs to be weighty enough to withstand constant prodding and swiping without wobbling or falling over - something it most definitely will not do, no matter how angry you get playing Angry Birds.

A simple tilting stand is fitted which allows a 30-degree backward tilt for more comfortable touch input, but this can be easily replaced with a VESA 100 compatible stand or Dell's own articulated monitor arm.

For a low-cost monitor, the E2014T is surprisingly well connected, with VGA, DisplayPort and a pair of HDMI inputs, one of which also supports MHL for easy connection to a mobile phone with simultaneous charging. If you need a DVI connection, you'll have to purchase an inexpensive adaptor to hook up to one of the digital inputs.

No speakers are included, but there's an optional Soundbar available that clips on to the bottom of the screen to provide stereo sound. Otherwise you can use the standard audio output jack to drive your own speakers.

The display is backed by a three-year warranty, and Dell's Advanced Exchange Service means a replacement unit will be shipped out to you before you return your own, should it be found to be faulty.

This is a TN display, so our expectations on image quality weren't high. Sure enough, our tests revealed a colour gamut of 97 percent of the sRGB standard and colour accuracy, which can't


match up to better performing technologies such as IPS or the PLS panels found in some of Dell's pricier displays. However, checkerboard contrast is good at 820:1 and brightness and colour uniformity is also better than average.

This isn't a monitor to show off photos or video to their best effect - you'll find it's noticeably inferior to a decent tablet - but it acquires itself well for a TN display.

As is typical for TN displays viewing angles are a little restricted at 160/170 degrees. Displaying a solid purple background resulted in noticeable shifts in hue due to viewing-angle. However, the small size of this display means viewing angles to the edges of the screen don't need to be as wide as on a larger screen and, unlike a tablet, you won't be picking this display up and viewing it from all sides.

It's important to note that the two larger displays in the Touch range are very different to the E2014T. The 23in P2314T and 27in P2714T are much more stylish displays, featuring edge-to-edge glass; a more adjustable, more attractive metal stand and superior PLS panel technology. They are also much more expensive, the 23in model coming in at over twice the price of the E2014T.

Verdict

The Dell 20 Touch Monitor is a good choice if you're on a budget and the convenience of touch input are your main concerns.  **Paul Monckton**



£570 inc VAT**Contact**■ uk.nec.com**Read more**■ tinyurl.com/ne9hgbz**Specification**

24.1in LCD monitor;
1920x1200 pixels, 16:10
aspect ratio; 0.27mm
pixel pitch, 93ppi pixel
density; matt anti-glare
finish; IPS technology;
white LED backlight; 8ms
specified response time;
176-degree viewing angle;
1x DisplayPort 1.1a, 1x HDMI
1.4, 1x DVI-D, 1x D-Sub VGA;
3x USB 2.0 downstream,
2 x USB 2.0 upstream;
picture-in picture;
AmbiBright auto
brightness control;
557x378-528x228mm
(whd with stand); 10.2kg

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★

**MONITOR****NEC MultiSync P242W**

Functional PC monitors can be found for less than £100, and just a little more than that will buy you a usable IPS panel. But if you need decent build quality, great images and less challenging overall usability, you'll need to pay a bit more.

The MultiSync P242W is a mid-range 24in screen that's equipped for graphic design, CAD and similar industries that demand a robust and dependable high-performance display. While some high-end monitors are pushing up the pixel count to achieve Retina-class resolution, the P242W sticks with the familiar full-HD specification – but extended vertically to provide 1920x1200 pixels rather than the more letterboxed 1920x1080.

The 16:10 aspect ratio that results from these pixel dimensions means substantially more screen space and it's particularly useful for any work that requires reading down the screen, as less scrolling is required. Regular 16:9 video still works well, with just an extra thin black band top and bottom of the screen.

The panel itself uses IPS technology, advertised as AH-IPS, or advanced high-performance in-plane switching, which is panel-supplier LG's name for its latest generation of IPS screens.

And relatively new to the MultiSync range is white-LED rear lighting, in contrast to CCFL still found in some professional designs; and a true back light rather than edge-lit as used in cheaper or trendy slim panels. This bodes well for more even brightness levels across the entire screen.

We tested display performance with a Datacolor Spyder4Elite calibrator, which indicated a maximum contrast ratio of 680:1 (at full brightness), and 540:1 at a more usable 50 percent level. Maximum available brightness was a high 367cd/m², even if sensible real-world use will be set to 200cd/m² or lower.

Colour gamut was very good, slightly exceeding NEC's specification of 75 percent AdobeRGB, here recorded at 81



percent. For sRGB, the full 100 percent gamut was met.

Overall colour accuracy as measured by the same colorimeter was superb, at an average of just 1.82 Delta E using 48 spot colours.

Luminance was also consistent across the entire panel at different brightness levels, typically just two percent at the higher brightness levels, but with a five percent dip in the bottom right corner. Compared to most consumer monitors, which can have 10- 20 percent variation, this remains a good result.

Thankfully to the use of LED backlighting, the P242W proved surprisingly frugal in power consumption. At 120cd/m² brightness setting it consumed just 18W, and even at full screen brightness this figure rose to just 29W.

The surface finish of the panel is semi-matt, with no glare found from reflected light sources around our brightly lit lab. There was no apparent over-sharpening to provide false detail either, as found on televisions and some budget PC monitors.

Build quality is excellent, solid feeling in matt black plastic, although we found this could easily attract fingerprint marking, for example around the thin 18mm bezel. A useful carry grip is positioned on the rear at the top, making it very easy to lift and carry when required. Ventilation holes run around all four edges to assist ventilation, passive cooling only with no need for fans as found in some professional displays.

The P242W didn't run entirely silent, though. An annoying high-frequency whistle was clearly


audible whenever the monitor was powered up.

The monitor chassis isn't slim at 84mm thick, but is capably supported by the adjustable stand. This allows height adjustment, from 380-530mm, measured from desk to top surface of the monitor. You can swivel left and right on the pillar axis by around 270 degrees, and the face can tilt downwards by five degrees, and upward to the ceiling to 28 degrees from the vertical.

There are no speakers built-in, but you will find a Kensington lock slot at the rear to shackle the monitor to a desk. There are four different video inputs set in the usual underside position facing down: DisplayPort 1.1a, HDMI 1.4, DVI-D and D-Sub VGA. To serve as a USB hub, there are also two Type B serving as inputs and two Type A for connecting peripherals, plus another USB on the right edge of the screen. All USB ports are of the older USB 2.0 specification.

This model has a very good onscreen display (OSD) menu system that puts most consumer monitors of the world to shame. There are two pairs of Up/Down rockers, on right and bottom edge of the bezel, make it easy to move around the OSD without having to reuse the same three buttons for everything. Brightness and contrast are adjustable within fractions of a percent for true precision.

Verdict

The NEC MultiSync P242W is well equipped to be a robust and dependable 24in PC monitor of very high quality to meet professionals' expectations.  **Andrew Harrison**



€399 (£329)

Contact

■ jolla.com
Read more
■ tinyurl.com/pvq59Ln

Specification

4.5in (540x960) IPS touchscreen, 245ppi; 1.4GHz dual-core Qualcomm Snapdragon 400 CPU; Sailfish OS; Adreno 305 GPU; 1GB RAM; 16GB storage; microSD (up to 64GB); 8Mp rear camera, AF with LED flash; 2Mp front camera; video recording up to 1080p; Wi-Fi 802.11b/g/n; Bluetooth 4.0; NFC; A-GPS; Micro-USB; 4G LTE; Micro-SIM; 7.8Wh removable lithium-ion battery; 68x131x9.9mm; 141g

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★



SMARTPHONE

Jolla

Jolla is a smartphone from a company of the same name, founded by a team of ex-Nokia employees. It runs on a new Linux-based operating system called Sailfish OS, the spiritual successor to the MeeGo system that Nokia binned in favour of Windows.

The handset's design is unlike any other smartphone we've seen, except perhaps the two-tone effect in Sony's Xperia range. A two-piece construction has the front rounded at the top and bottom, and the back piece with rounded sides. Those sides not rounded are square, resulting in a slab that's not so comfortable to hold. It's a little chunky, too, at 9.9mm thick and a middle-weight at 141g.

The rear unclips to reveal a removable battery, micro-SIM and microSD card slots. Different colours of detachable backplate each have an NFC chip that stores customising information, letting it dictate wallpaper, custom tones and other settings. Called 'The Other Half', options include Keira Black and Aloe and cost €29 (£23) each.

The Jolla is powered by a 1.4GHz Qualcomm ARM dual-core processor and 1GB of memory. We found that while apps generally launched and closed without hesitation and interface animations were smooth, there were some hiccups.

The camera app, for example, was sluggish to load; and web browsing suffered unreliable pinch-to-zoom and a noticeable lag when rendering pages. Games didn't



perform well either, and the popular Fruit Ninja played at a conspicuously poor frame rate.

There's 16GB of internal storage, expandable by microSD card. The 7.98Wh removable lithium battery lasted a couple of days comfortably, and didn't drop much overnight.

A 4.5in IPS screen with 540x960 pixels is a little short of full Retina-class resolution at 245ppi. Colour saturation is good, though, giving the display an eye-popping look without slipping into garish territory.

Unfortunately, contrast isn't its forte, and the viewing angles weren't up to the normal standard we're used to with IPS technology. There seems to be certain sweet spots where the display looks fine but at angles in between these, everything goes a bit dim and contrast drops.

You'll find the usual Wi-Fi, Bluetooth and A-GPS, plus 4G support, which you'd expect to find on a modern smartphone. It's also got NFC, but this is just there for use with the interchangeable covers.

An 8Mp rear camera has LED flash, joining a 2Mp front webcam. Those numbers sound reasonable, but they're no guarantee of quality.

The main camera was fine when light was good, but it struggled to deliver decent images indoors. The camera app is basic, only allowing adjustment of flash mode, white balance and auto-focus. In video mode, you can shoot 1080p clips.

The Sailfish OS interface is probably closest to BlackBerry 10 in operation. There are no navigation buttons - everything is based on gestures. Rather than side-to-side navigation found in iOS and Android, Sailfish is arranged vertically. Top to bottom, you have a lockscreen,

homescreen and an app menu. Since all navigation requires swiping, it's easy to swipe the wrong thing. For example, scroll up or down a web page too closely to the edge of the screen and you'll open your notifications or the options menu.

The screen also isn't really big enough to perform the gestures well, meaning you have to be deliberate with your swiping.

Navigation aside, Sailfish OS runs smoothly and is good-looking. The lock screen is pretty, but although it will indicate new messages or other notification, you can't do anything about it until you unlock.

There's a limited number of apps, as you'd expect from a new platform, but a potential life-saver is support for Android apps. You can't use the Google Play Store, but there are third-party alternatives around such as Russia's 'Google' - Yandex. Via this, you can install apps including Facebook, Skype, Twitter and Firefox. You do end up with a sort of two-sided experience, though, and some of the Android apps we tried crashed a few times.

Oddly, pre-installed apps are sparse. There's just phone, messages, browser, camera, people, store, gallery, settings and tutorial. It seems strange that Jolla hasn't offered basic software such as an email client, media player, calendar, calculator, maps or even a clock.

Verdict

The Jolla is an interesting new smartphone with its eye-catching Sailfish OS. However, it's too expensive for the middling specification, has a confusing interface and a reliance on Android apps. Chris Martin



£199 inc VAT**Contact**■ lg.com/uk**Read more**■ tinyurl.com/kkpnmeg**Specification**

8.3in (1920 x 1200) IPS touchscreen; 1.7GHz Qualcomm Snapdragon 600 quad-core; Adreno 320 GPU; 2GB RAM; 16GB flash storage; Android 4.2.2; 5Mp rear camera, 1080p video; 1.3Mp front camera, 720p video; Bluetooth 4.0; Wi-Fi 802.11a/b/g/n; infrared transmitter; 17Wh lithium polymer battery; 127x217x8.3mm; 338g

Build: ★★★★★☆

Features: ★★★★★☆

Performance: ★★★★★☆

Value: ★★★★★☆

**TABLET****LG G Pad 8.3**

At 8.3in, the G Pad is one of a handful of tablets to buck the 10in and 7in trends. The 8.3 figure in the name signifies not only the size of the screen in inches, but its thickness of 8.3mm, too.

The tablet has a similar design as the LG G2 (tinyurl.com/pafk4sz) phone, and is available in black or white, with brushed aluminium rear and plastic border at either end.

The G Pad 8.3 doesn't feel like a £200 tablet, though. Indeed, with that aluminium rear and nice build quality, it feels the opposite. The only moving part is a flap at the top which hides a microSD card slot. Our first quibble is how easily the tablet gets grubby with fingerprints.

The screen matches the Nexus 7 (page 69) in aspect ratio and pixels: 16:10 and 1920x1200 pixels, but spread over a larger surface area, so a lower density of 273ppi. It looks great in its full-HD IPS splendour and despite the large screen is easy enough to hold one handed.

Driving the G Pad 8.3 is a snappy 1.7GHz Qualcomm Snapdragon 600 quad-core processor and a healthy 2GB of RAM. The ARM processor is using lauded Krait 300 cores, and an Adreno 320 for its graphics.

Performance is good but far from flawless. The main problem is the long loading time of the homescreen interface. When you quit an app, screen icons and widgets can take a



second or two to reappear, leaving you with just the wallpaper. It's not constant and web browsing and other tasks are all smooth.

Storage is a plus point - 16GB, but unlike Google rivals there's a microSD card slot for another 64GB.

It's unsurprising to see dual-band Wi-Fi and Bluetooth 4.0 built in. The G Pad doesn't include NFC, but it has a handier feature - an infrared transmitter for remote control of your TV and other home devices. It's fairly easy to set up using the QuickRemote app, switchable from the notifications centre.

The G Pad runs Android 4.2.2 with additional features from LG. KnockON, for example, usually wakes the screen with a double-tap and is super handy when it works, while Slide Aside is an arguably unnecessary alternative to the built-in Android multitasking. You slide three apps off to the left with a three-finger gesture and get them back with the opposite. QSlide allows you to load up multiple small apps, which can be made transparent while you work, while QPair lets you pair the tablet with a smartphone and use it to manage calls and messages received on the smartphone. You can even have a phone call on the G Pad and fling files between the two. It works using Bluetooth and needs the phone to have Android 4.1 or later.

Photography is not the G Pad's strongest point. LG has wisely focused its attention elsewhere. Its two cameras are reasonable but

nothing special - 5Mp at the rear and 1.3Mp at the front. The rear has no flash, so you'll need decent light. By default, it shoots at 4Mp with an aspect of ratio of 16:10, or 5Mp at 4:3 is accessible via the settings.

Added features include HDR, manual settings override, and ability to take a photo when you say "cheese". The HDR mode can improve images.


The rear camera shoots video up to 1080p, detailed and smooth. The front is limited to 720p and offers enough quality for video chats.

The Nexus 7 had decent battery life with its 16Wh battery, which the G Pad looked set to improve with its 17Wh pack. In our experience, the G Pad seemed to hold charge well although the GFXBench 3.0 battery test lasted just four hours of video playback before expiring.

In our looped HD video over Wi-Fi test, the G Pad lasted eight-and-a-half hours, which was just a few minutes short of the Nexus 7 (2013).

Power-saving software will switch off functions such as Wi-Fi and dim the screen once the battery level drops below a certain level - as standard 30 percent, but you can adjust this yourself.

Verdict

The G Pad 8.3 is LG's best tablet to date and at around £200 it's a bit of a steal. A nice selection of hardware with useful software make this a good choice as a small tablet, excepting its occasionally laggy performance.  **Chris Martin**



£120 inc VAT

Contact

■ uk.msi.com

Read more

■ tinyurl.com/oz6wuyt

Specification

AMD Radeon R7 260X; 2GB GDDR5; 1175MHz core clock; 1625MHz memory clock (6.5GHz DDR effective); 128-bit memory interface; 896 stream processors; 56 texture units; 16 ROP units; PCI-E interface; DirectX 11; 2x DVI, 1x HDMI; 1x DP; 1x 6-pin PSU connector; 3-year warranty

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★



GRAPHICS CARD

MSI R7 260X 2GD5 OC

We can expect to see quite a few reviews of mid- and low-range AMD Radeon GPUs appearing over the coming months. Having taken over the higher end of the market with its fantastic 280X and 290X products, AMD is now aiming closer to the middle.

This is really the sector of the market where most of us hunt for the best all-round graphics card, so it's important to have strong participation here. AMD already had decent representation, with the likes of the HD 7790, and the 260X is cut from the same cloth. Indeed, it employs the same Bonaire GPU as the 7790, making it the latter's natural predecessor.

Bonaire is a very efficient design, and the 260X has been pushed to the max in terms of clock rates. The standard version offers a core-clock speed of 1100MHz, but this version pushes this up almost seven percent to 1175MHz. That makes it one of the highest-clocked cards we've seen.

The complement of 56 texture units isn't as outstanding, although it's adequate for a product at this price point – the 650 Ti is the only card in our sub-£150 chart to better this. The texture fill rate of 65.8GT/s is excellent for the money, bettering even the 650 Ti's speed (with 61.8GT/s) and the 7790 (56GT/s).

Clock rates remain high when we get to the memory. This MSI version makes no attempt to improve upon the standard GPU's speed of 1625MHz (effectively 6.5GHz, taking into account the quadrupling effect of the GDDR5 RAM), and this figure is significantly higher than even the 7790's 1.5GHz (6GHz DDR effective) – itself very good for its class.

However, the 260X doesn't improve on the 7790's one significant roadblock – its 128-bit memory interface. The downscaling is to be expected at this price point, even if nVidia's 650 Ti does manage a 192-bit version. The upshot is that the 260X's memory bandwidth figure of 104GB/s is superior to the 96GB/s of the 7790, but still trails to the 129.6GB/s of the 650 Ti.

On the upside, 2GB of GDDR5 is provided with the 260X rather than the 1GB of the 7790. This is a good move, as the 260X is never likely



tell us whether this is a gimmick or not.

In terms of gaming


speed, the R7 260X proved itself to be the superior of both the AMD Radeo HD 7790 and the standard nVidia GeForce 650 Ti – although not by a huge amount.

In our newest game, Bioshock Infinite, it achieved a figure of 56.6fps at 1680x1050, whereas the 7790 achieved just 52fps; and the 650 Ti, 51.5fps. At a higher resolution of 1920x1080, the 260X dropped to 34.4fps, while the 7790 and 650 Ti tumbled slightly less, to 31.8- and 30.6fps.

In Stalker: Call of Pripyat, the card could cope more easily with the older graphics, tallying 64.7fps in 1680x1050, but falling slightly to 57.9fps at the higher resolution. The 7790 trailed with 62.8- and 54.6fps respectively, while the 650 Ti was slower again, on 62- and 53.5fps.

BattleForge revealed a similar story, and the R7 260X was once again faster (62.2/54fps) than the 7790 (59.8/51.5fps). The 650 Ti struggled on 55.3- and 49.8fps.

Verdict

The AMD R7 260X is a definite improvement on the previous 7790, even if it isn't a country mile ahead. Given a straight choice between the two, at the same price, the 260X is leaner and a little meaner. Having said that, the 7790 can currently be bought for around £20 less than the 260X. Given that difference, we'd be tempted to go for the 7790 instead. The 7790 is likely to be disappearing from the market very shortly, though, leaving the way clear for the 260X to establish itself as a very competent, if rather unexciting mid-range graphics card.  **Robin Morris**

to be held back by its memory – theoretically, there'll be games that will benefit from more than 2GB, but sub-£150 graphics card shoppers aren't likely to need to go beyond that amount of memory.

The 260X is also well-stocked when it comes to stream processors, and its complement of 896 – albeit the same as the 7790's – remains ahead of the other competitors. The 650 Ti, in contrast, has just 768.

The 260X is light on power draw, requiring just one six-pin connector, and typically consuming around 115W of power. This is highly impressive given the clock rates. The card is pleasingly quiet, too, and MSI has done a very good job with its version of the 260X.

As with other new AMD cards, the 260X covers Mantle. TrueAudio is less well-supported – you won't find this feature enabled on the 280X, for instance – and reintroduces the idea of sound features being handled by the GPU's hardware, rather than relying on software.

TrueAudio will still need games programmers to be adding extra code to take advantage of it, but it should produce better three-dimensional audio. In reality, the first games that can really take advantage of TrueAudio won't be coming out for a few months yet, although we had a try-out with the demo of Lichdom (the full version should be available in the summer), which showed impressive spatial effects. Only time (and uptake) will

£560 inc VAT**Contact**■ uk.gigabyte.com**Read more**■ tinyurl.com/o29jmt3**Specification**

nVidia GeForce GTX 780 Ti; 3GB GDDR5; 1020MHz core clock (boost to 1080MHz); 1750MHz memory clock (7GHz DDR effective); 384-bit memory interface; 2880 stream processors; 240 texture units; 48 ROP units; PCI-E interface; DirectX 11.1; 2x DVI, 1x HDMI, 1x DisplayPort; 1x 8-pin and 1x 6-pin PSU connector needed; 3-year warranty

Build: ★★★★★
 Features: ★★★★★
 Performance: ★★★★★
 Value: ★★★★★

**GRAPHICS CARD****Gigabyte GeForce GTX 780 Ti**

While nVidia likely felt that its GTX Titan and 780 graphics cards must have had the high end of the market sewn up last year, a doughty challenger from AMD appeared, the R9 290X. It has since put paid to that idea, establishing itself as the top single-GPU card.

In the spirit of a classic tennis match, nVidia has responded with a new powerful volley - the GeForce GTX 780 Ti. In fairness, this card is going to cost a considerable amount extra - at least for the first few months of its existence. The AMD Radeon R9 290X hovers around the £400 mark, whereas this version of the 780 Ti will set you back a hefty £560.

The GTX Titan, 780 and 780 Ti are all built around the same GK110 chip. But whereas the 780 has 12 of the 15 Streaming Multiprocessors (or SMXes) activated, the 780 Ti has all 15 of them turned on.

Interestingly, this means that the nVidia Titan, despite costing £200-£250 more, has a number of inferior figures compared to the 780 Ti. So while the Ti gets the maximum complement of 240 texture units and 2880 stream processors, the Titan is stuck with just 224 and 2688 respectively. The standard 780, with just twelve fifteenths of the complement, has 192 texture units and 2304 stream processors.

In truth, this isn't as crazy as it may seem. The Titan was always about its stunning compute capabilities, making it a viable prosumer alternative to the extortionately priced high-end Quadro/Tesla products.

The Titan retains that lead in compute power, with both the 780 and 780 Ti severely hobbled in this area. For gamers, though, hardware-accelerated graphics computing isn't really an issue, so it makes sense to create a gaming-specific card, the 780 Ti, where compute capabilities are toned down, and everything else is turned to full.

Looked purely in terms of clock rates, the 780 Ti is relatively unimpressive. Its standard core clock of 875MHz (928MHz with Boost) beats the figures of both the Titan and 780 (the latter came with an 863MHz clock and a Boost of 876MHz). However, it lags far behind



780 Ti's 3GB - but we feel that 3GB will be more than enough

for the next few years.

The 780 Ti is very much the single-GPU champ when it comes to game frame rates. In Crysis 3, for example, it polled 53- and 33.1fps at resolutions of 1900x1200 and 2560x1600 respectively. That compares favourably to the previous leader, the R9 290X, with 49.5- and 29.6fps. The standard 780 is even further back, on 48.4- and 28.7fps.

In Bioshock Infinite, we decided to up the resolution ante even more. At 2560x1600, the 780 Ti produced 64.9fps, vanquishing its rivals with the 290X on 60fps and the 780 back on 55fps. Moving into 4K territory, at a resolution of 3840x2160, the 780 Ti was again superior, tallying 39.6fps to the 290X's 36.7fps.

Given the extra firepower, we were surprised to find the 780 Ti drawing an extra 16- to 19W in typical testing when compared to the standard 780. This is an extremely well-designed card, and Gigabyte has given it the deluxe treatment, adding an elaborate cooling system that generates barely any noise. The AMD cards have given us a few concerns in terms of increased noise, but there were no such problems with this immaculately conceived 780 Ti.

Verdict

In many respects, the nVidia GeForce GTX 780 Ti is the best out there. It's got the best specifications and produces astounding frame rates in real-world gaming. It's also relatively quiet next to the 290X. Having said all that, we'd still recommend the 290X to most users. That's because there's a £160 price gap which, in our opinion, isn't bridged by the Ti's superiority. For the time being it remains just that bit too expensive to take the recommendation as best value high-end card.  **Robin Morris**

the GTX 770, for instance, which in its Asus version, offers 1058MHz, with a Boost to 1110MHz.

Luckily, the 780 Ti is about far more than clock rates. Indeed, the 240 texture units allows it to slaughter the GTX 770, offering a texture fill rate of 222.8 GT/s against the 142.1 GT/s of the 770. The standard 780 is also left behind, with a figure of 168.2GT/s.

So even on basic factory settings, the 780 Ti is superior to all competitors. This, though, is a cleverly designed Gigabyte version, and comes with a vastly improved clock rate of 1020MHz, with a Boost to 1085MHz. That means it increases that 222.8GT/s rate to a stunning 260.4GT/s. The R9 290X has a figure of 176GT/s - better than the standard 780, but no match for the Ti.

The R9 290X isn't as far behind on memory speed. The 780 Ti's 1750MHz memory clock works out at 7GHz. That places it ahead of the 6GHz of the Titan and standard 780, and up with the industry-leading 7GHz of the GTX 770.

The 290X, stuck on just 5GHz, may seem behind the curve. However, whereas the 290X's memory interface is a wide 512-bit version, the 780 Ti, 780 and Titan all use a more modest 384-bit version. This means that the R9 290X sets a strong standard with a memory bandwidth of 320GB/s, despite its modest memory clock. The Titan and standard 780 achieve 288GB/s.

However, the 780 Ti proves itself the best again, with that fast 7GHz memory clock making up for the narrower interface. Its resulting bandwidth score of 336GB/s is fantastic. The R9 290X does pack slightly more memory - 4GB to the

£249 inc VAT

Contact

■ samsung.com/uk

Read more

■ tinyurl.com/L2jxh7

Specification

16.3Mp; 1/2.3in CMOS sensor with BSI; 23-483mm lens (21x zoom); 3in TFT display; ISO 80-3200; 16-1/2000 second shutter speed; microSDXC card slot; 114x65x25mm; 216g

Build: ★★★★★☆

Features: ★★★★★★

Performance: ★★★★★☆

Value: ★★★★★☆



CAMERA

Samsung WB350F

With a 16.3Mp sensor, long zoom and built-in Wi-Fi, the Samsung WB350F has specs to impress. It's a looker, too, with a retro chassis and faux-leather finish in black, brown, white, red or blue.

Looks aside, it's the lens that will really impress, with its 23-483mm range delivering up a 21x zoom. It's stabilised, too, so you can still shoot handheld, even at full telephoto.

We performed our tests indoors and out under mixed weather, so the results encompassed a wide gamut of lighting conditions. Despite this, the Samsung did a great job of retaining the original colours in each of our shots, although at the longest end of the zoom we started to see some grain creeping into our overcast outdoor samples when viewing them at original size.

There was also some colour fringing at closer quarters in areas of sharp contrast. This was slight, but as you'd expect, it was a little more pronounced towards the edges and corners of the frame where the lens had to work harder to bend the incoming light towards the sensor.

Around the back, you'll find a touch-sensitive 3in display paired with a full complement of hardware controls. Setting focus is a breeze - simply tap your subject on the screen, and so long as you haven't done anything improbable with

the lens, it gets a fix pretty much instantly.

Maximum aperture stands at f/2.8 and f/5.9 at either end of the zoom, which at close quarters allows for beautiful shallow depth of field shots, with a quick fall-off in the level of focus around your subject. Naturally, when you're shooting in auto mode, it spots when it needs to switch to macro by itself.

You've got full control over shutter speed and aperture through a combined ASM notch on the mode dial, each of which you can set by dragging a thumb across the screen.

The fastest exposure sits at 1/2000 second, while for darker surroundings you can open the shutter for up to 16 seconds without dipping into the scene modes, so it's ripe for twilight city shots.

If it's still too dark, you can ramp up the sensitivity to a maximum of ISO 3200 - from an opening gambit of ISO 80 - with compensation of two stops in either direction, each in 1/3EV increments.

It shoots full HD movies (1920x1080) at 30fps, which you can downsize at the point of capture to 720p if you want to save space,



or take as low as 640x480 for web use.

Again the results are good, with accurate colours and a high level of detail. The optical zoom remains active while shooting, but to minimise the chance of hearing its motors on the soundtrack, the WB350F semi-mutes the mic, leaving you with momentarily muffled recordings.

It can take a second or so to fix its focus on your subject if you go from wide angle to maximum telephoto, but otherwise it's certainly up to the job of shooting impromptu movies, and copes well with dramatic changes in lighting by smoothly increasing or decreasing the sensitivity as appropriate.

Verdict

This is a versatile performer, with the zoom range, manual options and easy sharing features that will endear it to more ambitious travel photographers. **Nik Rawlinson**

BLUETOOTH WIRELESS SPEAKER

Maxell MXSP-WP2000

A wireless speaker that can connect to your digital music source via Bluetooth, NFC and a 3.5mm cable, the Maxell MXSP-WP2000 is a step up from the MXSP-BT03 (tinyurl.com/l2fsy72). That's a step up in terms of both size and features.

The WP2000 has aptX and AAC compatibility, which should make for a better fidelity than Bluetooth's default SBC codec. And built-in Qi inductive charging allows compatible devices to be placed on the speaker system for a wireless charge.

The WP2000 isn't portable, though, as it needs to run from the mains. A mains adaptor is supplied.

We're fond of Maxell's style. Our review model was mostly white and

grey, but it's also available in black. The speaker is an oblong lozenge of a device with curved edges, and measures 284x103x79mm.

At the top there's a textured rubber finish in a fetching grey. On close inspection, we found that this wasn't perfectly smoothly applied on our review sample, but the overall effect is pleasing. To the right-hand edge of the top is a touch-activated control panel, with Play/Pause in the centre, and search and volume rockers around the edge.

The entire front half of the Maxell MXSP-WP2000 is encased in a soft grey cover that wraps around the edges. In the middle is a slightly cheap looking silver plastic 'Maxell'

logo. The back side is textured white plastic, with a panel bearing product details inset in the middle. Here also we can find the on/off button, as well as ports for 3.5mm line in, USB and power adaptor.

Down at the bottom there's a square metallic speaker grid, as well as white rubber feet that keep the base off the floor.

The Maxell's speakers have a listed frequency response of 100Hz-20kHz. This isn't high-end audio, but again the price tag has to be taken into consideration. And we do like the fact that the WP2000 can use the aptX audio codec, which should mean less of your music is lost as it streams over Bluetooth.

£120 inc VAT

Contact

■ uk.maxell.eu/en

Read more

■ tinyurl.com/L56s2a4

Specification

MXSP WP2000 Wireless Docking Speaker; 2x 60mm drive units; 2x 7W rms amplifier; 12V DC mains adaptor; remote control; 285x102x101mm

Build: ★★★★★☆

Features: ★★★★★★

Performance: ★★★★★☆

Value: ★★★★★☆



£200 inc VAT**Contact**■ aoc-europe.com**Read more**■ tinyurl.com/Ldtanwc**Specification**

27in monitor; AH-IPS display; 1920 x 1080 pixels; 5ms specified response time; 1x DisplayPort, 1x HDMI, 1x MHL, 1x VGA; 622x213x449mm; 5kg

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★

**MONITOR****AOC i2769Vm**

With street prices around £200, the AOC i2769Vm is one of those value-packed IPS panels where you need to keep half an eye out for the catch.

This 27in display has a very thin bezel edge that's none too solid around three of the sides. Inside, the picture starts around 10mm in from the edge. The menu controls are arranged under it, so some hunting needs to be done, especially as the icons are marked in dark grey on the panel, with no backlighting.

There are lots of options, though, including Eco mode to reduce the power consumption (typically 35W when on and 0.5W on standby), and sharpness adjustment with the Clear Vision setting. That latter control may come into play because this is a 27in (1920x1080) screen. Fortunately, it isn't needed because the anti-aliasing strikes a good balance between well rendered text and sharpness with it turned off.

Around the back a nicely curved panel houses the internal power supply and the interfaces. These include a D-Sub, DisplayPort, HDMI (MHL) and a standard HDMI. There's also a headphone jack socket, but mercifully no speakers.

The i2769Vm sits on a stand that tilts back and forth (-5 to +15 degrees) but doesn't or elevate. Moving it around does incur some wobble, but it's stable in normal use.



For brightness, AOC's claims 250cd/m² and in our measurements we recorded 275cd/m². At full brightness we measured a contrast ratio on 720:1, and dropping the brightness down to '75 percent' (227cd/m²) it was at 760:1. Down at 25 percent, or a more practical 132cd/m², we recorded 670:1.

Luminance consistency wasn't the best. At 100 percent brightness, the top two corners were 17 and 15 percent darker. At a more usable 50 percent brightness this increased to 22 percent each, which is more variation than most IPS panels.

Colour uniformity was very good at all brightness levels, being DeltaE 1.7 in the middle and bottom middle

at 100 percent brightness and just DeltaE 1.1 in the bottom middle at a brightness of 50 percent. Colour accuracy DeltaE averaged 1.36 and only the grey shades (all under 2.0) and the dark cyan (a typically poor 5.18) pushed the average DeltaE up to 1.73. In terms of colour gamut, we recorded 99 percent for sRGB and 75 percent in AdobeRGB.

Verdict

While the AOC i2769Vm's build quality is average, it's still good to look at. Throw in the excellent colour uniformity and consistency and you have a very decent, large screen, budget 27in IPS option.

✉ **Duncan Evans**



To pair the Maxell with your device, you need to either hit the 'Pairing' button on the supplied remote, or hold down the Play button. Either way, it was a snip with both our phone and tablet. Controlling the source via remote or on-speaker controls is straightforward and worked well in our tests.

Over Bluetooth, the WP2000 will comfortably provide background music for a reasonable-sized room, but don't expect to DJ at a party.

Playing acoustic music, such as *Ho Hey* by Lennon, Stella and Maisy Stella, we heard a nicer, warmer sound than we are used to when playing digital music via Bluetooth. But it was slightly muffled, and we noticed an absence of bass.

More rocky guitar music, such as *'Arabella'* by the Arctic Monkeys, was a little less successful, and we found it muddy, and the bass problems were more pronounced.

The most rewarding music we played was hip hop from the likes of Dizzee Rascal. Here the brighter, more in-your-face production combined with the distinct spaces between sounds made for a clearer more punchy and balanced sound.

Over Bluetooth at least, we would say that the Maxell is just as good as some of the more expensive Bluetooth speakers on the market. But that's not great.

The proof of that particular pudding came when we switched to using the supplied audio cable to connect up to the 3.5mm audio-in port, and play our music with wires. In every single case the sound was transformed. Much, much louder. Clearer and cleaner.

Verdict

A full-featured Bluetooth speaker that's nice to look at, the WP2000 offers decent value paired with solid audio performance. ✉ **Matt Egan**

£50 inc VAT

Contact

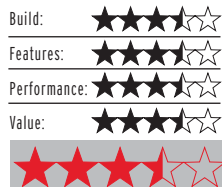
■ verbatim-europe.co.uk

Read more

■ tinyurl.com/q8vdky9

Specification

Wireless storage interface unit; 802.11 b/g/n Wi-Fi; SDXC card slot; USB 2.0 Micro-B port; lithium-ion battery; requires iOS 4.0 or Android 2.0 or higher; 112x79x143mm; 127g



PORTABLE STREAMING DEVICE

Verbatim MediaShare Wireless

Verbatim's MediaShare Wireless is a portable network hotspot, not much bigger than a pack of cards and a mobile phone, that extends the storage capability of an iOS or Android device.

It has a USB 3.0 port that can be used with a USB hard disk or a USB thumb drive, and a SD card slot that supports all variants up to SDXC and 64GB. Although the MediaShare doesn't come with a charger, it ships with a Micro-USB cable so you can charge the device from a PC's port.

We tested it on an iPad, iPhone and Nexus 7. Connecting to the MediaShare is as easy as configuring any Wi-Fi connection; you just find the hotspot ID it's broadcasting and enter its password in your Wi-Fi settings. You can connect up to five devices at once.

You'll need to download the free MediaShare Wireless app from the App Store or Google Play to browse the MediaShare on your tablet or phone. It acts as a simple file finder and media player for the images,

music and video stored on a USB key or SD card connected to the device. You can also use the app to bridge to your local router or another internet connection, so you can carry on browsing the web as you use the MediaShare.

Verbatim's specs claim 2Mbit/s wireless transfer speed. In our tests, streaming was stable enough for HD video streamed to our test devices. If you do experience with stuttering, you can always download files first and play them from your device's internal storage instead, although that would rather defeat the object of off-device storage.

We gave the battery a work out with video, too, and clocked up just over eight hours use. Verbatim's documentation claims between seven and nine. Whichever way you slice it, that's good enough for a long car journey or a few episodes of *Mad Men* at the Travelodge, so you'll need to be prepared to keep charging the device.



We were frustrated after discovering you can only access files on the MediaShare using the dedicated app. On iOS, this proved to be a pain when we tried to stream movies wrapped in the popular AVI container format, as the media player defaulted to Apple's built-in QuickTime. There are workarounds for this, but none are particularly convenient.

We were also disappointed to find that there's no app for OS X or Windows, and attempts to connect to the device via its IP address didn't work for us either.

Verdict

Verbatim's portable streaming device could be a good choice as a music or video streamer, as long as you're aware of the bundled app's shortcomings. **Karl Hodge**

£170 inc VAT

Contact

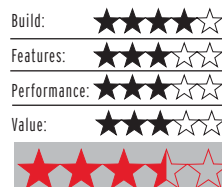
■ lacie.com/uk

Read more

■ tinyurl.com/Lk3398c

Specification

Wireless storage for iPad; 1TB 2.5in SATA hard disk; 802.11b/g/n; Micro-USB 3.0 port; 115x115x23mm; 300g



WIRELESS DRIVE

LaCie Fuel

LaCie was taken over by Seagate about a year ago, but the two brands are being kept separate, with LaCie as the more well-known name at the 'premium' end of the consumer IT market. Inevitably, though, there will be some overlap between the two brands, and the Fuel is LaCie's version of the Seagate Wireless Plus drive (tinyurl.com/pp98Lf5).

At first glance, the Fuel looks completely different. The Wireless Plus has the rectangular design of a conventional drive, while the Fuel is a squat, square little device, with a carrying hook on one corner.

To be fair, the Fuel does seem sturdy, so while its £170 price tag means it's more expensive than the Wireless Plus it's the more sensible choice if you'll be using it outdoors.

Cosmetic differences aside, the Fuel and the Wireless Plus are identical in most other respects. Both devices provide 1TB of internal hard-disk storage, and include a USB 3.0 interface for connecting to a Mac or Windows PC, along with

802.11n wireless for mobile devices such as an iPhone or iPad.

When it's connected to a computer, the Fuel works like an ordinary hard disk and draws its power from the USB interface. Note that out of the box it's formatted in the Windows ExFAT format and can't be used for Time Machine backups.

To use it with an iPhone or iPad, you'll need to press the power switch on the side of the Fuel to activate its built-in Wi-Fi. You'll also need to download the Seagate Media app - originally designed for the Wireless Plus - in order to access files stored on the Fuel. That might be a bit confusing for people who don't know about the connection between Seagate and LaCie, but at least the app is straightforward and easy to use.

The first time you run the app, it will guide you through the process of initially connecting your mobile device to the Fuel's Wi-Fi network, and then show you how to connect the Fuel to an existing wireless



network, so you can continue to use the internet as well.

The app allows you to stream photos, music or video stored on the Fuel, and you can also transfer files between the Fuel and your mobile devices in order to free up some space on your phone or tablet.

The Fuel includes a rechargeable battery that LaCie says will last for up to 10 hours.

Verdict

At £170, the Fuel is considerably more expensive than a conventional 1TB USB hard drive. However, it could earn its keep if you regularly shoot a lot of photos and videos on your iPhone or iPad. **Cliff Joseph**

Versatile and Powerful NAS



DS1513+



DS1813+



Superior Performance

Read and write speeds of 350 MB / sec and 202 MB / sec respectively. With dual core CPU and upgradable RAM, the DS1513 + / DS1813 + is ideal for the implementation of essential business functions and the most intensive applications, such as data encryption and video transcoding.

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DS1813+ award



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ND 4000 Gaming PC

CPU: Intel i7 4770K (4 x 3.5 GHz) OC @ 4.2 GHZ

RAM: Corsair 16 GB DDR3 1333 MHZ

HDD: 1 TB SATA-III 7200 RPM 64 MB

Graphics Card: NVIDIA GTX 760 2 GB

Motherboard: Gigabyte Z87-HD3

Case & PSU: Corsair R200 & Corsair 650W PSU

Optical Drive: 24x Dual Layer DVD Re-Writer

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ND 3000 Gaming PC

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- ✓ 1 TB (1000 GB) SATA-III
- ✓ NVIDIA GeForce GTX 660 2 GB
- ✓ Asus B85M-E Motherboard
- ✓ Windows 7 or Windows 8 Included

Included Benefits

- FREE - Assassin's Creed BlackFlag
- FREE - UK DELIVERY
- FREE - 3 YEAR WARRANTY
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GAME

Baldur's Gate 2

£10.49**Contact**■ baldursgateii.com**Read more**■ tinyurl.com/njfqezp**System requirements**iPad with iOS 5.1 or later;
1.92GB storage

Baldur's Gate 2 is a retro roleplaying game for the iPad. It's a remake of the 90s fantasy classic for the PC, and sequel to 2012's Enhanced Edition, itself a remake. You'd struggle to call this 'new' in the strictest sense. But BG2 retains a capacity to captivate undimmed by the years. Baldur's Gate was state-of-the-art in its heyday and, while gaming has moved on, deep gameplay and strong storytelling never go out of fashion.

Gameplay

Based on the Dungeons & Dragons roleplaying system, BG2 invites you to assemble a party of up to six characters of various sorts, comprising 'you' (the character you name, build and customise at the outset of the game, around whom the story arc principally revolves) and a rotating cast of hangers-on and do-gooders (or do-badders) that you pick up along the way.

These run the usual fantasy gamut – elves and dwarves, clerics and thieves and mages – but most have enough personality that you find yourself keeping or dropping party members based on how much you like them.

Your party wanders around killing things and completing quests, thereby acquiring experience points, levelling up your characters and learning new skills. An overarching story spans the whole game, but in between working to defeat the villain/save the world/uncover your mysterious past you can take on side quests, which are generally more fun and often where you pick up new characters. One of the challenges of the game is keeping all your party



members happy, since each has their own goals and values.

The story itself is rather good, but at times there's an odd blend of humour and cruelty; we were shocked, for example, to see a couple of old favourites from the first game killed off at the start with less ceremony than Newt and Hicks in *Alien 3*. It's a bleaker world than you may be used to in roleplaying games, but there's still time for broad character-based comedy in most of the towns you visit. A strange combination, perhaps, but enjoyable nonetheless.

A small regret is that this game – understandably – uses the 2nd Edition D&D, which is full of imbalances, unfairnesses and loopholes that were tweaked in later editions. It isn't compulsory for you to understand these rules, but it helps, since it's impossible for the game's tutorials to explain all the intricacies of such a complex system. Fortunately, non-veterans will be able to use intuition and trial-and-error to optimise their party composition and equipment.

Controls

BG2 is a rich and immersive experience, but alongside these retro pleasures it evokes a few of the less savoury aspects of 90s gaming. For one thing, it's often made painfully apparent that the touchscreen control system was originally designed with a keyboard and mouse in mind.

For example, dialogue choices (which can make the difference between befriending an ogre chieftain and insulting members of his family) are a nightmare using

fingertip controls; you have to tap slender lines of text, frequently sandwiched between other slender lines that lead to wholly different, and often disastrous, results.


The game's 90s-esque character AI can make it infuriatingly difficult to keep your people under control, too. You're likely to tear out hairs when your fragile mage plumps for a scenic route to the destination you've selected and blunders alone into a goblin camp.

Price

In app terms £10.49 is expensive for one game, but we think it's worth it. Aside from its quality, this is a massive game – containing both the original *Shadows Over Amn* and the *Throne of Bhaal* and *Black Pits* expansions – that will last you for hundreds of hours.

Mind you, having charged a tenner for the download, it would be nice if the developers didn't shove a list of additional characters (at £1.99 a pop) in your face when you start the game: the in-app purchase equivalent of forcing museum visitors to enter via the gift shop.

Verdict

BG2 is pricey compared to most iOS games, and that – combined with some minor difficulties with the touch controls – prevent us from giving this game a full five stars. But this is still a fantastic game: rich in detail, compelling and enormous. And the controls will get easier as you grow used to it. Play the first one first, though, or you'll miss out on the pleasures of building up a character from level one.  **David Price**

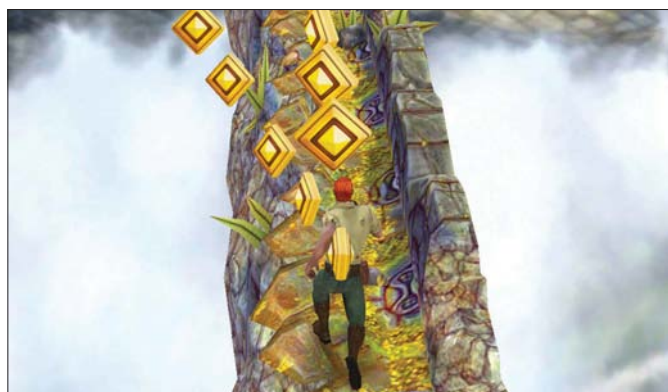


Best Android games

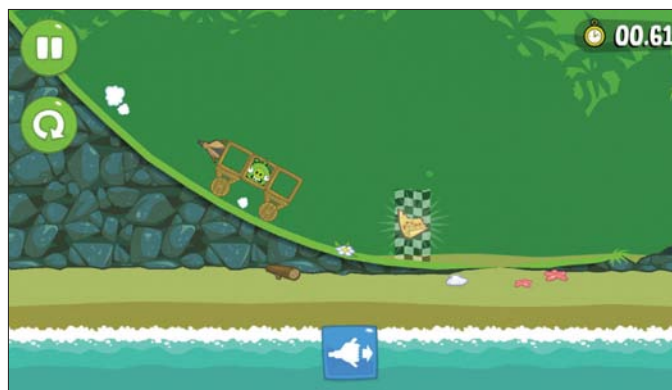
Chris Martin compiles 10 of the most popular titles for phones and tablets running Google's mobile operating system



1. Hill Climb Racing: Hill Climb Racing may look basic, but what it lacks in eye-popping graphics it makes up for in pure addiction. To start you get a jeep, one level, an accelerator and a brake, but you'll quickly unlock more cars and levels. Coins - used to upgrade cars and buy new items - are collected by driving over them, reaching checkpoints and performing flips. You'll find yourself coming back again and again to get further, an upgrade, a new car or level.



2. Temple Run 2: Temple Run is the crème de la crème of endless runners and the second version is not only better than the original, but free. Temple Run 2 combines easy controls with a simple objective and a graphically stunning design. You'll be jumping, dodging and sliding to beat your friends and unlock achievements and new characters. You might not escape with the precious idol, but you'll definitely have fun trying.



3. Bad Piggies: The first Angry Birds to put the evil green pigs in the spotlight is Bad Piggies, and we love it. Getting your pig (or pigs), from A to B might sound simple, but you've got to do it by building an increasingly complex contraption out of available parts. Various objectives and the desire to win three stars will keep you coming back for more. Probably the most fun is the sandbox levels, which let you build almost anything you want from a vast inventory of parts.



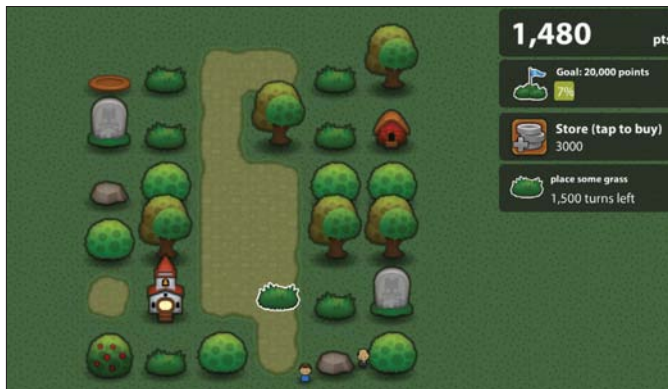
4. Plants vs Zombies 2: The original Plants vs Zombies was a smash-hit and the sequel is a must-have for any Android gamer. This exceptional tower-defence game expands on the original, while taking you in new directions. A level structure takes you through themed worlds, complete with new objectives to complete. As you would expect, there are new plants with which to get to grips and, although in-app purchases make an appearance, you can ignore them.



5. Cut the Rope: A classic mobile game available in various editions, Cut the Rope has superb level design and makes great use of a touchscreen. Physics-based gameplay lets you interact with many different objects as you try and try again to win three stars in each level. There's loads of levels to keep you going - and keep you coming back for more. And let's not forget how adorable is the main character Om Nom.



6. Real Racing 3: If you find Hill Climb Racing too basic, and have a spare gig of storage on your device, check out Real Racing 3. You'll be blown away by its highly detailed graphics. Real Racing 3 features real cars, tracks and people. Time Shifted Multiplayer lets you compete against friends, even if they're offline. A good selection of race types includes cup races, eliminations, endurance challenges and drag races. All this and, amazingly, it's free to download.



7. Triple Town: Bringing an innovative concept to puzzle games, Triple Town is a great free download and the kind of game you can pick up at any time. The idea is to build the best city you can, and this is done by combining three items to form a better one. Bushes become trees, trees become huts and so on. Some cute but pesky bears will get in the way of your progress. We're also big fans of the gorgeous and charming graphics and animations.



8. Tetris Blitz: This is no ordinary version of Tetris. In Blitz you get just two minutes in which to score as many points as you can. A Frenzy mode adds a fresh element to this classic game. Rather than moving around blocks, you simply tap on the screen where you want them to go. This removes some of the skill, but is in keeping with the game's fast-paced nature. Although Tetris Blitz tries to tempt you to buy power-ups, you can get high scores without opening your wallet.



9. Candy Crush Saga: Topping the games charts since its release, you've probably heard of Candy Crush Saga. It's a variation on the classic match-three puzzler, whereby gems are swapped with sweets and other tasty treats. The ease with which you can continue your game on multiple devices is a huge plus point. Objectives must be completed before you can progress through the seemingly never-ending supply of levels. In-app purchases are avoidable, but irritating.

David Court			
25 Star Rating	Energy		
Age 23	Stats		2,374
Stats	Season	Career	Int
Apps	43	419	26
Goals	33	323	30
Hat Trk	2	19	2

10. New Star Soccer: This footie game puts you in the boots of a penniless up-and-coming footballer. You have to complete flick-based challenges, such as passing, shooting and timing interceptions. The better you get the more money you earn, allowing you to buy vehicles, clothes, property... and a whole string of girlfriends. The more you train your player the better you get. So while you start your career at Torquay United, you can flick your way to the World Cup. ❌

SECURE FILE SHREDDER

East-tec Eraser 2014

\$30 (£18)

(single-computer licence)

Contact

■ east-tec.com

Read more

■ tinyurl.com/Lpg7m6b

System requirements

Windows XP/Vista/7/8;
300MHz Intel Pentium
4 or equivalent
processor; 512MB RAM;
50MB disk space

Usability: ★★★★★

Features: ★★★★★

Value: ★★★★★

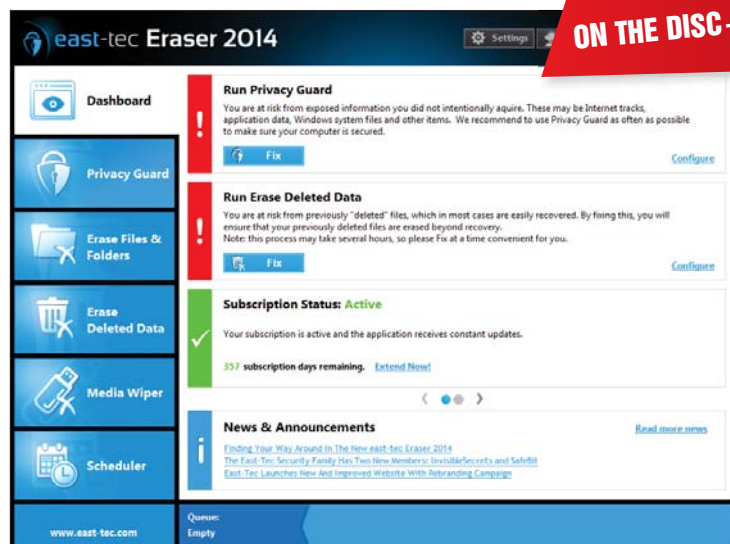


When you delete a file in Windows, the data isn't wiped from its place on the drive. Instead, the markers that tell the filing system where the sections of the file start and end are deleted from a lookup table, so the file can no longer be found easily. The data on the disk is then only overwritten when space gets tight and another file is stored on the same parts of the drive.

East-tec Eraser 2014 is more thorough. It writes data, which might be ones, zeroes or random strings, to all the locations on the drive where the file was stored. It may do this once, or it may write zeroes, then ones, then zeroes in up to seven passes, to ensure that there are fewer magnetic 'traces' of the original file remaining.

The no-nonsense interface has six modules. Dashboard shows status and messages, Privacy Guard automatically cleans your system of unwanted clutter, while Erase Files & Folders securely wipes those you select. Further down, Erase Deleted Data wipes the disk space of files that have previously been deleted by Windows standard recycling system, Media Wiper deals with removable drives and Scheduler enables automation of cleaning duties.

The speed of a wipe is inversely proportional to the level of security. The software offers a variety of



ON THE DISC+

THE DASHBOARD will alert you whenever you need to use Privacy Guard

algorithms, which use from one to seven passes. We wiped 10MB of files from a USB drive, using the default three-pass DoD algorithm - it took just over 53 minutes. If you're deleting a whole hard drive of hundreds of gigabytes, it's going to take a while and you'll probably need to leave it running overnight.

We tried to resurrect the files with several data recovery programs, but to no avail. This is what we expected, although we were using consumer data recovery software.

Shredding files isn't the only thing east-tec Eraser 2014 is capable of, though. It's also a versatile browser cleaner. It can delete your

web browsing history from Internet Explorer, Firefox, Chrome, Opera and Safari, among others.

The ability to delete history and traces extends to individual applications, too. There's support for wiping the specific traces of programs such as iTunes, Skype and Dropbox, and more general applications including Adobe Photoshop and Microsoft Office.

Verdict

East-tec Eraser 2014 does a thorough job of deleting files and offers a range of different methods, depending on the security level you require. **Simon Williams**

DATA RECOVERY TOOL

O&O DiskRecovery 9 Professional

£65 inc VAT

(single-computer licence)

Contact

■ oo-software.com

Read more

■ tinyurl.com/kpj8mqk

System requirements

Windows XP/Vista/7/8/8.1;
20MB disk space

Usability: ★★★★★

Features: ★★★★★

Value: ★★★★★



A recovery tool is one of those 'vital when you need it' utilities that can save a lot of time, frustration and money. O&O DiskRecovery 9 Professional is designed to recover inadvertently deleted files and folders in Windows, reconstitute a disk partition or even resurrect a reformatted hard drive - as long as it hasn't been securely wiped.

The process of recovering data is simple, as the application runs as a wizard, asking step-by-step questions, before performing analysis of files from the selected drive. Once you've selected a logical drive to look at, the software runs an automatic three-part scan, looking for deleted data.

We examined a 60GB partition on a test Windows PC and the software found 391,954 files in 61,120 folders. It took 35 minutes to do this, though, speed will depend on the number of files the scan locates on a particular drive and the speed of your drive.

Once discovered, DiskRecovery offers a list of all the files it's found. By definition, a deleted file won't have an entry in the Master File Table (MFT), but the data, including its filename, is usually still intact on the drive, so the software can recover the file type from the filename or by looking at its structure. It's very good at doing this and O&O says it's adding file types to the list the program can recognise all the time.

Once the analysis is finished, the software shows a tree of discovered files, broken down into three sections - Unerase, FormatRecovery and DiskRecovery. These different ways of recovering data can mean you have a lot more available data than the size of the partition or disk being examined - we saw over 680GB of recognised data from our 60GB test partition, so it makes sense to browse through the subfolders and recover only the data you need.

Under NTFS, it's easy to spot a particular file you want to recover. This is less straightforward in a FAT32 volume, though, where the first character in the filename is replaced with a special character

SECURITY SOFTWARE

Lookout Security & Antivirus

Free (£1.99 per month for premium features)

Contact

■ lookout.com

Read more

■ tinyurl.com/m5tzgqo

System requirements

Android smartphone or tablet; requirements vary with device

Usability: ★★★★★

Features: ★★★★★

Value: ★★★★★

Lookout Security & Antivirus achieves the fine balance of being a security suite that offers comprehensive protection without getting in your way. It detected a near flawless 99.4 percent of the 1460 malicious Android apps thrown at it during AV-TEST's Labs test in September 2013, but it doesn't just guard against the rogues lurking in the Google Play Store.

Premium users (£1.99 per month after the initial 14-day free trial) are treated to Safe Browsing mode, which runs a real-time scan on all the sites you're visiting - not only in the default Android browser but in Google Chrome for Android, too. A pop-up lets you know that all your web surfing is being monitored.

We were pleased to see that our attempt to download the test Eicar virus was blocked the moment we clicked on the website link. However, Lookout isn't a failsafe for staying safe - it didn't step in when we clicked on links in several phishing emails in our Gmail account.

We were impressed by Lookout's anti-theft features. These are activated via the lookout.com website, which is the model of neatness and clarity. Device tracking was accurate to within 20m, whether or not the handset's Wi-Fi radio was switched on, with the phone's location shown clearly on a map.

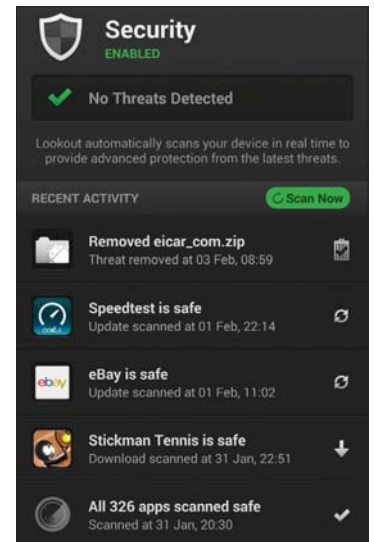
There's no chance of losing the phone down the back of the sofa thanks to the Scream feature, which sounds like a police siren and is loud enough to wake the dead.

The novel Signal Flare feature automatically sends you an email with the location of your phone once its battery level dips below 15 percent. Whether or not that's much use in hunting down a thief is questionable, but it's handy in those scenarios where you've dropped your phone and it's sitting in a bar's lost property box.

If someone enters your phone's passcode or PIN incorrectly five times, Lock Cam discretely snaps a photo of the user, which is sent to your email address along with a map of their location. That email arrived within seconds in our test, which could enable you to act quickly if a thief has got hold of your phone.

In such a scenario, you might decide to Lock or Wipe your handset (Premium version only), and Lookout generously allows you to switch on these features via the website, even after your phone's been stolen.

Remotely locking the handset worked flawlessly in our tests, with Lookout providing the option to enter a contact telephone number, email address and bespoke message on the Lock screen, in case you want to offer a reward to someone




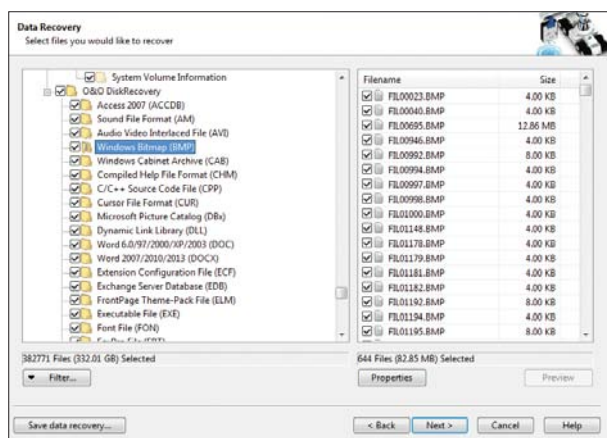
SAFE BROWSING runs a real-time scan on all the sites you visiting

who finds your stolen handset. Remote wipe performs a full factory reset, which is preferable to merely clearing out personal data.

However, Lookout doesn't offer as many anti-theft features as the similarly-priced Avast Mobile Security & Anti-Virus software (tinyurl.com/kktwbm6). There aren't any call/message blocking or parental controls, for example.

Verdict

Lookout's superbly designed and unobtrusive app steps in when it needs to, but otherwise keeps out of the way.  **Barry Collins**



After scanning your drive, **DISKRECOVERY 9 PROFESSIONAL** asks which files you'd like to recover

to indicate deletion. Recovered files from FAT32 volumes may therefore be in an odd alphabetical order; you'll need to browse by the second letter in the filename.

There are ample warnings not to install and run DiskRecovery 9 Professional from the drive you want to recover from, but you can install an 'instant' version of the program to a USB drive or similar and run the software 'off platform', recovering perhaps to an external drive.

If you're thinking you might be able to use this application to recover data from a drive wiped securely with a military-grade disk eraser, such as east-tec Eraser 2014 (above), you're out of luck. On modern drives, where data is accurately located on the platters, a single-pass erase will destroy any pre-existing data, so that even a specialist lab will fail to retrieve it.

The Professional version of O&O DiskRecovery 9 reviewed here is licensed for a single computer, but an Administrator licence for all the PCs on a site is available for £250, while an Engineer's version, for use on multiple sites, costs £629.

Verdict


For the three main types of data recovery - from file deletion, partition removal and disk reformatting - DiskRecovery 9 Professional will resurrect the majority of files, via its easy-to-use interface. The only query is whether the occasional use most people will give a program of this type is worth the £65 asking price.  **Simon Williams**

PHOTO-EDITING SUITE

GIMP 2.8.10

Free

Contact

■ gimp.org
 Read more
 ■ tinyurl.com/k7wnsux

System requirements

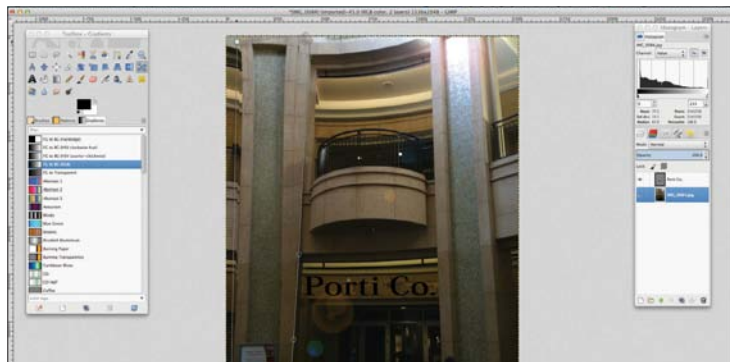
Linux, Mac OS X or
 Windows; 2GB RAM

Usability: ★★★★★
 Features: ★★★★★
 Value: ★★★★★

GIMP (GNU Image Manipulation Program) is a free image-editing app. Some criticisms in the past included the need for X11 developer tools to get it on to Macs, but now all you need do is drag the GIMP.app from a downloaded DMG file into your Applications folder. The latest update at the time of writing (2.8.10) safely runs on OS X Mavericks, fixing some keyboard shortcuts and adjusting the Save/Export code in the process.

The latter is concerned with the way the Save or Save As command will only allow images to be saved in the GIMP .xcf image file format, but you can still export an image in another format, such as .jpg or .psd. This is because whenever images are loaded or imported into GIMP, they are converted into the .xcf format as a new project. It's a little bit confusing, but means your original Jpeg remains unchanged unless you overwrite it.

A big improvement is the adoption of a single window



interface, rather than the floating panels you previously had to deal with. There are also Layer Groups, which add a bit of organisation to the Layers palette and let you apply a layer mode to a group, just as you would with a single layer.

A new angle setting for brushes means they can be rotated and there are welcome improvements to the Text tool, which previously involved you having to type into a dialog box. Now you can type and edit directly on the canvas, in common with most other graphics applications.

The dialog box now offers font family, style and size selectors, as well as numeric control over baseline offset and kerning, as well as text colour selection. Some fine-tuning still needs to be done in this area, though.

Verdict

When using GIMP, you'll soon realise just what the little paid-for productivity touches are worth in other applications. It is, however, free, so giving it a trial should be a no-brainer. ☒ **Michael Burns**

PHOTO-EDITING SUITE

CyberLink PhotoDirector Ultra 5

£79 inc VAT

Contact

■ cyberlink.com
 Read more
 ■ tinyurl.com/p4em2fq

System requirements

Intel Core i7 or AMD
 Phenom II X4 for 64-bit
 OS; Windows XP/Vista/7/8
 or OS X 10.6.8 or later;
 2GB RAM

Usability: ★★★★★
 Features: ★★★★★
 Value: ★★★★★

It may now offer HiDPI support, but PhotoDirector Ultra 5 hasn't changed much in appearance and workflow. It's more powerful, though, with a 64-bit rewrite and improvements to RAW and Jpeg image processing, allowing for faster import, export and image previews.

In terms of image correction, it now 'automatically' fixes lens faults based on the EXIF data of the image, such as barrel and perspective distortion. The suite ships with over 60 built-in lens profiles and additional ones are available from CyberLink's DirectorZone (tinyurl.com/bcm4zr9).

There are new noise-reduction methods in the form of automatic denoise and photo texture recovery, which can restore detail lost when reducing luminance noise. There's also greater curve control, with adjustments available for individual red, green and blue channels.

The Manual adjustments panel gains a new Split Toning section for adjusting the hue and saturation of



the highlights and shadows of an image. This makes for interesting effects resembling vintage film stock.

If you have multiple versions of the same photo that were shot at different exposures, you can use the new Photo Merge tool - Bracket HDR. As well as the amalgamation process, which can be set to remove any 'ghost' artefacts, it provides controls for adjusting glow, edge, tone and detail.

The library gains the ability to stack similar images automatically in the Photo Browser, based on their content. This works better if images are from a similar time frame.

Verdict

Still keeping focus on organisational tasks, the 64-bit PhotoDirector also gains strength in the image-processing and correction areas with this release. ☒ **Michael Burns**

GAME

Might and Magic X Legacy

£19 inc VAT**Contact**■ might-and-magic.ubi.com**Read more**■ tinyurl.com/pvvgogs**System requirements**

Windows Vista SP2/7
 SPI/8 (all 32/64 bits
 versions); Intel Core 2
 Duo E7200 2.5GHz or AMD
 Athlon 4800+ 2.5GHz
 processor; 4GB RAM;
 nVidia GeForce 8800GT
 or AMD Radeon HD3870
 (512MB VRAM with Shader
 Model 4) graphics card;
 DirectX 9.0c compatible
 card; internet connection;
 10GB disk space



There's a world full of
 monsters and quests
 for you **TO EXPLORE**

Calm down, you don't need to have played the previous nine games, although the bewildering and beyond-tedious opening sequence to this old-school roleplaying game might have you worrying otherwise. That five minutes of lore-lost waffle about Might & Magic X's fantasy world aside, the game is self-explanatory. You are a party of adventurers: go adventure.

M&MX is a consciously retro-feeling affair, harkening back to the first person, turn-based dungeon exploration games of the mid-1990s. The primary change from its ancient predecessors is simply the graphics and a more polished user interface, and frankly neither of those are on the cutting edge either. This isn't a particularly attractive or visually dynamic game, but that's not the point. It exists to answer protests that today's roleplaying games lack tactical depth compared to the blocky, slower but more thoughtful RPGs of the past.

The control system takes a bit, or a lot, of getting used to for anyone who wasn't brought up on similar fare. Rather than the analogue movement of today's action games, here you move step-by-step through a world divided into tiles, and hitting the Q and E buttons to turn 90 degrees rather than freely wagging the camera around with the mouse.

Combat sees your party of four – either off-the-peg heroes or custom-created – take it turns to attack enemies with assorted weapons and an enormous range of spells. It feels more like a boardgame than Skyrim



M&MX harkens back to the **TURN-BASED RPGS** of the mid-1990s

(tinyurl.com/acdqyv), and the odd stiffness of it all will likely turn a lot of players off at first glance.

If you can stick with it, though, M&MX gradually becomes rewarding and engrossing, with a rich range of tactics and satisfying choice on how to customise your characters' abilities as they level up. The game feels far too small at first, locking you into a tiny and uninspiring area while you learn the ropes, but once it opens up it's a different game.

The tunnel-feel drops away, offering a large amount of monsters, quests and secrets-packed world to explore, with a fair bit of freedom about what you approach and when. Sadly, the archaic movement system means getting from A to B can take an age, which is particularly dismal when you're backtracking through areas you long ago cleared of foes.

There's a puzzle quality to a lot of the fights, which require a level


of understanding of the game's mechanics and what abilities counter what. At times, it goes a little overboard, when you need either an inventory full of specialist armour sets to protect against, for instance, dark magic or earth magic, or to have bought and upgraded exactly the right spell sets with your mage characters. In this it fits the mechanical nature of the game, but sometimes it makes it a grind.

Not helping matters is the woeful dialogue. It's a real droner of a game, and sadly the occasional attempts at humour are even more grating. In the end we opted to mute the voices.

For all that, the clever and unusual roleplaying game at M&M's heart just about shines through the mess on top of it. It's a thoughtful and variable solo adventure, with tons of flexibility and a preference for really thinking about how to handle a fight rather than frenziedly flailing at whatever's on screen.

It's unfortunate that M&MX couldn't have seen a little more spit, polish and superficial flare in order to save it from looking and sounding as old-fashioned as it does, but that aside it's extremely pleasing to revisit roleplaying values that had been all but abandoned for no good reason.

Verdict

Might & Magic X: Legacy is just about successful in proving old-school roleplaying values still have worth today, but it suffers from wobbly production values and unengaging writing.  **Alec Meer**



GAME

The Banner Saga

£18 inc VAT

Contact

■ stoicstudio.com

Read more

■ tinyurl.com/kxkrj3j

System requirements

PC: Windows XP SP3; 2GB

RAM; 3GB disk space.

Mac OS X 10.7.5; 2GB RAM;

3GB disk space

PC ADVISOR
RECOMMENDED

The sweeping vistas of
THE BANNER SAGA
look like nothing else

Here's an early candidate for best-looking game of 2014. The Banner Saga's animation-like graphics look like nothing else, both when they're showing vast, sweeping scenery and when they're showing massive, characterful faces that speak of terrible wars and ancient sadness.

This roleplaying/strategy hybrid is set in a Viking-inspired world where humans and giants grudgingly work and live together in an attempt to survive the twin horrors of an extinguished sun and a demonic army made from stone. An elaborate but impressively restrained plot switches between a large cast of characters, any of whom can die or depart at any point.

Between that and the constant threat of an impossibly hard winter, The Banner Saga often seems like a more artful *Game of Thrones*. Only here it's you making the decisions that can lead to unexpected tragedy, in a consequence-loaded conversation system akin to the Mass Effect games but much trickier to predict. There's a constant tension between trying to do the right thing, make the choices that will keep the most people alive and try to deter in-fighting, and doing the practical thing.

For instance, taking on a band of survivors as your swelling party of humans and giants stomps across the icy landscape might sound like a noble act, but what it also means is more mouths to feed from your ever-dwindling food supplies. If the food runs out, many will die. So what's the right thing?



You'll need to fight off a **DEMONIC STONE ARMY** in order to survive

Sometimes choices are a matter of conscience, while at other times the game can see arbitrary, and the slew of terrible outcomes to attempts to be co-operative and considerate becomes exhausting. That's more a warning than a complaint - The Banner Saga is trying to create a mood of desperation and constant peril, so don't sign up thinking that the lavish, cartoon art style means all smiles and giggles.

Between the dilemmas and the vistas are relatively simplistic, somewhat repetitive but reliably challenging turn-based strategy battles. These involve picking a squad from a regularly changing (because people keep dying) roster of heroes and engaging them in small, tile-based skirmishes against the various creatures of this dying world, some of which require

surprisingly elaborate strategies to take down. Heroes will also level up over time and can equip special items, which makes it all the most painful when you lose one to an unexpected plot twist.

It's a decent enough way of including action and more visible threat, and the careful nature of it offers a welcome chance to feel more in control compared to the dizzying, unpredictable onslaught of the story and its dilemmas. Even so, these battles are the weaker part of the game. There are too few enemy types, and the ones there are take forever to take down, so come the second half of the game these battles can feel like a faintly tiresome interruption from the engrossing plot.

It's also a shame that these battles involve less than a dozen fighters, given your heroes are supposed to be at the head of a thousand-strong army. The dialogue often speaks of near-apocalyptic battles and the destruction of entire cities, but all we get to see of it is a few guys slowly hitting each other.

An uneven experience then, but the frankly astonishing scenery and a plot that starts confusing but becomes increasingly powerful makes The Banner Saga absolutely worth the bumpy ride.

Verdict

The Banner Saga is a beautiful and constantly surprising roleplaying adventure game, let down only slightly by repetitive and overly-slow turn-based battles. **Alec Meer**



£555 ex VAT
£667 inc VAT

Contact

■ dell.co.uk
■ tinyurl.com/q3oubqk

Specification

1.46GHz Atom Z3770 (2.39GHz Turbo); 10.8in (1920x1080) touch-sensitive LCD; Windows 8.1 Pro (32-bit); 2GB DDR3 SDRAM; 64GB solid-state storage; 802.11b/g/n; Bluetooth 4.0; 1x mini-HDMI; 1x USB 3.0; micro-SD; 8Mp camera (rear); 2Mp (front); headphone socket; 32Wh lithium-ion battery; 280x175x11mm; 770g

Build: ★★★★★

Features: ★★★★★

Performance: ★★★★★

Value: ★★★★★



TABLET

Dell Venue 11 Pro

Plenty of convertible Windows devices try to double as a laptop and tablet, but Dell says its Venue 11 Pro is a 'three-in-one' device, as it provides a desktop docking option to add to its tablet- and laptop modes. In fact, it's a conventional Windows 8 tablet in the Surface mold, and it's the accessories you choose that allow it to be used as a desktop or laptop.

There are several different configurations available, with the basic tablet starting at £439 with an Intel Atom processor running at 1.46GHz, 2GB of memory, 64GB of slow eMMC flash storage and the 32-bit version of Windows 8.1.

The memory and storage can't be upgraded later, although there is a model with an Intel Core i3 processor that includes 4GB of memory and 128GB SSD. This costs £619 on its own or £787 with the £168 docking keyboard. Dell also sells a basic keyboard without a battery for £52 and, as the Venue 11 is intended primarily for business, there's a number of warranty and support options available, too.

Our review unit was the cheaper £667 Atom version and included Windows 8.1 Pro (32-bit) and a sturdy and comfortable keyboard dock that includes its own internal battery.

Regardless of configuration, every version has the same basic design, with a 10.8in screen and a weight of 770g. That's heavy for a tablet of this size, but you can still hold the tablet in one hand for short periods while you tap on the screen with the other.



The screen has 1920x1080-pixel resolution and produces a sharp and colourful image, although it doesn't not use the usual IPS technology as we'd expect with a £400-plus tablet. It wasn't as bright as we would have liked either, and there seemed to be little difference between minimum and maximum brightness levels. The reason is that Dell has tried to lock down the backlight to almost unusably dim levels to inflate the battery life. If you look in the settings, you may be able to fix this.

The display is fine for personal use when you're browsing the web or watching some streaming video, but this is meant to be a business tablet and other people might struggle to get a clear view if you were using it for an impromptu PowerPoint presentation.

It's a similar story with the speakers, which produce a clear, detailed sound, but with poor volume levels. You'd certainly need to use headphones for listening to music, or external speakers for presentations in an office.

Connectivity is also limited, with a single USB 3.0 port, microSD and Mini HDMI located on the edges of the device. However, Dell offers a desktop dock unit (£115), which provides gigabit ethernet, three USB 3.0 ports, and both HDMI and DisplayPort connectors to aid office presentations.

The Dell Venue Pro includes an 8Mp rear camera and a 2Mp front-facing camera. The latter will be handy for video-conferencing when you're out of the office.


We were also pleasantly surprised by the performance of the Intel Atom Z3770 - a quad-core 1.46GHz processor that allows short-term Turbo speeds of up to 2.4GHz. It helped the device score 2567 points when running the PCMark 7 benchmark test.

That's not going to break any performance records, but it means that the Venue 11 Pro is capable of basic computing tasks such as web browsing, presentations and running Microsoft Office (not included). The touchscreen controls responded quickly and smoothly, and even programs such as Word and Excel didn't seem to be hindered by the limited 2GB memory.

Battery life was good, too. With its dim screen below our normal test setup levels, we got nine hours (545 minutes) of streaming video when running the BBC iPlayer via Wi-Fi. That's close to Dell's stated 10 hours, and without the additional runtime provided by the battery in the optional keyboard unit.

Unfortunately, the Venue 11 Pro wouldn't run our 3D graphics tests at all, so lunch-hour gaming sessions will be restricted to Angry Birds and similar lightweight 2D fare.

Verdict

The screen of the Venue Pro 11 needs to be easier to turn up to proper levels, but this tablet performs well for its price and is an option for business users who want a convertible tablet with Windows 8. Its battery life is also useful, making this low-power Intel Atom version a more affordable alternative to expensive Windows tablets such as the Microsoft Surface Pro 2 (page 65).  **Cliff Joseph**



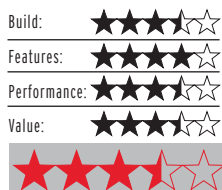
£355 ex VAT
£426 inc VAT

Contact

■ kyocera.co.uk
Read more
■ tinyurl.com/nrLnszw

Specification

Mono multifunction laser printer; 512MB standard memory; 1800x600 dpi max printing resolution; 667MHz processor; 30ppm specified speed; auto duplex printing; 300-sheet standard input capacity; 800-sheet maximum input capacity; 50-sheet ADF; 10/100/1000 ethernet, USB 2.0; 494x430x448mm; 18kg



MONO MULTIFUNCTION LASER PRINTER

Kyocera Ecosys M2030dn

Outwardly it's hard to distinguish the Kyocera Ecosys M2030dn from its predecessor, the FS-1130MFP. The laser printer has identical dimensions of 494x430x448mm, weighs the same 18kg and is styled in the company's usual two-tone colours of cream and grey.

Keeping a familiar design, however, isn't always an advantage and there are two features that aren't so user friendly. The lesser annoyance is the positioning of the USB port high under the rim of the jutting control panel, which makes inserting a flash drive here awkward. More serious, though, is the drum installation mechanism, which involves a flimsy plastic locking mechanism and some frustrating manoeuvring into position.

While the control panel is broad and clearly labelled, some specialised buttons might need some reading up on beforehand. The Send function, for example, forwards images to PC folders, FTP servers, via email and TWAIN.

Despite not having the luxury of a touchscreen, the five-line LCD display menus are nevertheless bright and simple to follow.

Print savings are apparent from the 50-sheet ADF, which allows for duplex scanning, while double-sided ID cards can be scanned to a single sheet. There's a further 50-sheet multipurpose drop-down tray at the front with a conventional 250-sheet cassette tray in the base.

Kyocera printers have usually been blessed with nippy print rates and the M2030dn is no slouch either, slinging out documents around the 28ppm mark, with single sheets and 16ppm in duplex. This decent pace may have been helped by doubling the memory from the previous model to 512MB (an extra 1GB is also available).

Print quality, on the other hand, was less consistent. Print and graphics copied documents generally emerged relatively



bold and sharp, but ordinary text documents were paler and less substantial. Photos, too, were fainter, but still managed to keep a reasonable amount of detail without too much banding.

Ink replacement costs have normally been comparatively low for Kyocera MFPs and here the 3000-page drum works out at 2.21p per page at current market prices.

Verdict

Although externally little has altered, the Ecosys M2030dn has a slight speed increase and efficiency, even if print quality is more inconsistent. ✉ **Martyn Clayden**

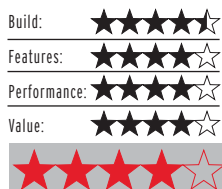
£301 ex VAT
£362 inc VAT

Contact

■ epson.co.uk
Read more
■ tinyurl.com/ke32Lsk

Specification

Sheet-fed document scanner; 600dpi optical resolution; 48-bit colour; colour duplex; 50-sheet feeder capacity; USB 2.0 interface; 3000-sheet daily duty cycle; TWAIN/ISIS/WIA compliant; 297x152x154mm; 2.5kg



SHEET-FED SCANNER

Epson WorkForce DS-510

This high-quality Epson WorkForce DS-510 sheet-fed scanner cuts a sleek figure, its polished lid adding a certain élan to an otherwise orthodox design.

Not that there's anything wrong with orthodox when the result is as accomplished as the Epson. It's compact when folded up, but the lid is easily pushed back to convert this model into a substantial sheet-fed design.

The control panel is simple but highly functional, with colourful power on/off, start and stop buttons allowing for simple PC-free operation. There's also a handy page separation lever that lets you decide whether the scanner should handle documents one sheet at a time, or whether it should treat them as one long unbroken document.

The A4 50-sheet paper feed is easily adapted to take A5 or A6 sizes of paper, and it can even handle A3 using the stitching function.

The sizeable software bundle could take a good 20 minutes

to install, but there's plenty of functionality once set up. The main gateway is the Document Capture Pro package. This isn't the most user-friendly program, partly because it's relatively sophisticated for standard scan software, supporting a variety of formats and cloud services. It also lets you alter the running order, and extract and add new pages at will.

The scanner comes with a maximum scanning resolution of 600x600dpi, and Epson claims a rate of 52 colour images per minute (ipm). At 200dpi, we were able to read a 10-sided document in a time of just 14 seconds – a speed of 42.8ipm. It took a further 18 seconds for those pages to be turned into full searchable PDFs. At 300dpi, the time went up to 20 seconds, and at 600dpi it took 48 seconds (30ipm and 12.5ipm respectively).

Quality, certainly from 300dpi onwards, is excellent, and the Epson picked up on the subtle differences in hue of complex magazine photos.



Text was also cleanly rendered, with well defined characters and smooth lines. OCR (through ABBYY) is also fantastic, and our fiendish dictionary page test produced almost 100 percent accuracy, even when working with tiny font sizes and intricate footnotes.

Verdict

The standard DS-510 is very good value for money for serious businesses who have lots of paperwork to convert to a digital format. ✉ **Robin Morris**

£358 ex VAT
£430 inc VAT

Contact

■ asustor.com
Read more
■ tinyurl.com/nx5qo8m

Specification

4-bay NAS enclosure;
2.13GHz Intel Atom
dual-core processor;
ADM 2.1 firmware;
1GB DDR3 RAM
(expandable to 3GB);
2x gigabit ethernet;
HDMI 1.3a; 2x USB 3.0,
4x USB 2.0; 2x eSATA;
230x170x185mm; 3.5kg

Build: ★★★★★☆
Features: ★★★★★★
Performance: ★★★★★☆
Value: ★★★★★★



NAS DRIVE

Asustor AS-604T

As our storage needs increase, so does the choice of NAS drives – accelerated by the appearance of new brands such as Asustor joining the gold rush in a relatively buoyant part of the IT retail sector.

The Asustor AS-604T is a four-bay free-standing NAS box, closely resembling a clone of Qnap's four-bay designs, such as the TS-421 (tinyurl.com/mcywub8). There are two other four-bay options from Asustor, the others lower-powered but otherwise looking identical, the AS-204T with a 1.2GHz Intel Atom and AS-304T with a 1.6GHz chip. The AS-604T, meanwhile, has a 2.13GHz Atom. There's 1GB memory included, which is expandable to 3GB.

Ports are more plentiful on this top four-bay edition, running to two USB 3.0, four USB 2.0 and two eSATA. Network connections can be made on one or both of its gigabit NICs. There's also an HDMI port.

From the front, you can readily access four 3.5in disk mounted vertically in their own sliding caddy, each with levers to extract them. As with all modern NAS drives, you can optionally use 2.5in disks or SSDs inside, with pre-cut mounting holes for the smaller drives.

Running across the top is a backlit fluorescent display with two lines of text. The brand name is applied in the top left corner, and there's a front-mounted USB port at the bottom left corner. There are no keyed locks on the drawers, but the secure nature of the release mechanism suggests you're unlikely to inadvertently pop out a disk.

The build quality is first class. The drawer mechanism, for example,

has positive spring-loaded levers that secure the mounted disks in place, on smooth sliding runners.

The unit is relatively peaceful in operation, with a single large 120mm fan at the rear running very quietly. The

disks will have the loudest impact, and modern NAS-compatible disks such as the Seagate NAS and WD Red will help keep noise levels manageable.

A NAS drive depends on its OS to keep your data managed and safe. In turn, it must be freely accessible by non-expert users who need to set the unit up and adjust it to their needs.

ADM 2.1 has a rich graphical look, with drop shadows below open windows, all centred on a desktop populated with large iPhone-style app icons. It's a great interface that doesn't suffer the over-bling of Qnap's latest, and closer to a real modern Linux distribution than Synology's current DSM 4.3, which is based around an OS X-like System Preferences interface.

Software features

In terms of functionality, there's compatibility with SMB, AFP and NFS networking standards, as well as FTP; power management settings; Time Machine compatibility as well as rsync for external backups to and from the NAS; and, of course, fine-grained management of the disks through the usual Raid 0, 1, 5, 6 and 10 setup and then monitoring of disk temperatures and health. Disks can be hot-swapped when required.

App Central is the portal to find and download apps to add functionality. And the options are extensive, from bittorrent clients to WordPress blog servers, media servers and photo gallery organisers.

We tested the drive with both Microsoft SMB and Apple AFP network protocols, and found markedly different results. Windows users will be limited to SMB, although Mac users can elect which networking type to use, depending on their usage priorities.

The AS-604T was set up with four 3TB WD Red disks in Raid 5, giving a total available volume of 8.1TB. Best-case sequential data



transfers were found in OS X using AFP, where the Asustor could read at up to 111MB/s, close to the limit of gigabit networking. Write speeds were much lower, at just 30MB/s for most data above 5MB in size. That write performance is about the speed we'd expect from a more efficient but lower performance ARM processor in a consumer NAS.

At the small file level, sequential reads and writes were much slower, as is typical in Raid network drives – around 9MB/s for both reads and writes. But random 4kB read/writes suffered at a desultory level of just 0.05MB/s, or just 5kB/s.


Turning to SMB connections, we have a different story when comparing fastest sequential and smallest random read/write performance. Best-case sequential reads were only around half as fast as over AFP, at 60MB/s. But now write speeds were nudged up slightly, averaging 53MB/s for data sized from 2- to 10MB.

Random small files also travelled much easier, at 9.7MB/s for 4kB reads and 5.9MB/s for random writes.

Given the choice, we'd use an AFP connection if transporting large video or music files around the network; but the SMB option for accessing smaller documents and metadata files far more quickly.

The AS-604T consumed 34W of power with four WD Red disks spinning. When the disks in standby mode, this fell to 22W.

Verdict

The Asustor AS-604T is a very well featured and sturdily built NAS drive.  **Andrew Harrison**



Tablets mega-test

Thinking of buying a tablet, but bewildered by the choice? Our mega-test will help you decide which one is right for you. Martyn Casserly takes 20 of the most popular models and puts them through their paces



Such is the huge growth in popularity of tablets over the past couple of years that there are now vast swathes of possibilities for a would-be buyer. In this test, we'll try to make things a bit simpler by taking many of the top models in different size categories and exploring what makes them worth your hard-earned cash. The test is broken down into three sections: 10in, 7in and children's tablets.

Why buy one

The first question you need to ask is what you want a tablet for. If it's a case of checking Facebook, surfing the web, email, reading, playing a few games and things along these lines, then a tablet is a superb choice. If you're intending to replace your

laptop with a lightweight productivity unit, then things aren't so clear.

Typing on a tablet is fine in short bursts, but not if you want to work on it all day. If you're working with an iPad then your files will be less easily accessible than they would on a traditional computer. It's worth checking if the software you like to use is available in the relevant app store for your device. You might also want to buy a Bluetooth keyboard.

Size

The tablet market has settled into two size categories: large 10in- and smaller 7in devices. They run the same software and apps, and increasingly the internal specifications show little difference. You just need to decide which size works for you.

If you want something you can carry everywhere with you and is primarily a consumption device, a smaller device will suit. The 10in tablets are hardly gargantuan, but they don't easily slip into a coat pocket. They do offer more screen space to display sites, movies and documents, though.

One important spec to look for is ppi (pixels per inch), which shows how detailed is the display and how clear the text will be. Anything over 200ppi is decent.

Storage

Storage space is an important consideration, given that many models won't allow you to slot in a memory card. If you want to store all your music and videos on the device you'll need the largest capacity you can afford.



Photography by Dominik Tomaszewski

If your needs are more modest, the lower-capacity models should be fine. We wouldn't recommend going lower than 16GB, and bear in mind that the operating system and preinstalled apps will take up a few of those precious gigabytes before you even start.

Operating system

There are three main flavours of tablet operating systems: Android, iOS and Windows. Each has its pros and cons.

Android is the most popular mobile OS and has an excellent choice of apps and devices. It's arguably not as simple to use as iOS, and has fewer apps optimised for tablets, but this number is increasing.

iOS has the Apple App Store on its side, for which apps are often created first -

sometimes exclusively so. The interface is also easy to get to grips with. iPads are wonderful, but they restrict how you use files and share data with other apps. This can lead to frustration if you want to do more than simply consume content.

Windows is more confusing. There are two options - RT or 8.1. The former is Microsoft's tablet-specific platform, which looks pretty but prohibits you installing any traditional Windows software. Instead, you are tied to the Windows App Store, which is sadly bereft of many useful apps. Windows 8.1 is a full-blown version of Windows running on a tablet, but the models that include it are expensive. One plus for Windows RT is that it comes with a stripped-down version of Microsoft Office.

Children's tablets

Kids love using tablets, and often work out the OS quicker than their parents. Remember, though, that these devices are fully fledged computers, with access to the internet and, potentially, your bank account.

When buying for children, you'll want a tablet that allows for separate user profiles, so you can restrict their access to certain content and stop them buying in-app extras. Alternatively, you could buy a dedicated kids' tablet that has parental controls built in, or even one that has a OS written for children.

These restrictions might make the device redundant quicker than a traditional model as the kids grow up, but it will keep them safe now. You'll want a hardy device, too. Look for a protective case as standard.

LARGE TABLETS

APPLE IPAD AIR

£399 inc VAT • apple.com/uk • tinyurl.com/nvoof6h

The iPad Air is all about lightness. If you've used any previous full-size iPad, you'll notice immediately the transformation from that circa-650g weight down to 469g. It also seems much smaller, despite the same-size screen. At only around 170mm wide, those with larger hands can even span and grip the unit in a unidextrous fashion. Holding it thus you can really appreciate just how light it is, helped by the reduced thickness of just 7.5mm against the previous model's 9.3mm. It also feels solid enough despite its light weight. The body has the same style and construction as the iPad mini, with a thinner bezel along the sides when held in portrait mode. This might be a problem with accidental finger touches on the screen when gripping the edges, although when tried with at least the iBooks app, the iPad Air intelligently ignores touchscreen input.

To reduce weight, and to squeeze into that smaller space, Apple has shrunk the size of the battery from 42.5Wh to 32.4Wh. This has no adverse effects, though, as we found that occasional but steady use meant it could last the best part of a week between charges. Savings in efficiency may be coming from the new Apple A7 processor - the same as found in the iPhone 5s and complete with the M7 motion processor. Unlike the 5s, the Apple iPad Air doesn't have the Touch ID fingerprint sensor, which is a disappointment.

The screen is in essence unchanged since the first iPad with Retina display - a 9.7in capacitive touchscreen using IPS technology, which delivers rich, faithful colours and clear viewing from any angle. We're a little troubled by the sometimes unsmooth interface, though. This is a general criticism of iOS 7, but one we didn't expect to see on the latest iPad with best-yet graphics processor.

Build	★★★★★
Features	★★★★★
Performance	★★★★★
Value	★★★★★
Overall	★★★★★

PC ADVISOR
BEST BUY



The cameras front and back are almost the same as before, with a full-HD-capable main camera on the rear, like the iPad 4, which also takes 5Mp stills; and 720p video camera up front for FaceTime and Skype, which also takes 1.2Mp still images. Sadly there's no upgrade to slo-mo video, despite the faster Apple A7 processor that we were told enabled this feature on the iPhone 5s.

VERDICT: The iPad Air makes some compromises to trim the weight, but minor gripes aside, it's a wonderful device.

GOOGLE NEXUS 10

£319 inc VAT • google.com/play • tinyurl.com/puag9rn

Like most larger Android tablets, the Nexus 10 is designed in a landscape orientation. The plastic casing is covered in a rubberised material that's soft and grippy to the touch, making the unit comfortable to hold. Google has partnered with Samsung on this device, and the Korean giant has equipped it with its own 1.7GHz Exynos 5250, a dual-core processor based on the ARM Cortex-A15 architecture, alongside 2GB of RAM. This combination results in excellent performance, with the Nexus 10 snappily responding to any input or command. Apps open quickly and pinch zooming in the Chrome browser is silky smooth. There are two storage options to choose from - 16GB or 32GB - and like Apple, Google has decided to not include a microSD card slot for additional storage.

One standout feature on the Nexus 10 is its beautiful 2560x1600 resolution screen - the same as the 13in MacBook Pro with Retina display. A pixel density of 300ppi is wonderful, and everything displayed on the screen looks super sharp and detailed. Touch is also very responsive and viewing angles are astounding, with the 16:10 aspect ratio being particularly good for watching films. There's also the bonus of front facing stereo speakers.

Android 4.2 Jelly Bean is the included version of the operating system, although you can install updates that bring it up to the current 4.4 software. This purpose of Nexus devices is to provide the pure vanilla experience which Google intended - without the clutter and bloatware that other manufacturers can so often add on. The user interface is fluid and has the familiar set of homescreens, permanent Google search bar, customisable app tray, and wonderful/intrusive (take your pick) Google Now.

Build	★★★★★
Features	★★★★★
Performance	★★★★★
Value	★★★★★
Overall	★★★★★



The Nexus 10 has a good-quality 5Mp rear-facing camera with an LED flash, which can shoot video footage up to full HD 1080p quality. We also found the battery life to be outstanding; even with moderate to heavy use, the device was often able to go a solid few days between charges.

VERDICT: It might be starting to show its age, but the Nexus 10 is still one of the best 10in Android tablets. A fantastic screen, decent cameras and software features all for a more than reasonable price.

KOBO ARC 10HD**£299** inc VAT • kobobooks.com • tinyurl.com/kqnqfff

It's hard to fault the Kobo Arc 10HD in the looks department. It's understated, dark and stylish. The tablet also feels assuredly solid in your hand, especially for a £300 device. The only drawback is that this solidity comes at a price, and that price is weight – at 627g the Kobo Arc 10HD is a heavy tablet.

Internally, the Arc 10HD has an nVidia Tegra 4 quad-core, 1.8GHz processor, 2GB RAM, 16GB storage (12.9GB available to the user) and an impressive 10.1in 2560x1600 (300 ppi) display. The device doesn't have a microSD slot, and even though taking pictures with a tablet looks (and is) ridiculous, the fact it only has a single front-facing 1.3Mp camera isn't ideal either.

In terms of real-world performance there's nothing remarkable – good or bad – to report on. The device functions with a reasonable amount of zip, and switching from app to app isn't lightning fast, but acceptable. Software-wise Kobo has opted for an almost partitioned OS that gives you full access to the Google Play app and media store, while also presenting you with its own Kobo store and apps.

With the brand being so synonymous with reading, it's not surprising that the Kobo store offers pretty much any mainstream book or magazine you can imagine, boasting over 3.5 millions titles for its readers. For the serious bookworms out there, there's also a handy Reading Mode button, accessible via the pull down mini-setting menu that turns off all of your tablets alerts, so you can immerse yourself into a book with no distractions. Certain words/phrases in popular books also have links attached to them, and by clicking them a Wikipedia pop-in appears on page, giving you further information about the subject without leaving the ebook. In Phillipa Gregory's

Build	★★★★☆
Features	★★★★☆
Performance	★★★★☆
Value	★★★★☆
Overall	★★★★☆



The White Queen, for example, you can learn all about The House of Lancaster with the tap of a finger.

If you're hoping the Arc 10HD will have the impressive battery life of the Kobo e-Ink ereaders, then you will be disappointed, as the 6550mAh non-removable battery is about average.

VERDICT: The Kobo Arc 10HD is a decent tablet that offers a lot for its price tag. The only real downside is the weight, which makes it less tempting to carry with you everywhere.

MICROSOFT SURFACE PRO 2**£719** inc VAT • microsoft.com/uk • tinyurl.com/qx9ezmb

Microsoft's Surface Pro 2 is designed to be a laptop and tablet in one. It's a very compact device considering these ambitions, but coming in at 13.5mm thick and nearly 1kg in weight, it feels far better suited to use on a desk than on a lap or in the hand. The new two-stage kick-stand certainly helps when using it as a laptop or for watching videos, but the device still feels clunky compared to other tablets.

Although it's a bit of a beast, we can't knock it on build-quality. If anything, the weight makes it feel reassuringly sturdy, with the rest of the unit being well put together and superbly finished. As you would expect, there's built-in Wi-Fi and Bluetooth 4.0, plus front and rear 720p cameras.

It's perfectly feasible to do 'real' work on the Pro since it runs a full version of Windows 8.1, however, it's a compromised experience. For starters, the screen is quite small at 10.6in, so tasks other than word processing can be difficult, especially if you don't use a mouse. The trackpads on the optional Touch and Type Covers are also tiny and awkward. There is, of course, the touchscreen, but for desktop applications you'll need a mouse pointer or the included digital pen to avoid getting frustrated with things such as drop-down menus.

The IPS screen does look gorgeous in terms of viewing angles, colour saturation and contrast. It's also nice and responsive to touch input, which supports 10-point multi-touch. As a tablet, though, it's just simply too big and heavy, plus the moderate six-hour battery life is less than we've grown accustomed to in this category.

The Surface Pro 2 is an arguably better desktop than laptop replacement. With the onboard full-size USB port and Mini DisplayPort connections meaning you can attach a monitor, mouse

Build	★★★★☆
Features	★★★★☆
Performance	★★★★☆
Value	★★★★☆
Overall	★★★★☆



and keyboard. The internal 1.6GHz Core i5-4200U Haswell chip, paired with 8GB of RAM, is powerful enough for most general PC duties, and it's only the limited internal storage (the 64GB model only has 27GB free) that hampers this, though, you can always hook up external storage reasonably cheaply or use the microSD card slot.

VERDICT: The Surface Pro 2 crams a serious amount of power into a compact frame, but we can't help feel that instead of being the best of both laptop and tablet worlds, it's neither.

LARGE TABLETS

NOKIA LUMIA 2520

£399 inc VAT • nokia.com/gb-en • tinyurl.com/pwegrsu

At £399 and with 4G LTE as standard this is a lot of tablet for the money. It's also pretty powerful for a Windows RT device. Fuelled by a quad-core Qualcomm Snapdragon 800 chip and 2GB RAM, the Lumia is noticeably responsive, even when undertaking multiple tasks. There's a nominal 32GB of storage onboard, with a MicroSDHC card slot giving you the option of adding up to another 64GB.

The 10.1in IPS display is covered with Corning Gorilla Glass 2, and has a 1920x1080 resolution with a pixel density of 218ppi. This isn't the best, but the display is certainly sharp enough. Viewing angles are wide, and the Lumia fares well under bright light. There are front and rear cameras (1.2- and 6.7Mp respectively), both of which capture video at 30fps, 1080p, continuing the Lumia range's reputation for quality images.

Windows RT is famously kind on hardware, so it should be no surprise that the 2520's impressive specification leads to superb performance. Power management is also good - we gave the Lumia a good hammering over a day or so and it still had plenty of juice left in the battery. In the hand, the Nokia feels slim and light, and running your fingers over it finds only smooth edges. The overall impression is that of a premium tablet, although the lack of a full USB port makes it a difficult device to move your data on and off, especially as you can't connect it to a PC via Micro USB.

One thing to bear in mind is that Windows RT is an operating system for the consumption and display of media. The app store might include over 190,000 offerings, but how many are optimised for this size of display is debatable. Skype, Vine and Instagram are available, though, so things are at least moving in the right direction.

Build	★★★★★
Features	★★★★☆
Performance	★★★★★
Value	★★★★☆
Overall	★★★★★



Given a straight choice we'd still choose iOS or Android over Windows RT for a consumption device, but there is one big plus point for RT, and that's the inclusion of a version of Microsoft Office. The ability to load up, edit, then display PowerPoint presentations via the built-in HDMI-out port, gives Lumia 2520 a potentially unique calling card.

VERDICT: Some caveats still apply to Windows RT devices, but if you want an alternative to iPad and Android for a consumption device, the Nokia Lumia 2520 is that.

SAMSUNG GALAXY NOTE 10.1 (2014)

£450 inc VAT • samsung.com/uk • tinyurl.com/Lsypleu

This latest Samsung offering joins the esteemed ranks of the Note series, which has been largely responsible for the phablet craze of the past two years. The main thing that distinguishes this 10in tablet from its brethren Galaxy Tab 10.1 is the inclusion of the S-Pen stylus and accompanying software. To save you losing the S-Pen, Samsung has included a neat slot in the upper right-hand side of the case. You might think this would result in a thick, or at least bulbous, device but the Note 10.1 is decidedly slim in the hands. It's reasonably light, too, thanks in part to the predominantly plastic construction.

An excellent 10.1in 2560x1600 IPS screen adorns the front, surrounded by slim bezels and the now standard three button controls. Framing the chassis is a metal, grooved band that also holds the volume and power buttons, dual speakers, S-Pen, microSD and Micro-USB slots.

There's nothing silly about the internals of the Note 10.1, though. Samsung has installed its beefy 1.9GHz Quad-core Exynos 5, and 3GB of RAM. This results in a speedy tablet that loads and runs apps quickly. We did see a few examples of lag in the interface, but on the whole it's a very nice unit to use. The Touchwiz interface that Samsung layers on top of Android 4.3, still feels overly complicated when compared to vanilla Android, but it does allow the Korean giant to promote its various services. These include the Samsung Hub through which you can purchase various media, although the Google Play Store is also included. There are also plenty of default apps from calendars to a magazine-style news feed.

The S-Pen is a lot of fun for doodling or annotating notes. Excellent palm cancellation means you can rest your hand on the

Build	★★★★★
Features	★★★★★
Performance	★★★★★
Value	★★★★☆
Overall	★★★★★

PC ADVISOR
RECOMMENDED



screen while you do so. How useful you'll find it is questionable, but if you really want a stylus then this is the one to buy. Otherwise save some money and take a look at the Tab 10.1 instead.

Cameras are very good, capturing impressive images and coming replete with a raft of cool modes, plus the battery life of nearly nine-and-a-half hours makes this a solid performer.

VERDICT: Touchwiz and fake stitching aside the Note 10.1 is a very good tablet with the added S-Pen feature for those who want it.

SONY XPERIA TABLET Z

£399 inc VAT • sony.co.uk • tinyurl.com/odtp6b8

The Sony Xperia Tablet Z feels extremely good in your hands. It's astonishingly thin and light at just 7mm and 495g, and screams 'Sony' in terms of its design and build quality, which is no bad thing. Simply put, it's one of the best-looking Android tablets on the market.

One feature that really stands the device out from the sea of other black, glass and plastic slates, is that the Xperia Tablet Z is dust and waterproof. The Xperia Tablet Z is powered by a Qualcomm 1.5GHz quad-core processor and packs 2GB of RAM. The user experience is good, but we did occasionally see lag, which was unexpected. Even when just swiping between home screens the device doesn't always perform the task smoothly. Browsing the web was the worst for us; the device just couldn't keep up with our scrolling and zooming on content heavy sites.

The 10.1in display has a 1920x1200 resolution, with a slightly less than exemplary pixel density of 224ppi. That said, the screen can hardly be called bad, as Sony's Mobile Bravia Engine 2 delivers colours and contrast that look great.

The two onboard cameras are very good; with a forward-facing 2.2Mp option for video chatting, and the rear that houses a serious 8.1Mp camera that takes super-sharp images. The device also comes with 16GB of internal memory, and has a microSD slot which gives users expandable memory of up to 64GB, which will be necessary if you plan on using the cameras.

Battery life is respectable, with the unit still having a little bit of charge left after a weekend of web browsing, gaming, social media and watching video content. A good performance all round and what we expect from a high-end tablet

Build	★★★★★
Features	★★★★★
Performance	★★★★☆
Value	★★★★★
Overall	★★★★★



Running Android 4.1.2 Jelly Bean, the Xperia is nearly up to date when it comes to the OS. It's a nice balance of vanilla Android and Sony's stylish overlay. As well as the expected collection of Google apps, there are also some of Sony's own, but many of them double up on what the Play Store offers. We don't mind the choice but would rather they were combined into one app so that it's less confusing.

VERDICT: Sony has made a very desirable tablet in the Xperia Tablet Z. However, its slightly lacking performance is a disappointment.

ZOOSTORM PLAYTAB Q6010

£150 inc VAT • zoostorm.com • tinyurl.com/kl4yjoj

The PlayTab is a widescreen, large-format tablet along the lines of the Nexus 10. Its plastic casing is sturdy, exhibiting little flex, while looking quite smart in the process. In landscape mode each side of the chassis is slightly raised, which makes the unit comfortable to hold in spite of its reasonably hefty 620g weight.

The right edge houses various connections such as a Micro-USB, mini HDMI, and the proprietary charging socket. The latter is disappointing, especially when so many Android tablets now use the universal Micro-USB charging port. The left edge incorporates a 2W speaker, which sounds barely audible, even at full blast.

The 10.1in IPS display is bright and spacious, but has a low 1280x800 resolution, which gives it a pixel density of 149ppi. This means text and icons look blocky and jagged. Video is decent, though, making good use of the wide screen, and web pages render reasonably well, with images appearing sharp and colourful. For many people, the display will be adequate, but if you've grown used to a HD or Retina display the lower quality will be apparent.

Under the hood there's a 1.5GHz quad-core A9 CPU, supported by 2GB of RAM. This is a good spec for a lower-cost tablet and should deliver enough power for web use, social media activities and less demanding games. It's a surprise then that the PlayTab had a tendency to stutter occasionally. Downloading updates to apps in the background reduced the operating speed to almost zero, while games like Temple Run had a noticeable hesitancy in executing movements.

Android 4.2.2 is the OS of choice for the PlayTab, and it remains mostly unmolested. The only real obvious deviations from the norm were two additional software buttons for volume control, which

Build	★★★★☆
Features	★★★★☆
Performance	★★★★☆
Value	★★★★★
Overall	★★★★☆



is actually a very useful feature. Google Now is present, as is full access to the Google Play store for all your app needs.

The PlayTab does contain front and rear cameras, but they are useless, with the focus being slow, inaccurate, and producing images of such low quality that it's not worth the effort. At least battery life is decent, lasting well over eight hours in our looped video test.

VERDICT: While adequate for basic tasks, the spotty performance and low-res screen make the PlayTab Q6010 feel far from a bargain.

SMALL TABLETS

ADVENT VEGA TEGRA NOTE 7

£130 inc VAT • adventcomputers.co.uk • tinyurl.com/pmco4h4

Currys/PC World has waded into the tablet arena with the nVidia-based Tegra Note 7. Actually, calling the Vega 'nVidia-based' is a little misleading as this is really nVidia's tablet with Advent branding - but that's no bad thing. The highlight is the new quad-core Tegra 4 processor, which is immensely fast, but nVidia hasn't forgotten about the rest of the tablet, the result being a well-rounded device.

There's a passive stylus for writing or sketching, GPS, Bluetooth 4.0, 802.11n Wi-Fi, a Micro HDMI output and microSD card slot for adding to the 16GB of internal storage. There are also front-facing stereo speakers, plus front and rear cameras. Everything runs on Android 4.3 Jelly Bean and there's access to the Google Play store. Mostly Android has been left untouched, but nVidia has added a few apps and tweaks. One is the DirectStylus launcher, which pops up when you pull out the stylus. There's also a choice of two related apps: Tegra Note Draw and Stylus Labs Write. Both are relatively basic, but do a decent job

If there's one weakness, it's the 7in IPS display. The problem is the 1280x800 resolution, which is nothing special these days. A low pixel density of 215ppi also means that the Vega doesn't possess the sharpness of full HD tablets. In other respects, it's a good screen with the wide viewing angles you'd expect from IPS technology and respectable brightness levels and vivid colours.

On the plus side, the Tegra Note 7 is fast. It loads apps faster than just about any other Android tablet and browsing the web on it is extra-enjoyable because there's no waiting around for Google suggestions to appear, nor web pages to load. nVidia, of course, is better known for graphics and the 72-core GeForce GPU is great for

Build	★★★★☆
Features	★★★★☆
Performance	★★★★★
Value	★★★★☆
Overall	★★★★☆



games. There's also support for Tegra gaming controllers, although we weren't sent one for review and they're not yet widely available.

The Tegra Note 7 should count battery life among its strengths, mainly because of its fifth, low-power core which is all that's needed for most tasks, including video playback and web browsing. Using our usual video looping test, the Vega lasted just over eight hours.

VERDICT: For the price, the Advent Vega offers an awful lot. If you're after a budget Android tablet, the Tegra Note 7 is a great choice.

AMAZON KINDLE FIRE HDX

£199 inc VAT • amazon.co.uk • tinyurl.com/o96x4nz

The 7in HDX has exactly the same design as the Fire HD on page 71, with angular chamfers at the back. Build quality is excellent - at least on a par with the new Nexus 7 - and we love the soft-feel back.

It has a fantastic 1920x1200 resolution display, that's able to reproduce 100 percent of the sRGB gamut. Photos look almost hyper-real, with vibrant - but realistic - colour. It's very bright, too, and has great viewing angles. However, there's a problem. In order to get that sRGB coverage and not compromise battery life, Amazon has used blue, rather than white, LEDs. Therefore any screen with a white or light-coloured background at the edges has prominent blue strips. This is blue light 'leaking' through from the LEDs, and it can't be avoided.

Equipped with a Snapdragon 800 quad-core processor running at 2.2GHz, the device is an outstanding performer, feeling supremely fast. We saw no hesitation or stuttering at any point during testing, and the new dual-antenna Wi-Fi also appeared to be paying dividends with snappy app downloads and quick web page loading times.

Storage-wise, there's a choice of 16-, 32- and 64GB models, but you can't add storage via a microSD card on any of them. Battery life is reasonable, with our usual video-looping test draining the HDX in six hours, 38 minutes. The updated Fire OS software is a triumph. A lot of niggles that tarnished the older versions have been addressed and it's even easier to use. Good as these improvements are, the Fire HDX does lock you into Amazon's world due to its proprietary app store. It's no hardship being limited to buying ebooks and audiobooks from the well-stocked libraries, but the choice of apps in Amazon's Appstore lags behind plain Android devices with Google Play.

Build	★★★★☆
Features	★★★★☆
Performance	★★★★★
Value	★★★★☆
Overall	★★★★☆



Exclusive to the HDX tablets is the new Mayday button. If you need help with your Kindle, press the Mayday icon and it will put you in a queue to speak to one of Amazon's Tech Advisors. We tried out the service and were impressed that our call was answered in under 10 seconds. FreeTime mode is another useful feature, as it allows you to create user profiles for your children, replete with parental controls.

VERDICT: A great choice for undemanding users, who'll benefit from the closed, easy-to-use ecosystem and the free tech support.

APPLE iPad MINI RETINA

£319 inc VAT • apple.com/uk • tinyurl.com/Laptsed

The first-generation iPad mini's display was a disappointment to many. The all-important pixels per inch was too small by modern terms, at just 162ppi. The iPad mini with Retina display takes care of this, with an updated resolution matching the iPad Air at 2048x1536. That's a quadrupling of the original version's resolution, and as it's the same 7.9in size as before, that equates to a pixel density of 326ppi. In short, it's the best iPad screen we've seen to date. Colours are superb and with the extra resolution, photos look amazing.

The device shares the same A7 chip as the new iPad Air (see page 66). That means it's a 64-bit device, which makes it more future-proof than if it had stuck with a 32-bit processor. It also gets the M7 motion coprocessor, which should help prolong battery life when you're using fitness or activity tracking apps. As usual, Apple hasn't disclosed the amount of RAM, but this is of little consequence: the second-generation mini is very quick and feels slick in general use.

Storage options range from 16- to 128GB but, as ever, this isn't expandable. You get new dual-antenna Wi-Fi and support for MIMO, which Apple says doubles the theoretical transfer speed compared to the original iPad mini (300Mb/s versus 150Mb/s). There's also Bluetooth 4.0 and only the cellular version has a GPS receiver. Battery life remains as impressive as ever, with the new Mini lasting an impressive 10 hours, 42 minutes in our lab tests.

There's no major change in the camera department, with a 5Mp iSight snapper on the rear (capable of 1080p video) and an improved FaceTime HD webcam on the front. In our tests, we found little difference between shots taken on the original mini and the new version. In low light, using the front webcam, the slightly updated

Build	★★★★★
Features	★★★★★
Performance	★★★★★
Value	★★★★★
Overall	★★★★★

PC ADVISOR
RECOMMENDED



camera in the new mini meant there was less noise in photos. Video quality was impressive and - thanks to the new second back-mounted mic - audio recording was also much improved.

The new mini comes with iOS 7, which also entitles you to download a selection of Apple's apps (including iPhoto, iMovie, GarageBand and Pages) for free - a real bonus.

VERDICT: The new iPad mini is a fabulous tablet. The price may be frustrating, but if you can afford it you won't be disappointed.

GOOGLE NEXUS 7 (2013)

£199 inc VAT • google.com/play • tinyurl.com/Lxjdv5r

The original Nexus 7 was hugely significant in popularising Android small-form tablets. Now with its successor Google and Asus have upped the stakes construction wise. It's slimmer and lighter than the original, at just 8.7mm and 290g. This might not sound like much, but it makes the device comfortable to hold for long sessions, and is aided by the smooth, rubbery surface on the rear casing, which feels soft to the touch.

Stereo speakers are placed at either end of the tablet, delivering good audio; and excellent build quality has been maintained throughout. The highlight is the amazing 7in IPS display, which has a 1920x1200 resolution, and a mammoth pixel density of 323ppi. It's simply stunning and without doubt one of the best of any 7in tablet around at the moment.

Google has equipped the Nexus 7 with a 1.5GHz Snapdragon S4 Pro quad-core Krait processor and 2GB of memory. This, combined with the vanilla version of Android, means the device feels super slick and responsive. Storage options are either 16- or 32GB capacities, but there's still no microSD card slot for expansion. In our battery test, the tablet lasted eight hours, 47 minutes on a single charge while looping a locally stored, HD video - a perfectly respectable time.

Two cameras are included, with the front an acceptable 1.2Mp and the rear a 5Mp snapper with auto-focus but no flash. Photos from the rear camera are better than we expected with crisp, nice-looking shots. The device is also small enough to make taking photos and videos, with it feel more appropriate than when using larger tablets.

The slightly older 4.3 (Jelly Bean) version of Android ships on the Nexus 7, but you can update to the latest versions as they come

Build	★★★★★
Features	★★★★★
Performance	★★★★★
Value	★★★★★
Overall	★★★★★

PC ADVISOR
BEST BUY



out. That being said the existing interface is simple, uncluttered, and everything is snappy and enjoyable to use. Truly Android has come on in leaps and bounds over the past year or so. There's also the ability to create multiple user accounts on one device, which is great if you want to share the Nexus 7 with other members of your family.

VERDICT: It might not be the cheapest Android premium tablet any more, but with its amazing screen and clean software, the Nexus 7 (2013) certainly remains one of the very best.

SMALL TABLETS

LENOVO YOGA TABLET 8

£199 inc VAT • lenovo.com/uk/en • tinyurl.com/p8x6kqn

The design of the Yoga 8 is the main selling point, partly because it's something a bit different and partly since the specs aren't anything special. Lenovo's innovation comes in the shape of a cylindrical barrel that adorns one side of the tablet. This makes it much easier to hold than others because the majority of the weight is on one side and therefore in your hand. The barrel also angles the display towards you when placed on a surface, and flipping out the built-in kickstand angles it further. The stand also allows the tablet to stand up on its own without the help of a case, or anything else for that matter, with a viewing angle that can be adjusted a reasonable amount.

The kickstand is made from aluminium, as is the edging around the sides. However, the remaining parts of the device, bar the glass screen, are plastic. If you want a good looking and versatile tablet then the Yoga Tablet will suit, especially when you consider the price.

While this has an impressive and innovative design, its hardware doesn't match up. It's got an adequate 1.2GHz quad-core processor and 1GB RAM backed up with 16- or 32GB of internal storage. A plus point is a microSD card slot that can accept up to 64GB cards.

A speedy quad-core processor might sound good, but we didn't find the Yoga Tablet 8's performance was anything special. It's nippy around the homescreens but more demanding tasks show signs of lag. Scrolling through the Play Store, for example, is often jerky and switching between open apps can take a couple of seconds.

The screen is 8in, but has an uninspiring resolution of 1280x800 with 187ppi. It does offer great viewing angles, but unfortunately we found it occasionally temperamental. The cameras are good but not great, although we did like the front-facing stereo speakers. If you're

Build	★★★★☆
Features	★★★★☆
Performance	★★★★☆
Value	★★★★☆
Overall	★★★☆☆



going to watch video content then these will be a real boon. Battery life was also impressive at around 12 hours.

Both Yoga Tablet models come pre-loaded with a tweaked version of Android 4.2 Jelly Bean. We do like the Smart Side Bar, which gives access to app shortcuts and media content. However, this is switched off by default and doesn't work unless you're on the homescreen.

VERDICT: The Yoga Tablet 8 is one of the best-designed Android tablets we've seen, but is let down by mediocre hardware and performance.

TESCO HUDL

£119 inc VAT • tesco.com • tinyurl.com/m52L7yz

The Hudl feels nice in the hand with its soft-touch plastic casing. You can pick from four colours - black, blue, red and purple - and there's a range of accessories including cases and headphones. Realising that parents will want to give their kids a Hudl, there's also a red rubber child-safe cover for £15 and kids' headphones (£12) that limit volume. The Hudl is a little chunkier and heavier than the Nexus 7 (see page 71) at 9.9mm and 370g, but doesn't feel unwieldy. It's also very well built for a cheap tablet with a solid and durable construction.

Despite the budget price, the Hudl has a decent specification. Much better than we expected, in fact. As well as dual-band Wi-Fi and Bluetooth, there's also a built-in GPS receiver so you can use it as a satnav. The resolution on the 7in display is good for a budget tablet at 1440x900, with decent viewing angles. It isn't perfect, though. We found the screen occasionally unresponsive and it's also relatively dim, so you'll probably use it at maximum all the time. This, of course, drains the battery faster, with our test showing that it would last around five hours at these settings. If you only pick it up occasionally to check Facebook or Google, then it will give you a few days' worth of use, as the Hudl holds its charge proficiently when not in use.

The 1.5GHz quad-core A9 processor copes well with most apps. Navigating around Android is nippy enough, but it does suffer from occasional slowdown. Cameras are mediocre, with 3Mp at the rear and a 2Mp webcam. The results from both are low quality and the rear camera has problems focusing. The Hudl comes in one variant of storage, 16GB, of which around 12GB is available to use. There's also a microSD card slot for adding up to 32GB, and a Micro HDMI port allows you to connect it to your TV.

Build	★★★★☆
Features	★★★★☆
Performance	★★★★☆
Value	★★★★☆
Overall	★★★☆☆



Android 4.2.2 Jelly Bean is almost vanilla, but Tesco had added a few of its own bits and pieces. Preloaded widgets give first-time users a helping hand and other things such as Clubcard status at a glance. These can, of course, be removed if they are of no use to you. With Jelly Bean on-board users can also create multiple accounts, meaning the Hudl will suit families who want to share the tablet.

VERDICT: The Hudl is a tablet with a nice design and good build quality. Impressive specifications for the price make it easy to recommend.

CHILDREN'S TABLETS

AMAZON KINDLE FIRE HD

£119 inc VAT • amazon.co.uk • tinyurl.com/ch6cLnz

Unlike regular Android tablets, the Fire HD has a customised version of the operating system that has one aim: to let you get at Amazon's digital content. That means all your apps, books, videos, music and magazines come from Amazon rather than the Google Play Store.

The new, angular design matches the more expensive Fire HDX models (see page 68), but this sibling doesn't get the 'X' suffix as its screen has a 1280x800 resolution, rather than Full HD. Honestly, though, the screen is perfectly fine for reading, watching videos, playing games and browsing the web. The stereo speakers are decent, too, and we like the new button positions on the rear, as they're much easier to find without looking. The Fire HD also has a beefier processor than its predecessor which, along with the updated operating system, makes the unit feel a bit speedier.

Accoutrements are sparse, though. There are no cameras, microphones or cellular capabilities and a fixed amount of internal storage that can't be expanded via microSD cards. Bearing in mind that the 8GB model has less than 5GB of usable storage, you'd do well to consider the 16GB model for £139.

A new feature in Fire OS 3.0 is Freetime, which turns the Kindle into a kids' tablet. You can create separate user profiles, choose which apps and content is available in each profile, set different time limits for reading, gaming, and everything else. Freetime also makes text and icons larger, helping kids to navigate around more easily. There's no worry about them seeing inappropriate websites, since there's no web browser in this mode.

The only slight snag is that you don't get Google apps such as Maps and YouTube, and Amazon's Appstore is missing some apps

Build	★★★★☆
Features	★★★★☆
Performance	★★★★☆
Value	★★★★☆
Overall	★★★★☆



you'll find on Google Play – particularly UK-specific ones such as ITV Player, 4oD and other TV catchup services. However, it's pretty easy to install third-party app stores (not Google Play, though).

Battery life wasn't quite as good as we were hoping at six hours, 11 minutes, but turn down the screen brightness and you'll eke out at least an extra hour.

VERDICT: Apart from the lack of cameras, this is a great kids' tablet with access to lots of appropriate books, apps and games.

FUHU NABI 2

£150 inc VAT • nabitablet.com • tinyurl.com/bm9tbp2

The nabi 2 has a design that we can't help thinking looks a bit like an Etch A Sketch. Much of the similarity is caused by the red silicone bumper enveloping the chassis, which does a good job of protecting the unit from any rambunctious youngsters.

A quick look at the specs reveals that the nabi 2 has a quad-core nVidia Tegra 3 processor, 8GB of storage, a microSD slot for adding up to 32GB more, plus Micro-USB and Mini HDMI ports. You also get a front-facing 2Mp camera, which can be used for Skype video chats, and a pair of speakers on the rear.

The 7in screen is the first sign of weakness, with its 1024x600 resolution. In practice it's good enough, but it feels too cramped when browsing the web. The other problem is that it isn't an IPS LCD panel, so viewing angles are very poor in landscape mode.

In terms of performance, though, the nabi 2 is great. It's fast for gaming and browsing websites, plus the battery lasted just over eight hours in our tests.

There are plenty of preloaded games and 'educational' titles, but there are also a lot of trial versions that are worth removing before you hand the tablet to your kids. The educational stuff is US-focused and not of a particularly high quality. Our young testers loved the selection of preloaded music and MeeGenius app, however.

An update in February 2014 brought with it a major change: Google certification. This means that the nabi 2 now has access to the Google Play store, plus Google's own apps including Gmail, YouTube, Maps, Chrome and more. This is in addition to the nabi's own App Zone, and it's also easy to install Amazon's Appstore, meaning there's no shortage of great content for the tablet.

Build	★★★★☆
Features	★★★★☆
Performance	★★★★☆
Value	★★★★☆
Overall	★★★★☆



Plus, the OS also got an update from Ice Cream Sandwich to Jelly Bean. Few kids will notice or benefit from this, since they will be using the tablet in 'nabi mode', which limits content to whichever apps you deem suitable. This can include the Maxthon Kid-Safe browser. You can, of course, use the nabi 2 in 'Daddy mode', which is plain Android.

VERDICT: It's not without its faults, but with Google Play certification, the child-friendly interface and a rugged design, the nabi 2 is one of the best kids' tablets around.

CHILDREN'S TABLETS

KURIO 10S

£200 inc VAT • kurioworld.com/k/uk • tinyurl.com/kzo3hL5

The new Kurio 10S is one of few children's tablets to possess a 10in display. Its 1280x800 resolution display is lower than we've come to expect these days, but it's an IPS panel so it has decent viewing angles and is also nice and bright. Loud stereo speakers are inset on the front, which means audio is surprisingly good. Naturally, there's a headphone socket as well.

Flanking that are all the other ports and connections, including a potentially useful Mini HDMI output and a microSD card slot for adding to the internal 8GB. (Note that there's only around 2.5GB of free storage out of the box.) You also get front- and rear-facing 2.1Mp cameras. Sadly build quality isn't great, being similar to budget Android tablets from a couple of years ago. Press the screen too hard or squeeze the tablet from the back and the screen discolours at those points in protest.

There may well be a quad-core processor inside, but the 10S was frustratingly slow to respond to taps and sluggish at launching apps. Once the apps were running things were smooth, but performance is deeply unimpressive. That includes battery life, which was just three hours in our initial testing. Web browsing is unacceptably slow. Websites would regularly take over 30 seconds to display, and more often than not, embedded videos wouldn't play at all.

As for software, the Kurio starts on the solid foundation of Android Jelly Bean (4.2.2) and adds a dedicated kids' interface. You can create up to eight user profiles, allowing you to customise which apps are available to each child. There are a lot of bundled apps including some decent Disney titles and big names such as Cut the Rope HD, Fruit Ninja, Angry Birds Space and Where's My Water?

Build	★★★★☆
Features	★★★★☆
Performance	★★★☆☆
Value	★★★★☆
Overall	★★★☆☆



Kids have access to the standard Android web browser, but it can be locked down via a Parental Area where you can manage kids' profiles and decide exactly which websites they can access. There are predefined lists of sites based on various age ranges, but all are US-specific, so you'll have to add UK sites such as CBeebies and Milkshake yourself.

VERDICT: Although the Kurio 10S good child-friendly software and decent parental controls it's also slow and has mediocre battery life.

LEAPFROG LEAPPAD ULTRA

£119 inc VAT • leapfrog.com • tinyurl.com/mrtqzxx

The LeapPad Ultra is the successor to the phenomenally successful LeapPad 2 tablet for kids (tinyurl.com/k4z7wzd). The new device feels robust - a lot more so than adult tablets - and should be able to withstand even the clumsiest, or should we say careless, kid. Aimed to cater for four- to nine-year olds, the LeapPad Ultra's - albeit limited - web access, Wi-Fi, peer-to-peer gaming and bundled MP3 player should make it a little cooler for children than its predecessor. Although it should be noted that you can't download chart tunes and other non-Leapfrog-endorsed music onto the device.

It has a 7in 1024x600 display that LeapFrog calls Duo Tech, as it's resistive for stylus use and also capacitive for finger-swiping friendliness. There are front- and rear-facing 2Mp cameras, capable of 480p video recording, 8GB of internal storage, and the internal battery promises around nine hours of use after a full charge.

As standard, the Ultra comes with 11 apps, including ones for art, photography, chatting with other Ultra users and a utilities suite. One standout feature for parents is LeapSearch, the kid-safe web browser. With LeapSearch's new parental tools, including a four-digit security code, parents are in control of what their child is able to access.

LeapSearch is a closed environment of pre-approved, whitelist YouTube video and site content. LeapFrog's own team of learning experts have to review and approve all web and video content available on the Ultra. On other supposedly child-friendly web browsers we were quickly able to browse to inappropriate content. LeapFrog's closed-environment approach removes this element of parental worry, and is a major benefit of choosing a closed system rather than the iPad or Android.

Build	★★★★★
Features	★★★★★
Performance	★★★★☆
Value	★★★★☆
Overall	★★★★☆



Our testers (aged three to seven) enjoyed playing with the Ultra, particularly its cameras and chatting with other nearby LeapPad users on the phrase-based Pet Chat app. However, the occasional sluggish performance led to moaning as apps took time to load. Plus, some apps proved difficult to use for some of our testers.

VERDICT: The Ultra has good educational value and a reassuringly safe internet browser, but it's expensive and kids can't grow into it like the identically priced Kindle Fire HD.

SAMSUNG GALAXY TAB 3 KIDS

£199 inc VAT • samsung.com/uk • tinyurl.com/nzq676m

The Galaxy Tab 3 Kids is the same as the Galaxy Tab 3 7.0, but finished in bright yellow instead of white. It also comes with an orange silicone bumper case and – in a separate package that's often bundled free – a combined case and stand with built-in stylus, the Kids Grip Cover Kit.

The 7in screen IPS panel is bright, vibrant and has great viewing angles. The low 1024x768 resolution is the only slight disappointment, but your kids certainly aren't going to complain. At just over 300g, the tablet on its own feels sturdy, yet even with either case attached, it's not too heavy for kids to handle. In terms of storage, there's 8GB internally (4GB actually usable) and a microSD card slot so you can add up to 32GB more.

In both looks and simplicity, Samsung's child-friendly interface is excellent. Once set up by a parent, a swipe anywhere on the screen unlocks the tablet and a series of scrollable 'cards' makes it easy for even young kids to launch the app they want. A parental area, which is protected by a PIN, lets you set limits on screen time.

Samsung's Kids' Store is populated with apps Peppa Pig titles and Fireman Sam, as well as Lego and Disney games. It's considerably better than the stores on other kids' tablets, and prices are reasonable, too. It's also worth bearing in mind there's no internet access in Kids mode. The good news is that, since the Google Play store can be found in the main Android interface, you can download any app you like and make it available in Kids mode.

Performance on the tablet doesn't impress. Sometimes apps take an age to load, which leads to frustrated children, and that's the last thing you want. Fortunately, gaming is fine, so once an app has

Build	★★★★★
Features	★★★★☆
Performance	★★★☆☆
Value	★★★★☆
Overall	★★★★☆



launched, it runs smoothly. Video playback is also good, with even HD videos on YouTube playing fine, and battery life is around eight hours.

For a modern tablet, the Galaxy Tab 3 Kids has diabolical cameras. Photo quality is poor and the same goes for videos. This is a real shame as other Samsung devices often have excellent cameras.

VERDICT: This is one of the better kids' Android tablets we've seen, but it's not cheap, and the sluggish performance and poor cameras make it hard to justify that cost.

VTECH INNOTAB 3S

£99 inc VAT • vtechuk.com • tinyurl.com/ntb3jad

The Innotab 3S is a chunky tablet, mainly to accommodate the required four AA batteries, alongside a cartridge port for dedicated games. There are also more buttons than normal, with controls for power, navigation, volume, and a D-pad for games all on the front panel, which is topped off by a cool swivel-mounted camera. Due to the bespoke nature of the software we weren't able to run our usual battery tests, but the unit kept going for several days of light use.

The 5in screen is bright and colourful, featuring both resistive and capacitive responses. Using your fingers is a painfully frustrating experience, though, so it's best to stick with the supplied stylus. There are a variety of bespoke apps installed, but you'll need to connect the tablet to your PC and download the Learning Lodge software to activate many of them.

Once up and running your child can access an art app, the camera, some fun utilities and a few gently educational games. Generally these are enjoyable, but don't feel deeper than ones you can find on Android or iOS. One cool feature is Kid Connect, which (coupled with the corresponding app on your smartphone) allows the child to send and receive text messages with you.

New apps can be bought from the Learning Lodge. These average out at around £3, but the Disney/Pixar and other premium brand content seems to be available only on the cartridge format that costs around £20. The unit also features a child-friendly web browser, which has several preset, educationally-focused sites. Scrolling through the list is ponderous, with the screen only updating one line at a time, but once at the destination site things improve. Only marginally, though, as the poor resolution makes text hard to read.

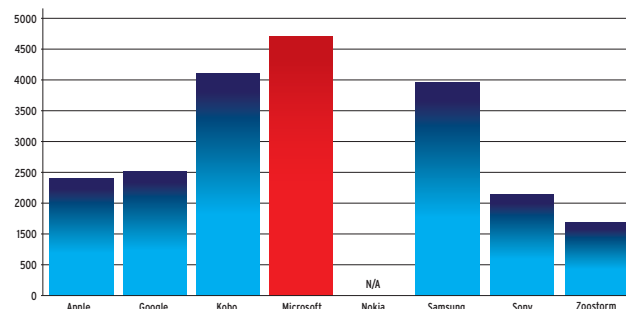
Build	★★★★★
Features	★★★★☆
Performance	★★★☆☆
Value	★★★★☆
Overall	★★★★☆



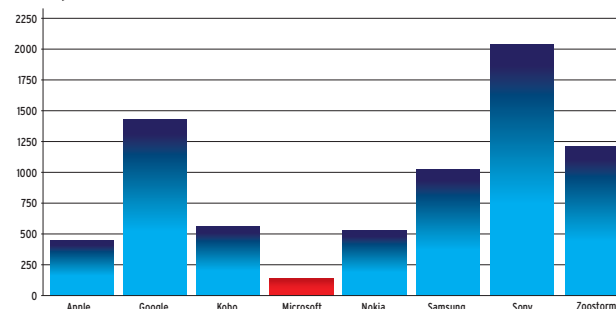
As an adult using the Innotab 3S you want to give up after about three minutes thanks mainly to the laggy interface. Our laboratory children had a quite different response: they loved making movies, playing the games and just interacting with the device, although they did mention the constant delays.

VERDICT: The Innotab 3S may be a slow and potentially costly system, especially if you go down the cartridge route, but the children we gave it to really liked it. Kids eh?

Geekbench 2



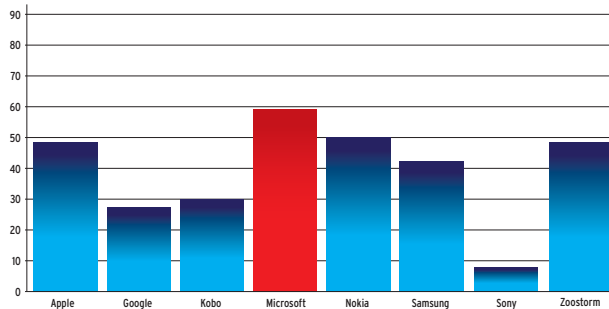
SunSpider (ms)



Large tablets

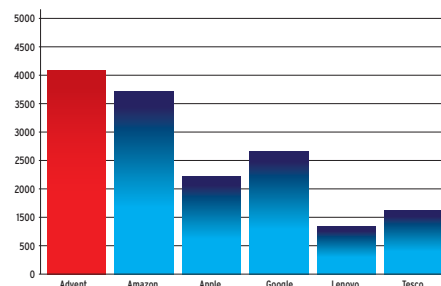
	APPLE £399 inc VAT 	PC ADVISOR BEST BUY GOOGLE £319 inc VAT 	KOBO £299 inc VAT 	MICROSOFT £719 inc VAT 	
Product name	iPad Air	Nexus 10	Arc 10HD	Surface Pro 2	
Screen size/resolution	9.7in IPS display, 2048x1536, 264ppi	10.1in IPS display, 2560x1600, 300ppi	10.1in display, 2560x1600, 300ppi	10.6in IPS display, 1920x1080, 208ppi	
Operating system	iOS 7	Android 4.2	Android 4.2.2	Windows 8.1 Pro	
Processor	1.39GHz Apple A7	1.7GHz Exynos 5250, dual-core ARM Cortex A-15	1.8GHz quad-core nVidia Tegra 4	Intel Core i5-4200U (Haswell)	
Graphics	PowerVR G6430	Mali T604	nVidia Tegra	Intel HD 4400	
RAM	1GB	2GB	2GB	4GB	
Capacity tested	16GB	16GB	16GB	64GB	
Expandable memory	N/A	N/A	N/A	microSD up to 64GB	
Wi-Fi	Dual-band 802.11 a/b/g/n with 2x2 MIMO	802.11 b/g/n MIMO+HT40	Dual Band 802.11 a/b/g/n with 2x2 MIMO	802.11 a/b/g/n	
Bluetooth	4.0	4.0	4.0	4.0	
3G	Optional 4G model	No	No	No	
NFC	No	Yes	No	No	
Camera	Front, 1.2Mp; rear, 5Mp	Front, 1.9Mp; rear, 5Mp	Front, 1.3Mp (720p)	Front, 720p; rear, 720p	
Video recording	1080p	1080p	720p	720p	
GPS receiver	Only on 4G models	Yes	N/A	N/A	
App Store	Apple	Google Play	Google Play	Windows	
Ports	Lightning connector, 3.5mm headphone	Micro-USB, Magnetic Pogo pin charger, Micro HDMI, 3.5mm headphone	Micro-USB, Micro HDMI, 3.5mm headphone	USB 3.0, Micro SDXC, Mini DisplayPort, 3.5mm headphone	
Dimensions	240x170x7.5mm	264x178x8.9mm	253x172x9.9mm	275x173x13mm	
Weight	469g	603g	627g	907g	
Warranty	1 year	1 year	1 year	1 year	
Battery life	10 hours	8 hours	7 hours, 32 minutes	6 hours	
Geekbench 2 score	2388	2505	4105	4698	
SunSpider score (ms)	456.4	1329	563.5	119.4	
Egypt HD	48fps	27fps	30fps	59fps	

Egypt HD (fps)

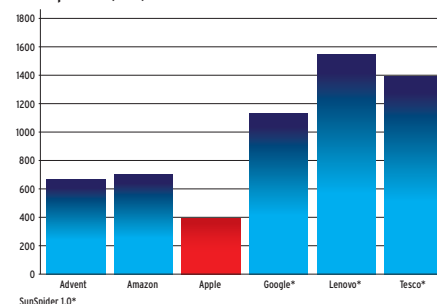


	NOKIA £399 inc VAT ★★★★★	SAMSUNG £450 inc VAT ★★★★★	PC ADVISOR RECOMMENDED	SONY £399 inc VAT ★★★★★	ZOOSTORM £150 inc VAT ★★★★★
	Lumia 2520	Galaxy Note 10.1 2014 Edition	Xperia Tablet Z	Playtab Q6010	
	10.1in IPS display, 1920x1080, 218ppi	10.1in IPS display, 2560x1600, 299ppi	10.1in display, 1920x1200, 224ppi	10.1in IPS display, 1280x800, 149ppi	
	Windows RT 8.1	Android 4.3	Android 4.3	Android 4.2.2	
	2.2GHz quad-core Qualcomm Snapdragon	1.9GHz quad-core Exynos 5	1.5GHz quad-core Qualcomm APQ8064+MDM9215M	1.5GHz quad-core Rockchip RK3188 Cortex A9	
	Adreno 330	1.9GHz quad-core Exynos 5	Adreno 320	1.61GHz ARM RK30board	
	2GB	3GB	2GB	2GB	
	32GB	16GB	16GB	16GB	
	microSD up to 64GB	microSD up to 64GB	microSD up to 64GB	microSD up to 64GB	
	802.11 a/b/g/n	802.11 a/b/g/n/ac	802.11 b/g/n	802.11 b/g/n	
	4.0	4.0	4.0	4.0	
	4G LTE	Optional 4G model	Yes	No	
	Yes	No	Yes	No	
	Front, 1.2Mp; rear 6.7Mp	Front, 2Mp; rear, 8Mp	Front, 2.2Mp 1080p; rear, 8.1Mp	Front, 0.3Mp; rear, 2Mp	
	1080p	1080p	1080p	480p	
	Yes	Yes	Yes	Yes	
	Windows	Google Play/Samsung Hub	Google Play	Google Play	
	micro-SIM, microSD, Micro HDMI-D, USB 3.0, 3.5mm headphone	Micro-USB, Micro SD, S-Pen, 3.5mm headphone	Micro USB, microSD, micro-SIM, 3.5mm headphone	Proprietary charger, microSD, Mini HDMI, Micro-USB, 3.5mm headphone	
	267x168x8.9mm	341x171x7.9mm	266x172x6.9mm	268x169x12mm	
	615g	540g	495g	620g	
	1 year	1 year	1 year	1 year	
	6 hours, 25 minutes	9 hours, 22 minutes	8 hours, 25 minutes	8 hours, 40 minutes	
	N/A	3930	2119	1665	
	515	1013	2036	1201	
	50fps	43fps	31fps	7.3fps	

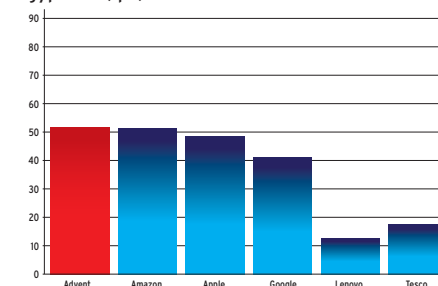
Geekbench 2



SunSpider (ms)



Egypt HD (fps)



Small tablets

	ADVENT £130 inc VAT ★★★★★	AMAZON £199 inc VAT ★★★★★	APPLE £329 inc VAT ★★★★★ <div>PC ADVISOR RECOMMENDED</div>	
Product name	Vega Tegra Note 7	Kindle Fire HDX	iPad mini Retina	
Screen Size/Resolution	7in IPS display, 1280x800, 215ppi	7in IPS display, 1920x1200, 323ppi	7.9in IPS display, 2048x1536, 326ppi	
Operating system	Android 4.3	Fire OS 3.0	iOS 7	
Processor	1.9GHz Tegra 4 Quad-core CPU	2.2GHz quad-core Snapdragon 800 CPU	A7 CPU	
Graphics	72-core GeForce GPU	Adreno 330 GPU	A7 PowerVR G6430 GPU	
RAM	1GB	2GB	1GB	
Capacity tested	16GB	16GB	16GB	
Expandable memory	Yes	No	No	
Wi-Fi	802.11 b/g/n	802.11 b/g/n	802.11 n	
Bluetooth	4.0	4.0	4.0	
3G	No	Optional 4G model	Optional 4G model	
NFC	No	No	No	
Camera	Front, 0.3Mp VGA; rear, 5Mp	Front, 720p HD	Front, FaceTime HD; rear 5Mp	
Video recording	1080p	720p	1080p	
GPS receiver	Yes	4G version only	4G version only	
App Store	Google Play	Amazon	Apple	
Ports	Micro-USB, Micro HDMI, microSD, 3.5mm Headphone	Micro-USB, 3.5mm headphone	Lightning connector, 3.5mm headphone	
Dimensions	120x190x10mm	186x128x9mm	200x134.7x7.5mm	
Weight	320g	303g	331g	
Warranty	1 year	1 year	1 year	
Battery Life	8 hours	6 hours, 38 minutes	10 hours 42 minutes	
Geekbench 2 score	4088	3717	2222	
SunSpider score (ms)	662	697	397	
Egypt HD	52fps	51fps	48fps	

*SunSpider 1.0 (other results with SunSpider 1.0.2)


Conclusion

The large tablet market is maturing nicely, as can be seen by the amount of four-star reviews in this test. Two models do manage to stand out above the rest, with the iPad Air stealing the Best Buy award. Apple's latest iteration is very fast, impressively light, and still has the most, and best, tablet optimised apps available. Of course, the iPad Air is one of the newest devices in the test, so you'd expect it to do well. The same can be said of the Samsung Note 10.1 (2014), which is another hugely capable tablet with plenty of features – the microSD slot and S-Pen are a

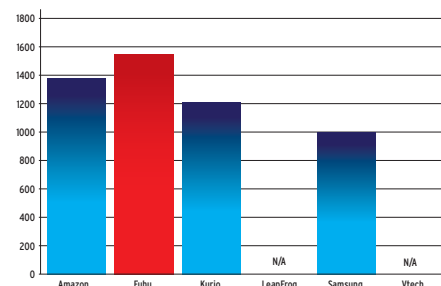
big deal. This is why it comes a close second and picks up the Recommended award.

Choosing between the smaller tablets wasn't easy either. The Tegra Note is very fast and the Tesco Hudl offers incredible value, but in the end the Nexus 7, which possesses a mixture of those two qualities push it up onto the podium to collect the Best Buy accolade. For a hair under £200, it's an immense bargain with little in the way of compromise. It pips the iPad mini Retina mainly due to cost, but Apple's powerhouse is a worthy Recommended winner.

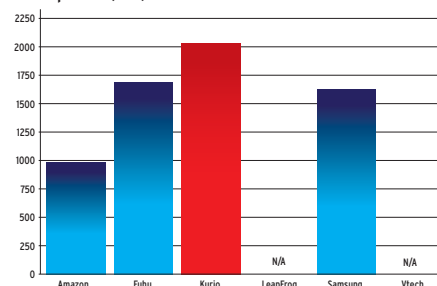
Probably the most diverse category was the Children's tablets. Purpose-built devices such as the LeapPad and Innotab 3S found favour with the kids who helped us test them, but their closed systems feel too restrictive. The Samsung Tab 3 Kids is a great device that falls down on performance and price, while the Nabi 2's screen is a sticking point in an otherwise fine tablet. It's Amazon's inclusion of Freetime on the Kindle HD that transforms a great device into a fantastic children's tablet, making it a Best Buy for us.

GOOGLE £199 inc VAT 		PC ADVISOR BEST BUY	LENOVO £199 inc VAT 		TESCO £119 inc VAT 
Nexus 7			Yoga Tablet 8		Hudl
7in IPS display, 1920x1200, 323ppi			8in IPS display, 280x800, 187ppi		7in IPS display, 1440x900, 243ppi
Android 4.3			Android 4.2		Android 4.2.2
Qualcomm Snapdragon S4 Pro 8064			1.2GHz quad-core ARM Cortex-A7 CPU		1.5GHz quad-core A9 CPU
Adreno 320, 400MHZ			PowerVR SGX 544		Mali 400 GPU
2GB			1GB		1GB
16GB			16GB		16GB
No			microSD up to 64GB		microSD up to 32GB
802.11 a/b/g/n			802.11 b/g/n		802.11 a/b/g/n
4.0			4.0		4.0
Optional 4G model			Optional 3G model		No
Yes			No		No
Front, 1.2Mp; rear, 5Mp			Front, 1.6Mp; rear, 5Mp		Front, 2Mp; rear, 3Mp
1080p			720p		720p
Yes			Yes		Yes
Google Play			Google Play		Google Play
Micro-USB, 3.5 mm headphone			Micro-USB, 3.5mm headphone		Micro-USB, Micro HDMI, 3.5mm headphone
114x200x8.65mm			213x144x21.5mm		193x129x9.9mm
299g			401g		370g
1 year			1 year		1 year
8 hours, 47 minutes			12 hours		5 hours
2651			1322		1583
1136*			1565*		1397*
41fps			13fps		17fps

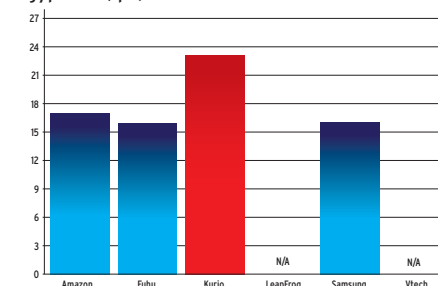
Geekbench 2



SunSpider (ms)



Egypt HD (fps)



Kids' tablets

	AMAZON £119 inc VAT ★★★★★	PC ADVISOR BEST BUY	FUHU £150 inc VAT ★★★★★	KURIO £200 inc VAT ★★★★★	
Product name	Kindle Fire HD	nabi 2	10S		
Screen Size/Resolution	7in IPS display, 1280x800, 215ppi	7in TN display, 1024x768, 182ppi	10.1in IPS display, 1280x800, 149ppi		
OS	Fire OS 3.0	Android 4.1	Android 4.2.2		
Processor	1.5GHz dual-core CPU	1.3GHz nVidia Tegra 3 quad-core	1GHz Allwinner A31S quad-core		
Graphics	PowerVR SGX540, 384MHz	nVidia Tegra 3	Mali 400 350MHz		
RAM	1GB	1GB	1GB		
Capacity Tested	16GB	8GB	8GB		
Expandable Memory	N/A	microSD up to 32GB	microSD up to 32GB		
Wi-Fi	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n		
Bluetooth	4.0	3.0	N/A		
3G	N/A	N/A	N/A		
NFC	N/A	N/A	N/A		
Camera (front / rear)	N/A	Front, 2Mp 720p	Front and rear, 2.1Mp		
Video recording	N/A	720p	720p		
GPS receiver (y/n)	N/A	Yes	N/A		
App Store	Amazon	App Zone & Google Play	Kurio		
Ports	Micro-USB, 3.5mm headphone	Micro-USB, microSD, Mini HDMI, 3.5mm headphone	Micro-USB, Mini HDMI, microSD, 3.5mm headphone		
Dimensions	191x128x10.6mm	221x154x29mm	282x195x17mm		
Weight	345	610g	944g		
Warranty	1 year	1 year	1 year		
Battery Life	6 hours, 11 minutes	8 hours	3 hours		
Geekbench 2 score	1376	1551	1207		
SunSpider score (ms)	986	1678	2024		
Egypt HD	17fps	16fps	23fps		

How we test


We fully charge each tablet and loop an HD MP4 movie to test and compare battery life. The volume is set to 50 percent and brightness to 100 percent. Wi-Fi is turned on, but Bluetooth and GPS (where applicable) are disabled. This test also lets us assess the quality of the screen and speakers.

We use the SunSpider Javascript test to compare each tablet's web-browsing speed (a lower score is better here) and Geekbench 2 for general system performance (a higher score is better). Finally, GFXBench's Egypt HD test allows us to assess the graphics.

We also note the responsiveness and accuracy of the touchscreen with general typing and navigation, especially with text-heavy sites that require more precision when selecting options and clicking links. In terms of screen quality we inspect the brightness, contrast, colour accuracy, clarity, and viewing angles, and make comments in response to our subjective assessment within each review.

Finally, we test each device's camera(s) by taking pictures and videos in a range of environments, both indoors and out,



examining the speed and fidelity of the focus, colour and audio quality. 

LEAPFROG £119 inc VAT ★★★★☆	SAMSUNG £199 inc VAT ★★★★☆	VTECH £99 inc VAT ★★★★☆
LeapPad Ultra	Galaxy Tab 3 Kids	Innotab 3S
7in display, 1024x600, 170ppi	7in IPS display, 1024x600, 170ppi	5in display, 480x272, 110ppi
Leapfrog custom	Android 4.1	Vtech custom
800MHz CPU	1.2GHz dual-core Cortex A9	360MHz ARM 11
Not stated	1.2GHz dual-core Cortex A9	Not stated
Not stated	1GB	Not stated
8GB	8GB	4GB
N/A	microSD up to 32GB	microSD up to 32GB
802.11 b/g/n	802.11 b/g/n dual band	802.11 b/g/n
N/A	3.0	N/A
N/A	N/A	N/A
N/A	N/A	N/A
Front and rear, 2Mp	Front, 1.3Mp; rear, 3Mp	Front, 2Mp
480p	720p	480p
N/A	N/A	N/A
Leapfrog	Google Play	Vtech
Micro-USB, cartridge slot, 3.5mm headphone	Micro-USB, 3.5mm headphone	Mini USB, proprietary charger, cartridge slot, 3.5mm headphone
354x294x74mm	188x111x10mm	400x300x60mm
1.2kg	303g	1.2kg
1 year	1 year	1 year
N/A	8 hours	N/A
N/A	999	N/A
N/A	1631	N/A
N/A	16fps	N/A



Make Windows 8 work for you

Windows 8 is almost great. Martyn Casserly explains how free software can make it even better

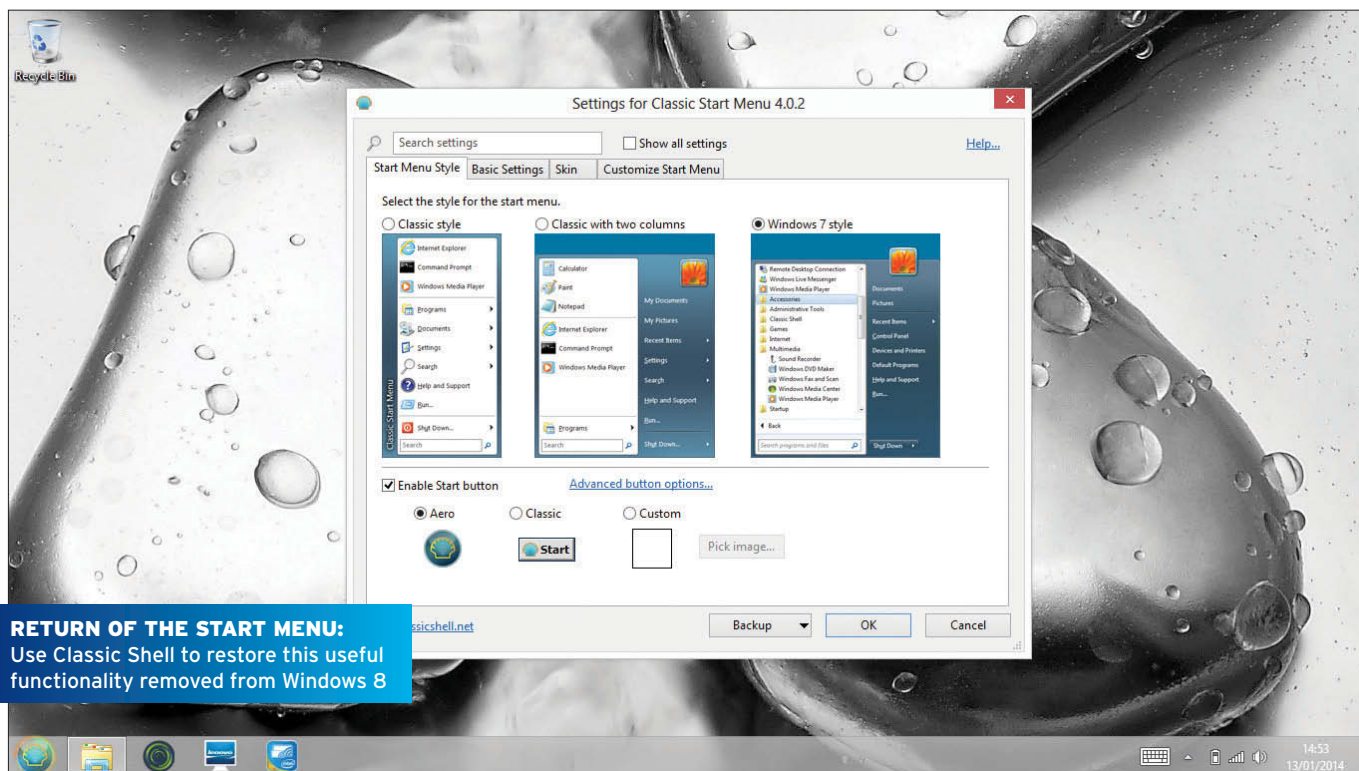
It's fair to say that Windows 8 hasn't set hearts racing. There was much to admire if you had touch-enabled hardware, but the interface has proven unpopular due to its radical departure from the established Windows formula. This has led to two common questions: 'How can I buy a Windows 7 machine?' and 'Is there any way to change the operating system back to Windows 7?'

While we can answer both, in many ways we believe these are the wrong questions. Under the live tiles and swiping menus, Windows 8 is

a very solid, fast and robust upgrade to Windows 7. It's also the same old Windows platform, which boasts an incredible amount of third-party software that can transform your PC into something that serves your purposes without any tablet-influenced finger-bobbery.

In this feature we'll show you how to customise Windows 8 to achieve a more traditional interface, while harnessing the power of the thoroughbred engine that beats at its heart. The best part is that everything we add is free. All it will cost you is a little time.





Taming the tiger

With the Windows 8.1 update Microsoft has addressed some of the main concerns users found so disconcerting. There is a half-return of the Start Menu, albeit with a heavy Windows 8 flavour, and revisions to the frustratingly underpowered default programs.

In many ways, though, it feels like a plaster over the cracks of what remains a confusing environment with a split personality. It seems that, for the majority of people, the new Start Menu and Modern UI apps are a distraction they would rather ignore than embrace. Thankfully, this is easy to fix.

Start Menu

One way to make Windows 8 friendlier is to return the Start Menu to its rightful place on the taskbar. Microsoft is reluctant to offer this function, at least in the way we remember it, but that hasn't stopped enterprising software developers creating their own solutions.

Classic Shell (classicshell.net) is our favourite, as it offers multiple menu styles and user-controllable features, and it works very nicely. Download and install the free app, then a blue-and-yellow shell will appear in the left corner of the desktop taskbar.

Clicking this shell opens a window in which you can specify how the Start Menu should look and behave, and what happens when you press the Windows key. It even offers an option to boot directly to the desktop mode.

To enable the latter feature go to the Basic Settings tab, scroll to the bottom, then ensure Skip Metro is enabled. If you want to access the Modern UI, just right-click the

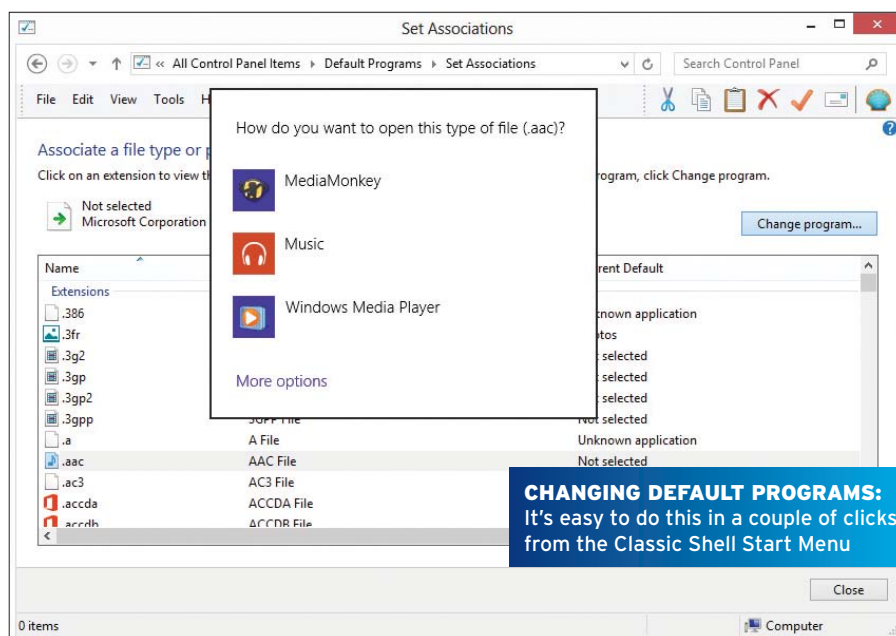
shell button, choose Settings, then untick the box next to Skip Metro.

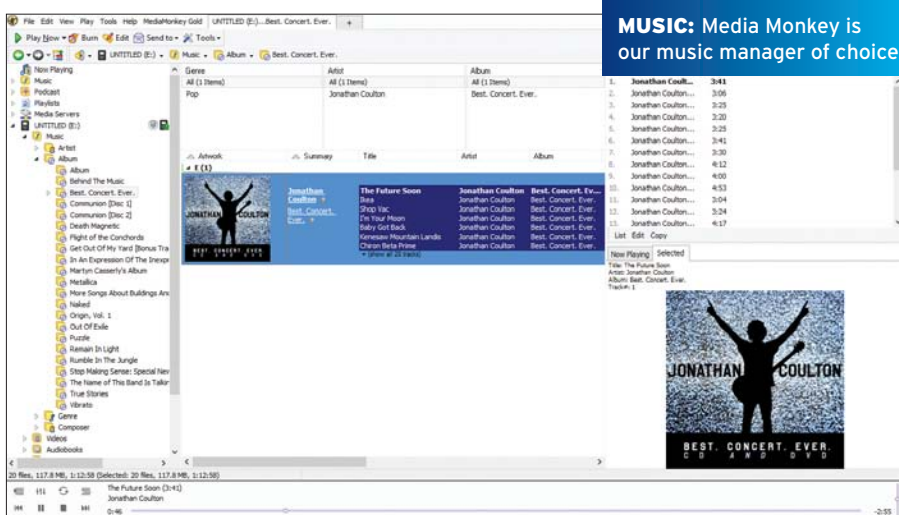
You should also disable Windows 8 touchpad gestures, which will otherwise appear whenever you accidentally drag your finger in from the side of the touchpad. How you do this varies from machine to machine, but typically you'll find the options in Control Panel, Hardware, and Sound, Device, and Printers, Mouse. Look for a tab that has options for a touchpad - it will most likely be the last one. In here you'll find tick boxes for each gesture, allowing you to keep those you want and discard the rest.

While we might have just replaced the menu and parts of the control interface, by default many actions will still launch Modern UI apps. Replacing the default programs is no problem, though, as we'll explore next.

Changing default programs

With Classic Shell installed, all you need to do to change your default applications is click on the shell button and choose Default Programs, 'Associate a file type or protocol with a program'. You can then choose the file type, click Change Program, and select your preferred application. Sometimes you'll





if you're happy to store photos online then both Google's Picasa and Yahoo's Flickr are excellent options that offer simple editing, large free storage, and the ability to share with social-media sites. Picasa isn't officially compatible with Windows 8 yet, so it might be wise to experiment first before committing to the program.

For a fully featured editing suite there's always The Gimp, which is an open-source Photoshop-style application that's hugely powerful. It's complete overkill if you just want to do quick fixes, and the interface takes a little while to learn, but once you do it's an excellent manipulation suite that can create amazing results.

Browser

With more of our daily tasks moving online, the choice of browser we use becomes increasingly significant. Windows 8 offers two versions of Internet Explorer and, while neither is particularly bad, we're not overly keen on either.

Google's Chrome has quickly established itself as a fast and robust browser whose simple design does a good job of getting out of your way while you're surfing the web. If you use any of the Google services (and who doesn't?), you'll find the seamless integration between them a boon.

While Firefox might have slipped down the pecking order in recent years, we've found Mozilla has got its groove back with the last few updates and are glad to see the old favourite once again being fast and reliable. Add-ons (including ad-blocker) are also useful, as long as you don't use too many.

find that when you install new software it will request to become the default for the relevant files, saving you from manually changing it.

Video

The Video app that comes with Windows 8 is decent enough, but we've long been fans of VLC Media Player. The list of video and audio formats it can play is frankly ridiculous, and it has the added ability of being able to convert media from one format to another. It also plays DVDs, has deep controls for audio balancing, can enhance video with various effects, and will open broken- or incomplete video files from torrent sites. The app is available from videolan.org and is often one of the first things that we put on to any new Windows machine.

Best of all, it's compatible with many iOS, Android and Windows Phone 8 devices.

A new beta version is working out compatibility issues with the very latest Apple hardware, but for everything else it's an impressive piece of software.

Photos

When Windows 8 arrived, possibly the most disappointing app was Photos. It looked pretty, but it was next to useless for even the most basic editing. If you wanted to remove red-eye or crop an image you had to send it to Paint, which is a joke in this day and age. Thankfully, many alternatives are available, some of which are incredibly powerful.

Paint.NET has been around for several years and is a solid choice for those who want a basic image editor. Alternatively,

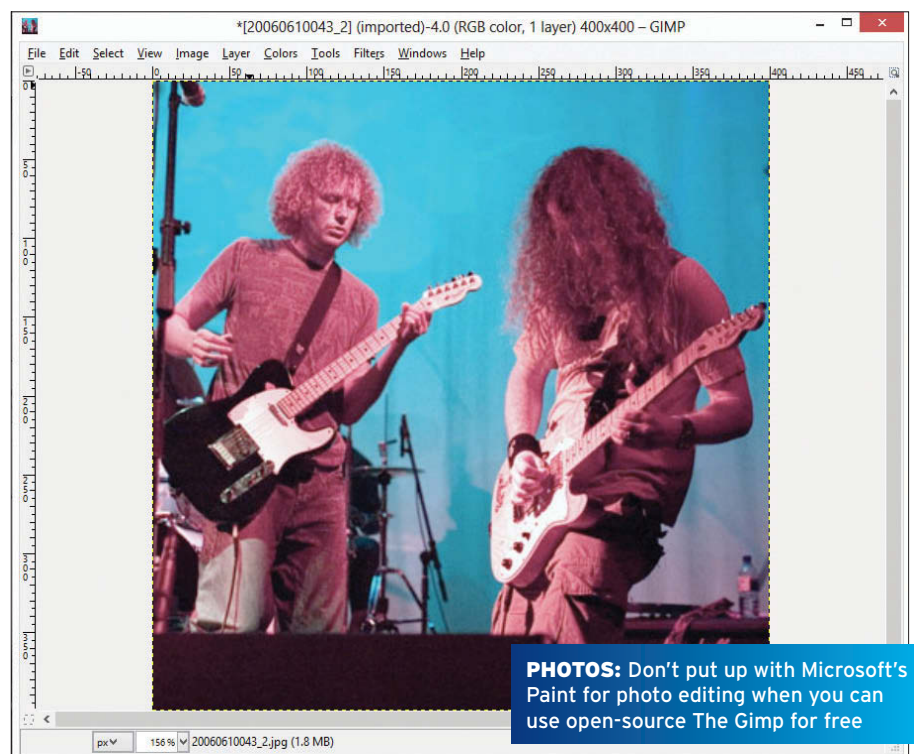
Music

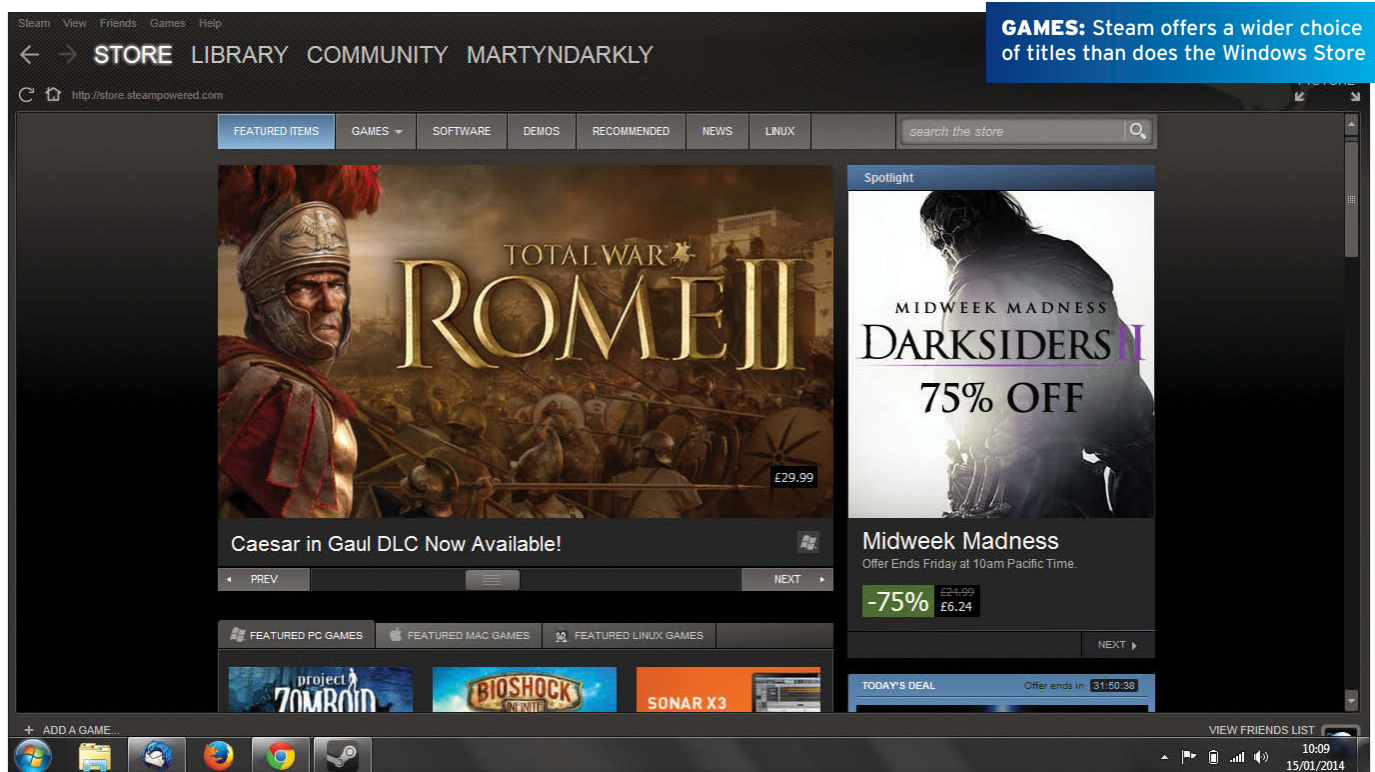
VLC Media player will handle pretty much any audio file you throw at it, but it's not a great solution for managing a large music collection. While Xbox Music is a good-looking and capable app, certainly one of our favourites from Microsoft, it's still optimised for touch and wants to sell you content.

If you want a desktop-native alternative, several are worthy of your consideration. iTunes is a hugely powerful option, and one that makes a lot of sense if you have an iOS device. It's somewhat cumbersome, though, and doesn't really play nice with Android.

Spotify can integrate your music collection with its streaming catalogue, and Google Play Music will copy your music to its online servers (the first 20,000 songs are free), which you can stream or download to your mobile devices.

Our current favourite is Media Monkey. Now on its fourth major revision, this music manager is a fully featured media centre, with support for a wide range of audio and video formats, playlist capabilities, an integrated podcast player and a CD ripper.





GAMES: Steam offers a wider choice of titles than does the Windows Store

Having more than one browser on your system is a good idea from a security standpoint, too. With Java and Flash exploits among the most common attacks, it's useful to have both disabled on your primary browser. Setting up a secondary utility with both working means that on the occasions you need them you can temporarily switch browser and minimise the risk to your PC.

Email

The bundled Email app that comes with Windows 8 is stripped down and in essence designed for a tablet. As many users require a little more than this for correspondence, there's really only one choice here: Mozilla Thunderbird. Sure, other clients are available, not to mention many of the web-based email services, but Thunderbird is powerful and complex, without being complicated. It's also solid as a rock.

Calendar

Mobile technology is quickly becoming the primary method we use to manage our calendars. It's essential that a service works across all platforms and devices. In this regard, Google Calendar is the way to go. You can have multiple calendars, sync with your partner's one so you know what each other are doing, and access it from anywhere.

Games

The Xbox games store in Windows 8 is beginning to fill out a bit, with titles such as Cut the Rope, Halo Spartan Assault and Minesweeper on offer. For a much wider choice, and a desktop-native interface, Steam is top of our list.

Run by Valve, the company behind both Half-Life and Portal franchises, Steam is an excellent source for new and older games. The site regularly runs huge sales, in which

you can pick up top titles for surprisingly little money. You'll need to check your system requirements to ensure each game works on your machine, but there's no doubt you'll find something to whet your appetite.

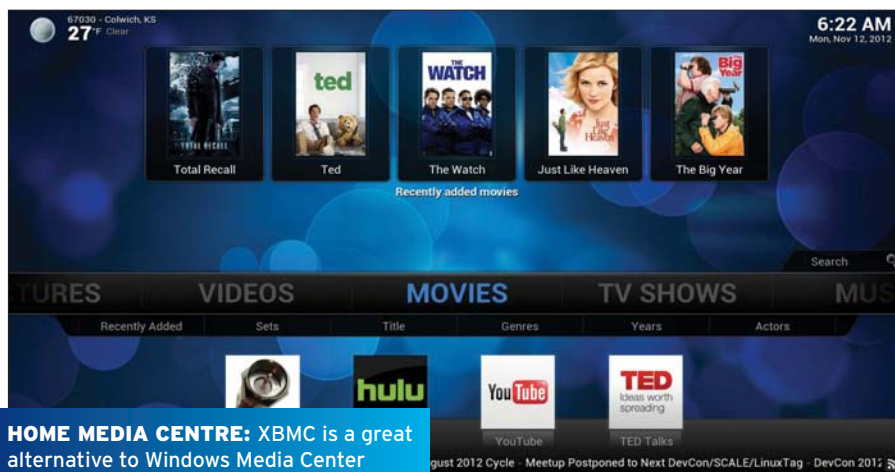
Office

Windows 8 comes with Notepad and Wordpad for opening documents or creating basic text files. These are perfectly good apps for these purposes, but if you want something more like Microsoft Office then LibreOffice (libreoffice.com) is an excellent free solution. The suite contains powerful tools for creating documents, spreadsheets and presentations, with an interface that will feel familiar to Office users. It's a little slow at times, and advanced formatting can be problematic, but for most general uses it's a great solution.

Home media centre

Microsoft has its own Windows Media Center software, but it requires that you upgrade to Windows 8.1 Pro (£99) or, if you're already using Pro, pay £6.99 for the software. A very good free alternative is XBMC, which started out as a media player for the original Xbox but has grown into a multiplatform suite in its own right.

XBMC uses a large-scale interface that's designed so you can see it from the other side of the room, making it handy for reading text from the sofa. It supports a wide variety of music, video and photography formats, plus a number of add-ons give you access to content streamed from the web or devices connected to your network. Visit XBMC.org for user forums and a helpful wiki. ☐



HOME MEDIA CENTRE: XBMC is a great alternative to Windows Media Center

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Broadband survey 2014

Which is the best broadband provider in the UK? We asked more than 10,000 UK consumers and a panel of experts to find out. Matt Egan sifts through the results

Broadband Britain has come a long way in the past decade. It has a long way to go still. These days a significant chunk of the UK populace expects their houses to be hooked up to fast and reliable web connectivity, in the same way they expect gas, water and electricity to be readily available. And rightly so: we bet that plenty of you use the internet much more than you pick up your landline and place a call. Today we want to do more than ever online, everything from banking and filing a tax return to downloading movies and streaming radio.

That's the theory, at least. But whenever we write a story about faster broadband being spread to areas of our island we are guaranteed to meet with howls of protest from those living outside Broadband Britain's faster highways. For a significant minority the idea of stable, fast broadband remains just an idea.

We wanted to find out how the UK is doing in terms of broadband provision, and to find out which are the best ISPs. Best for innovation, performance and value. And the best at providing customer service when things do go wrong.

As consumer tech experts we partnered with Broadband Genie, an impartial, independent and consumer-focused commercial

broadband-comparison service. Together we engaged an independent survey company (OnPoll) to survey 3,000 broadband users, chosen at random, in late 2013 and early 2014. We asked those users how happy they were with their ISP. We got them to test the speed and reliability of their connections, and found out how much they were paying, and for what exactly.

We also convened a panel of experts incorporating editors from *PC Advisor* and Broadband Genie, as well as broadband industry insiders. And finally we asked the readers of *PC Advisor* what they thought of UK broadband provision now and in the future, using a series of polls that garnered more than 3,000 respondents.

All told, then, more than 10,000 UK broadband users have contributed to the data we are about to share. Combined with the expertise of *PC Advisor*, Broadband Genie and our panel of broadband-industry experts, this gives us a unique snapshot of Broadband Britain in 2014.

Here we'll examine UK consumers' experience of broadband, and what we hope for in the future. And we'll also reward excellence in UK broadband, crowning the best ISPs for speed, reliability, innovation, customer satisfaction and value.



EXPERT PANEL AWARDS

Matt Powell, editor, Broadband Genie

Our panel of industry insiders and commentators was asked for its opinion on the broadband ISPs that

stood out in 2013. The judges voted on the following categories: Best Budget Broadband Provider; Best Bundled Broadband Provider; and Most Innovative ISP.

Our judging panel included: Pamela Learmonth, CEO of the Broadband Stakeholder's Group; Mike Davies, CEO of the

Registered Digital Institute; Tom Fellowes, sales director at business ISP Spitfire; Matt Egan, editor-in-chief at IDG UK Tech Media; and myself, Broadband Genie editor Matt Powell.

Each was asked to nominate a provider in each category, before casting votes on the finalists. There were no guidelines or restrictions over which providers could be nominated, giving providers big and small a chance at winning. Here's what the judges had to say.



PC ADVISOR
BUDGET BROADBAND

BEST BUDGET BROADBAND PROVIDER

Winner: Plusnet

Tom Fellowes: "Excellent all-round value and, crucially, does not push you as much as other providers to take its phone line rental - if you do want this it's (slightly) cheaper than the competition. Good mixture of cheap capped- and unlimited-use services."

Finalist: Tesco

Pamela Learmonth: "Not just offering cheap services, but also challenging the 12-/18-/24-month minimum of the market, providing more flexible options for consumers."

TalkTalk also made the final round for budget internet service providers.

Matt Powell: "TalkTalk's Simply Broadband package is incredible value, offering a truly unlimited service for a nominal fee."



PC ADVISOR
BUNDLED BROADBAND

BEST BUNDLED BROADBAND PROVIDER

Winner: Sky

Mike Davies: "It offers great TV-, broadband- and telephone packages to suit all budgets, coupled with great customer service. It also offers a super-fast fibre package at a reasonable price."

Finalist: BT

Tom Fellowes: "BT offers a good-value package for fast broadband, phone and TV. The TV package is not the most comprehensive but, in terms of all-round value, the TV Entertainment with unlimited BT Infinity 2 Broadband is good value."

TalkTalk also made the final nominations for bundled-broadband providers.

Pamela Learmonth: "In a climate where BT and Sky are continually investing staggering amounts, it is TalkTalk that has capitalised on the bundled-broadband market, with good-value YouView bundles."



PC ADVISOR
MOST INNOVATIVE ISP

MOST INNOVATIVE SERVICE PROVIDER

Winner: Gigaclear

Matt Powell: "By creating its own pure fibre network, Gigaclear has delivered ultra-fast gigabit broadband to neglected rural communities."

Finalist: BT

Matt Egan: "It has continued to push the boundaries of speed and reliability, pushing out fibre to the home to increasing numbers of consumers, and it has a bold content strategy. BT now provides the content and the means for you to enjoy that content. Offering BT Sport for free has opened up competition like never before."

Also nominated: Gigler and Kijoma.

Pamela Learmonth: "Gigler is ultra-fast, with competitively pricing across the consumer and business markets."

Tom Fellowes: "Kijoma offers up to 40Mb/s downstream and 10Mb/s up via a wireless service covering up to 20km."

What you think of broadband provision in the UK

Our survey of 3,000 broadband users gave us data on the following ISPs: BT, Virgin Media, Sky Broadband (including O2 Broadband), Plusnet, EE Broadband (formerly Orange Broadband), TalkTalk, Be Broadband, Tesco, Post Office Broadband and Primus. One or two smaller ISPs such as Karoo and Madasafish were included, but the sample sizes were so small we couldn't include them in the collated results - a shame, as both performed well.

Of our 3,000 respondents, the majority (68 percent) were on ADSL broadband. Interestingly, however, that leaves just shy of 20 percent on fibre broadband, and around 12 percent with cable.

Encouragingly, only 12 percent of those surveyed said they wouldn't recommend their ISP. 20 percent were neutral on this, but 51 percent would recommend their ISP as "satisfactory" and 17 percent went as far as to describe their ISP as "top-rate".

Would you recommend your ISP?

	BT	Virgin Media	Sky (inc O2)	Plusnet	EE Broadband	TalkTalk	Be Broadband	Tesco	Post Office Broadband	Primus
Definitely, it is top-rate	17%	26%	16%	28%	10%	10%	15.92%	13%	18%	14%
Yes, it is satisfactory	53%	54%	55%	53%	55%	51%	30.35%	45%	42%	43%
I'm undecided	20%	13%	19%	14%	22%	26%	18.91%	35%	22%	9%
No, it is below my expectations	7%	5%	8%	4%	8%	10%	25.37%	5%	10%	17%
Very disappointed	3%	2%	2%	1%	5%	3%	9.45%	2%	8%	17%



MOST RECOMMENDED ISP: Plusnet & Virgin

When we asked whether you would recommend your broadband provider, Plusnet tied with Virgin to achieve the best overall ranking. But the picture was positive across the board. For instance, although around a third of Tesco Broadband customers were undecided as to whether they would recommend their ISP, only in the cases of Primus and Be Broadband did a third of respondents actively say they wouldn't recommend their provider.

How good is your ISP's customer care?

	BT	Virgin Media	Sky (inc O2)	Plusnet	EE Broadband	TalkTalk	Be Broadband	Tesco	Post Office Broadband	Primus
Definitely, it is top-rate	12%	15%	12%	31%	9%	8%	12%	15%	22%	6%
Yes, it is satisfactory	49%	56%	50%	46%	48%	45%	35%	43%	41%	34%
I'm undecided	24%	19%	28%	18%	28%	30%	17%	34%	21%	24%
No, it is below my expectations	9%	8%	8%	4%	11%	13%	20%	6%	8%	14%
Very disappointed	6%	2%	2%	1%	4%	4%	16%	2%	8%	22%



BEST CUSTOMER CARE: Plusnet

It was a similar story when it came to customer care, with only Be and Primus failing to get half their subscribers to say customer service was excellent or at least satisfactory (and even then Be's 47 percent is close enough). Indeed, we were delighted to see four providers had more than 60 percent wholly satisfied customers. And the winner? Step forward once again Plusnet.

How much do you pay for broadband (£/month)?

	BT	Virgin Media	Sky (inc O2)	Plusnet	EE Broadband	TalkTalk	Be Broadband	Tesco	Post Office Broadband	Primus
£0 to £10	7%	6%	28%	37%	20%	34%	1%	20%	11%	43%
£10 to £20	54%	48%	46%	41%	50%	40%	21%	44%	51%	31%
£20 to £30	35%	38%	21%	20%	30%	24%	69%	30%	32%	17%
£40 to £50	4%	5%	4%	1%	1%	2%	8%	4%	5%	3%
£50-plus	0%	3%	1%	0%	0%	0%	1%	2%	1%	6%
Average amount spent	£19	£20	£15	£13	£16	£14	£24	£17	£19	£15



BEST VALUE ISP: Plusnet

A key factor is the price you pay to receive such service. Here, Plusnet was again the winner, with its customers paying an average of only £13 a month for their broadband. The overall average was a little under £18, with TalkTalk deserving of an honourable mention as the only other provider to charge less than £15. Virgin Media shows that you get what you pay for, with an average cost of over £20, lower only than Be Broadband, which looks expensive in this company.

Is your broadband connection reliable?

	BT	Virgin Media	Sky (inc O2)	Plusnet	EE Broadband	TalkTalk	Be Broadband	Tesco	Post Office Broadband	Primus
Definitely, it is top-rate	23%	27%	19%	28%	14%	13%	12%	17%	16%	23%
Yes, it is satisfactory	54%	54%	55%	52%	55%	51%	34%	48%	47%	32%
I'm undecided	12%	9%	15%	12%	14%	18%	20%	25%	14%	14%
No, it is below my expectations	8%	8%	9%	7%	13%	14%	21%	8%	18%	20%
Very disappointed	3%	2%	2%	1%	4%	4%	13%	2%	5%	11%



MOST RELIABLE ISP: Virgin Media

As we discovered when we questioned PC Advisor readers (overleaf), reliability and speed are extremely important things when you are considering your choice of ISP. And, in terms of reliability, Virgin Media is the best of the best, with a staggering 80 percent approval rate, and fewer than 10 percent of customers left unsatisfied. Plusnet again kept up its strong showing with a credible second place.

Are you happy with your broadband speed?

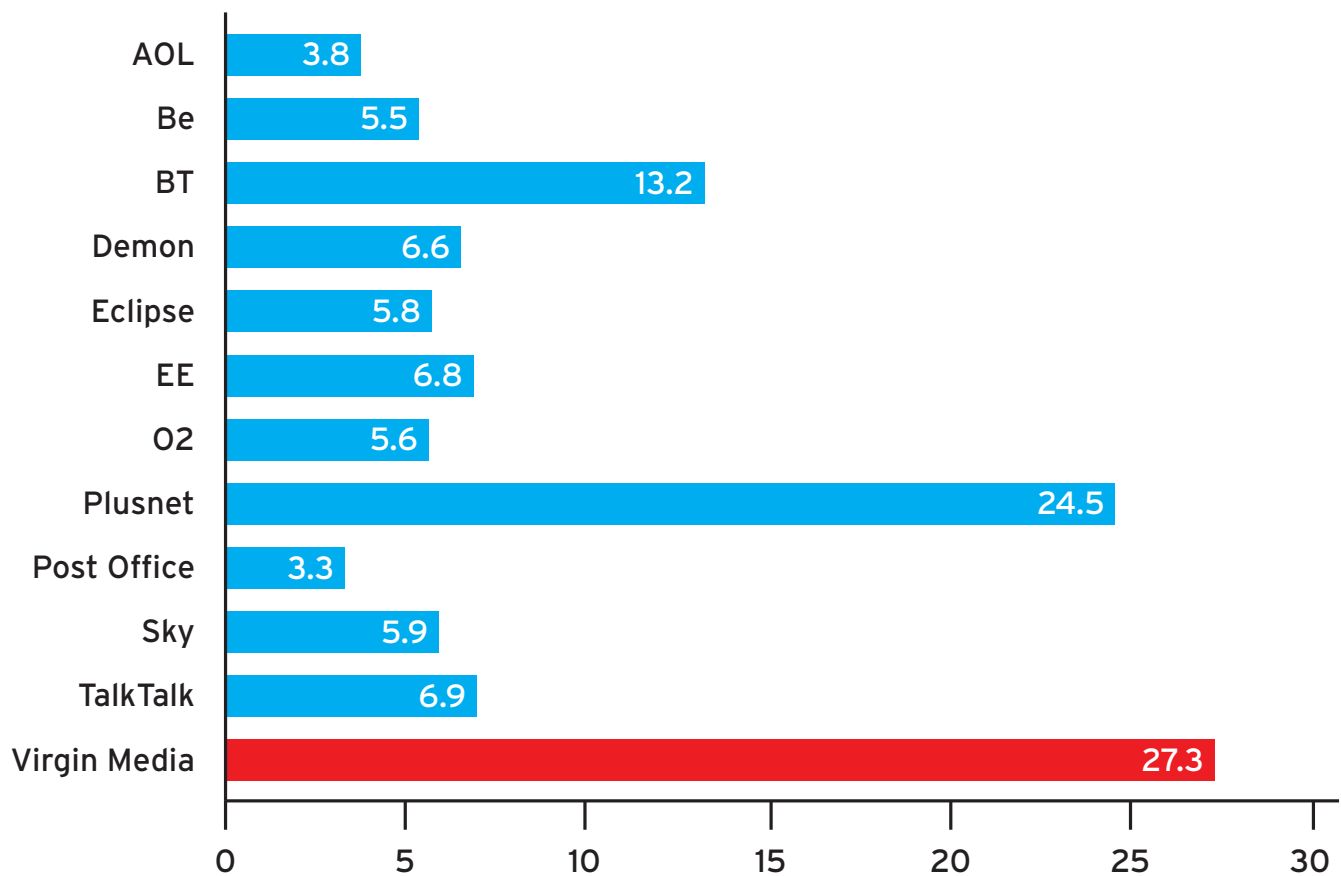
	BT	Virgin Media	Sky (inc O2)	Plusnet	EE Broadband	TalkTalk	Be Broadband	Tesco	Post Office Broadband	Primus
Definitely, it is top-rate	18%	27%	15%	17%	8%	9%	16%	14%	10%	17%
Yes, it is satisfactory	52%	55%	55%	57%	53%	47%	39%	45%	46%	38%
I'm undecided	13%	9%	13%	12%	14%	22%	13%	24%	14%	17%
No, it is below my expectations	11%	7%	14%	12%	19%	17%	20%	12%	18%	14%
Very disappointed	6%	2%	3%	2%	6%	5%	12%	5%	12%	14%



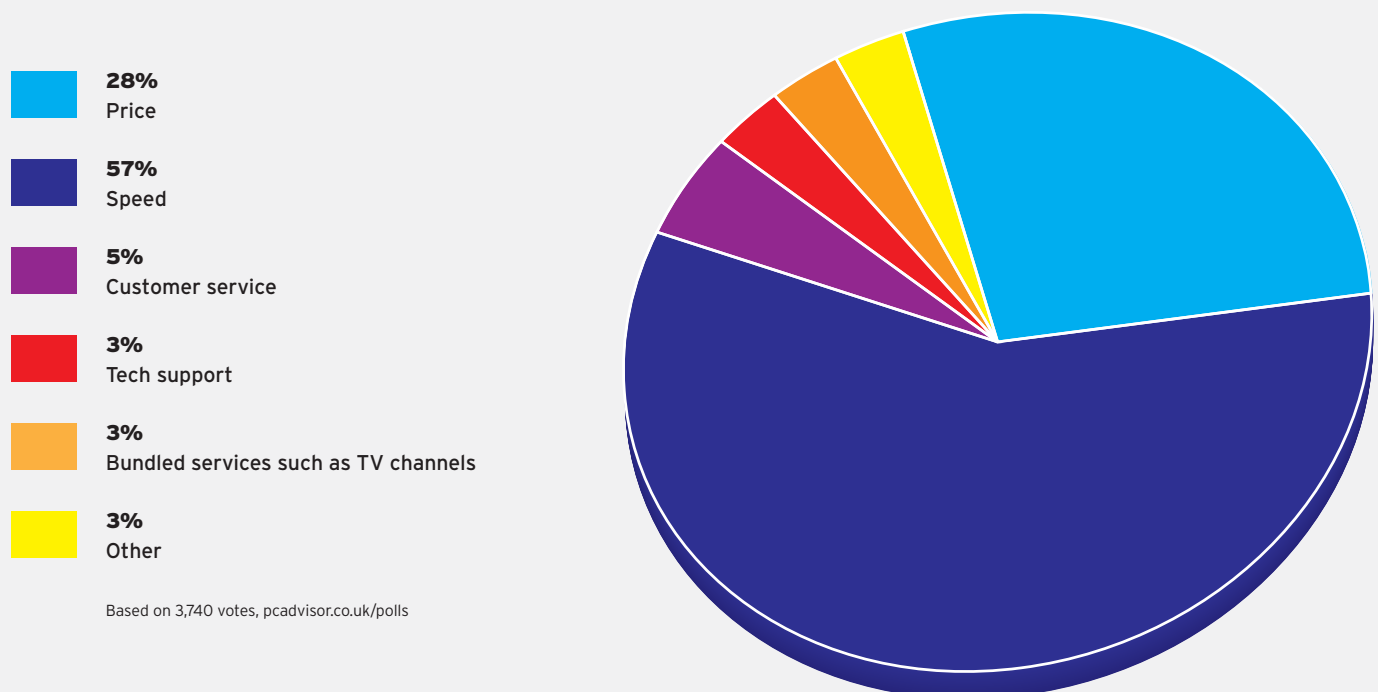
FASTEST BROADBAND: Virgin Media

And what then, of speed, the most important factor for broadband users when selecting an ISP. We measured this two ways, both in terms of customer satisfaction and the speed tests submitted by survey respondents. With the former Virgin Media led the way, with a whopping 82 percent of customers happy with its rapid internet. BT and Plusnet's fibre networks also made a strong showing here. These results were repeated when we looked at the speed tests themselves: Virgin Media was closely followed by Plusnet and BT.

Average speed test results per ISP (Mb/s)



What's most important to you when choosing an ISP?





ISP AWARDS 2014

PC ADVISOR
HIGHLY COMMENDED

HIGHLY COMMENDED

Winner: Virgin Media

The fastest ISP, both in terms of overall speed tests and user satisfaction, it is perhaps unfair on Virgin that we have to pick a winner. Indeed, the survey results show that Virgin Media users are just as happy as are Plusnet customers. As well as speed, Virgin's cable technology provides the most reliable network, but it's one of the more expensive ISPs in this regard.



ISP AWARDS 2014

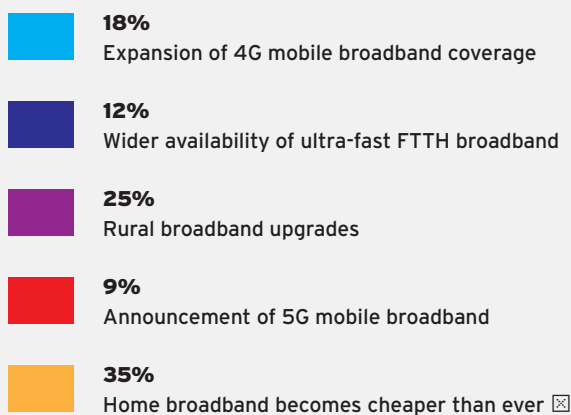
PC ADVISOR
BEST ISP

BEST ISP

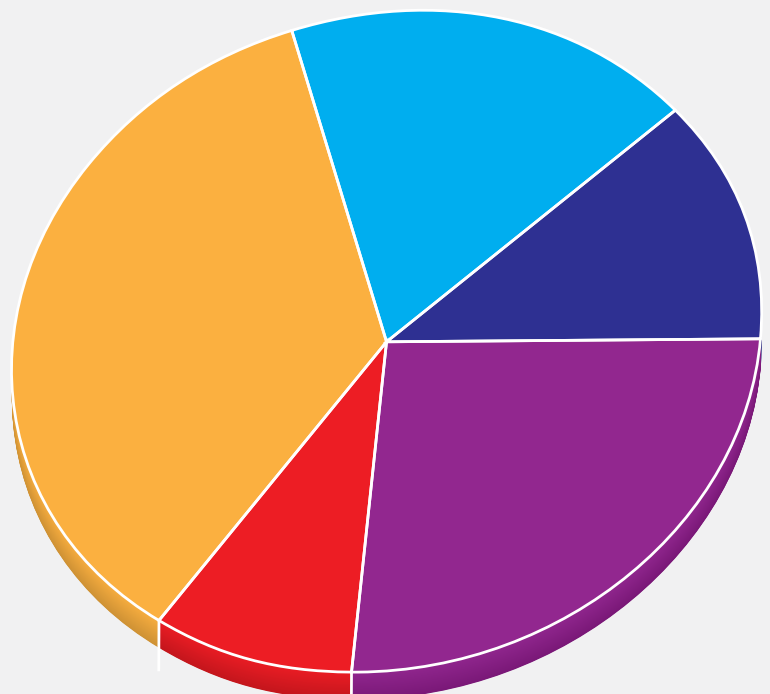
Winner: Plusnet

Plusnet is fast, cheap, and its customer service is second to none. It was a close-run thing, but we have to award Plusnet our overall best broadband ISP award. It is only marginally slower than Virgin, and a lot cheaper. Indeed, it was the cheapest broadband provider to make our shortlist, offering the best customer care and performing well in every category.

What will be the most important broadband development of 2014?



Based on 3,108 votes, pcadvisor.co.uk/polls



SPEEDING UP



A SLOW PC

If your PC seems sluggish, you can revive its performance using these simple techniques. **Roland Waddilove** shows you how

Computers slow down over time. What was once a fast system can become slow and irritating to use after a couple of years. A new PC always impresses with the speed at which it starts up and runs Windows and other software, but it will become noticeably slower after being used for some time. It is frustrating the way that computers can take several minutes to start up or shut down, especially when everything slows to a crawl before you've even paid off the loan. Eventually, things get so bad you might even give up completely and buy a new computer.

Fortunately, there are ways of tackling the lethargy to restore most of your PC's original speed, which means you shouldn't need to spend any money on a new machine. This prolongs the life of the computer and reduces the annoyance factor that inevitably builds when using old hardware. Here, we'll look at five ways you can speed up a Windows PC.

1 Clean up Windows

Part of the reason old PCs take so long to start is because of all the programs and utilities you've installed. Reducing the number of applications that start up when Windows boots enables you to get going faster and increases the available memory.

Click the arrow at the right side of the taskbar to display notification icons. Each is a program that loads with Windows. Some are essential - antivirus software, for example - but others may not be. Right-click each in turn and, if there is a Settings menu, use this to find an option to prevent it starting automatically with Windows. Some programs, such as Google Drive, can be manually started when they are required, and don't need to be running on your PC at all times.

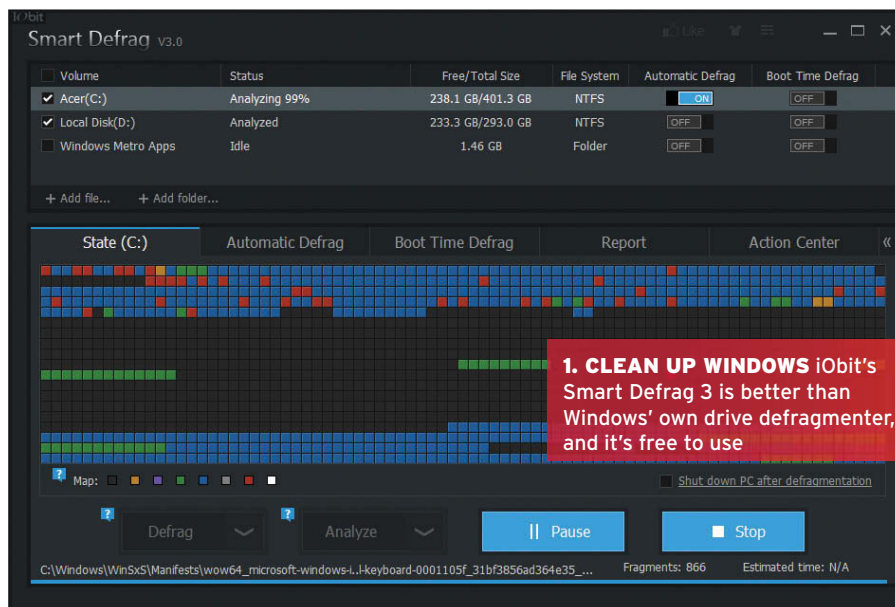
Next, hit Windows, R, type **msconfig** and click Ok. Select the Services tab, tick 'Hide all Microsoft services' and see what's left. There may be services you can live without and clearing the tick box prevents them from running. For example, Firefox works perfectly well without the Mozilla Maintenance Service.

On the Startup tab are lots of programs that start with Windows. Knowing what to disable isn't easy, but you can use Google to search for items and see whether they are necessary, useful or neither.

Recent versions of Windows automatically defragment the hard disk, but Microsoft's tool is basic and there are better defragmenters out there. Programs including O&O Defrag (oo-software.com) are excellent, but iObit's Smart Defrag 3 (iobit.com) is nearly as good and it's free.

The ultimate speed-boosting technique is to reinstall Windows. This removes unwanted software that slows down a PC, erases malware, clears out junk files and more.

A Windows disc is required to reinstall older versions of Windows, but Windows 8



has a built-in Refresh option that eases the job. Open the Charms bar and click Settings, then 'Change PC settings'. Click 'Update and recovery', then choose Recovery. Under 'Refresh your PC without affecting your files', click Get started.

Personal files - photos, music and documents - will remain on your PC, so this isn't a complete refresh, but it may be enough for most people.

A more powerful option is 'Remove everything and reinstall Windows'. Be sure to back up any files you want to keep to a USB drive, then select this option to restore the PC's original performance.

2 Update everything

Out-of-date drivers, programs and Windows itself can cause the computer to run slowly. Faulty drivers, for example, stop Windows shutting down or cause it to start more

slowly. Video-card drivers are often updated to fix bugs and boost performance, and it is always a good idea to check that you have the latest version. Even if Windows updates are automatic, go to Windows Update in the Control Panel and manually check for updates. Only essential ones are installed automatically and there may be useful optional items available.

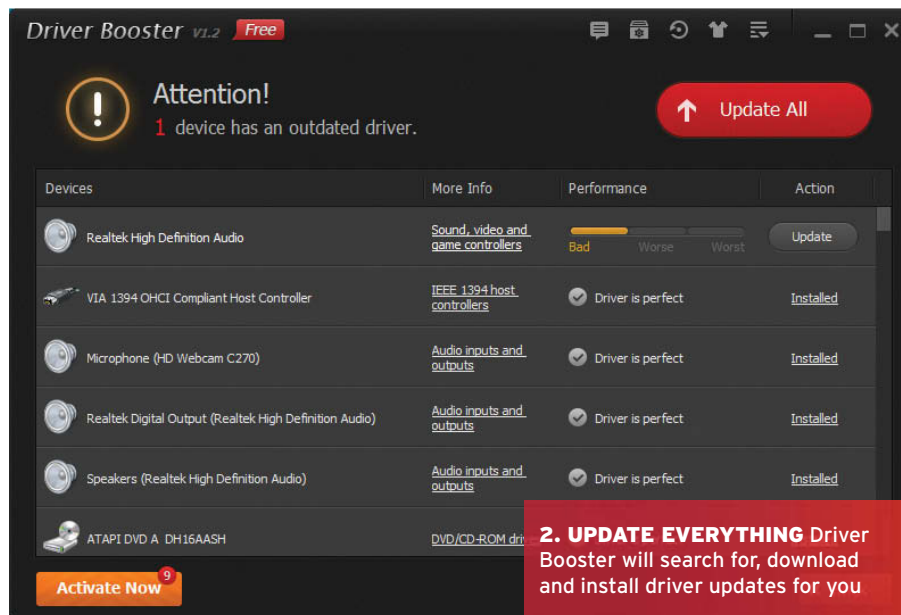
Drivers are programs that enable Windows to access hardware components such as the video, sound, printer, scanner, webcam and so on. Updating them is a pain and you have to identify the hardware, the drivers and version numbers, the hardware manufacturer's website and the download page. Take a shortcut by using a free tool such as SlimDrivers (slimwareutilities.com) or Driver Booster Free (iobit.com). You'll also find UpdateStar on our Cover Disc+. These do all the work for you, identifying the current drivers, then checking for, downloading and installing any available updates. They can solve a lot of problems.

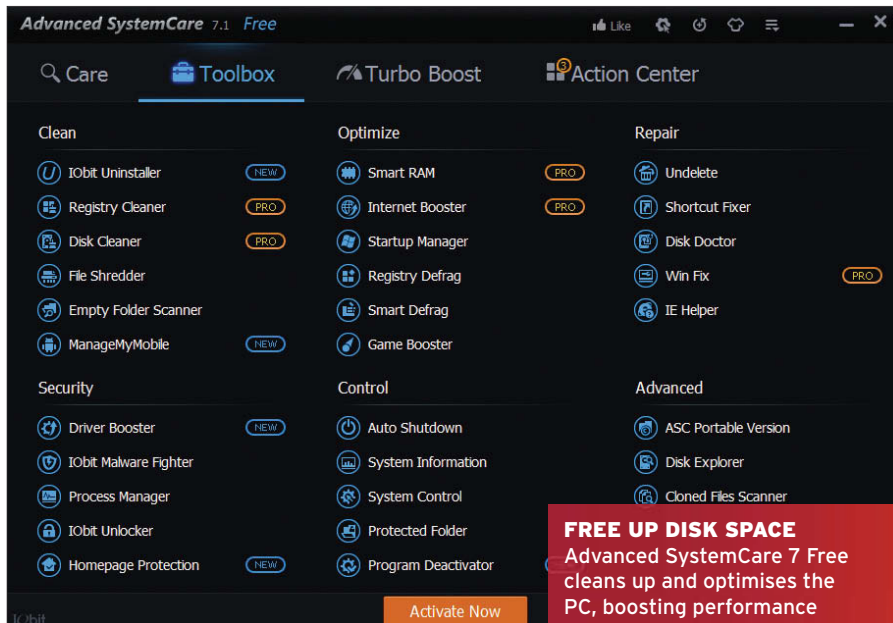
3 Free up disk space

Your PC's hard disk slows down as it fills up. Uninstalling software helps to free up space, giving more room for Windows to work faster. Disk space can also be recovered using Ccleaner (piriform.com), Anti Tracks Free Edition (giantmatrix.com), Advanced SystemCare 7 Free (iobit.com) and others.

There's a right- and a wrong way to use these utilities, though. Select just a few items and clean them, making sure the app backs up the changes. If the PC is working okay, go ahead and clean a few more items; if it isn't, restore the backup. Do not clean everything in one go: if something goes wrong you won't know where the problem lies.

For uninstalling programs you could go to the Control Panel, open 'Programs





and Features', and then uninstall software you haven't used in the past six months. Better still are free utilities such as iObit Uninstaller 3 (iobit.com), Revo Uninstaller (revouninstaller.com) and Wise Program Uninstaller (wisecleaner.com). They do a better job of removing software because, in addition to removing the program itself, they clean the disk and Registry.

Some programs install lots of files into Windows and they can have a detrimental effect on performance. To keep Windows clean and fast you should avoid installing anything. Of course, you need software, but there are many portable apps that don't need installing. A good source of software is portableapps.com. Click Get Apps and you'll find office software, graphics- and photo editors, utilities, internet browsers, music-

and video players and more. It's not the only place to find portable software, but it's a good place to start.

4 Install better software

Sometimes it's possible to improve the PC's performance by installing better software. The speed difference between Internet Explorer 8 and Chrome on Windows XP is huge, so it's a must-have upgrade. Chrome is still the fastest web browser even on Windows 8, and it's the one we recommend for performance.

Smaller, lightweight programs are often faster than big, full-featured applications. Do you need Word or is WordPad sufficient? Microsoft Office Home and Student 2013 requires 3GB of disk space, but LibreOffice (libreOffice.org) and Kingsoft Office

(kingsoftstore.co.uk) work with just 300MB. You need 4GB of disk space to install Adobe Photoshop Elements, but only 40MB for Paint.NET (getpaint.net) and 150MB for GIMP (gimp.org). These could be all you need for photo editing. Use alternativeto.net to find alternatives to popular software.

The speed at which games run is highly dependent on the screen resolution and special effects used. Some games provide options to select the screen mode and to turn off some effects that tax the processor and graphics card. This can make a slow game more playable by increasing the framerate. For more tips see tinyurl.com/mu4o58f.

5 Upgrade the hardware

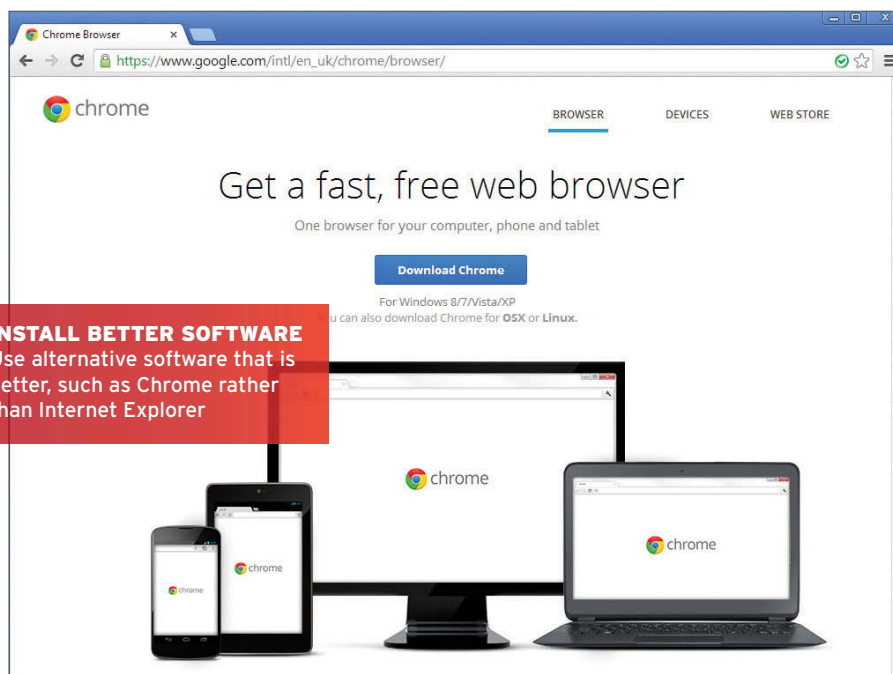
All the techniques discussed so far for speeding up the PC take you only so far. They restore the original PC's performance, but this may not be sufficient. An old PC might not be capable of running the latest games or other software you want to use. A five-year-old model will struggle with the latest games, apps and operating system. For this reason, a hardware upgrade may be required. It will boost the PC's performance beyond its original spec, and narrow the gap between your current PC and the latest ones.

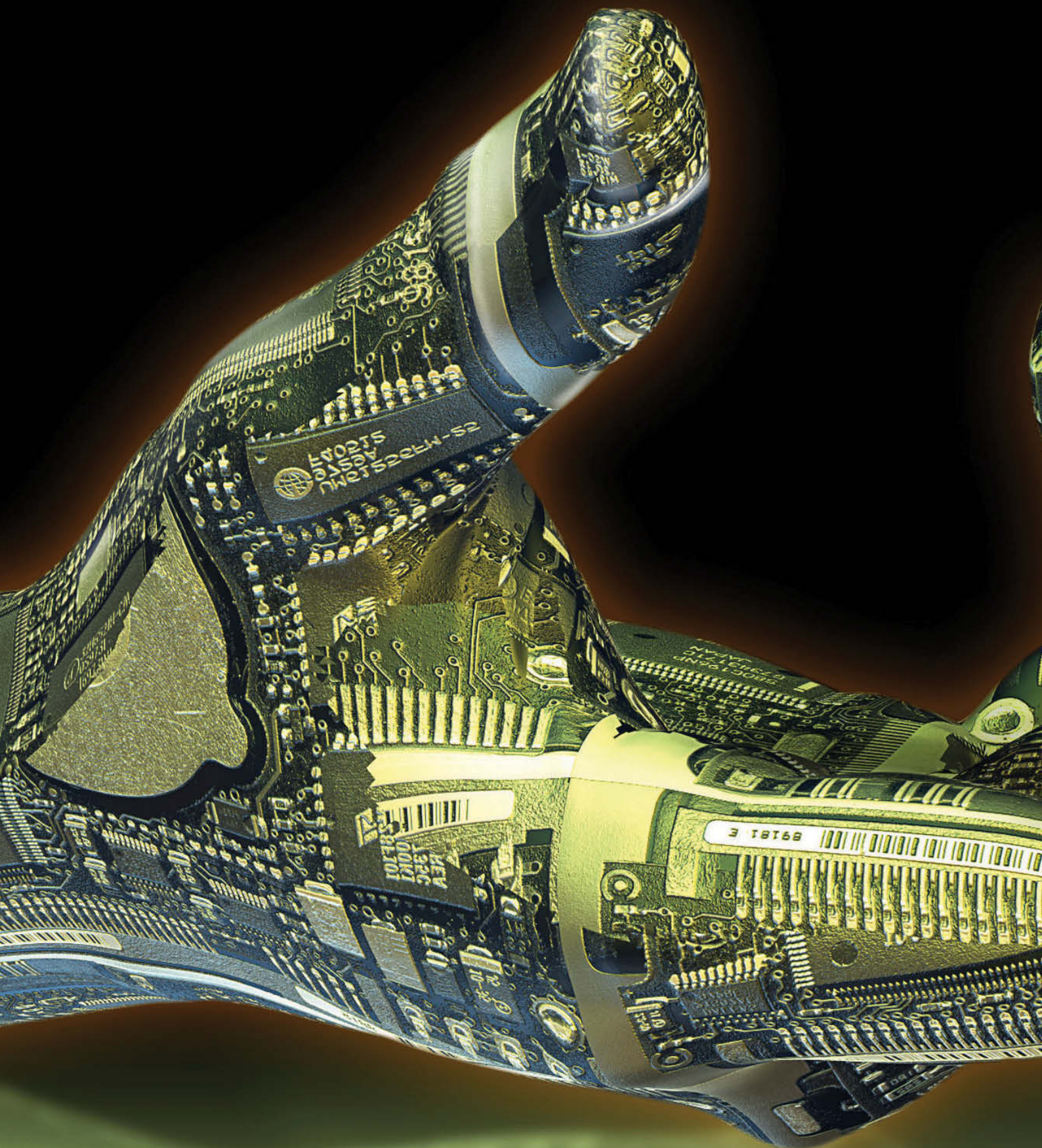
Many old PCs suffer from too little memory (consider 2GB the absolute minimum these days, but 4GB is the maximum usable by 32-bit versions of Windows) and this is the first component to consider upgrading. Memory suppliers including crucial.com/uk have tools on their website that identify what type of RAM you need. It shows the maximum the desktop PC or laptop can take, and this is the best upgrade you can perform.

Before you purchase any memory, though, examine your PC or laptop: some are easy to upgrade; others are more difficult. Buying RAM online and installing it yourself is the cheapest option, but if you aren't confident in your DIY skills, local computer shops can do the job on your behalf.

A solid-state disk (SSD) offers another way to boost your computer's performance. Note that you will need to clone the old disk drive on to the new SSD before installing it. This is achieved by plugging the SSD into the PC's USB port and running a program on the PC. A special cable and software might be supplied with the SSD; if not, they are available to purchase for a few pounds.

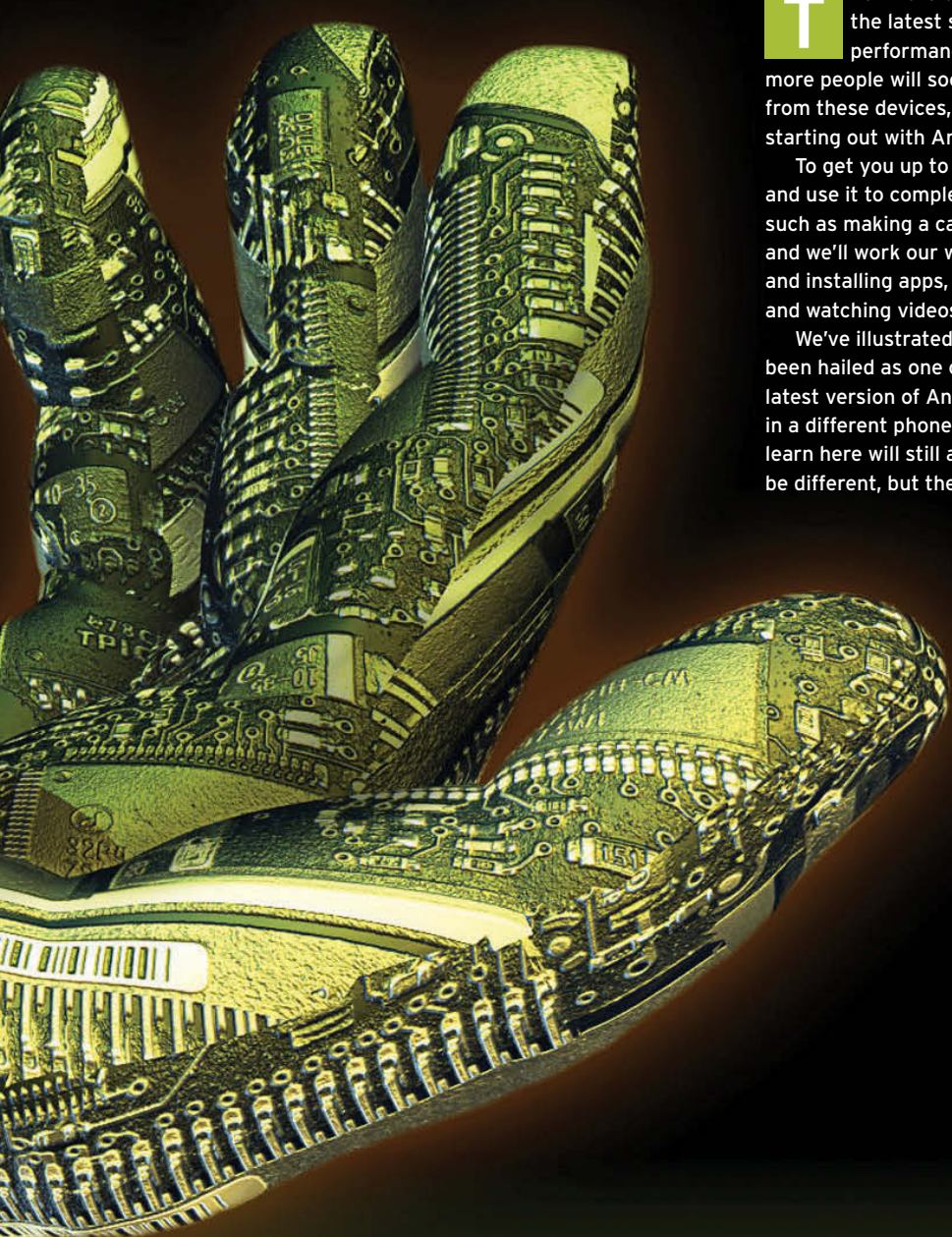
Upgrading the graphics card is a great way to speed up games, but the benefits to other software is limited. Top-of-the-range video cards are big, so before ordering the latest nVidia or AMD model check it will fit inside the computer's case. Space, the size of the PC's PSU and other factors limit your options. Full-height/dual-slot video cards are for big PCs with lots of space; low-profile single-slot cards are for compact PCs. ☒





Beginner's guide to Android

With Android offering better value than ever, there's no reason not to take the plunge. Mike Bedford shows you how to get the most from your mobile device



The Android operating system is by no means new, but with the latest smartphones and tablets providing such good performance without breaking the bank, we anticipate yet more people will soon be taking the plunge. However, to get the best from these devices, you need to know your way around. If you're just starting out with Android, this guide is for you.

To get you up to speed, we'll show you how to set up a new phone and use it to complete a range of tasks. We'll start with the basics, such as making a call, sending a text or email, and taking a photo, and we'll work our way up to more advanced stuff such as finding and installing apps, navigating using Google Maps, listening to music and watching videos.

We've illustrated this guide using the Motorola Moto G, which has been hailed as one of the best-value smartphones ever, and runs the latest version of Android, 4.4 'KitKat'. However, if you decide to invest in a different phone, or perhaps even a tablet, much of what you'll learn here will still apply. The exact appearance of the screen may be different, but the basic principles are the same.

Getting started

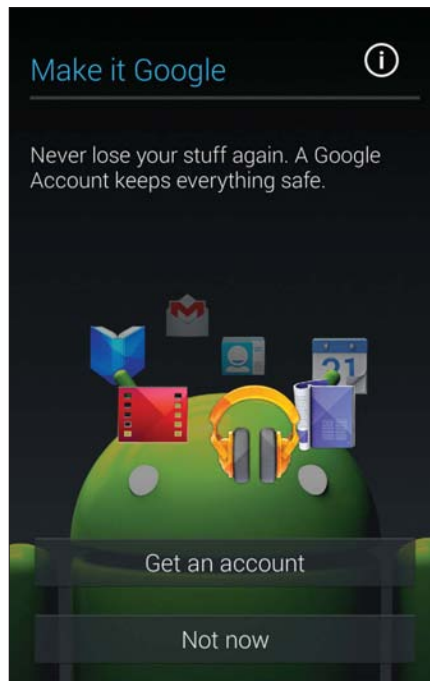
Before you can use your new phone you'll need to set it up via a straightforward procedure, similar to that involved in setting up a Windows PC. In particular, you'll be asked to choose your language and select your home Wi-Fi connection so you won't have to pay for cellular data when you're at home. If you're unsure about anything throughout the procedure, just accept the default - you can always change these settings later.

Of particular importance is owning a Google account. While you can use the phone without providing Google account details, you'll miss out on so much of the Android experience. Only if you have a Google account, for example, can you obtain apps from Google Play, synchronise your phone with online data in Google Drive, and more.

Many of the instructions in this article assume you have a Google account. If you already have an account, you'll have to provide your username and password; alternatively you can set up an account for free. You can do this on your PC - head to accounts.google.com - or follow the instructions on your phone.

One stage of the setup offers to migrate your settings from an old phone. However, this works only if your old phone runs Android. We'll see later how to transfer your contacts from devices running other operating systems.

To make your phone unique, you could select a new wallpaper. Hold your finger on the current wallpaper for a second and, when 'Choose wallpaper from' appears, tap Wallpaper. Drag across the options at the



bottom to see previews and, when you've made your choice, tap Set wallpaper.

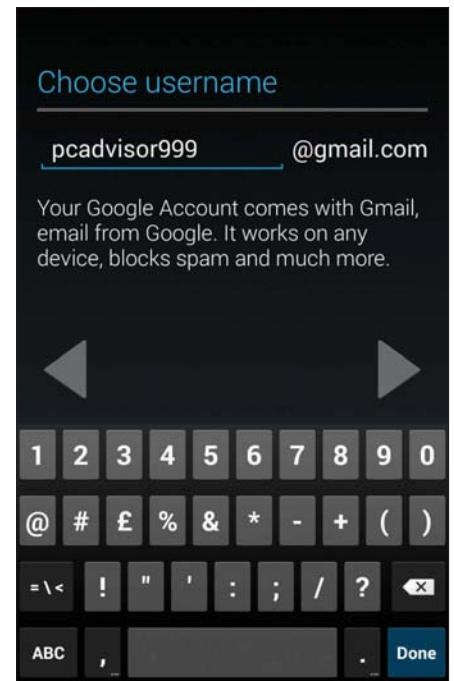
Another aspect of customisation is putting frequently used apps on your home page. Initially, just a handful of commonly used apps will be on your home page but, to add more, touch the apps icon (the circle with the six squares inside) and hold your finger on any apps you want on your home page.

To quickly turn off (and back on again later) features that drain your battery when you're not using them, hold your finger at the top of the screen and drag down. Initially you'll probably see status information, in which case you should touch the icon in the top-right corner. Now you can turn on and off Wi-Fi, Bluetooth and Location data (GPS).

A few general points before we continue: if you don't do anything for a few seconds the screen will blank to save power. Touching the power button will bring it back but, unless you do this immediately, the screen will be locked, as indicated by the padlock symbol. To unlock the screen, touch the padlock and drag your finger to the edge of the circle.

Note that the backward-pointing arrow at the bottom left will return you to the previous page or menu, the house icon in the centre will take you to the home page, and the icon that looks like two sheets of paper at the bottom right shows, and allows you to select, recently used apps.

As we now look at how to perform common actions on your phone, you can find the various apps mentioned in your Apps menu (some may also have shortcuts on the home screen). To access the Apps menu tap the icon on the home page. If widgets are

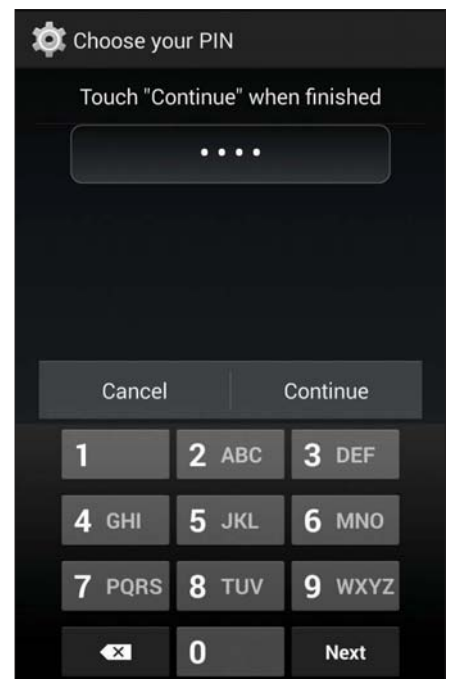


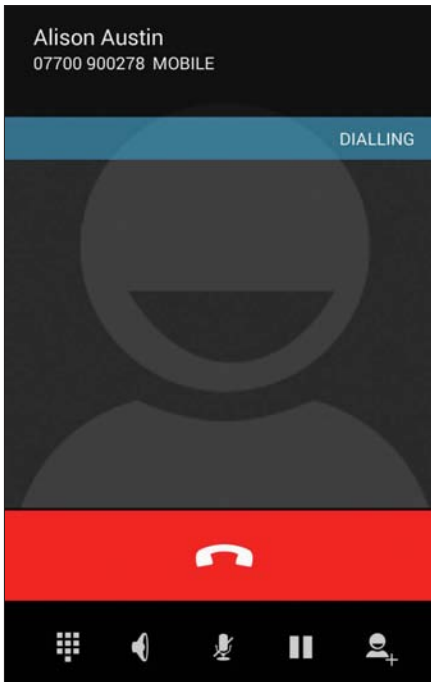
displayed you will need to swipe left to see the various apps installed on your phone.

Secure your phone

We've seen that your phone will lock automatically, so it won't inadvertently dial a number or send a text when rattling around in your pocket or handbag. However, you can also prevent others from unlocking it for unscrupulous means.

In the Settings app, scroll down to Personal, select Security, then Screen lock and, finally, PIN. Enter your chosen PIN, which must be at least four digits long, and confirm

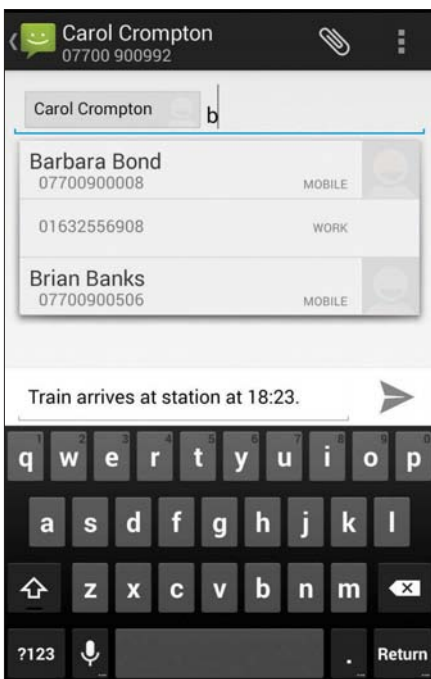




it when prompted. In future, whenever the screen locks and you press the power button, you'll see a keypad instead of the padlock icon. To unlock your phone, enter your PIN and tap Enter.

Import contacts

There are easier ways of getting all your contacts on to your new smartphone than typing them all in from scratch. Here we'll see how to do this if your old phone is not running Android, although other options are available if you're migrating from another Android device.



Your old phone will provide some means of uploading your contacts to a PC, and this should be your first step. Generally, they'll appear on your PC as either a comma delimited file (.csv) or as one or more VCard files (.vcf). Google Play lists several apps that help you to import contacts from .csv or .vcf files, so you could try these. However, your Google account provides another option.

If your contacts are stored on your PC as multiple .vcf files (perhaps one per contact), you first need to combine them into a single file. To do this, open the command prompt (type **Cmd** in the Start Menu's Search box and press Enter), then specify the folder in which your .vcf files are stored by typing, for example, **cd \phone\contacts**. Now type **copy /b *.vcf merged.vcf** to create a single file containing all your contacts.

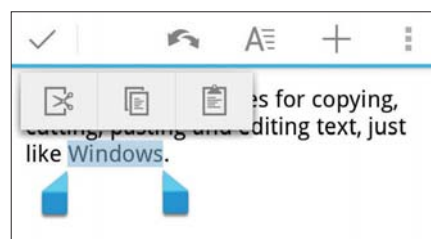
Once this is done, head to and log into google.com/contacts, select Import contacts and provide the name of your .csv or merged .vcf file. The next time your phone synchronises itself with Google's servers, those contacts will automatically become available on your phone. If you don't want to wait, you can force it to synchronise immediately in the Settings app under Accounts, Google.

Make a phone call

To make a phone call, tap the telephone handset icon that will be visible near the bottom left of your home page. If you want to call someone in your address book, tap All contacts, scroll down to find the person you want to talk to and select that name. Alternatively, to dial someone who's not in your address book, tap the telephone icon, then select the keypad icon. Type in the number and tap the telephone handset icon. Whichever method you choose to initiate a call, to end that call you simply touch the red telephone handset icon.

Send a text message

To send a text message, tap the Messaging icon (a square green smiley face) on your home page. If this is the first time you've used it no conversations will be displayed. Tap the icon at the bottom left that looks like a piece of paper with a plus sign. A blank message and a Qwerty keyboard will appear



- rotate the screen through 90 degrees if you want to use a larger keyboard.

By default the cursor will begin in the To field. Start typing the name of one of your contacts, then select the person you want to text from the list that appears. Add more contacts in the same way if you want a message to go to multiple recipients.

Use the large field below to enter your text message, then tap Send.

Select, edit, copy and paste

Just as selecting, editing, copying and pasting text are invaluable techniques on a PC, these are also actions you'll find useful in Android. To make a selection, tap and hold some text until it is highlighted in blue. To change the selection drag the pointers at either end to highlight more or less text. Whenever text is selected onscreen, the copy icon (two pieces of paper) will appear. Tap this to copy the selection text to the clipboard.

If you're in an application where editing is permitted, for example while composing a text or email, several other options are available. In addition to copying you can cut the selected text using the cut icon (a piece of paper and scissors) or replace it with the text in the clipboard using the paste icon (a clipboard). You can also insert text at whichever point the cursor lies.

Take a photo or video

The Moto G has both front- and rear-facing cameras. Here we'll see how to use the rear camera to take a photo or capture a video.

Touch the camera icon on the home page. Use the display to compose your shot, then



tap anywhere onscreen to take a photo. To capture a video, tap the video-camera icon at the bottom right. Recording will begin and a timer will appear at the top left. To stop recording press the icon at the bottom right that depicts a square in a circle.

To view the photos and videos you've captured, you can either tap the right edge of the screen and drag to the left when in the Camera app, or open the dedicated Gallery app. Swipe left and right to move between your photos and/or videos, tapping a video to begin playback.

The camera's various settings are accessible by dragging in from the left edge of the screen.

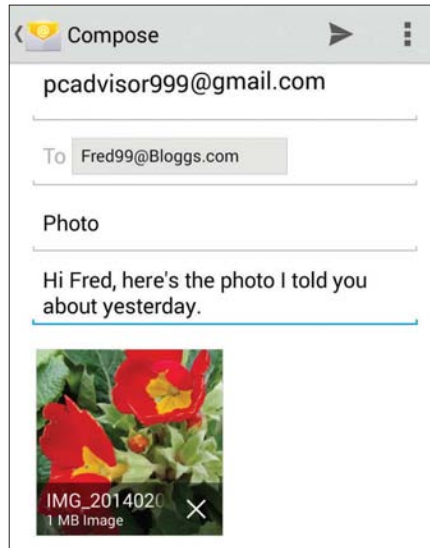
Send an email with a photo

Android 4.4 KitKat ships with two email apps: Gmail and Email. If you wish to access a Gmail account you can use either, but if you want to access mail from another account you'll need to use Email. We'll explain how to use the latter here, plus how to send the photo you just captured as an attachment.

The first time you use the Email app you'll have to go through the account-setup process, which involves providing your email address and password, and specifying how frequently you want new email to arrive.

Accept all the defaults and you'll be presented with a list of your recent messages. To compose a message, touch the icon that looks like an envelope with a plus sign at the top, then fill in the fields for the address, subject and message text.

To attach your photo, tap the menu icon (the three little boxes) at the top of



the screen and select Attach Picture. You'll be presented with any recent photos from which you can make your selection. Having attached the photo, send the message by touching the icon at the top that looks like a right-pointing delta wing.

Make a video call

The Hangouts app has several uses. You can use it, for example, as alternative way of sending text messages; it's also good for instant messaging. Here we'll see how to use it to make a free video call, to up to 10 people, all of whom must have a Google+ account.

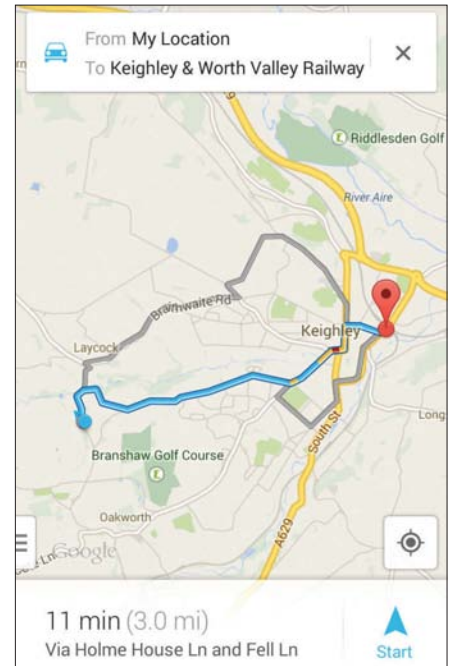
When you use Hangouts for the first time you'll be asked various questions but, after this, you'll be presented with a page that prompts you to 'Send a message or start a video call'. Tap to go to the 'New Hangout' page, where you should type the name, email address or phone number of the person you want to contact. Provided that this person is recognised, you can then start your video call by touching the video-camera icon at the top right of the screen.

Initially you'll see your own picture, captured by your phone's front-facing camera; once your call is connected, you'll see a full-screen image of the recipient, with thumbnails of your own outgoing video and any other people in the Hangout.

Navigate with Google Maps

Google Maps provides navigation facilities comparable to those provided by dedicated in-car satnavs or paid-for apps. When you launch Google Maps, provided GPS is turned on, it'll show your current position on a map.

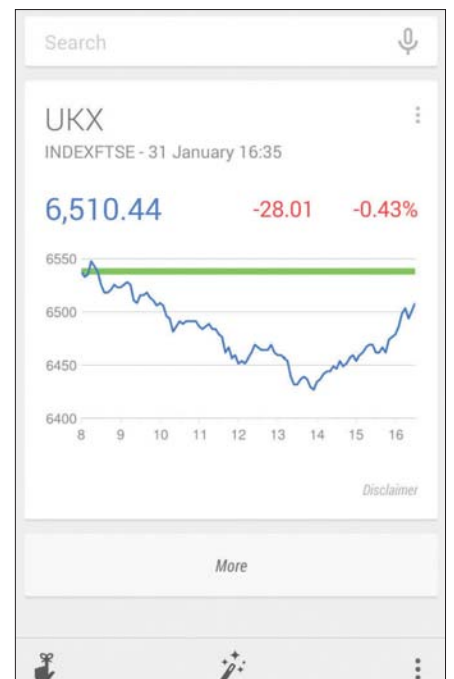
To find your way somewhere, touch the icon at the top that looks like a letter Y with an arrow. Specify your form of transport, then tap Choose destination. Enter a

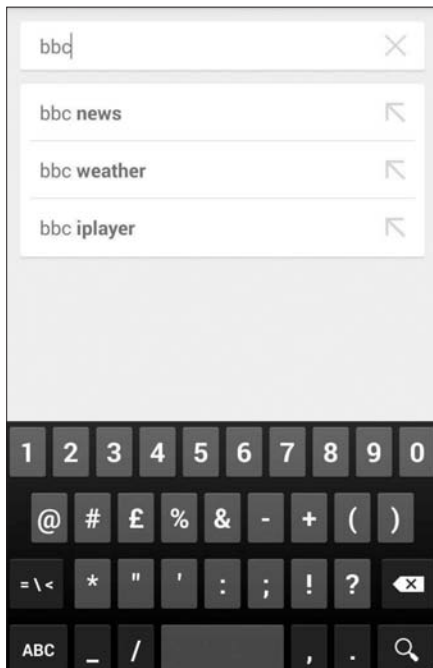


postcode or address and Maps will return a recommended route in blue (plus several alternatives in grey where applicable). If you want to use one of the alternative routes, tap it to turn it blue, then tap Start at the bottom right. Now simply follow the instructions.

Use Google Now

Near the top of your home page you'll see a Google Search bar that lets you search either the web or your phone. This is also the gateway to Google Now. Tap anywhere in the app and you'll be prompted to set up Google Now. To start, just accept the defaults.





Google Now provides lots of information, much of it relevant to your locality, and you'll no doubt add to what's displayed as you go on. Initially, for example, tapping the Google app might show you the local weather and provide a search box. Scroll down to see additional content and try tapping More. Tapping the wizard's wand icon at the bottom offers you further options.

Use Google Search

Google Search provides a quick and easy way to find stuff on the web and on your phone. At first sight it seems similar to the search

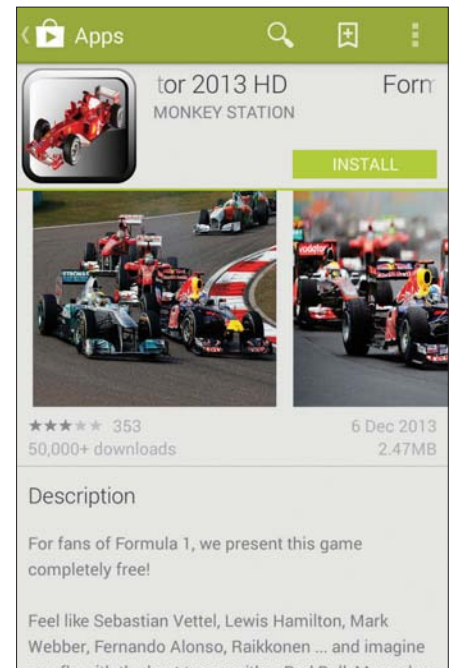
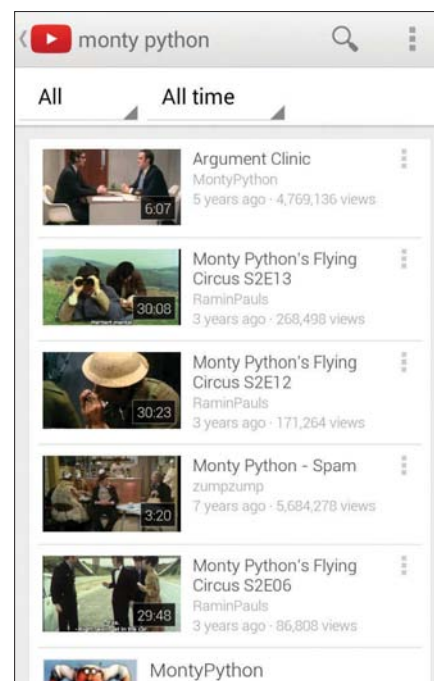
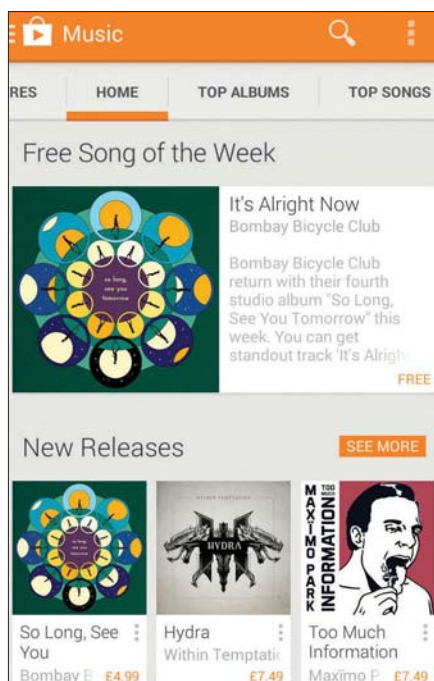
engine you're probably familiar with on your PC, but it has greater functionality. Tap in the Search bar and enter a search query, then tap the magnifying glass icon (or a suggested search term). If you type anything that matches something on your phone - an app, for example - tapping Search Phone lists those matches. The microphone icon lets you audibly enter search queries.

Play a song

The Play Music app allows you to play both the music stored on your device (perhaps ripped from CD and transferred from your PC to your phone) and any tracks you've bought and downloaded from the Google Play store. Here we'll see how to do both.

Launch Play Music app and tap the Google Play icon (a briefcase with an arrow) to go to the Google Play store. Here you can browse recommended tracks or search for a particular tune. In most cases, you'll have to pay to download your chosen track. However, to get the hang of this, try scrolling down to and listening to the free song of the week. Usually this will be a single track from an album - just tap to play it.

To download and play a track you've ripped from your PC, connect your phone to your PC using a USB cable. Your PC will recognise the phone and it will appear as a new device in Windows Explorer. Now, using Windows Explorer, drag your ripped tracks to your phone's Music folder. Your phone will now list those tracks as recently downloaded on Play Music's Listen Now page. Your downloaded tracks will also appear under My Library so you can find them later.



Watch TV, video and YouTube

YouTube has its own Android app, which you should use in preference to a web browser. When you launch the app you'll be shown various videos that may interest you. As time goes on, these will better reflect subjects in which you're interested, but to start with you'll probably want to find your own video. Tap the magnifying glass icon to open the search field, then enter your query and tap the magnifying glass icon again.

For TV or movies you'll need to install the necessary apps, as described below. Popular services, such as BBC iPlayer and ITV Player, are available for Android, and some offer live- as well as catch-up TV. Pay-to-view services such as Netflix are also available.

Find and install an app

In addition to music, Google Play lets you augment the apps that came preinstalled on your phone. Many are free to download, but some may charge a small fee.

Launch the Play Store app and tap the Apps tab at the top. A few popular apps will be suggested but, in all probability, you'll be looking for something in particular. Tap the magnifying glass icon at the top, then enter the name of the app you're looking for. All apps that match your search criteria will be listed - scroll down and select any you think meets your requirements to see more details.

If you like what you see, you can download an app to your phone by tapping the Install button. Various permissions will be displayed; if you're happy with these, tap Accept. If it's a large app be sure to turn on Wi-Fi before downloading it. ☒



YOUR QUESTIONS ANSWERED

Expert computing advice

We tackle readers' hardware and software conundrums

NO GOOGLE SEARCH RESULTS

Q I recently bought a new PC with Windows 8.1 installed. Everything works fine except when I try to search Google from my browser. I've tried both Internet Explorer and Firefox and the upshot is the same each time – no search results are returned, just the occasional sponsored link. Is there anything I can do about this?

Some users have reported seeing this problem when Google Instant Search is enabled. This feature lets Google deliver search results as you type your query rather than waiting until you press Enter.

To disable it, go to the Google home page, (google.co.uk). At the bottom right of the screen, click on Settings and then select 'Search Settings' from the pop-up menu. Find the section marked 'Google Instant predictions' and select 'Never show Instant results'. Once you've deactivated Instant Search, you'll be able to select how many search results you'd like per page, ranging from 10 to 100. Finally, scroll down to the bottom of the page and click the 'Save' button

Google won't display search results any more as you type, but you should now see a page full of results when you hit Enter.

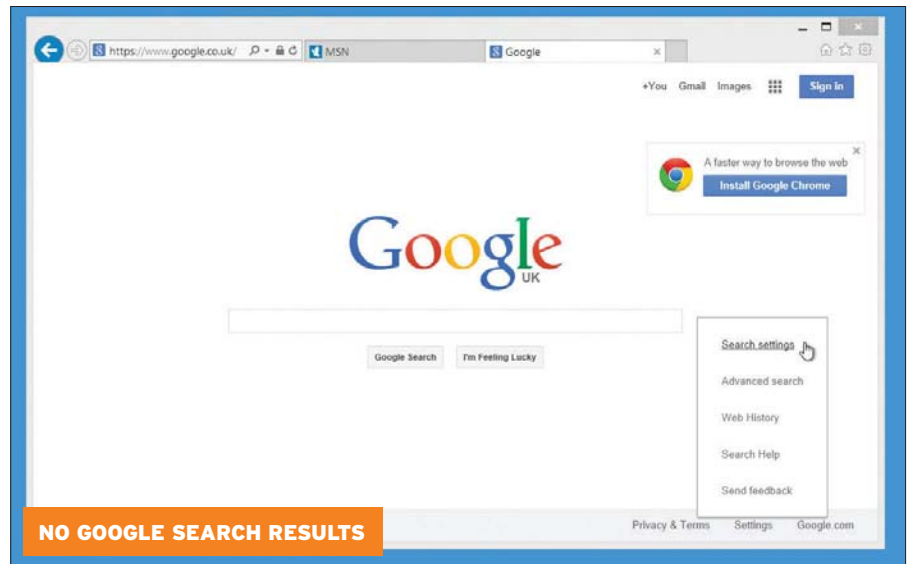
MISSING LIBRARIES

Q I've recently performed a clean installation of Windows 8.1. The process has gone seemingly without a hitch, but I haven't any libraries in File Explorer. How can I get them back?

You'll be pleased to know that the libraries are still there, they're just hidden by default. To make them reappear, open a File Explorer window and click the View tab. Now click on the Navigation pane icon at the top left and select 'Show libraries' from the pull-down menu. Your libraries should now be visible in the Navigation pane.

ADDING WI-FI HUB

Q I have over 100m of ethernet cable running from a BT hub in one building to another. This works fine, but I would like to have Wi-Fi in the second



building. Is there any way to add a Wi-Fi hub to the end of this ethernet cable?

Yes, it's simple. The device you need is called an Access Point and it's designed for exactly the purpose you describe. They are usually less expensive to buy than full wireless routers because they are much less complex.

However, if you already have a spare router available, it's worth checking the documentation as you may find that it can operate in Access Point mode and provide the function you require. Plugging in a standard wireless router without switching to access point mode can cause problems on your network, as it will probably contain a DHCP server that will start allocating IP addresses, which may conflict with those on your existing wired network.

PICTURE QUALITY

Q I recently bought a 27in ViewSonic monitor, which I use primarily on my Windows PC, but occasionally on my MacBook Pro. I've been really pleased with the picture quality under Windows. Text is sharp and readable, but without any jagged edges.

Unfortunately, the same display looks horrible on my Mac. I've tried various inputs, but all with the same result – text looks horrible. If I look closely I can see colours in the text, especially

around the edges there appear to be hints of green and magenta.

Is there anything I can do about this? I know the monitor works well on my PC and I haven't come across this before.

We actually discovered the same thing in the test lab and, with a bit of tweaking, finally found a satisfactory solution. The problem seems to occur due to a difference in the way the PC and the Mac render text.

When using a PC, the monitor's default settings work fine, but when we connected a Mac we found we had to delve into the display's menu settings and reduce the monitor's sharpness setting by a couple of notches. This removed the distracting colour effect you were seeing around text while keeping the letters just as sharp as they appear when using a PC. Also see the question below for getting the most out of your monitor's settings.

MONITOR SETTINGS

Q Having made the move from a Mac to Windows, I'm intrigued by all the settings on my monitor. Do I need to use them, and what happens if I don't? Does it matter if I just leave my screen in 'Movie' mode while I'm editing a Word document? I think I'd much rather just leave it alone, but then which setting is best?

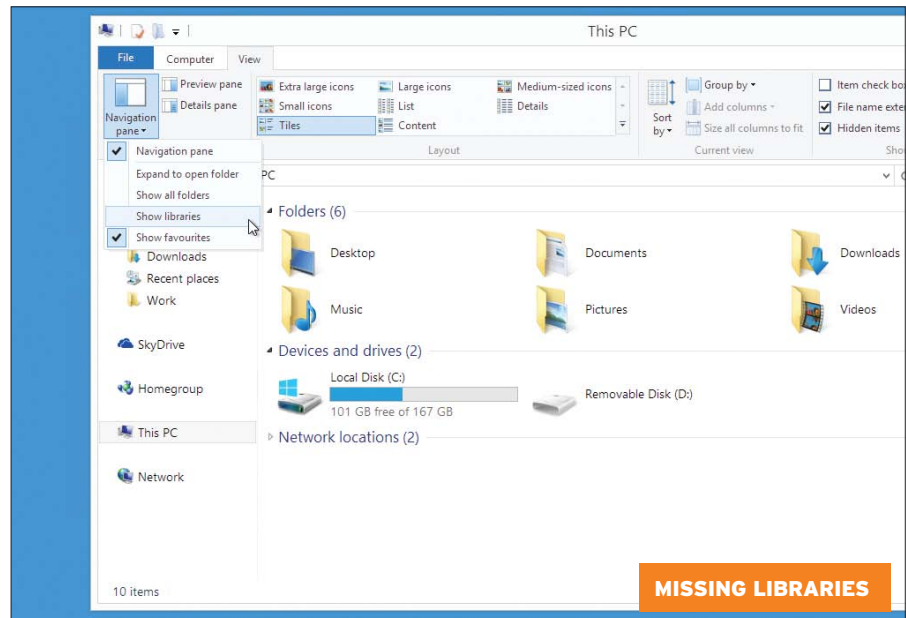


If you're used to a Mac monitor or a laptop, you probably won't have come across many of these settings or 'presets', which can seem a little confusing.

The available settings can vary a great deal from monitor to monitor, but they are often just variations on a theme. There's usually a neutral setting that you can just set and forget – and we'd suggest doing just that unless you have a particular need to change things. If you have options called 'warm', 'cool' or 'neutral', go for the latter. You may prefer the look of one of the other settings, but if you want your display to look anything like everyone else's, then neutral is the way to go.

Better still, if you have an option called 'sRGB', select that. This is a default standard to which most monitors, operating systems, printers and applications will adhere in the absence of any other specific colour profiling information.

If you dabble in the graphic arts, video or photography, we strongly suggest not changing your monitor settings from the above setup. You want it to look exactly the same every time you come back to it if you



want colours to remain consistent. If you're planning on calibrating your display with a hardware device such as a Datacolor Spyder (tinyurl.com/pec6xwj), then that's a different story. Here we're just talking about taking

your monitor out of the box and picking the most appropriate settings.

If you have a 'Movie' setting, this will often activate features such as dynamic contrast, which can add extra punch to video
Continues >>

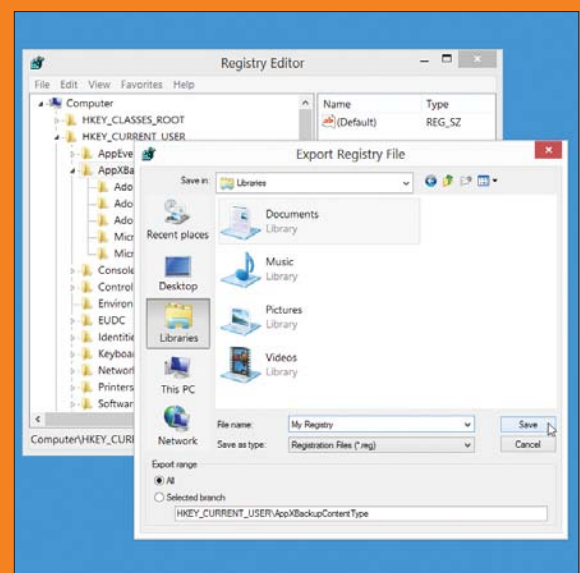
BACK UP AND RESTORE YOUR WINDOWS REGISTRY

Windows, and the programs that run on it, store a vast amount of critical information in a database called the Registry. This can include the options you set in the Windows Control Panel; stored user information; and any number of settings and options configured in your applications. Editing the Registry is usually safe when done correctly, but making a mistake has the potential to wreak havoc with your Windows installation. Thankfully, it's relatively easy to make a backup of your Registry, so you can restore it later if something should go wrong.

First, launch the Registry Editor called 'REGEDIT'. On Windows 8, go to the Start screen and begin typing the name of the program. Alternatively, hold down the Windows key and press R to bring up the Run box. Type **REGEDIT** and press Enter to launch the program.

The Registry Editor itself has remained largely unchanged over many generations of Windows, so you should be able to follow these instructions even if you're still running Windows 95. In the Registry Editor, click on 'Computer'. Now go to the File menu at the top and select Export. Choose a file name and save the Registry file in a location convenient to you.

Should you need to restore this backup, launch the Registry Editor and select the Import function. Alternatively, double-click on your .REG file from within File explorer to import it into your Registry.



content by varying the brightness of the backlight during playback. It can also tweak the monitors overdrive function to help keep fast movement blur-free - this is often also employed by any dedicated Gaming setting.

The drawback here is that dynamic contrast is horrible for working with still images, as the overall display brightness will fluctuate in unpredictable ways, making it impossible to accurately judge the effects of any of your own editing.

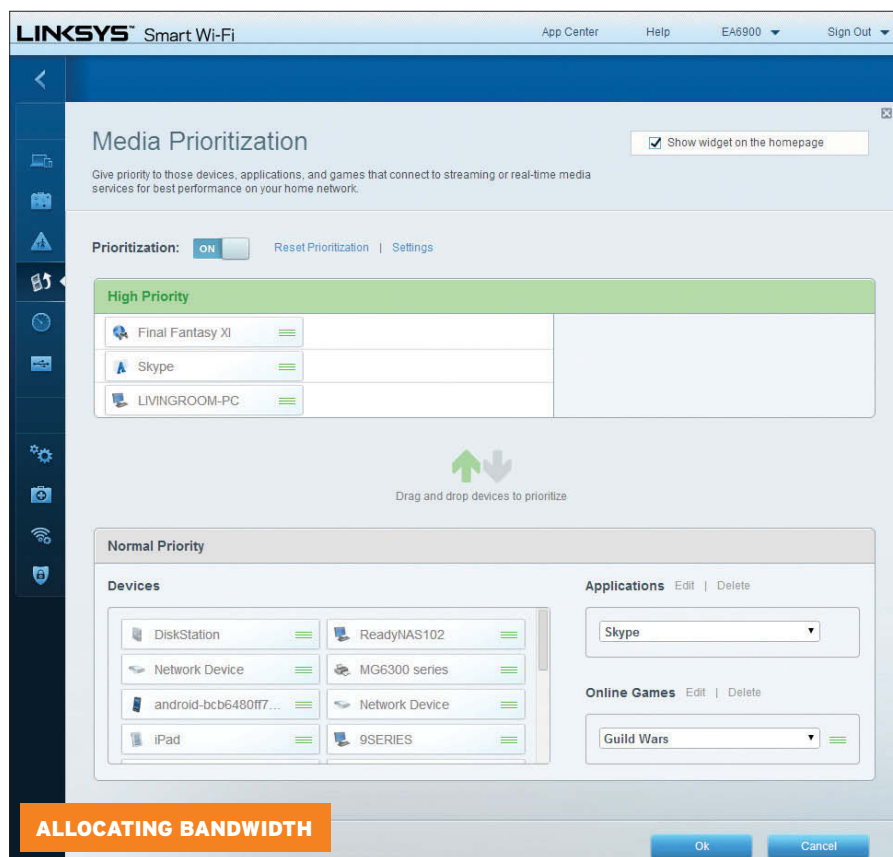
Similarly, the overdrive function can have drawbacks in the form of 'ghosting' effects on text. In our opinion, most of the time it's just not worth turning these functions on as it's very easy to forget to turn them off again. Of course, if you've built a dedicated media centre or gaming PC, you may want to leave the display in the relevant mode all the time - it'll be purely a matter of taste.

ALLOCATING BANDWIDTH

Q My son is always complaining about lag in his gaming. He's one of three (occasionally five when my daughters are home) users of our available bandwidth. He wants to know if it's possible to allocate bandwidth in such a way that he's 'guaranteed' some amount of it so that, no matter what any other user in the house is doing, his bandwidth doesn't suffer. We have a pretty standard, ISP-supplied (Thomson/Technicolor) router driving a six-port hub and a wireless network.

This sort of bandwidth management is possible with many models of broadband router, but is possibly not available on the budget model one supplied by your ISP, so it's likely that you'll have to upgrade it.

However, without knowing the exact model name, we can't say for certain, so it's worth checking the specification. You may also like to sign in to your router's browser-



based interface and look for options labelled QoS or Bandwidth Management.

Some budget routers will allow you to apply limits to particular IP addresses on your network, so you could allocate only a portion of your total available bandwidth to a given PC. However, this is a rather crude solution as it won't allow that PC to use any additional bandwidth even if there are no other users active on the network.

Better routers will allow you to prioritise PCs and connected devices and also selected applications or games. Many routers can do this, and the Linksys EA6900 and Asus RT-AC66U (tinyurl.com/bu79w64) are both good products.

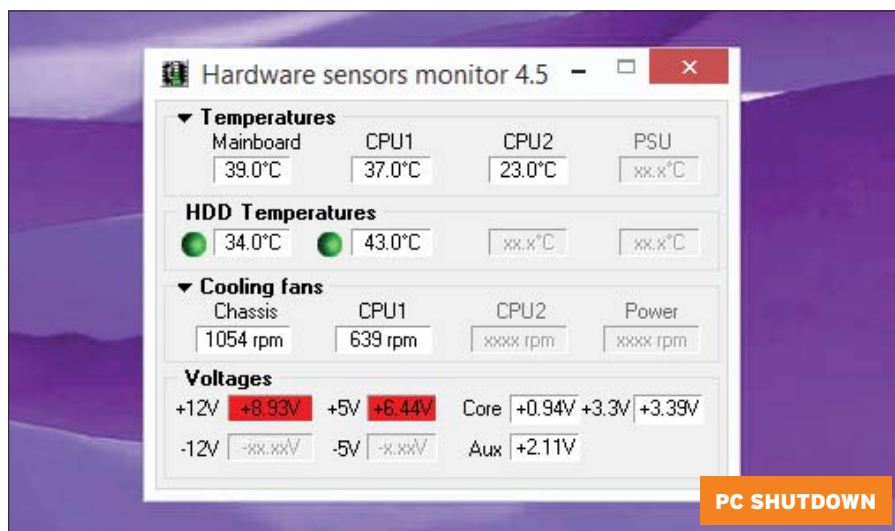
In this example, the Linksys EA6900's Media Prioritization page, enables you to prioritise devices and selected games with a simple drag-and-drop interface. You should be able to buy an up-to-date router, capable of similar features and supporting the latest wireless-AC technology for under £150.

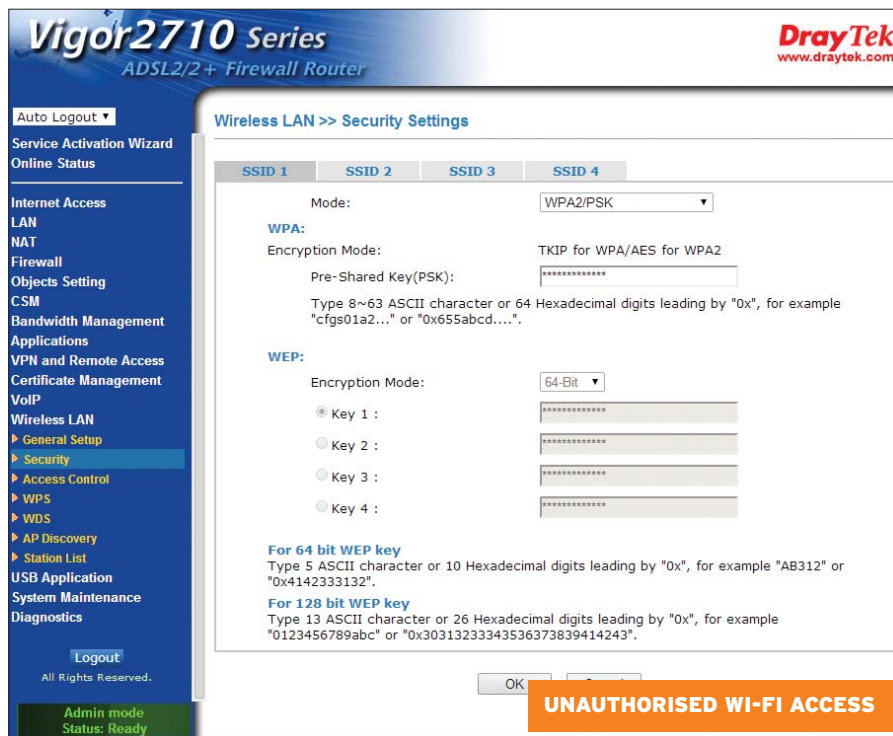
PC SHUTDOWN

Q Since I installed a new motherboard and processor, my PC has been shutting down unexpectedly. If I leave it sitting idle, it's fine, but when I run any serious applications or games it will get so far and then suddenly turn off without warning. There are no error messages and no blue screen of death, it just shuts down. I've been monitoring the temperatures of my processor and case and they seem normal, so the problem doesn't seem to be temperature-related. Do you have any suggestions?

The most common cause of this problem is an inadequate or faulty power supply. If you monitor the clock speed of your processor with a utility like CPUID's TMonitor, available here: tinyurl.com/Ljbwrjb, you may find that the computer shuts down once the CPU reaches a certain speed.

Watch the reported CPU speed and try running some more processor-intensive applications to see whether the increase in processor speed coincides with the crash. We would also suggest using some





monitoring software to report the voltages being delivered by your power supply. If your motherboard ships with some, then use that, otherwise you can try HWMonitor, also from CPUID.

Your power supply should be delivering 3.3-, 5- and 12V inputs to your motherboard, but these can fall outside acceptable ranges if the PSU is under-powered or has developed a fault. Check to make sure the power supply is operating as it should. If not, you may have to replace it.

If this is the case, you may be able to prevent your PC from crashing by limiting

the maximum speed of the CPU until your replacement power supply can be installed.

To do this, go to the Power Options section of the Windows control panel and click on 'Change plan settings' for the power plan you are currently using.

Now click on Change advanced power settings and scroll down to Processor power management. Click on Maximum processor state and reduce the setting from 100 percent down to something lower. You can estimate this value from the processor speeds you managed to achieve while running TMonitor earlier.

Now click OK to save the settings, and don't forget to restore the plan settings back to default once you have installed your new power supply.

UNAUTHORISED WI-FI ACCESS

Q I logged on to my router the other day, just to have a look around to familiarise myself with it. I became concerned when I noticed a neighbour's name 'Arthurs-iPhone' listed in the home network. This person lives about 200-300m away from me and has visited my home on numerous occasions. I've now deleted him from the network, but am worried my privacy may have been compromised. Should I be worried? Any help much appreciated.

Your neighbour won't be connected to your Wi-Fi network from 200m away. The list of connections on your router is most likely a list of all the connections that have been made in the past. From this information, it looks like your neighbour's smartphone has previously connected to your network on one of his numerous visits.

The information you're looking at is a log of previous connections and details of IP addresses allocated, and so on.

This means you shouldn't be worried that your neighbour is currently connected to your network. It does suggest, however, that his phone is connecting automatically each time he visits - assuming you didn't provide him with any sign-in information.

If you have previously given him your Wi-Fi password, then you have nothing to worry about as you're just seeing a log of a previous authorised connection. If, on the

Continues >>

TECH JARGON BUSTER

ACCESS POINT: In the home, you'll typically gain wireless access to the internet via a Wi-Fi router that provides access to your broadband service as well as setting up a Wi-Fi network. An access point creates the Wi-Fi network that's to be added to an existing wired network, which may already have an internet connection set up using other hardware.

CACHE: In computing terms, cache is a quantity of fast memory or storage that transparently stores frequently used data kept on a slower medium such as a hard disk or slower memory. A computer's CPU incorporates a small amount of cache to speed up access to your main system RAM, and you can use an SSD cache to speed up access to a hard drive.

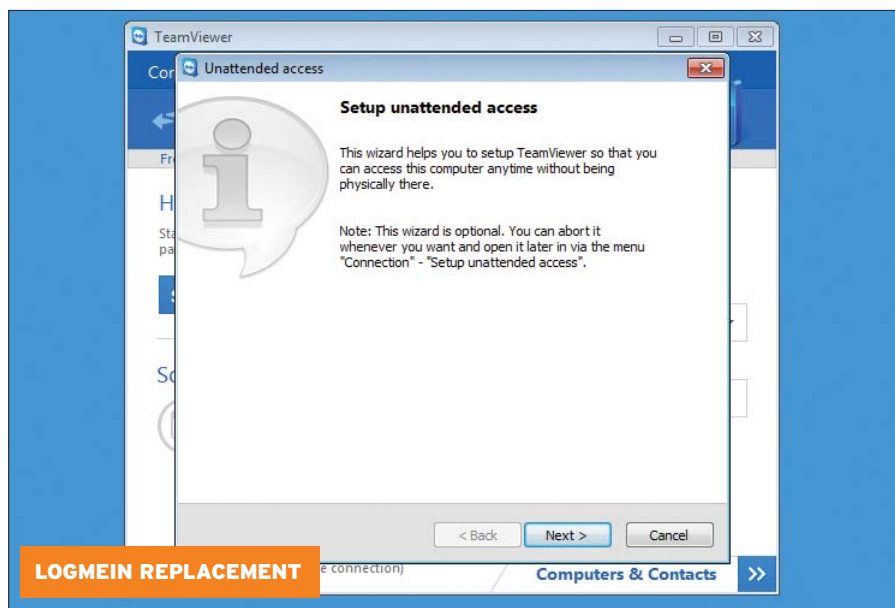
PENTILE DISPLAY: Colour displays on smartphones and PC monitors use a grid of coloured dots, or pixels, which are themselves each made from red, green and blue subpixels. A standard RGB display typically uses one subpixel of each primary colour to create each pixel, varying the intensity of each to create the full range of displayable colours.

The PenTile system uses a different layout with more green subpixels than red or blue, reducing the total number of subpixels required for a given display resolution and relying on image processing to reconstruct the full-resolution image. In LCD panels, a different PenTile technology is used, adding a white subpixel to the matrix that can allow for significant power savings as more of the backlight can be

allowed to shine through. Technically, PenTile displays offer lower image resolution than standard RGB ones, but in modern HD displays this difference is rarely perceptible.

STEAMOS: Valve's SteamOS is a Linux-based operating system designed to power the company's Steam Machine gaming consoles. It's a free-to-use platform that users can install to create their own Steam Machines (or Boxes) if they wish.

VP9: Developed by Google, this video compression standard is available for use royalty-free and is a competing standard to the H.265 format. Both formats are designed to facilitate 4K and higher resolutions.



other hand, the fact that he has connected at all has come as a surprise to you, this suggests that you don't have any security set up on your router and it may well be open to all - including other neighbours who live closer by and probably are within range of your network. We suggest that you log back into your router and make sure you have WPA2 encryption set up.

LOGMEIN REPLACEMENT

Q I've been using LogMeIn's free remote access solution for a number of years to connect to my family and friends' PCs to provide occasional assistance. I recently received an email telling me the free service is to be discontinued. Is there a free alternative I can use and how can I switch over with the minimum of effort?

There are many remote access solutions available, but the closest experience to LogMeIn Free would be TeamViewer. This is free for personal use and can be downloaded from teamviewer.com.

Seeing as you already have LogMeIn installed, you won't have to visit the remote PCs in person to swap over to TeamViewer. Just sign in to each remote computers via LogMeIn, then download and install TeamViewer remotely.

We've tested this and can report that both LogMeIn and TeamViewer can run at the same time on the remote PC without interfering with each other.

Now disconnect from LogMeIn and try connecting to the same PC via TeamViewer. If all goes well and you connect successfully, you can now uninstall the application from the remote system. ☒

CONTACT US



Email your Helproom questions to helproom@pcadvisor.co.uk. Please use 'Helproom' as the subject header and give your full name, the operating system you're using and other product details. We will let you know by email if your query has been selected for inclusion in these pages. If your query is urgent, you may find it useful to visit our forum at pcadvisor.co.uk/helproom.

Helproom aims to give you the best assistance possible. But, given the

limitations of this type of advice, we can't guarantee what we say will work and we can't accept responsibility for any damage arising as a result.

Always back up your system before you make any changes, including software installations.

Please note that we are unable to respond to letters or telephone requests, but we will endeavour to answer queries submitted by email or via our Helproom forum.

For more PC help go to:
pcadvisor.co.uk/helproom



SEARCH THE
PC ADVISOR FREE
ONLINE HELPROOM

The *PC Advisor* online Helproom contains an indispensable database of answers to common questions regarding all aspects of PC problems. This ranges from general Windows issues to problems with specific apps, and covers all types of PC hardware and software, including system components and peripherals.

Alternatively, you can ask for help from the experts on our online forums. Sign up to be a registered user - which is free - and then browse to one of the discussion forums. In the Helproom your first stop should be the searchable database of frequently asked and previously answered queries. With more than 1.5 million forum posts, you'll almost certainly find your answer in this archive of queries - just enter a few keywords.

If our online database can't solve your problem, try posting a question in the Helproom forum, where more than 200 queries are answered every day. The forum is manned by our team of Helproom Angels, who are ready and willing to lend a hand with anything from system crashes to virus alerts.

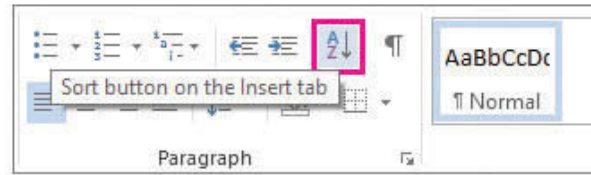
helproom@pcadvisor.co.uk
pcadvisor.co.uk/helproom

Organise your lists in Microsoft Word



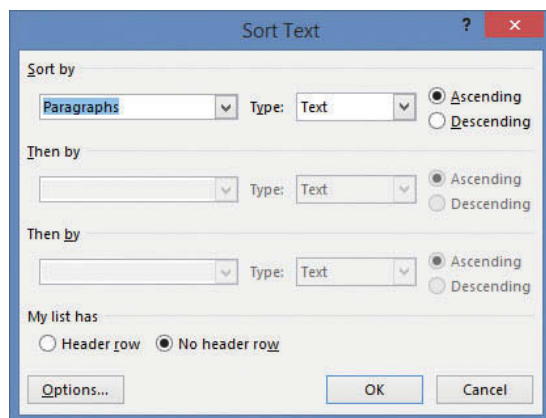
Fed up spending time manually organising your lists? Jim Martin reveals how you can get Microsoft Word to do all the hard work for you

Don't waste time manually sorting lists in your Word documents. Word has some reasonably powerful sorting tools like those in Excel, and it can even order lists numerically as well. Here's how to do it. We're using Word 2013 here, but the feature exists in older versions as well.

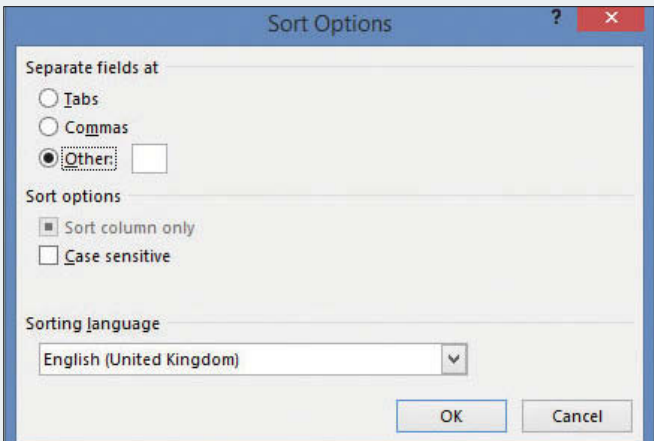


START

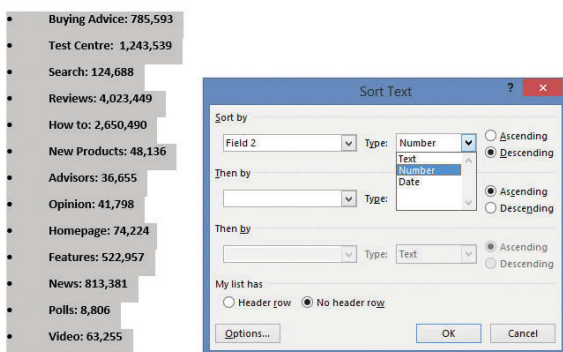
First, select your list by clicking and dragging. In the Home tab of the Ribbon, click on the Sort button - it's easy to miss, so we've highlighted it here.



2 A window will open showing the sorting options. To sort alphabetically, select the appropriate option from the first drop-down menu (here we've chosen Paragraphs) and select whether you want ascending or descending order. Click OK.



3 To sort by surnames, select your list, click the Sort button and then the Options button. Next, choose Other and type a space in the box. Click OK and choose Word 2 from the 'Sort by' drop-down. Again ensure the other options are set correctly and click OK.



4 Word can also sort numerical lists. Here's a bulleted list with names and numbers. To sort this numerically with the largest figure at the top, select Field 2 from the Sort by drop-down, Number from the Type menu and then Descending.

- Reviews: 4,023,449
- How to: 2,650,490
- Test Centre: 1,243,539
- News: 813,381
- Buying Advice: 785,593
- Features: 522,957
- Search: 124,688
- Homepage: 74,224
- Video: 63,255
- New Products: 48,136
- Opinion: 41,798
- Advisors: 36,655
- Polls: 8,806

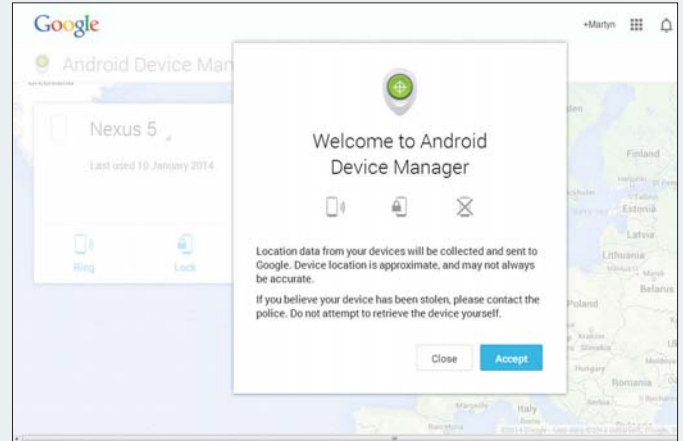
5 Again, if it doesn't work, ensure you've entered a space in the Sort Options so Word knows how your 'fields' are separated. In this example, Field 1 is the name and the number is Field 2. You may have to experiment to get the desired result. ☒

Locate a lost device



Martyn Casserly explains how to use Google's Android Device Manager software to remotely locate and protect a lost or stolen device

Apple users have long enjoyed the ability to track their devices if they were lost or stolen. The Find My iPhone option has been touted as an anti-theft measure, with plenty of stories online of people recovering their iDevices by turning up at the ne'er-do-well's door with the police in tow. Now Android has added a similar feature called 'Android Device Manager' for GPS-equipped units, which can not only locate your lost handsets but also change passwords, lock screen PINs and remotely wipe your missing unit. Here we'll show how to set up your phone or tablet to use the service, so the next time your Nexus 7 falls behind the sofa you'll be able to track it down.

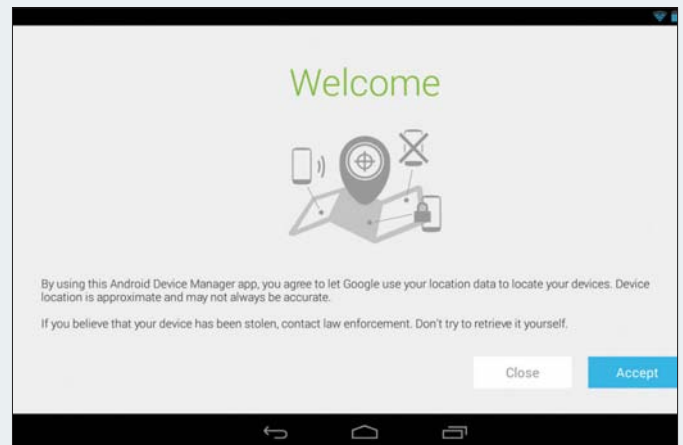


START

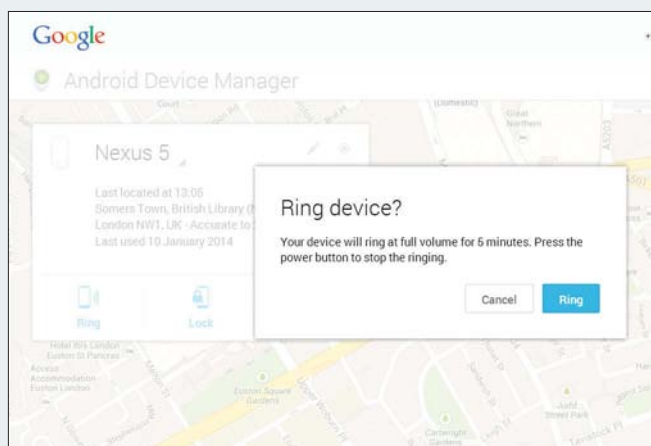
First, go to tinyurl.com/m5p37as where you'll be prompted to accept Google's request for location data. As this is a tracking service, it's necessary to do this for the feature to work.



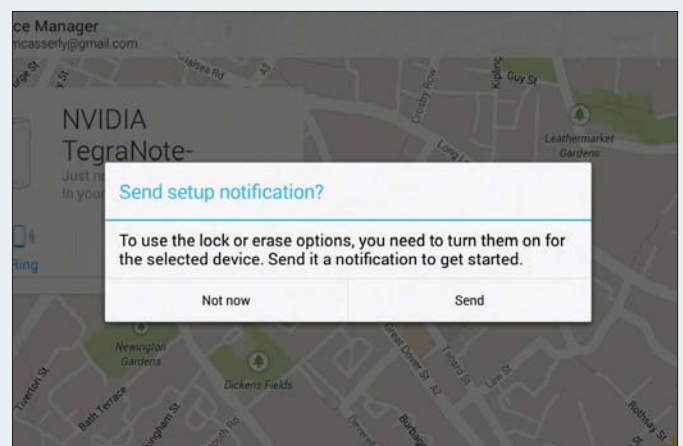
4 To step up a new device you'll need to visit the App Store on the handset itself, then search for the Android Device Manager app. There are a few similar apps, so look for the one with the green circle and target in the middle.



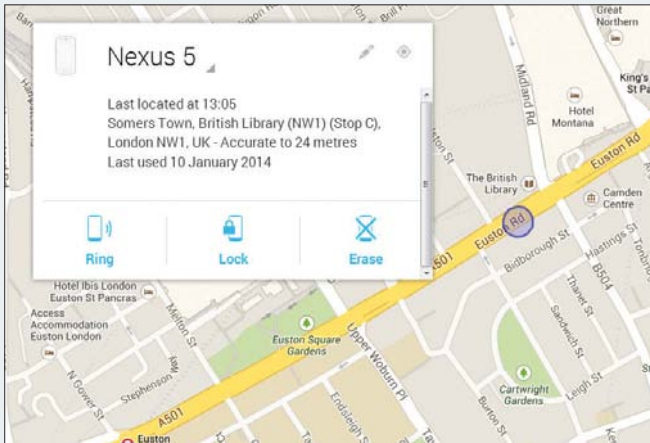
5 Tap the install button and you'll be presented with another Welcome screen requesting to use your location data. As in Step 1 you'll need to agree to this if you want to use the service. Tap Accept and you're ready to go.



8 Selecting the Ring option will allow the app to make your device announce itself at maximum volume for five minutes, even if it's locked and set to vibrate. This is particularly useful if you've lost it somewhere in the house.



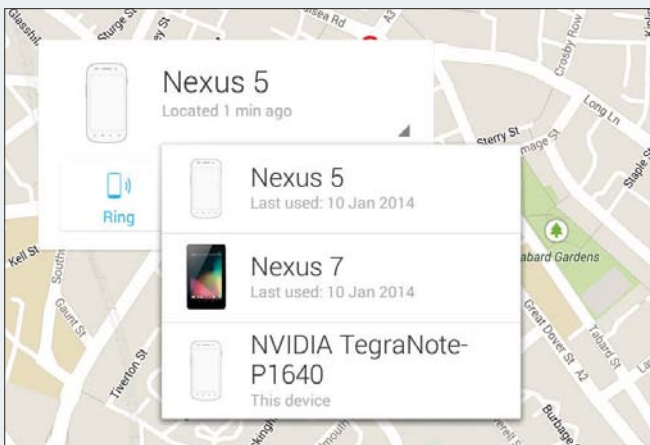
9 Selecting Setup Lock and Erase will open a dialog box telling you that you need to send the device a notification. Tap Send and you'll see a message appear in your notification bar for Android Device Manager. Tap this.



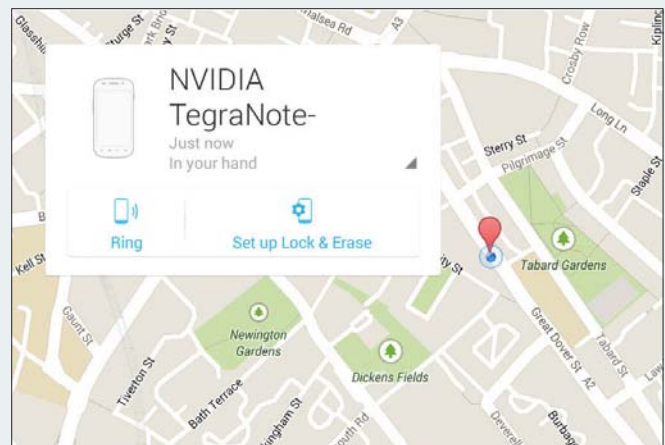
2 If you own a Nexus device with location services turned on, it should appear on your list. Here you'll see the current position of your handset, along with the last time it was used.



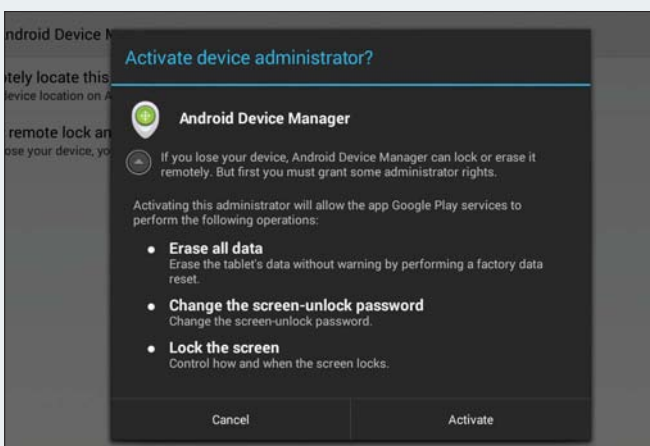
3 To switch between devices, click on the name and a drop-down menu will appear. Select another model and you'll be taken to the map screen for that one instead. You can also rename each device by clicking on the pencil icon.



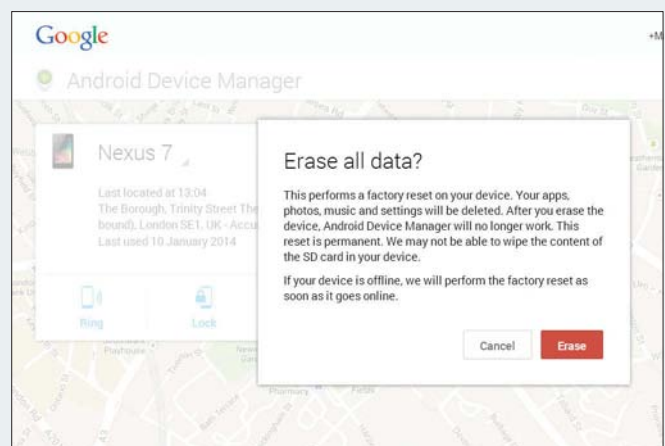
6 The screen now looks remarkably like the one in Step 2, this is because the Android Device Manager app basically uses the web interface to run the service. Once your device has found a GPS signal, it should appear on the drop-down menu.



7 Take a closer look at the features available. Beneath the device name are two icons: Ring and Set up Lock & Erase. We'll look at how each of them work in turn, starting with Ring. You can also use Google's website to access these options.



10 You'll now be taken to the settings for the app, where a pop-up box will ask if you want to activate the device administrator? Agree to this and your device will now have access to all the security features.



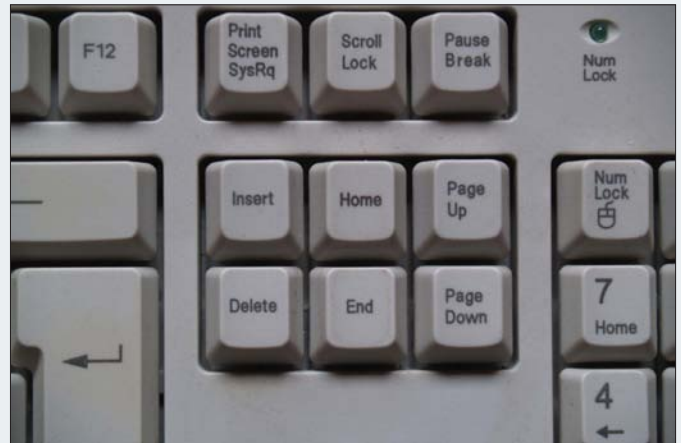
11 The Lock option will let you remotely create a new password for the lock screen, while Wipe is the choice of last resort. Essentially it's a factory reset that removes all your data from the device. Very effective in the event of a theft. ☒

Capture your screen



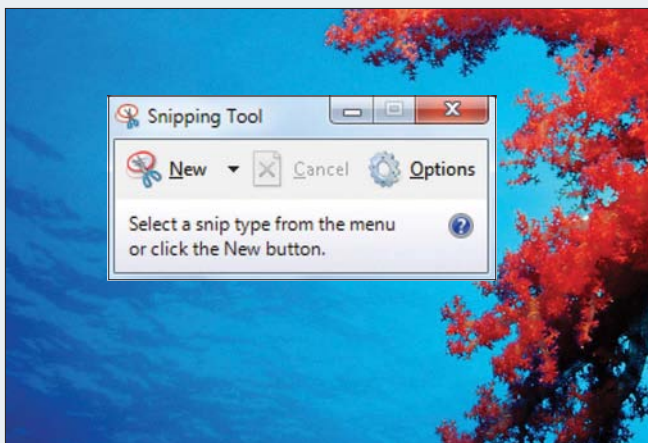
Recording the contents of your PC's screen is essential for many reasons. Mike Bedford shows how to use Windows' built-in facilities and a third-party utility

At one time or another, most PC users will need to make a copy of their screen contents as a graphic file that can be incorporated into a document or shared via email. If you're having difficulty using some software, for example, a screenshot provides the best means of communicating the problem, or maybe you need to incorporate screen images in to a company report. In each of these instances, you need a simple way of capturing what you can see onscreen. We start by showing you how to do this using the facilities provided in Windows, which will meet most of your needs. We'll also look at a free screen capture utility that offers extra facilities.

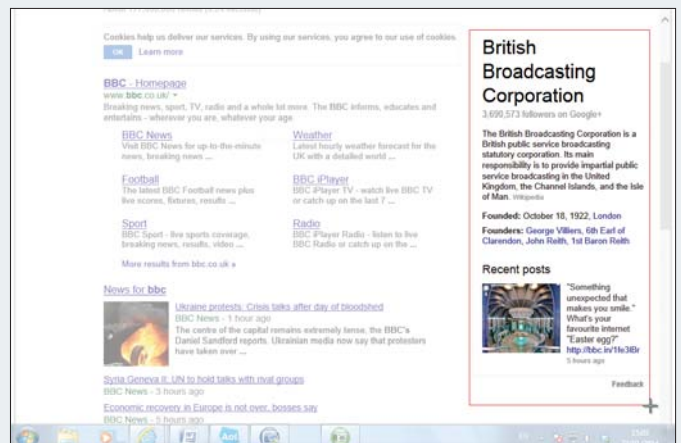


START

The quickest way to take a screen is to press **PrtScr** on your keyboard. Alternatively, if you want the active window rather than the whole screen, use **Alt+PrtScr**. This copies the image to the Windows clipboard, so you can paste it into a document.



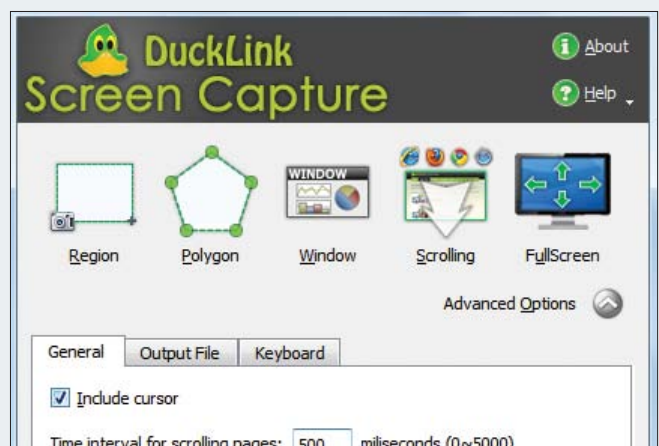
4 The Snipping Tool will open as a small window. First, select the type of screen capture you want from the menu. In addition to full-screen and window, which are available using the **PrtScr** key, you can choose a rectangle or a freeform shape.



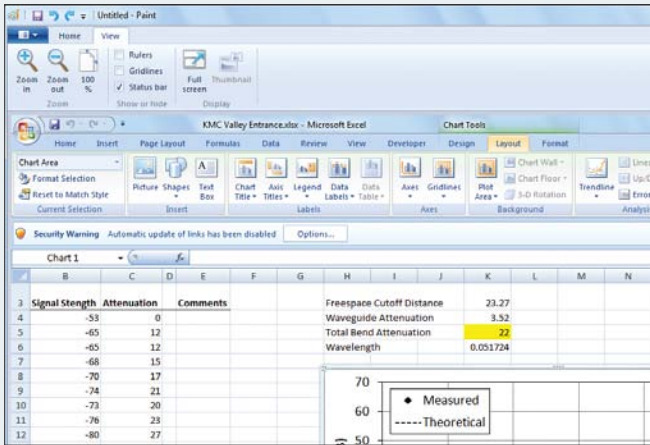
5 Here we've chosen the rectangle option and are selecting the area of the screen we want to capture by dragging a box around it. The Snipping Tool disappears so you don't capture it, too. The freeform options works in much the same way.



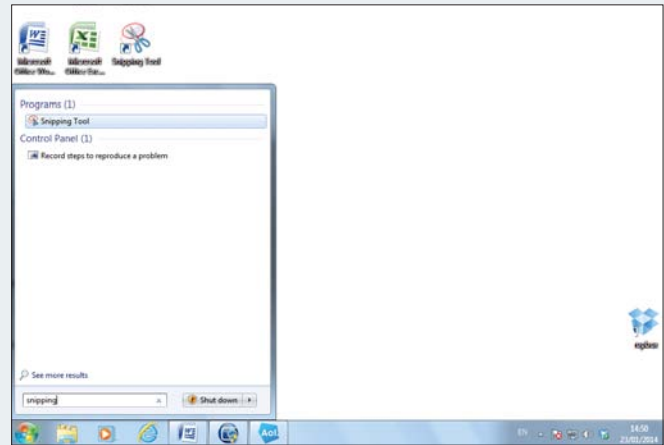
8 For better results, use DuckCapture (ducklink.com). It allows you to include the mouse pointer or cursor in your screenshot, you can grab all of a scrollable Window such as a web page, it has better annotation features.



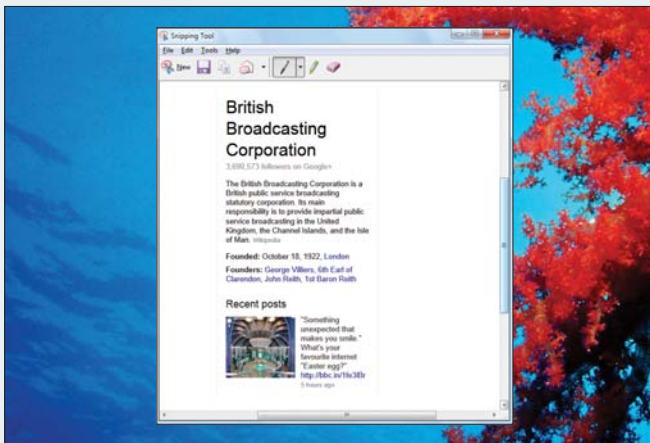
9 If you want to include the cursor, click on 'Advanced Options' and then, in the General tab, ensure that 'Include cursor' is checked. Now capture the screen normally.



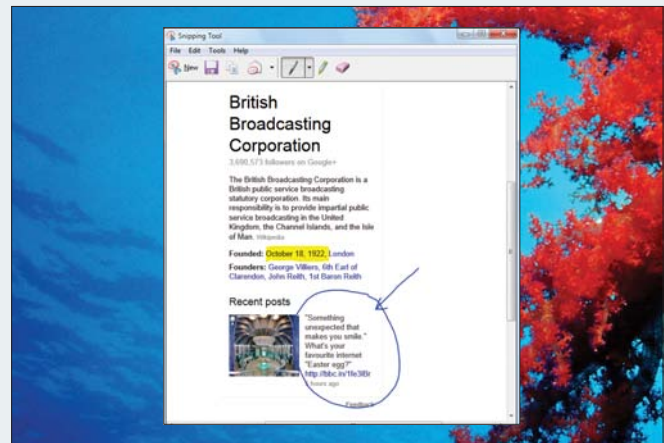
2 To save a screen as a graphics file, open a paint/photo-editing package, paste from the clipboard and save. Windows' built-in Paint will do the job as you can see here. We suggest saving in PNG format since Jpeg will produce compression artefacts on text.



3 For more options use the Snipping Tool, which has been available since Windows Vista. Consider putting a shortcut on your desktop.

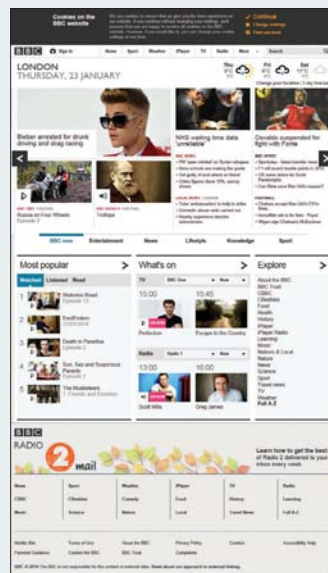



6 A larger Snipping Tool window will now appear, showing what you've captured. In most cases, all you now need to do is save the image to file (remembering our advice to use PNG format) using 'Save As' from the File menu.



7 Before saving, though, you might want to annotate your screenshot using the Snipping Tools' editing options. These are basic, but you can draw freehand and highlight text. Note the menu for changing the pen thickness and colour.

10 To capture a scrollable web page, first click on the Scrollable button and when the crosshair cursor appears, scroll up and down the page until all of it has been displayed. When prompted, choose to copy to the clipboard or save to file.



11 After a screen capture, click on the pen icon on DuckCapture's preview window to access its annotation options. Note that a menu appears when you've drawn something, which lets you alter colours, font size, and so on. 

Add a second screen



Sometimes you won't have enough screen real-estate on your laptop to work productively. Bob Shelmerdine explains how to connect a second screen

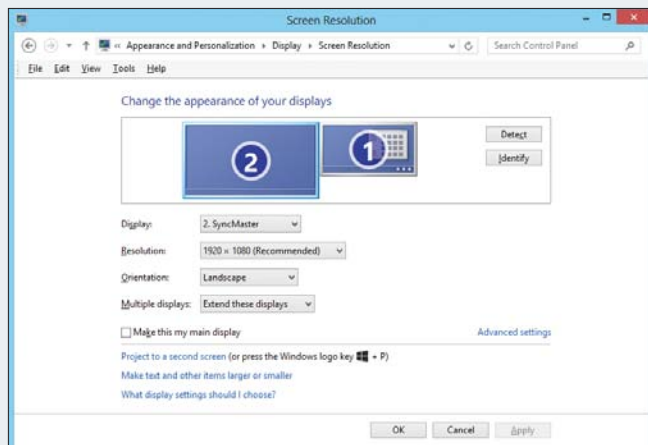
Your laptop is great when you're on the move, but when you get back to base it's a big advantage to hook up a larger, second display. With two screens, you can either have the same image on both, using the second screen because it's larger, or you can extend your desktop on to the other display and have different programs or windows on each monitor.

Virtually all laptops have some sort of output for a second monitor. Normally there's VGA or HDMI, but if not, you can use a USB graphics adaptor. Most TVs and projectors have an HDMI input, while older models might have VGA. You'll need a VGA or HDMI cable and second monitor, projector or TV to proceed.

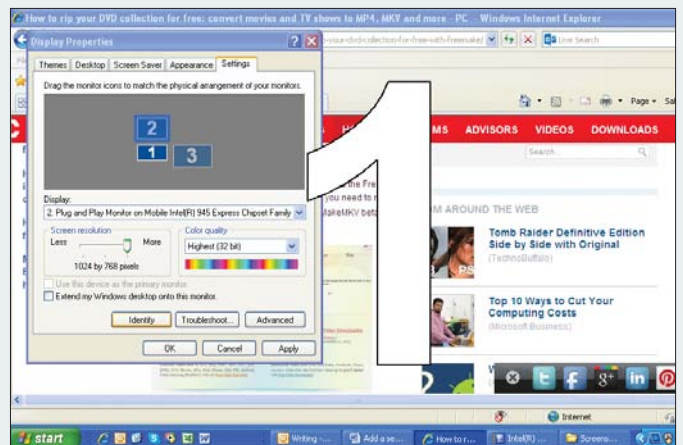


START

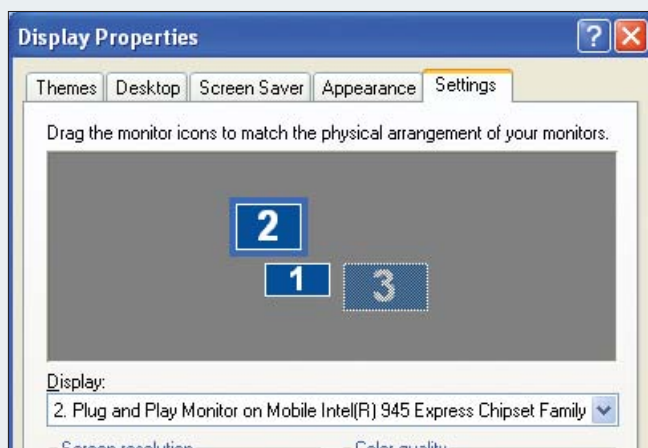
For a VGA connection, plug the VGA cable into the output on your laptop and to the input on the monitor or TV. If it's a television, you'll need to change the source to 'PC' or 'VGA' using the TV's remote (there's usually an AV or source button).



4 Windows can deal with these settings without any special graphics utility - right-click on the desktop and select 'Screen Resolution'. Again, you can choose to clone or extend the display to the second monitor.



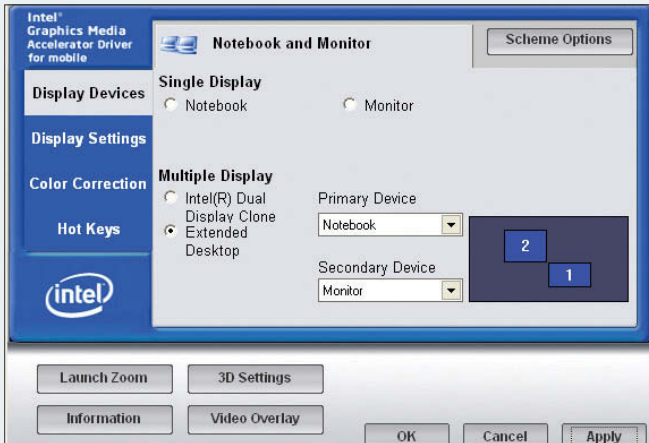
5 Make sure that the resolution is correct on the second screen. In XP, right-click on the desktop and choose 'Properties', then 'Settings'; select 'Personalise' and 'Display Settings' in Vista; while in Windows 7 and 8, click 'Screen Resolution'.



8 From this window, you can enable monitors and drag them to match your home setup. So if, for example, your second display is physically above and to the left of the first, drag the icon for monitor 2 to that position.



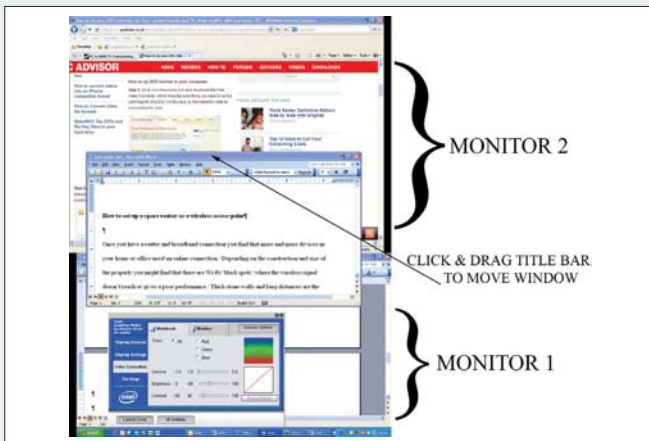
9 If an HDMI cable is connected to a TV, you may need to prevent 'overscan'. This happens when the television fills its display with an incorrect resolution giving fuzzy images. On the TV's setup menu, adjust the picture to 'Screen Fit' or 'Just Scan'.



2 Right-click on the Windows desktop and select 'Screen Resolution'. You might also have a specific utility installed for your graphics card, such as the Intel tool shown here. Choose to clone the display so the same image appears on each monitor.

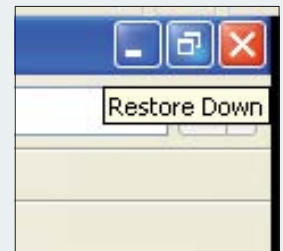


3 If Step 2 doesn't work, hold down the 'Fn' key on your laptop's keyboard and press one of the 'F' keys (usually with a twin-screen icon) to view the different options. Alternatively, hold down the Windows key and press P to toggle through the various modes.



6 You can 'extend' your display, so that you can open windows on two screens. The mouse will then move between them.

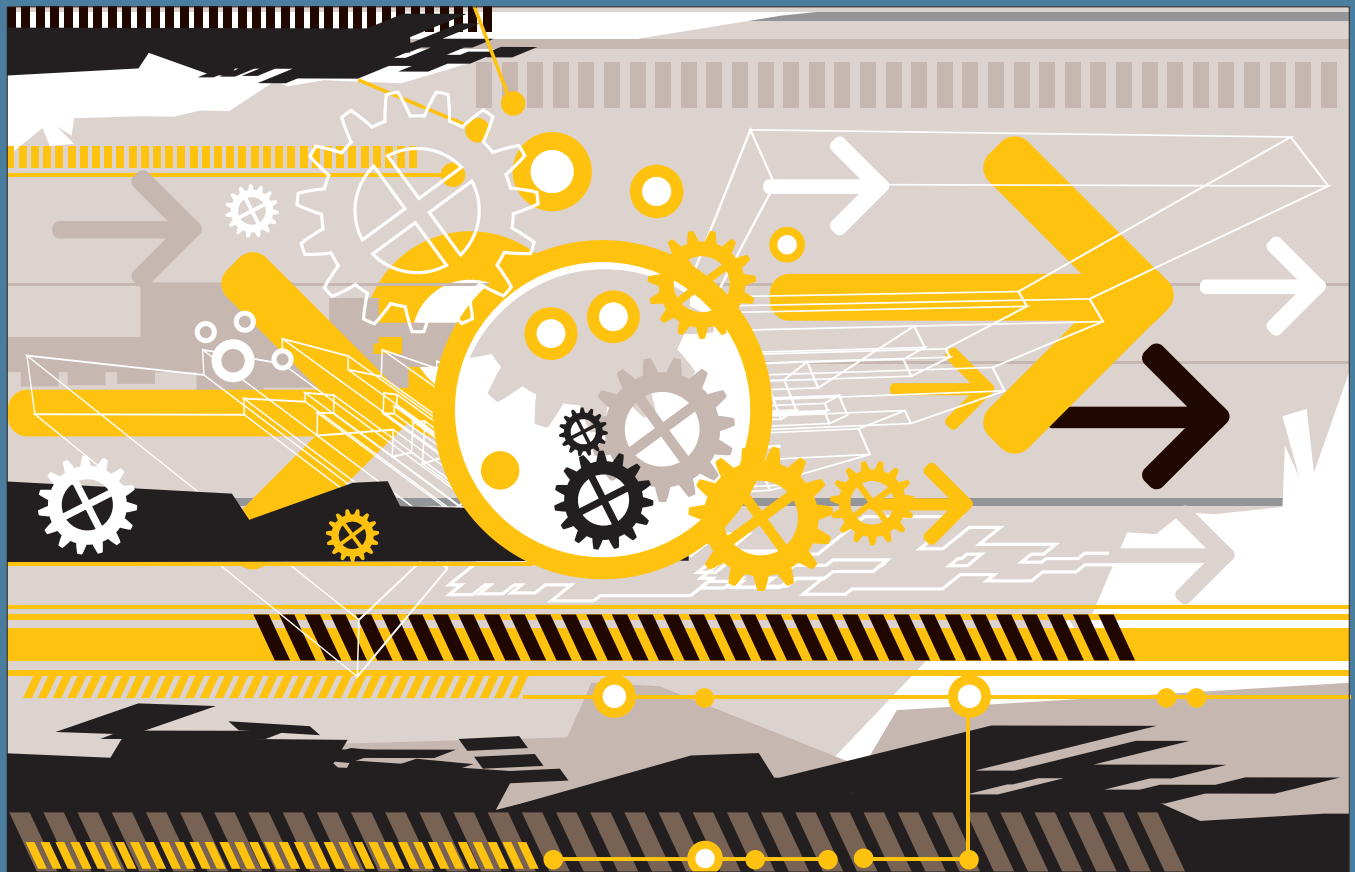
7 If you want to move a window between screens in XP, you'll need to 'Restore Down' that window first. Use the middle button on the right of the title bar. After that drag-and-drop the title bar to any location on either screen.



10 Using a USB VGA adaptor, you can add another monitor to get a three-screen setup. When several windows are open, multiple displays make information much clearer.



11 You can also attach projectors to your laptop using the same VGA or HDMI ports. Whatever you display on your laptop can be projected to drop-down screens and walls. ☒



Move applications to a second hard drive



SSDs are soon filled with programs and files. Moving the contents of the C:\Program Files folder to a hard disk will free up space. Roland Waddilove explains how

The capacity of solid-state drives (SSDs) is growing and the price is falling, but there's still a wide gap between these and traditional hard disk drives (HDDs). A 500GB HDD, for example, costs around £40, while an equivalent SSD will set you back over £200.

You can have your cake and eat it, though. Windows can be installed on a small-capacity SSD and your files stored on a hard drive. Ideally, you need an internal hard drive, but external ones can be used if that's your only option: a USB 3.0 model is almost as fast as an internal one.

Even if you have a 128GB SSD, you'll soon fill it up with applications, iPhone backups, music, photos and video. Many people ask if they can move their C:\Program Files folder to a hard disk drive. After all, this one change will free up lots of space on the SSD. However, we don't recommend this because the folder is hard-wired into Windows and there'll be problems if it isn't where the operating system expects it to be. (It is possible to relocate the whole folder, but it's an in-depth process to do it properly.)

There are two other options; one of which is to install your programs elsewhere. During installation you'll be asked where you want to store the files and C:\Program Files\ is suggested. Select the HDD as the destination, such as D:\Programs\. For programs that are already installed on the SSD, it's possible to move their subfolders which are stored within C:\Program Files.

Don't forget, though, an SSD is used not just to speed up Windows, but also software. If you move programs to a hard drive, then you'll lose the speed benefit.

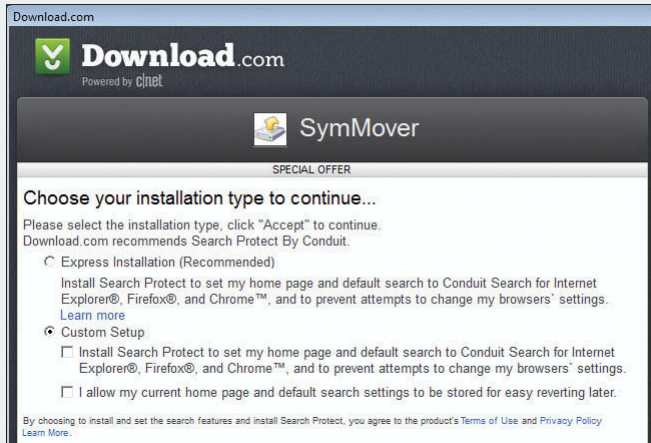
Open an Explorer window and then open C:\Program Files. You'll see that each application is stored in a separate folder. Identify the ones you use least often. Moving them to a hard drive will then have the least impact on system speed. Keep your most used software on the SSD, so that it loads and runs quickly whenever you need it.

You can't simply drag program folders to a different drive, though. What you must do is to create what's called a 'symbolic' link. It's a bit like the shortcuts to programs, folders and websites that litter the desktop, but they are more powerful.

To free up space on the SSD, you can copy a subfolder of C:\Program Files containing an application to another disk drive and then replace the subfolder with a symbolic link. When Windows or any program tries to access the folder, the symbolic link redirects it to the new location. It's transparent to software and Windows.

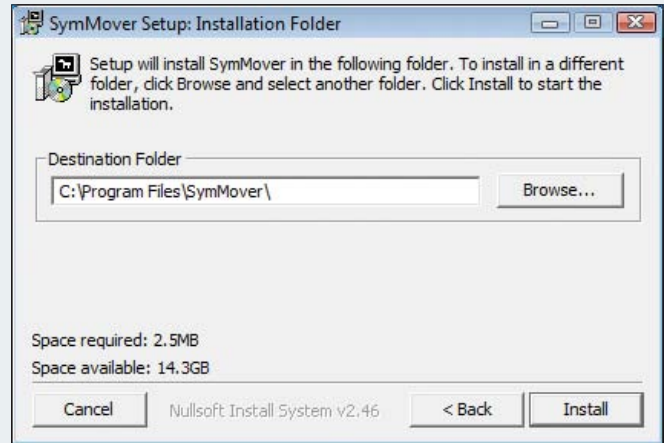
Symbolic links can be created manually and there is a command line tool called 'mklink'. Expert users can open a command prompt window and enter mklink to see the options. There's no need to resort to complicated commands, though, and there's a simple and free utility that does everything for you. Go to mobasoftware.com and download SymMover.

There are separate Program Files folders for 32- and 64-bit programs on 64-bit Windows, so you'll need to move subfolders from both if you have them. This technique also works if your PC has two hard disk drives and you need to free up space on C:.



START

Go to mobasoftware.com and download SymMover. Note that it comes from Download.com, and when you run the file it will try and get you to install things you don't want. Select Custom Setup and decline all the extras.



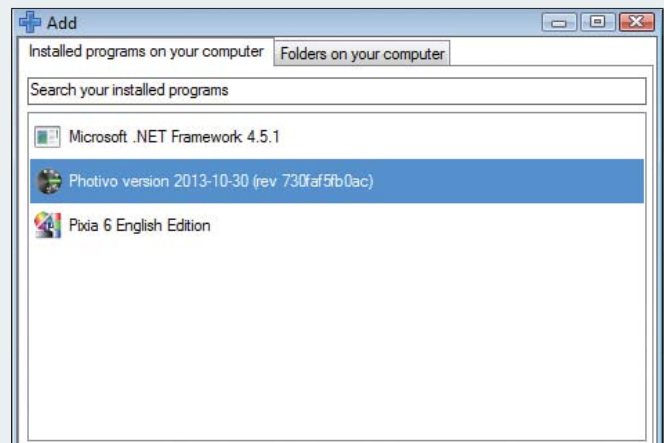
2

When you install any software, it will always ask where you want to store it. SymMover can be stored on your hard disk drive instead of the SSD if you want. Click the Browse button and select the drive and folder.



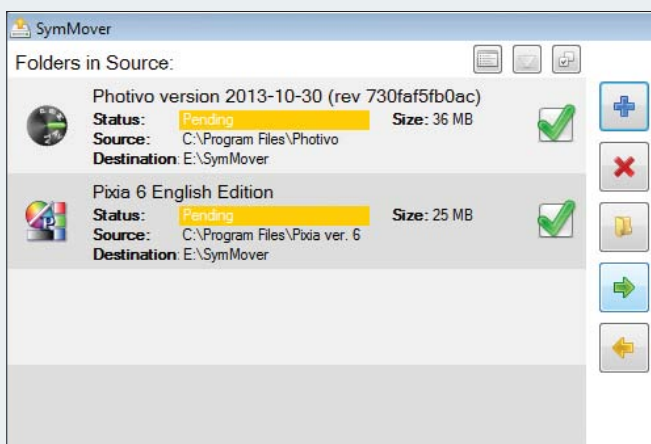
3

When installation is complete, run SymMover from the Start menu or Start screen. It has two halves, divided by a column of icons. Choose the source folders and the destination.



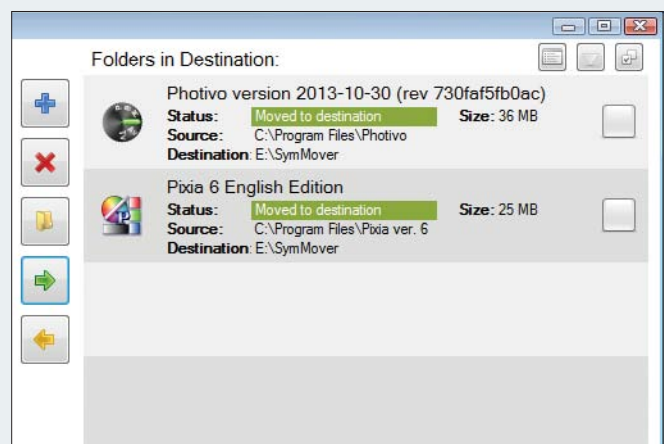
4

Set the destination folder at the bottom - in this example it's E:\SymMover - click the '+' button, select a program and click Add Folder. If a program isn't listed, click 'Folders on your computer' and select its folder in C:\Program Files.



5

Repeat the last step for each of the folders you want to move from the SSD to the hard disk. The left-hand side of SymMover will fill up with the folders you want to move. Make sure that they are all ticked.



6

Click the green arrow in the toolbar in the middle and SymMover will copy the source folders to the destination and replace them with symbolic links. Quit and restart Windows afterwards. The programs will now run from the hard drive. ☑

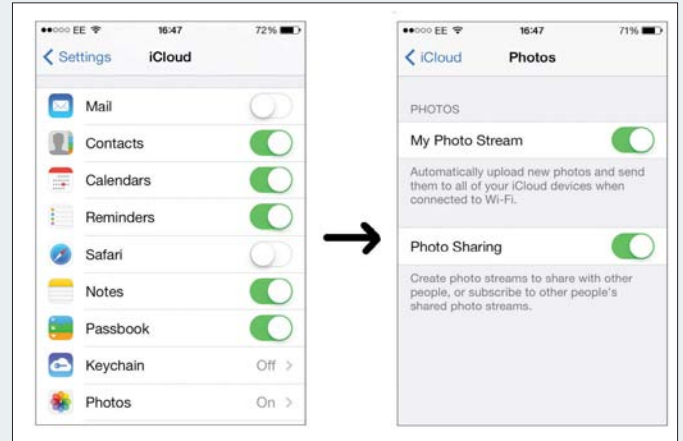
Share iOS photos



Taken some photos that you'd like to share with friends and family? Cliff Joseph explains how to use the new Shared Streams feature in iCloud

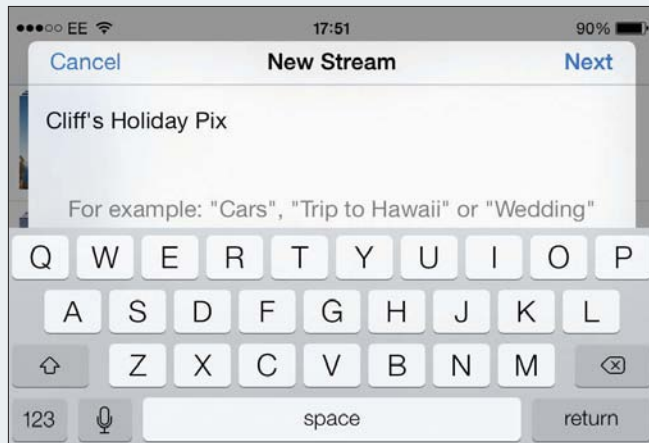
If you've got an Apple iOS device, then you've probably come across the built-in iCloud option and its photo-sharing feature - My Photo Stream. This works well, though, it has certain limitations. For example, you can only share photos with devices that are linked to your personal iCloud account.

However, Apple recently updated iCloud with a new Shared Streams option that, as the name implies, lets you share your photos with other people. Also, unlike Shared Photo Streams before it, Shared Streams now allows you to share videos, too. Setting up the sharing options can be a little confusing, though, so here's how to master it.



START

First, make sure iCloud is set up. Open the Settings menu on your iOS device and select iCloud. There are several options for sharing different types of data, so select Photos and turn on both My Photo Stream and the new Photo Sharing option.



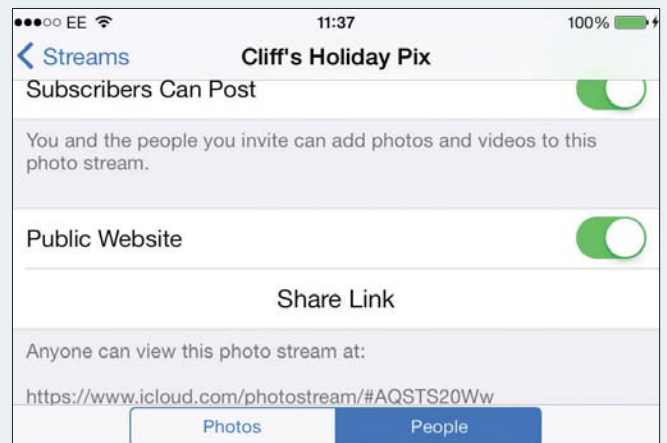
4 Tap 'Create New Stream' and you'll be prompted to give the stream a name. Always use one that will make sense to people when they receive your invitation. You'll then be prompted to invite people by entering their email addresses.



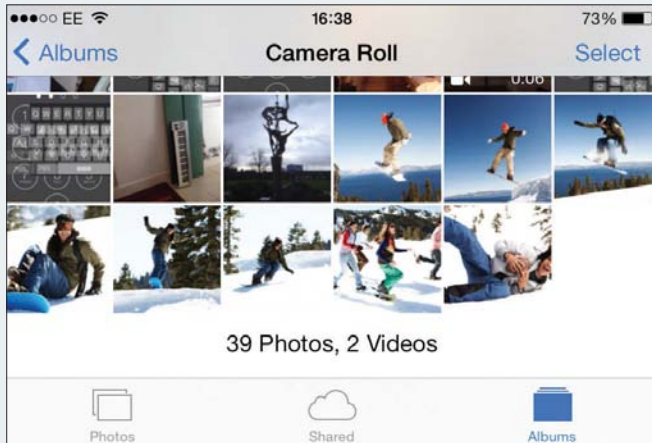
5 You can use the contact info stored on your iPhone or iPad to invite people to share your photo stream. An invitation will then be sent to each person via email. What happens next depends on whether they have iCloud accounts set up on their iOS devices or PC.



8 Jim can now see all my shared photos and videos in the iCloud Photos folder on his computer, and add his own photos and videos to the stream, too. If he has iCloud set up on his iPad, he can see the photo stream on that, too.



9 Not everyone will have an iCloud account, so there's also an option to 'publish' your photo stream as a public web site on icloud.com. Click the People button and turn on Public Website to activate this option, and tap Share Link to send out more invitations.



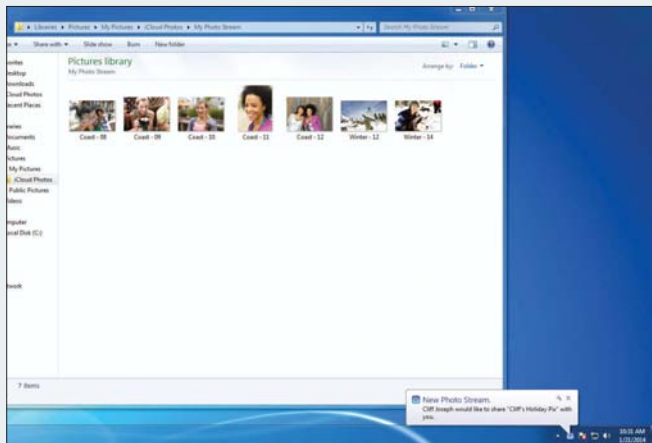
2 The photos in your iOS device's Camera Roll will now automatically copy across to your computer. And since you've also activated Photo Sharing, you'll see a Shared button.

iCloud Photo Sharing

Share photos and videos with just the people you choose, and let them add photos, videos, and comments.

Create New Stream

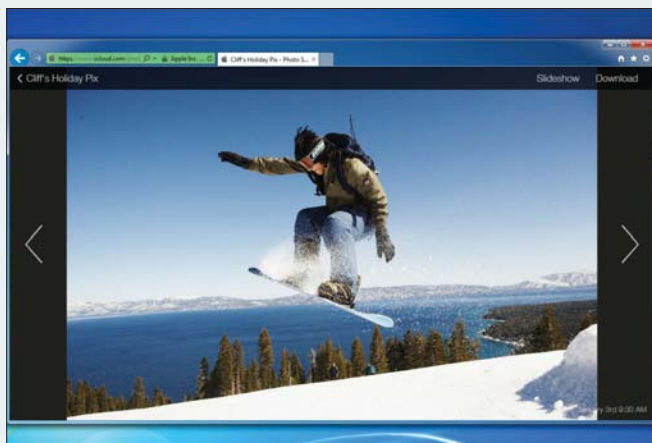
3 Tap the Shared button and you'll see this window, which gives you the option of creating a new 'stream' that you can share. If you're running iOS 6, you can only share photos, but upgrading to iOS 7 lets you include videos in your shared streams, too.



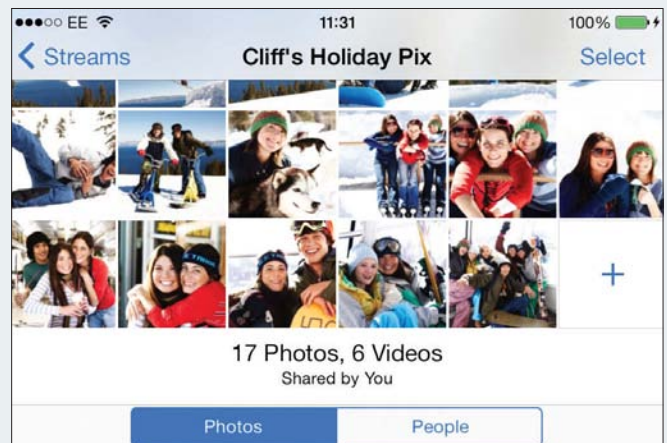
6 Jim owns an iPad and already has iCloud set up on his PC - and you can see his own iCloud photos folder in the Windows Explorer here. He'll see this invitation automatically popping up from the iCloud icon in the Taskbar, and can click the invitation to accept it.



7 Once you've invited one or more people, you'll be prompted to add photos and videos to the stream. Unlike My Photo Stream - which automatically syncs all your photos - a shared stream requires you to tap and select each photo you want to include.



10 Anyone with an internet connection and a web browser can view your shared stream on the iCloud website. They can't add their own photos and videos without having an iCloud account of their own, but they can download files that they want to keep.



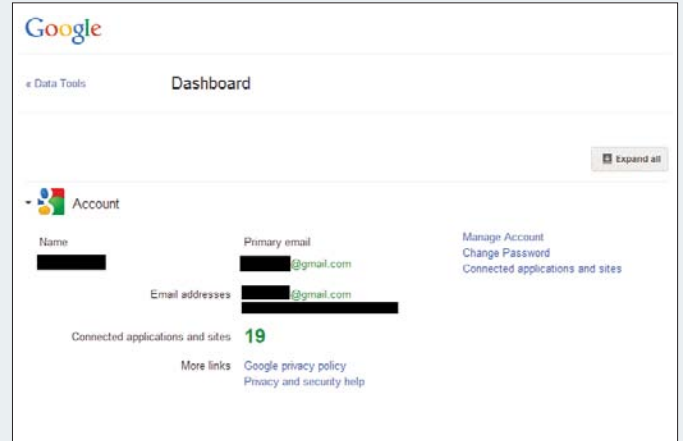
11 Back on your iPhone, you can view the contents of your Shared Stream and add or delete photos and videos whenever you want. Tapping the People button lets you send more invitations, remove people, and publish or delete your public website. ☑

Hide from Google



If you're worried about having your personal data tracked, Edward Jones reveals how to hide from Google and anyone else keen on collecting it

Imagine if every time you went out a stranger followed you and noted down where you live, who your friends are, the places you shop and the things you buy. Then imagine they shared that information with individuals you didn't know, who began offering you goods and services. You'd be disturbed. Yet this is what we let Google do. Many of us knowingly trade this information in exchange for its free services. Don't get us wrong, Google hasn't tried to hide this fact: it makes everything abundantly clear in its privacy policy. The problem is, who has ever read it? Here we show you how to begin protecting the data you don't want Google to collect and share.

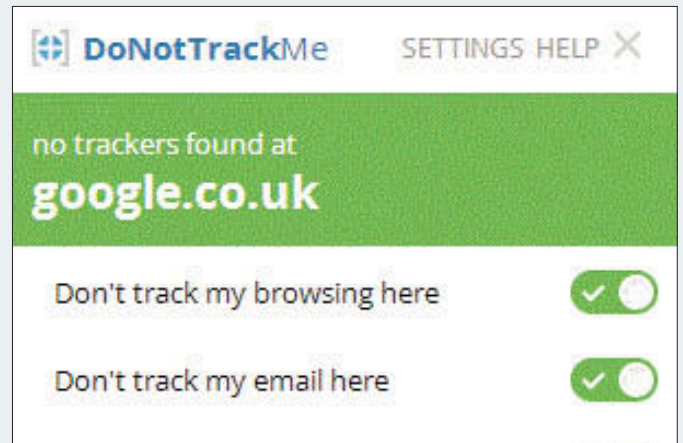


START

If you want to use services such as YouTube, but want to control the data they can see, go to google.com/dashboard. Here you can access all the services associated with your Google profile and change the privacy settings.

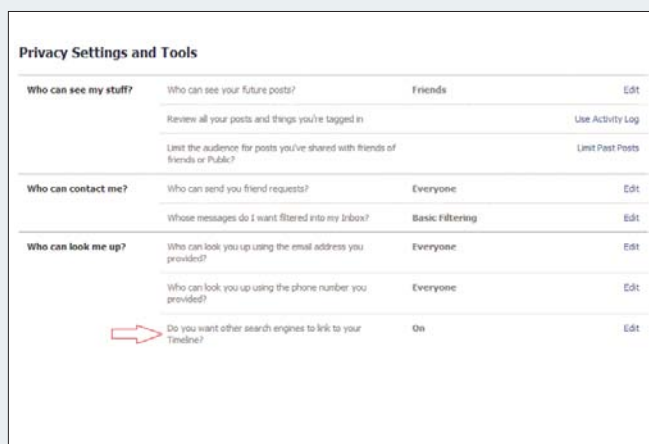


4 Another level of anonymity can be provided by setting up a personal Virtual Private Network (VPN). Available from less than £5 per month, a VPN will provide anonymous Google browsing and protect you from hackers, providing a wall of strong encryption.



5

DoNotTrackMe is a handy Chrome plug-in that prevents online tracking from over 600 web trackers including Google Analytics, Facebook and Twitter. It can be downloaded for free from the Chrome Web Store.

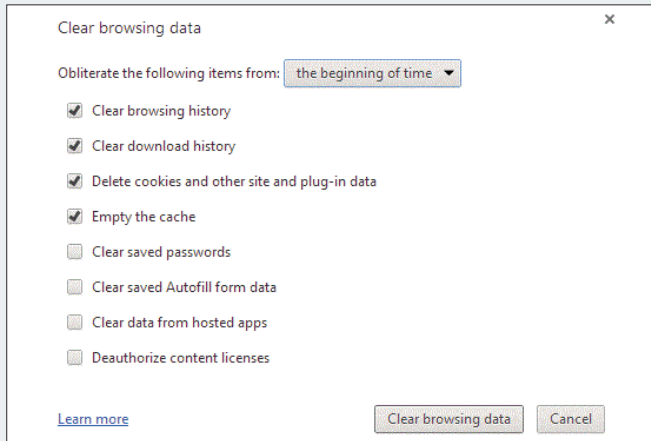


8 The act of creating a social media profile means you're willing to share some personal information. It is, however, possible to limit this. In Facebook, for example, in 'Who can look me up', edit the 'Do you want other search engines to link your timeline' option.

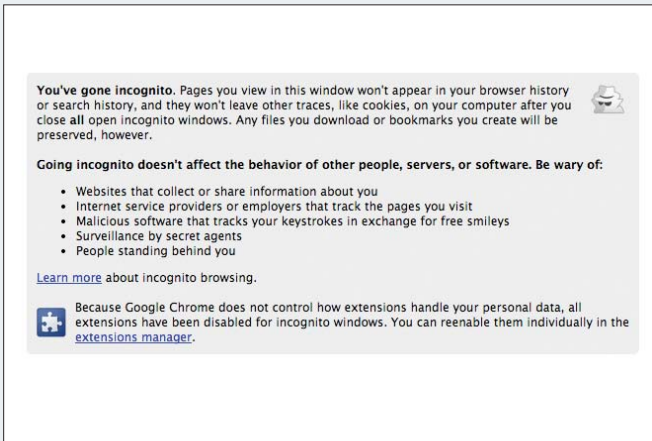


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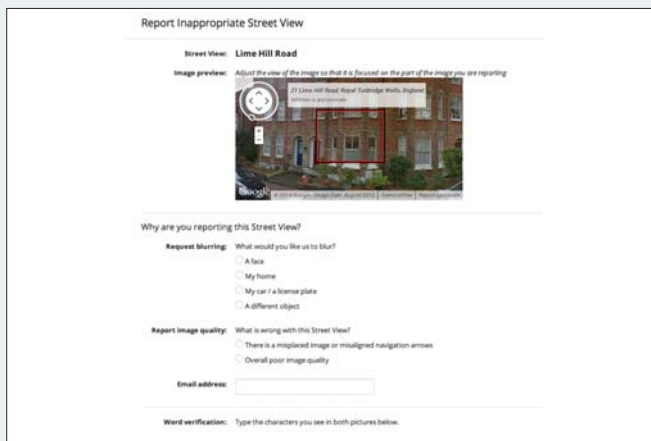
If you're using Chrome, resist the urge to use your Google login. Yes, you'll be able to access all your bookmarks on other devices and save your passwords, but it also allows Google to track every single one of your actions.



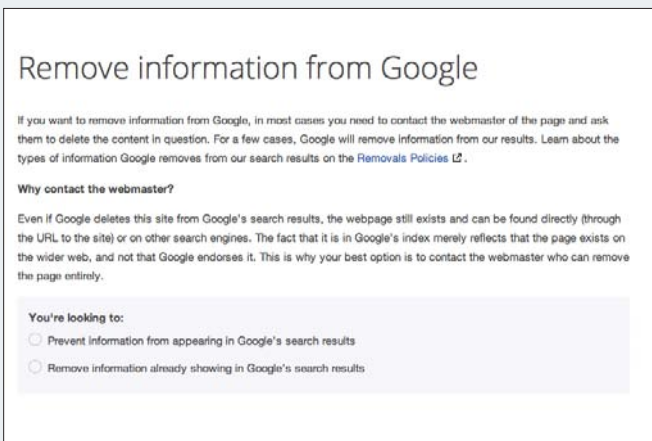
2 If you're using default web browser settings, then your PC will probably be full of cookies. These are used by Google (and many other websites) as a unique identifier for your PC, collecting data on you and allowing ads to follow you round the internet.



3 Major web browsers offer secure browsing to protect your privacy. Activating this function will prevent cookies being downloaded to your computer. In Chrome, you'll need to press Ctrl-Shift-N, while in Firefox and Internet Explorer press Ctrl-Shift-P.



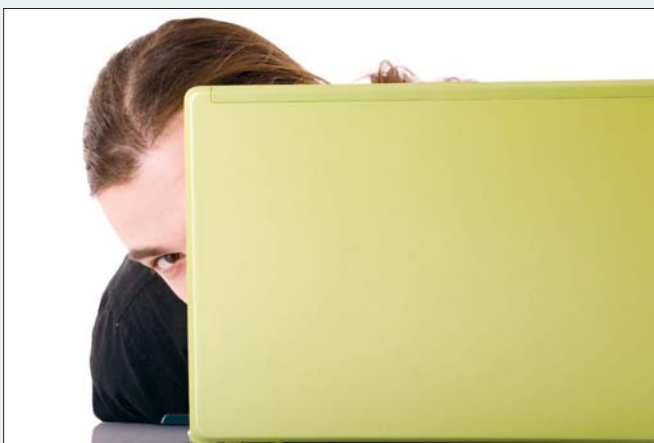
6 To remove your house from Street View, go to Google Maps and enter your postcode. Click the Street View icon and then find your home. Click the 'Report a Problem' link in the bottom-right corner, complete the form and then click the Submit button.



7 If you find personal details on Google, you can request a removal by going to tinyurl.com/k2e295o. Unfortunately, Google's Removal Policies suggest that unless it's sensitive financial information or offensive images, you're on your own.



10 This may be obvious, but no-one is forcing you to use Google. Quite apart from the tracking, it also tailors the results so your list of results based on what it knows about you. If this is a concern, use a non-profiling engine such as duckduckgo.com.



11 Finally, if you don't want personal information about you on the web, don't put it there in the first place. ☒

The Cover disc is free with print issues of PC Advisor magazine, available in all good newsagents

LETITIA
AUSTIN



**ONLINE
REGISTRATION
REQUIRED**

UpdateStar Premium Edition 10

FULL PROGRAM (SIX MONTHS OF UPDATES) AVAILABLE ONLY ON THE DISC+

Installation details

Go to My Computer. Right-click the disc icon and open the disc. Select Files (226) UpdateStar Premium Edition 10 and open the file

Online registration required:

head to tinyurl.com/me7x2r4 before 14 May 2014

System requirements

Windows XP/Vista/7/8; internet connection

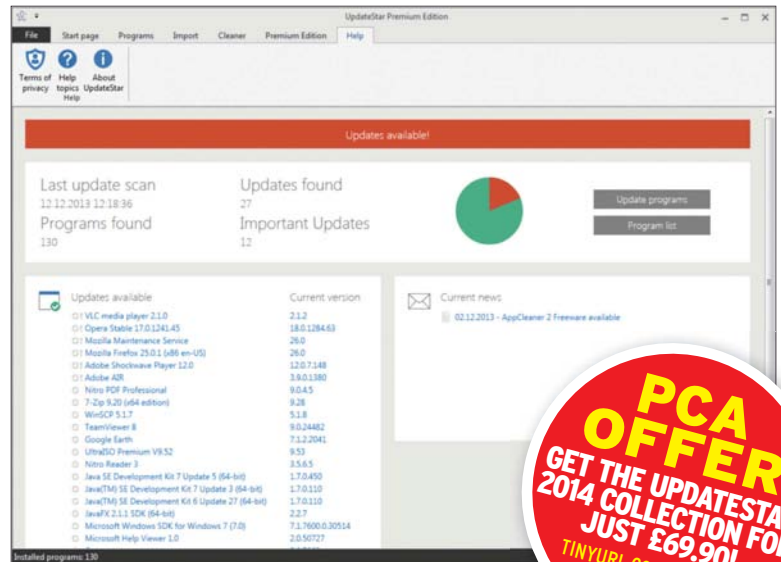
UpdateStar Premium Edition will protect your PC from any vulnerabilities caused by outdated software. You'll receive security levels and alerts, minor- and major upgrades, downloads, and you can even export your individual software profile for backup reasons.

With UpdateStar Premium, you'll always have the most up-to-date software, maximising your everyday user experience. UpdateStar covers all your freeware, shareware, demos and commercial software, and includes special offers. Old software can lead to problems and system crashes, and even leave you vulnerable to attacks from outside. UpdateStar puts a stop to all that. As soon as a new version is available, UpdateStar lets you know, so you can immediately download it.

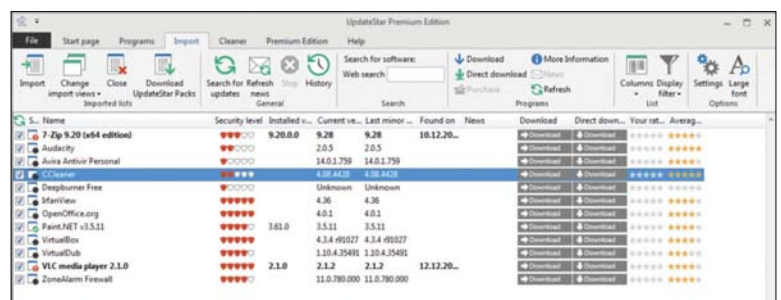
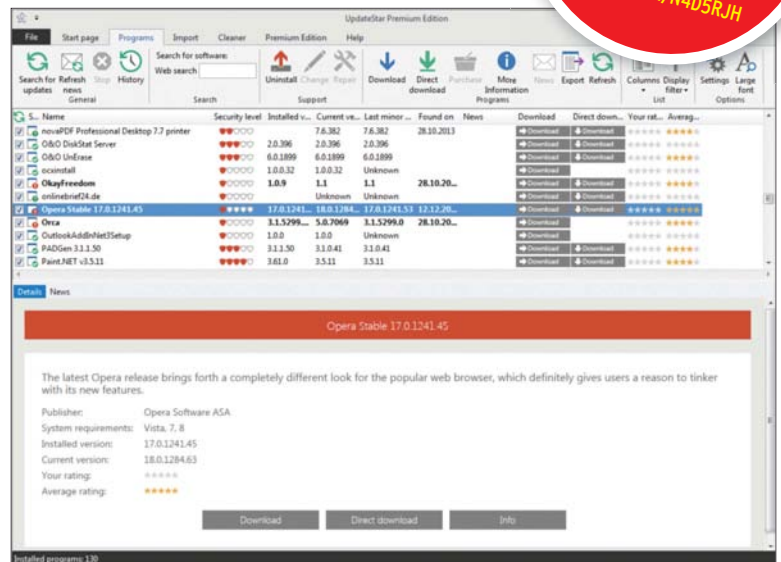
The Premium Edition delivers 20 times as many updates and upgrades as the Freeware Edition. So don't miss out on all your updates and save yourself the time searching for available updates of your personal software.

Key features

- One-stop site for the latest software updates
- Works in addition to the Windows Update Service
- Reduces a computer's vulnerability level caused by outdated software
- Personalised updates
- Security levels and alerts for optimal vulnerability protection
- Minor and major upgrades - complete update information
- Exports of software setup (for backups of your setup) ☒



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ONLINE
REGISTRATION
REQUIRED

east-tec Eraser 2014

FULL PROGRAM (THREE-MONTH LICENCE) AVAILABLE ONLY ON THE DISC+

Installation details

Go to My Computer. Right-click the disc icon and open the disc. Select Files 226\ east-tec Eraser 2014 and open the file

Online registration

required: head to tinyurl.com/ofvok2o and follow the prompts before 14 May 2014

System requirements

300MHz processor; Windows Server 2003/ 2008/XP/Vista/7/8; 256MB RAM; 50MB storage

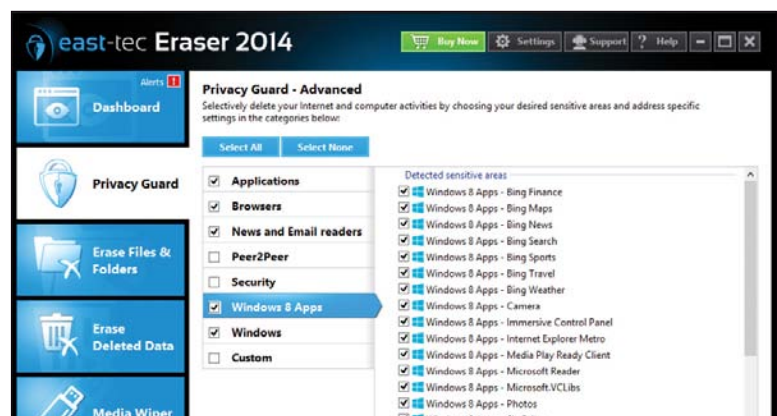
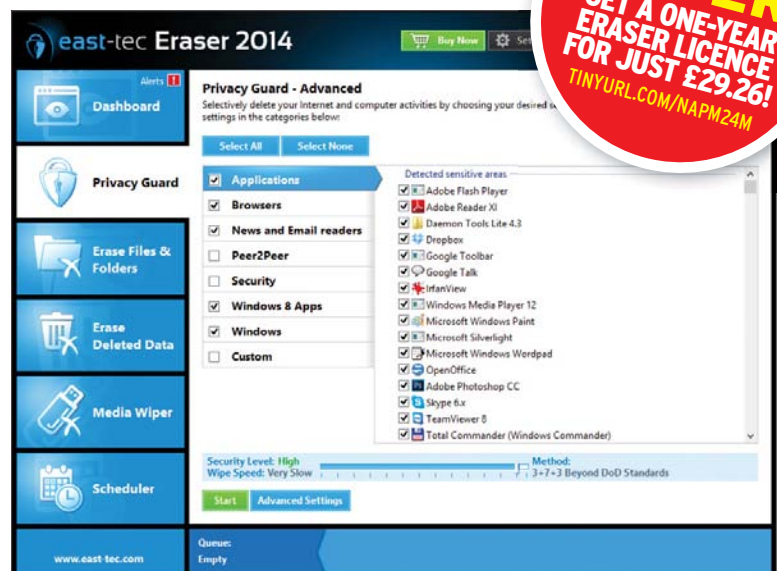
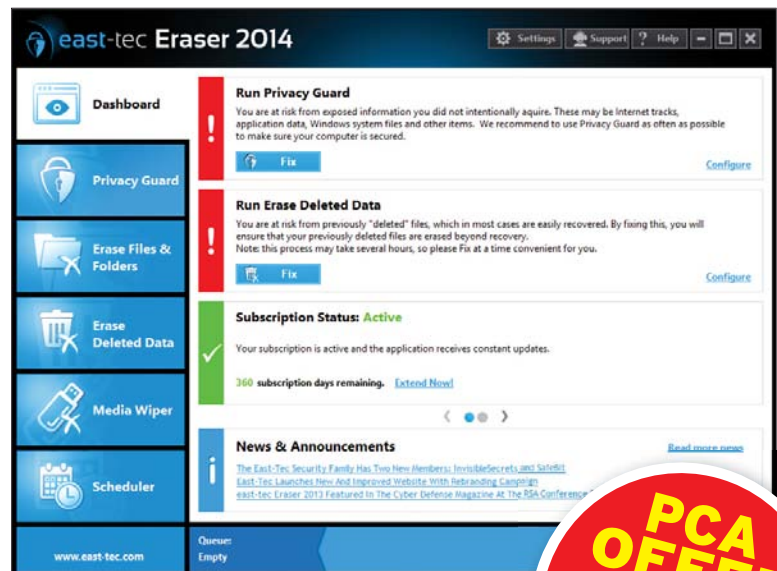
east-tec Eraser 2014 is a privacy-protection program that guarantees permanent removal of all traces of your online and PC activity.

The redesigned interface is clean, logical and intuitive, catering for both novice- and power users. To make wiping data a simple procedure, the software first scans your computer for privacy issues. The Dashboard then displays the result of the scan, and the default wipe eliminates the compromising traces, all with a single click.

The software supports the most popular browsers and more than 250 popular applications. Its default wipe does a thorough cleanup by removing sensitive traces from all major areas, including browser data, clues of which applications have been used and Windows traces. You can add custom areas, or fine-tune the erasing process by, for instance, changing the wipe method. Eraser lets you individually apply advanced settings to each erasure mode.

east-tec Eraser 2014 also lets you permanently remove selected files and folders, whether they are on the PC or removable media. Files to be erased can be dragged-and-dropped or selected from Windows Explorer. The 14 industry- and government-standard erasure methods let you select the speed/security level you need for each scenario. For those looking for general security, the strong, default wipe guarantees carefree PC and internet usage.

This release boasts a handy job queue option and Scheduler for efficient time management. ☒



Ashampoo HDD Control 2

FULL PROGRAM

ONLINE
REGISTRATION
REQUIRED

Installation details

Go to My Computer. Right-click the disc icon and open the disc. Select Files 226\Ashampoo HDD Control 2 and open the file

Online registration required: follow the links during installation before 14 May 2014

System requirements

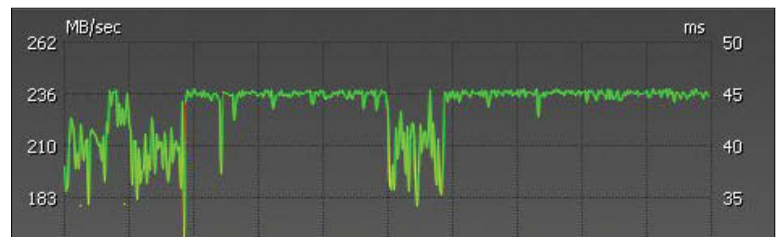
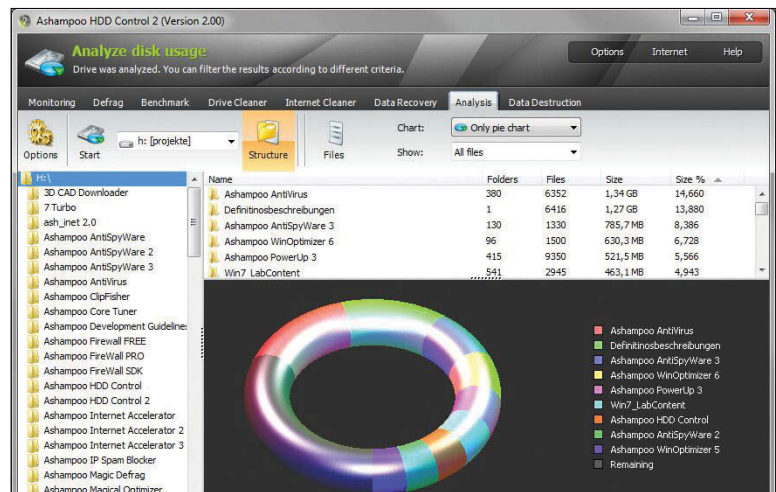
Windows XP/Vista/7/8;
2GB RAM; 512MB storage

The hard drive is one of the most important components of your computer. Even if it works flawlessly, it should still be regularly checked and maintained. This way an imminent hard drive failure can be detected early and might even be prevented. If suddenly major problems occur or if your hard drive completely fails, data loss might be the result.

Ashampoo HDD Control 2 can notify you early, so that your valuable data won't become the victim of a hardware crash. The SMART self-test or adjust the noise level and power management of your hard drive(s) (if supported). Furthermore, you can restore accidentally deleted files and folders with Ashampoo HDD Control 2. Get to know the all-rounder for monitoring, maintenance and defragmentation, and check the health status and performance of your hard drive(s) today.

Key features

- Constant monitoring of your hard drive(s)
- Extended user interface with extensive hints and information on the health, performance and temperature of hard drive(s)
- Significantly extended support for USB hard drives and SSDs
- Support of SMART self-test
- Adjustment of the noise level and power management of your hard drive(s) (if supported)
- Data recovery
- Fully automatic proactive defragmentation of the hard drive(s)
- Online retrieval of achieved benchmark results of your hard drive model(s) [x](#)



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Ultraportable laptops



Sub-£500 laptops



£1,001+ laptops



Tablets



Smartphones



All-in-one PCs



Business PCs



Family PCs



Blu-ray drives



Wireless routers



Printers



Projectors



Solid-state drives



Graphics cards



Flat-panel displays

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Prices

Laptops

Laptops up to £500
£501 to £1,000
£1,001 and over

Printers

Printers under £150
£151 and over

Graphics cards

Graphics cards under £150
£151 and over

Flat-panels

Flat-panels under £200
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Ultraportable laptops	 1 PC ADVISOR GOLD	 2 PC ADVISOR GOLD	 3	 4	 5 PC ADVISOR RECOMMENDED
	Apple MacBook Pro 13in Retina	Apple MacBook Air 13in	Apple MacBook Air 11in	HP EliteBook 840 G1	Dell XPS 12
Price	£1,499 inc VAT	£949 inc VAT	£849 inc VAT	£1,344 inc VAT	£1,170 inc VAT
Website	Apple.com/uk	Apple.com/uk	Apple.com/uk	Hp.com/uk	Dell.co.uk
Launch date	Feb 14	Sep 13	Nov 13	Apr 14	Jan 14
Build rating	★★★★★★	★★★★★	★★★★★	★★★★★★	★★★★★
Features rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Value rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	2.6GHz Intel Core i5	1.3GHz Intel Core i5-4250U	1.3GHz Intel Core i3-5250U	2.1GHz Intel Core i7-4600U	1.8GHz Intel Core i7-4500U
RAM	8GB DDR3L	4GB DDR3L	4GB LPDDR3	8GB DDR3	8GB DDR3L
Storage	512GB SSD	128GB SSD	128GB SSD	500GB HDD	256GB SSD
Screen size	13.3in glossy (anti-glare)	13.3in glossy (anti-glare)	11.6in glossy (anti-glare)	14in matt	12.5in glossy touchscreen
Screen resolution	2560x1600	1440x900	1366x768	1920x1080	1920x1080
Graphics	Intel Iris Graphics	Intel HD Graphics 5000	Intel HD Graphics 5000	AMD Radeon HD 8750M	Intel HD Graphics 4400
Video memory	N/A	N/A	N/A	1GB	N/A
Wireless	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n/ac	802.11b/g/n	802.11b/g/n
Ethernet	Optional	Optional	Optional	Gigabit	None
Bluetooth	✓	✓	✓	✓	✓
USB	2x USB 3.0	2x USB 3.0	2x USB 3.0	4x USB 3.0	2x USB 3.0
FireWire	x	x	x	x	x
Thunderbolt	✓	✓	✓	x	x
DisplayPort	x	✓	✓	✓	✓
HDMI	✓	x	x	x	x
DVI	x	x	x	x	x
VGA	x	x	x	✓	x
eSATA	x	x	x	x	x
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	N/A	N/A	N/A	N/A	N/A
Extras	HD webcam, multitouch trackpad, backlit keyboard	HD webcam, multitouch trackpad, backlit keyboard	HD webcam, multitouch trackpad, backlit keyboard	720p webcam	None
Operating system	Mac OS X 10.9 Mavericks	Mac OS X 10.9 Mavericks	Mac OS X 10.9 Mavericks	Windows 7 Pro 64bit	Windows 8 64-bit
Bundled software	iLife 11	iLife 11	iLife 11	None	None
Fear (Max detail)	Not tested	Not tested	Not tested	38fps (1080p)	27fps
Battery	71.8Wh lithium-polymer	54Wh lithium-polymer	38Wh lithium-polymer	50Wh lithium-ion	Not stated
Battery life	9 hrs 55 mins	12 hrs 57 mins	8 hrs 56 mins	6 hrs 25 mins	6 hrs 45 mins
PC Mark 7 score	Not tested	4602	4080	3100	5205
Dimensions	314x219x18mm	325x227x4-17.5mm	300x192x17mm	339x237x21mm	317x215x20mm
Weight	1.57kg	1.35kg	1.08kg	1.58kg	1.52kg
Warranty	1-year return-to-base	1-year return-to-base	1-year return-to-base	3-year return-to-base	1-year enhanced
FULL REVIEW	TINYURL.COM/M3TNC29	TINYURL.COM/KNXWZ3	TINYURL.COM/K64ZPKB	TINYURL.COM/L8HP79T	TINYURL.COM/QBAWKLK

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Sub-£500 laptops	1	2	3	4	5
	Toshiba Satellite M50-A-11Q	Compaq CQ58-300sa	Lenovo G505s	Packard Bell EasyNote TE11	Acer Aspire V5-122P
Price	£449 inc VAT	£250 inc VAT	£400 inc VAT	£329 inc VAT	£330 inc VAT
Website	Toshiba.co.uk	Saveonlaptops.co.uk	Lenovo.com/uk	Packardbell.co.uk	Acer.co.uk
Launch date	Feb 14	Nov 13	Nov 13	Mar 14	Apr 14
Build rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Features rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Value rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Overall rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Processor	1.7GHz Intel Core i3-4005U	1.4GHz AMD E1-1200	2.8GHz AMD A8-4500M	1.7GHz Intel Celeron B820	1GHz AMD A6-1450
RAM	8GB DDR3	2GB DDR3	4GB DDR3	6GB DDR3	4GB DDR3
Storage	1TB HDD	320GB HDD	1TB	500GB HDD	500GB HDD
Screen size	15.6in glossy	15.6in glossy	15.6in glossy	15.6in glossy	11.6in glossy touchscreen
Screen resolution	1366x768	1366x768	1366x768	1366x768	1366x768
Graphics	N/A	AMD Radeon HD 7310	N/A	Intel HD Graphics	AMD Radeon HD 8250
Video memory	N/A	N/A	N/A	N/A	N/A
Wireless	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	Gigabit	10/100	Gigabit	Gigabit	None
Bluetooth	✓	✓	✓	✗	✗
USB	2x USB 3.0, 1x USB 2.0	3x USB 3.0	1x USB 3.0, 2x USB 2.0	3x USB 3.0	1x USB 3.0, 1x USB 2.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✗	✗	✗	✗	✗
DisplayPort	✗	✗	✗	✗	✗
HDMI	✓	✓	✓	✓	✗
DVI	✗	✗	✗	✗	✗
VGA	✓	✓	✓	✓	✓
eSATA	✗	✗	✗	✗	✗
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	None	8x DVD ± RW	8x DVD ± RW	8x DVD ± RW	None
Extras	Webcam	Webcam	Webcam	Webcam	Webcam
Operating system	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit
Bundled software	None	None	CyberLink PowerDVD	None	none
Battery	4400mAh lithium-ion	47Wh lithium-ion	41Wh lithium-ion	48Wh lithium-ion	2640mAh lithium-ion
Battery life	7 hrs	4 hrs 45 mins	3 hrs	3 hrs 26 mins	3 hrs 35 mins
PC Mark 7 score	2511	1094	2700	1989	1300
Stalker (Low/High)	30fps (720p)	9fps (720p)	N/A	17fps (720p)	14fps (720p)
Dimensions	378x250x21mm	376x247x33mm	380x260x26mm	383x252x32mm	289x206x20mm
Weight	2.2kg	2.3kg	2.4kg	2.5kg	1.4kg
Warranty	1-year return-to-base	1-year return-to-base	1-year return-to-base	1-year return-to-base	1-year return-to-base
FULL REVIEW	TINYURL.COM/OTK6UZD	TINYURL.COM/MT67W8X	TINYURL.COM/QBAWKLC	TINYURL.COM/AL6DLAA	TINYURL.COM/NKD2TAJ



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£501-£1,000 laptops	1	2	3	4	5
	Chillblast Defiant Mini 13	Dell Latitude 3440	Scan 3XS LG155	PC Specialist Optimus V	Asus V550CA
Price	£899 inc VAT	£545 inc VAT	£909 inc VAT	£879 inc VAT	£570 inc VAT
Website	Chillblast.com	Dell.co.uk	3xs.scan.co.uk	Pcspecialist.co.uk	Asus.com/uk
Launch date	Feb 14	Mar 14	Oct 13	Dec 13	Mar 14
Build rating	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆
Features rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Value rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	3.4GHz Intel Core i7-4700MQ	1.6GHz Intel Core i5-4200U	2.4GHz Intel Core i7-4700MQ	2.4GHz Intel Core i7-4700MQ	1.8GHz Intel Core i5-3337U
RAM	8GB DDR3	4GB DDR3	8GB DDR3	8GB DDR3	6GB DDR3
Storage	1TB HDD	500GB HDD	1TB HDD hybrid	1TB hard drive + 120GB SSD	1TB HDD
Screen size	13.3in matt	14in matt	15.6in	17.3in	15.6in glossy touchscreen
Screen resolution	1920x1080	1366x768	1920x1080	1920x1080	1366x768
Graphics	GTX 765M/Intel HD 4600	Intel HD 4400	GTX 765M/Intel HD 4600	GTX 765M/Intel HD 4600	Intel HD 4000
Video memory	2GB	N/A	2GB	2GB	N/A
Wireless	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✓	✓	✓
USB	3x USB 3.0, 1x USB 2.0	2x USB 3.0, 1x USB 2.0	2x USB 3.0, 2x USB 2.0	3x USB 3.0, 1x USB 2.0	1x USB 3.0, 2x USB 2.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✗	✗	✗	✗	✗
DisplayPort	✗	✗	✗	✗	✗
HDMI	✓	✗	✓	✓	✓
DVI	✗	✗	✗	✗	✗
VGA	✓	✓	✓	✓	✓
eSATA	✗	✗	✓	✓	✗
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	N/A	8x DVD±RW	8x DVD±RW	6x BD-ROM	8x DVD±RW
Extras	Webcam	Webcam	Webcam	Webcam	Webcam
Operating system	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit
Bundled software	None	None	None	None	Asus utilities
Stalker (720p/1080p)	150/90fps	24fps	68/62fps	Not tested	22fps
Battery	62Wh lithium-ion	40Wh lithium-ion	77Wh lithium-ion	76.9Wh lithium-ion	44Wh lithium-ion
Battery life	4 hrs	5 hrs 50 mins	4 hrs	3 hrs 29 mins	3 hrs 25 mins
PCMark 7 score	4720	2699	4700	6099	2463
Dimensions	330x227x35mm	346x245x25mm	374x250x43mm	413x278x44mm	380x266x22mm
Weight	2.1kg	2kg	2.7kg	3.2kg	2.6kg
Warranty	1-year return-to-base	1-year business	2-year return-to-base	3-year return-to-base	1-year return-to-base
FULL REVIEW	TINYURL.COM/PBZPA65	TINYURL.COM/KQGO23P	TINYURL.COM/KYSYQ6K	TINYURL.COM/Q5QRFJ2	TINYURL.COM/NQALWLF

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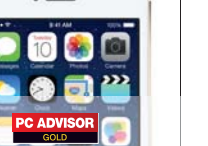
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	Apple 15in MacBook Pro Retina	Toshiba Qosmio X70-A	Chillblast Messiah 17 GTX780M	MSI GS70 Stealth	Schenker XMG C703
Price	£1,699 inc VAT	£1,699 inc VAT	£1,799 inc VAT	£1,600 inc VAT	£1,253 inc VAT
Website	Apple.com/uk	Toshiba.co.uk	Chillblast.com	Uk.msi.com	Mysn.co.uk
Launch date	Mar 14	Mar 14	Dec 13	Jan 14	Apr 14
Build rating	★★★★★	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Features rating	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆
Value rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	2GHz Intel Core i7-4750HQ	2.4GHz Intel Core i7-4700MQ	2.7GHz Intel Core i7-4800MQ	2.4GHz Intel Core i7-4700HQ	2.4GHz Intel Core i7-4700MQ
RAM	8GB DDR3	16GB DDR3	16GB DDR3	8GB DDR3	8GB DDR3
Storage	256GB SSD	1TB/256GB SSD hybrid	1TB + 250GB SSD	750GB + 2x 128GB SSD	250GB SSD
Screen size	15.4in glossy (anti-glare)	17.3in gloss	17.3in matt	17.3in matt	17.3in matt
Screen resolution	2880x1800	1920x1080	1920x1080	1920x1080	1920x1080
Graphics	Intel Iris Pro	nVidia GeForce GTX 770M	nVidia GeForce GTX 780M	nVidia GeForce GT 765M	nVidia GeForce GTX 765M
Video memory	128MB	3GB	4GB	2GB	2GB
Wireless	802.11a/b/n/ac, MIMO	802.11b/g/n, WiDi	802.11b/g/n, WiDi	802.11b/g/n	802.11b/g/n
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✓	✓	✓
USB	2x USB 3.0	2x USB 3.0, 2x USB 2.0	3x USB 3.0, 1x USB 2.0	4x USB 3.0	4x USB 3.0
FireWire	✓	✗	✗	✗	✗
Thunderbolt	✓	✗	✗	✗	✗
DisplayPort	✓	✗	✓	✓	✓
HDMI	✓	✓	✓	✓	✓
DVI	✗	✗	✗	✗	✗
VGA	✗	✓	✗	✓	✗
eSATA	✗	✗	✓	✗	✓
Media card slot	✓	✓	✓	✓	✓
Audio	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic	Headphone jack, mic
Optical drive	N/A	N/A	BD-RE	N/A	N/A
Extras	Webcam	2Mp webcam	2.1Mp webcam	HD webcam	2Mp webcam
Operating system	OS X Mavericks	Windows 8 64bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit
Bundled software	Apple iLife	None	None	None	None
Stalker (720p/1080p)	62/57fps (Batman)	50/43fps (Batman)	64fps	86fps	96fps (1080p)
Battery	958Wh lithium-polymer	47Wh lithium-ion	77Wh lithium-ion	Lithium-ion	58.8Wh lithium-ion
Battery life	8 hrs 14 mins	3 hrs 5 mins	4 hrs 15 mins	3 hrs 31 mins	3 hrs 35 mins
PCMark7 score	N/A	6164	6316	6060	6181
Dimensions	359x247x18mm	418x273x44mm	412x276x55mm	419x287x22mm	419x287x22mm
Weight	2.02kg	3.4kg	3.9kg	2.6kg	2.68kg
Warranty	1-year return-to-base	1-year European	2-year collect-and-return	2-year warranty	2-year collect-and-return
FULL REVIEW	TINYURL.COM/K3QSD9Y	TINYURL.COM/P5BD3GB	TINYURL.COM/PCJP940	TINYURL.COM/L5YXXVA	TINYURL.COM/LZ9ZXVB






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Tablets					
					
	1	2	3	4	5
	PC ADVISOR GOLD	PC ADVISOR RECOMMENDED	PC ADVISOR GOLD	PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED
	Google Nexus 7 (2013)	Apple iPad Air	Apple iPad mini (1st gen)	Google Nexus 10 by Samsung	Sony Xperia Tablet Z
Price	£199 inc VAT	£399 inc VAT	£249 inc VAT	£319 inc VAT	£339 inc VAT
Website	Play.google.com	Apple.com/uk	Apple.com/uk	Play.google.com	Sony.co.uk
Launch date	Jul 13	Oct 13	Nov 12	Nov 12	May 13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Platform	Android 4.3 Jelly Bean	Apple iOS 7	Apple iOS 7	Android 4.4 KitKat	Android 4.1 Jelly Bean
Screen size/resolution	7in/1280x800	9.7in/2048x1536	7.9in/1024x768	10.1in/2560x1600	10.1in/1920x1200
Storage/media card slot	16GB/none	16GB/none	16GB/none	16GB/none	16GB/microSDXC
Connectivity	802.11b/g/n, Bluetooth 4	802.11a/b/g/n, Bluetooth 4	802.11b/g/n, Bluetooth 4	802.11b/g/n, Bluetooth 4, NFC	802.11a/b/g/n, Bluetooth 4, NFC
Processor	1.5GHz Snapdragon S4 Pro	Apple A7	1GHz Apple A5	1.7GHz Cortex A-15	1.5GHz SnapDragon S4 Pro
RAM	2GB	1GB	512MB	2GB	2GB
Claimed battery life	9 hrs	10 hrs	10 hrs	9 hrs	10 hrs
Cameras (front/rear)	1.2/5Mp	1.2/5Mp	1.2/5Mp	1.9/5Mp	2.2/8.1Mp
Dimensions	114x200x8.7mm	169x240x7.5mm	135x200x7.2mm	178x264x8.9mm	172x266x6.9mm
Weight	299g	469g	308g	603g	495g
Warranty	1 year	1 year	1 year	1 year	1 year
FULL REVIEW	TINYURL.COM/QYUDY5C	TINYURL.COM/LSB84EE	TINYURL.COM/CLJWUVS	TINYURL.COM/ARL2KDG	TINYURL.COM/ODTP6B8

Tablets					
					
	6	7	8	9	10
	PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED		PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED
	Advent Vega Tegra Note 7	LG G Pad 8.3	Lenovo Yoga Tablet 10	Tesco Hudl	Samsung Galaxy Note 10.1
Price	£129 inc VAT	£199 inc VAT	£249 inc VAT	£119 inc VAT	£450 inc VAT
Website	Currys.co.uk	Lg.com/uk	Lenovo.com/uk	Tesco.com	Samsung.com/uk
Launch date	Nov 13	Feb 14	Jan 14	Sep 13	Jan 14
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Platform	Android 4.3 Jelly Bean	Android 4.2 Jelly Bean	Android 4.2 Jelly Bean	Android 4.2 Jelly Bean	Android 4.3 Jelly Bean
Screen size/resolution	7in/1280x800	8.3in/1920x1200	10.1in/1280x800	7in/1440x900	10.1in/2560x1600
Storage/media card slot	16GB/microSDHC	16GB/microSDHC	16GB/microSDXC	16GB/microSDHC	16GB/microSDXC
Connectivity	802.11b/g/n, Bluetooth 4	802.11a/b/g/n, Bluetooth 4	802.11b/g/n, Bluetooth 4	802.11a/b/g/n, Bluetooth 4	802.11a/b/g/n/ac, Bluetooth 4
Processor	1.9GHz nVidia Tegra 4	1.5GHz Snapdragon 600	1.2GHz ARM Cortex-A7	1.5GHz quad-core A9	1.9GHz Octo-core Exynos 5
RAM	1GB	2GB	1GB	1GB	3GB
Claimed battery life	10 hrs	8.5 hrs (actual)	18 hrs	9 hrs	9.5 hrs (actual)
Cameras (front/rear)	0.3/5Mp	1.3/5Mp	1.6/5Mp	2/3Mp	2/8Mp
Dimensions	120x190x10mm	127x217x8.3mm	261x181x8.1mm	129x193x9.9mm	243x171x7.9mm
Weight	320g	338g	605g	370g	540g
Warranty	1 year	1 year	1 year	1 year	1 year
FULL REVIEW	TINYURL.COM/PMCO4H4	TINYURL.COM/N80BC7N	TINYURL.COM/KLV5SDM	TINYURL.COM/MXHXVUK	TINYURL.COM/L7YTA35

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Smartphones		 1 PC ADVISOR GOLD	 2 PC ADVISOR RECOMMENDED	 3 PC ADVISOR RECOMMENDED	 4 PC ADVISOR RECOMMENDED	 5 PC ADVISOR GOLD
		LG G2	Google Nexus 5	Sony Xperia Z1 Compact	Sony Xperia Z1	Apple iPhone 5s
Price		£329 inc VAT	£299 inc VAT	£401 inc VAT	£430 inc VAT	£549 inc VAT
Website		Lg.com/uk	Play.google.com	Sonymobile.com	Sonymobile.com	Apple.com/uk
Launch date		Sep 13	Oct 13	Jan 14	Jul 13	Sep 13
Overall rating		★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Platform		Android 4.2 Jelly Bean	Android 4.4 KitKat	Android 4.3 Jelly Bean	Android 4.2 Jelly Bean	Apple iOS 7
Screen size/resolution		2.26GHz Snapdragon 800	2.3GHz Snapdragon 800	2.2GHz Snapdragon 800	2.26GHz Snapdragon 800	1.3GHz Apple A7
Storage/media card slot		16GB/none	16GB/none	16GB/microSDXC	16GB/microSDXC	16GB/none
Connectivity		5.2in/1920x1080	4.95in/1920x1080	4.3in/1280x720	5in/1920x1080	4in/640x1136
Processor		Capacitive multitouch	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch
RAM		4G, HSPA+, Bluetooth, Wi-Fi	HSPA+, Bluetooth, Wi-Fi ac	4G, HSPA+, Bluetooth, Wi-Fi	4G, HSPA+, Bluetooth, Wi-Fi	4G, HSPA+, Bluetooth, Wi-Fi
Claimed battery life		Not specified	17 hrs/300 hrs	18 hrs/670 hrs	14 hrs/880 hrs	10 hrs/250 hrs
Cameras (front/rear)		13Mp, 1080p video	8Mp, 1080p video	20.7Mp, 1080p video	20.7Mp, 1080p video	8Mp, 1080p video
Dimensions		A-GPS	A-GPS	A-GPS	A-GPS	A-GPS, Glonass
Weight		71x139x9.4mm, 143g	69x138x8.9mm, 130g	127x64.9x9.5mm, 137g	144x74x8.5mm, 169g	59x124x7.6mm, 112g
Warranty		1 year	1 year	1 year	1 year	1 year
FULL REVIEW		TINYURL.COM/PAFK4SZ	TINYURL.COM/PAFK4SZ	TINYURL.COM/KAU7DYR	TINYURL.COM/NJPM4DE	TINYURL.COM/MZ8JHLF

Smartphones		 6 PC ADVISOR RECOMMENDED	 7 PC ADVISOR GOLD	 8	 9 PC ADVISOR GOLD	 10 PC ADVISOR RECOMMENDED
		Motorola Moto G	HTC One	Samsung Galaxy Note 3	Sony Xperia Z	Samsung Galaxy S4
Price		£129 inc VAT	£430 inc VAT	£445 inc VAT	£320 inc VAT	£427 inc VAT
Website		Motorola.co.uk	Htc.com/uk	Samsung.com/uk	Sonymobile.com	Samsung.com/uk
Launch date		Nov 13	Feb 13	Sep 13	Jan 13	Mar 13
Overall rating		★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Platform		Android 4.3 Jelly Bean	Android 4.2 Jelly Bean	Android 4.3 Jelly Bean	Android 4.1 Jelly Bean	Android 4.3 Jelly Bean
Screen size/resolution		1.2GHz Snapdragon 400	1.7GHz Snapdragon 600	2.3GHz Snapdragon	1.5GHz Snapdragon S4 Pro	1.9GHz Snapdragon 600
Storage/media card slot		8GB/none	32GB/none	32GB/microSDXC	16GB/microSDHC	16GB/microSDXC
Connectivity		4.5in/720x1280	4.7in/1920x1080	5.7in/1920x1080	5in/1920x1080	5in/1920x1080
Processor		Capacitive multitouch	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch	Capacitive multitouch
RAM		HSDP+, GSM, Bluetooth, Wi-Fi	4G, HSPA+, Bluetooth, Wi-Fi	4G, HSPA+, Bluetooth, Wi-Fi	4G, Bluetooth, Wi-Fi	4G, Bluetooth, Wi-Fi
Claimed battery life		Not specified	Not specified	21 hrs/420 hrs	11 hrs/550 hrs	Not specified
Cameras (front/rear)		5Mp, 720p video	4Mp, 1080p video	13Mp, 1080p video	13Mp, 1080p video	13Mp, 1080p video
Dimensions		A-GPS	GPS, Glonass	A-GPS, Glonass	GPS, Glonass	GPS, Glonass
Weight		66x130x11.6mm, 143g	68x9.3x137mm, 143g	151x79x8.3mm, 168g	71x7.9x139mm, 146g	136.6x69.8x7.9mm, 130g
Warranty		1 year	2 years	1 year	2 years	2 years
FULL REVIEW		TINYURL.COM/NBUTSET	TINYURL.COM/CE76X3T	TINYURL.COM/QAKOLZY	TINYURL.COM/CXDR829	TINYURL.COM/CA5P7LF





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Gaming PCs					
	1 PC ADVISOR GOLD	2 PC ADVISOR RECOMMENDED	3	4	5
	Chillblast Fusion Probe	CyberPower Infinity Perseus XT	Yoyotech Warbird RS2	Quiet PC Serenity Mini Gamer	Aria FX-Viper 8320
Price	£1,299 inc VAT	£1,499 inc VAT	£1,370 inc VAT	£1,213 inc VAT	£895 inc VAT
Website	Chillblast.com	Cyberpowersystem.co.uk	Yoyotech.co.uk	Quietpc.co.uk	Aria.co.uk
Launch date	Feb 14	Feb 14	Feb 14	Feb 14	Feb 14
Build rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Features rating	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Value rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	3.4GHz Intel Core i5-4670K (OC 4.4GHz)	3.4GHz Intel Core i5-4670K (OC 4.4GHz)	3.5GHz Intel Core i7-4770K (OC 4.3GHz)	3.5GHz Intel Core i7-4770K	3.5GHz AMD FX8320 (OC 4.4GHz)
CPU cooler	Corsair H55 Liquid Cooler	Cooler Master Seldon 120mm	Corsair H80 cooler	Reeven Kelveros RC-1202	Scythe Ashura Performance CPU cooler
Memory	16GB DDR3	16GB DDR3	8GB DDR3	8GB DDR3	8GB DDR3
Storage	120GB SSD + 2TB HDD	256GB SSD + 2TB HDD	128GB SSD + 1TB HDD	1TB SSHD	120GB SSD + 2TB HDD
Power supply	750W Corsair	750W Corsair	600W Cooler Master	650W FSP	600W Corsair
Motherboard	Gigabyte GA-Z87N-Wi-Fi	Gigabyte GA-Z87-HD3	MSI Z87M-G43	Gigabyte GA-Z87MX-D3H	Gigabyte GA-990FXA-UD5
Operating system	Windows 8.1 64-bit	Windows 8.1 64-bit	Windows 8.1 64-bit	Windows 8.1 64-bit	Windows 8.1 64-bit
Screen	23.6in Iiyama X2377HDS	23in AOC i2367fh	23in AOC i2369vm	Not supplied	Not supplied
Graphics	Palit Jetstream GeForce GTX 780, 3GB VRAM	Powercolor AMD R9 290, 4GB VRAM	Asus GTX 760 DirectCU II OC, 2GB VRAM	Gigabyte GTX 650 Ti OC Windforce, 2GB VRAM	Sapphire Radeon R9 280X Vapor-X OC, 3GB VRAM
Sound	Onboard	Onboard	Onboard	Onboard	Onboard
Connectivity	Gigabit ethernet, 802.11n	Gigabit ethernet	Gigabit ethernet	Gigabit ethernet	Gigabit ethernet
Ports	6x USB 3.0, 4x USB 2.0	6x USB 3.0, 4x USB 2.0	4x USB 3.0, 6x USB 2.0	6x USB 3.0, 2x USB 2.0	4x USB 3.0, 14x USB 2.0
Optical drive	DVD±RW (Blu-ray optional)	DVD±RW, BD-ROM	DVD±RW	DVD±RW	DVD±RW
Case	Aerocool Dead Silence Gaming Cube	Cooler Master Dominator 690 III	AerocoolDS Cube Red with window	Nanoxia Deep Silence 4	Sharkoon Bulldozer
Keyboard & mouse	Gigabyte M6800 mouse, Force K3 keyboard	Gigabyte M6900 mouse, Force K3 keyboard	Powercool JM-9032U mouse, KB-768 keyboard	Zalman ZM-M300 mouse, ZM-K500 keyboard	Not supplied
Other	Optional family pack	None	None	Artisan Medium Hayabusa XtraSoft Mouse Pad	None
PC Mark 7 score	6965	6731	6424	5098	5219
Alien vs Predator score (720p/1080p)	169/93fps	172/96fps	161/88fps	54/27fps	141/79fps
Final Fantasy XIV (720p/1080p)	218/96fps	167/87fps	228/95fps	130/36fps	122/67fps
Sniper Elite V2 (Low/High/Ultra)	308/187/49fps	352/155/39fps	349/180/46fps	156/66/6fps	236/134/134fps
Power Consumption	52/407W	68/484W	81/370W	40/190W	147/657W
Warranty	2-year collect-and-return	3-year RTB (2 years parts, 3 years labour)	3-year Silver (1 year parts, 3 years labour)	2-year collect-and-return	2-year collect-and-return
FULL REVIEW	TINYURL.COM/OWQ24QQ	TINYURL.COM/NKWN7V4	TINYURL.COM/PMWPELY	TINYURL.COM/NUHFM3U	TINYURL.COM/OGA057M

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Mini PCs					
	1	2	3	4	5
	PC ADVISOR RECOMMENDED	PC ADVISOR RECOMMENDED			
	Intel NUC D54250WYK	Fujitsu Esprimo Q520	Chillblast Fusion Brix	Zotac Zbox nano ID65 PLUS	Lenovo IdeaCentre Q190
Price	£525 inc VAT	£389 inc VAT	£549 inc VAT	£530 inc VAT	£380 inc VAT
Website	Intel.co.uk	Fujitsu.com/uk	Chillblast.com	Zotac.com	Lenovo.com/uk
Launch date	Dec 13	Dec 13	Dec 13	Dec 13	Dec 13
Build rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Features rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Value rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	1.36GHz Intel Core i5-4250U (Turbo boost 2.6GHz)	2.9GHz Intel Core i3-4130T	1.9GHz Intel Core i3-3227U	2GHz Intel Core i7-3537U (Turbo boost 3.1GHz)	1.4GHz Intel Core i3-2365M
CPU cooler	Fan cooler	Passive cooler	Custom semi-active cooler	Smart fan	Fan
RAM	8GB DDR3	4GB DDR3	8GB DDR3	4GB DDR3	4GB DDR3
Storage	180GB Intel 530 Series mSATA SSD	320GB HDD	120GB Intel 525 mSATA SSD	500GB HDD	1TB HDD
Power supply	65W internal	65W internal	65W external	19V 3.42a external	19V 1.7A external
Motherboard	Intel Wilson Canyon D54250WYB	Fujitsu motherboard (Intel H81)	Intel HM77	HM77 Express	Lenovo custom
Operating system	Not supplied	Windows 8 Standard or Pro	Windows 8 64-bit	Not supplied	Windows 8
Graphics	Intel HD Graphics 5000	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 4000	Intel HD Graphics 3000
Sound	Onboard	Onboard	Onboard	Onboard	Onboard
Connectivity	802.11b/g/n/ac, gigabit ethernet, Bluetooth	Gigabit ethernet	802.11b/g/n, gigabit ethernet, Bluetooth	802.11b/g/n, gigabit ethernet, Bluetooth	802.11b/g/n, gigabit ethernet
Ports	4x USB 3.0, HDMI, Mini DisplayPort	2x USB 3.0, 4x USB 2.0, DVI, DisplayPort	2x USB 3.0, HDMI, Mini DisplayPort	4x USB 3.0, 2x USB 2.0, HDMI, DP, S/PDIF, eSATA	2x USB 3.0, 4x USB 2.0, HDMI, VGA, S/PDIF
Media card slot	None	None	None	MMC/SDXC/MS/MS Pro/xD	SDXC/MS Pro
Other	Integrated VESA mount, MS Office, PowerDVD	Integrated VESA mount, MS Office, PowerDVD	VESA mounting bracket	Webcam, VESA mounting bracket, PowerDVD	VESA mounting bracket, desktop stand
Dimensions	117x112x35mm	185x188x54mm	29.9x107.9x114.6mm	127x127x45mm	192x155x22mm
Weight	1kg	1.6kg	400g	1kg	1.2kg
PCMark 7 score	4681	2988	4094	2882	1905
Alien vs Predator score (720p/1080p)	7fps/5fps	6fps/Low	7fps/5fps	6fps/Low	N/A
Sniper V2 Elite score (Low/High/Ultra)	21fps/7fps/Low	21fps/7fps/Low	21fps/6fps/Low	18fps/6fps/Low	9fps/5fps/Low
Power consumption (idle/max)	7W/27W	10W/46W	10W/42W	11W/36W	11W/34W
Warranty	Varies	1-year onsite	2-year collect-and-return	2-year return-to-base	1-year return-to-base
FULL REVIEW	TINYURL.COM/KDBLVND	TINYURL.COM/KS56DVT	TINYURL.COM/PWX38WW	TINYURL.COM/PRSOKRD	TINYURL.COM/KT4MNQ8

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All-in-one PCs	1 	2 	3 	4 	5 
	Dell XPS 2720	Apple iMac 27in (Late 2012)	Medion Akoya P2002	Chillblast Fusion AIO Ultima	MSI Wind Top AE2712G
Price	£1,749 inc VAT	£1,699 inc VAT	£449 inc VAT	£1,199 inc VAT	£1199 inc VAT
Website	Dell.co.uk	Apple.com/uk	Medion.com/gb	Chillblast.com	Uk.msi.com
Launch date	Sep 13	Sep 13	Sep 13	Sep 13	Sep 13
Build rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Features rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Value rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	3.1GHz Intel Core i7-4770S	3.2GHz Intel Core i5-3470	3.3GHz Intel Core i3-3220	3.1GHz Intel Core i7-3770S	2.9GHz Intel Core i5-3470S
RAM	16GB DDR3	8GB DDR3	4GB DDR3	16GB DDR3	4GB DDR3
Storage	2TB HDD + 32GB SSD	1TB HDD	1TB HDD	1TB HDD + 120GB SSD	1TB HDD
Screen	27in IPS touchscreen	27in IPS	23.6in TN	21.5in IPS touchscreen	27in TN touchscreen
Screen resolution	2560x1440	2560x1440	1920x1080	1920x1080	1920x1080
Graphics card	nVidia GeForce GT 750M	nVidia GeForce GTX 675MX	Intel HD Graphics 2500	Intel HD Graphics 4000	nVidia GeForce GT 630M
Video memory	2GB	1GB	N/A	N/A	2GB
Wireless	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n	802.11b/g/n
Ethernet	Gigabit	Gigabit	Gigabit	Gigabit	Gigabit
Bluetooth	✓	✓	✗	✓	✓
USB	6x USB 3.0	4x USB 3.0	2x USB 3.0, 4x USB 2.0	4x USB 3.0, 2x USB 2.0	2x USB 3.0, 4x USB 2.0
FireWire	✗	✗	✗	✗	✗
Thunderbolt	✓	✓	✗	✗	✗
HDMI	✓	✗	✓	✓	✓
Media card slot	✓	✓	✓	✓	✓
Optical drive	Blu-ray combo drive	None	DVD drive	Blu-ray combo drive	Blu-ray combo drive
Other	2.1Mp webcam, wireless keyboard and mouse, dual digital microphone array	1.3Mp webcam, wireless keyboard and mouse	Wireless keyboard and mouse, CyberLink software, Kaspersky Internet Security	Webcam, Microsoft Wireless Desktop 3000	2Mp webcam, DVB-T TV tuner, wireless keyboard and mouse, CyberLink software
Operating system	Windows 8	Mac OS X 10.9 Mavericks	Windows 8	Windows 8	Windows 8
Power consumption (idle/max)	54/84/220W	53/84/243W	34/42/92W	32/40/119W	44/53/110W
Sniper V2 Elite (Low/High/Ultra)	6/25/94fps	12/54/197fps	5/5/16fps	5/7/28fps	5/6/17fps
PCMark 7 score	6091	4141	3298	5195	3138
Dimensions	492x664x72mm	650x203x516mm	580x196x430-460mm	338x541x61mm	672x483x66mm
Weight	16kg	9.5kg	10.3kg	9kg	13kg
Warranty	1-year next-day in-home	1-year return-to-base	1-year return-to-base	2-year collect-and-return	2-year collect-and-return
FULL REVIEW	TINYURL.COM/KWZ4KLL	TINYURL.COM/A95Q9VY	TINYURL.COM/MEVSJ9D	TINYURL.COM/LQ4U8FW	TINYURL.COM/MUGFKQ7

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Business PCs					
	Aria Gladiator Logic N200-3220M	Chillblast Fusion Opal	Wired2Fire Business Accelerate	Dino PC Synergy 4430	Eclipse Precision A856F85
Price	£509 inc VAT	£549 inc VAT	£689 inc VAT	£569 inc VAT	£519 inc VAT
Website	Aria.co.uk	Chillblast.com	Wired2fire.co.uk	Dinopc.com	Eclipsecomputers.com
Launch date	Aug 13	Aug 13	Aug 13	Aug 13	Aug 13
Build rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Features rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Value rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	3.3GHz Intel Core i3-3220 (dual-core)	3.2GHz Intel Core i5-4570 (quad-core)	3.4GHz Intel Core i5-4670 (quad-core)	3GHz Intel Core i5-4430 (quad-core)	3.6GHz AMD Trinity A8-5600K (quad-core)
RAM	8GB DDR3	8GB DDR3	8GB DDR3	8GB DDR3	8GB DDR3
Storage	500GB HDD + 80GB SSD	1TB HDD	120GB SSD	1TB HDD	1TB HDD
Motherboard	Gigabyte GA-B75M-D3H	Asus B85M-G	ASRock B85M-HDS	Gigabyte GA-H87M-HD3	Asus F2A85-M LE
CPU cooler	Arctic Cooling Alpine 11 GT Quiet	Standard Intel cooler	Standard Intel cooler	Standard Intel cooler	Standard AMD cooler
Power supply	Corsair 430W	CiT 500W	Xigmatek 400W	CiT 500W	Alpine 600W
Screen	21.5in AOC E2260SWDA	23.6in Iiyama X2377	2x 21.5in AOC E2260SWDA	23in Iiyama XB2380HS-B1	23in AOC i2369Vm
Screen resolution	1920x1080	1920x1080	1920x1080	1920x1080	1920x1080
Graphics	Intel HD Graphics 2500	Intel HD Graphics 4600	Intel HD Graphics 4600	Intel HD Graphics 4600	Integrated
Video memory	N/A	N/A	N/A	N/A	N/A
USB	2x USB 3.0, 4x USB 2.0	3x USB 3.0, 6x USB 2.0	2x USB 3.0, 8x USB 2.0	4x USB 3.0, 4x USB 2.0	4x USB 3.0, 4x USB 2.0
Sound	Onboard	Onboard	Onboard	Onboard	Onboard
Speakers	Not specified	Not specified	Not specified	Not specified	Not specified
Case	Cooler Master N200	CiT Fortress	In-Win Em040	CiT Templar	K2 Gamer
Keyboard	Microsoft Desktop 400 keyboard and mouse (wired)	Cherry J82-16001 keyboard, M-5450 mouse (wired)	Gigabyte K6800 keyboard, M6800 mouse (wired)	Logitech K120 keyboard, B110 mouse (wired)	Microsoft Optical Desktop 800 (wired)
Optical drive	24x DVD±RW	24x DVD±RW	DVD±RW	Samsung DVD±RW	Samsung DVD±RW
Operating system	Windows 7 Home Premium 64-bit	Windows 8 Professional	Windows 7 Professional 64-bit	Windows 7 Home Premium 64-bit	Windows 8 Professional
Bundled software	None	None	None	None	None
PCMark 7 overall score	3524	4257	5667	3458	2349
PCMark 7 Productivity score	4056	2685	5929	2529	1883
PCMark 7 Computational score	3321	21490	13651	9377	3899
Power consumption (idle/max)	27/69W	47/124W	37/135W	37/115W	34/145W
Warranty	1-year return-to-base, phone support	2-year collect-and-return, phone support	2-year return-to-base, phone support	3-year return-to-base, phone support	1-year return-to-base, phone support
FULL REVIEW	TINYURL.COM/OSW55A8	TINYURL.COM/KGGE98T	TINYURL.COM/PCSKWVS	TINYURL.COM/PF8LUXD	TINYURL.COM/MQFWJ3R

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Aerocool Dead Silence Case

Intel Core i5 4670K OC to up to 4.4GHz CPU

Gigabyte GA-Z87N WIFI Motherboard

GeForce GTX 780 3GB Graphics Card

16GB PC3-12800 DDR3 Memory

120GB Samsung 840 EVO series SSD

2000GB SATA 7200rpm Hard Disk

Corsair 750W PSU

WiFi connection built-in

Windows 8.1 64bit OS

23" Full HD Iiyama X2377 IPS Monitor with DVI

Gigabyte M6800 Keyboard

Gigabyte Force K3 Mouse

FREE
8GB PEN DRIVE
WITH ANY CHILLBLAST PC
WITH THE CODE:
PCAPENNY0214

PC ADVISOR

Rating: ★★★★★



CHILLBLAST DEFIANT MINI 13"

PC ADVISOR

Rating: ★★★★★



CHILLBLAST MESSIAH 17"

PC ADVISOR

Rating: ★★★★★



FUSION COMMANDO

Mobile Intel® HM87 Express Chipset
13.3" (1920x1080 Resolution) Display
8GB DDR3 at 1600MHz System Memory
NVIDIA® Optimus Technology
NVIDIA GeForce GTX 765M 2GB GDDR5
1000GB Seagate Momentus XT Hybrid SSD/HDD
SOUND BLASTER Cinema Surround Sound
1 x USB 2.0 port
3 x USB 3.0 ports (1x powered USB port, AC/DC)
1 x HDMI, 1 x external VGA port
1 x Headphone jack, 1 x Microphone jack
1 x RJ-45 LAN port
1 x DC-in jack
6-in-1 Push-Push Card reader
802.11N Wireless
Built in 10 / 100 / 1000Mb Base-TX Ethernet LAN
2M HD video camera
Battery life up to 300 minutes
330 (W) x 227 (D) x 31.9 (H) mm
2.1kg including battery

£899 inc VAT

Intel Core™ i7 4800MQ Quad Core Processor
17.3" SuperBright LED True HD (1920x1080) Display
16GB DDR3 at 1600MHz System Memory
Intel HM87 Chipset
NVIDIA GeForce GTX 780M 4GB GDDR5
250GB Samsung 840 Series SSD
1000GB Seagate Momentus XT Hybrid SSD/HDD
Blu Ray RW Drive
Creative X-Fi MB3 HD Audio
Built in Microphone and HD Webcam
Dolby Home Theatre® and Onkyo 4W Stereo Speakers
Subwoofer
10 / 100 / 1000 Gigabit Ethernet LAN
Intel Centrino Wireless N Card
1x HDMI Port, 1 Mini DisplayPort, 1 x DisplayPort
3x USB3.0 Ports, 1x USB2.0 Port, 1x E-SATA
1x Microphone in jack, 1x Headphone out jack
1x Mini IEEE 1394a Firewire port
9-in-1 Card Reader
412 (W) x 276 (D) x 41.8-45.4 (H) mm
3.9kg including battery

£1799 inc VAT

Cooler Master CM Force 500 Case
Intel Core i5 4570 "Haswell" Processor 3.2GHz
Asus B85M-G Motherboard
16GB PC3-12800 DDR3 Memory
Nvidia GeForce GTX 750 1GB Graphics Card
120GB Samsung 840 EVO series SSD
1000GB SATA 7200rpm Hard Disk
Blu Ray / DVD-RW Combo Drive
Chillblast 600W CIT PSU
Onboard High Definition Audio
Windows 7 HP 64 bit or Windows 8.1 64bit
802.11N Wireless USB Adaptor

Asus VS239HV or Iiyama X2377 23" TFT Monitor
Logitech Cordless Keyboard & Mouse
Logitech S220 Speakers

£799 inc VAT

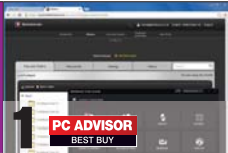
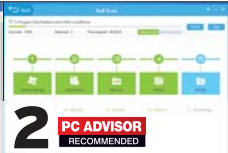



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Prices are correct at time of going to press (13-03-14) E&OE






* Chillblast won more awards in the leading IT press publications PC Pro, PC Advisor and Computer Shopper combined than any other retailer 2010-2012

** World's fastest PC as tested by PC Pro Magazine - <http://www.pcpro.co.uk/reviews/desktops/371152/chillblast-fusion-photo-oc-iv>






Family PCs	 1 PC ADVISOR BEST BUY	 2 PC ADVISOR RECOMMENDED	 3	 4	 5
	Chillblast Fusion Commando	Quiet PC Serenity Home Value	Dino PC Raging Lizard	CyberPower Ultra Scylla SE III	Computer Planet F2000
Price	£799 inc VAT	£696 inc VAT	£899 inc VAT	£699 inc VAT	£930 inc VAT
Website	Chillblast.com	Quietpc.com	Dinopc.com	Cyberpowersystem.co.uk	Computerplanet.co.uk
Launch date	Jul 13	Jul 13	Jul 13	Jul 13	Jul 13
Build rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Features rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Performance rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Value rating	★★★★☆	★★★★☆	★★★★☆	★★★★☆	★★★★☆
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Processor	3.2GHz Intel Core i5-4570	2.9GHz Intel Core i5-3475S	3.2GHz Intel Core i5-4570	4.2GHz AMD FX 4350	3.4GHz Intel Core i5-3570
RAM	16GB DDR3	16GB DDR3	16GB DDR3	8GB DDR3	8GB DDR3
Storage	1TB HDD + 120GB SSD	500GB HDD hybrid SSD	1TB HDD + 128GB SSD	2TB HDD	2TB HDD + 120GB SSD
Motherboard	Asus B85M-G	Gigabyte GA-H61M-USB3V	Gigabyte GA-Z87M-HD3	Asus M5A78L-M/USB3	Gigabyte B75M-D3H
CPU cooler	Arctic Cooling Freezer 7 Pro	Standard Intel cooler	Standard Intel cooler	Standard AMD cooler	Arctic Cooling Freezer 7 Pro
Power supply	600W CIT	Zalman ZM450-GS 450W	Corsair VS450 450W	Cooler Master 500W	Cooler Master GX 600W
Screen	23in Iiyama X2377	Not supplied	23in AOC i2369Vm	24in BenQ GL2450E	23.6in Iiyama X2377
Screen resolution	1920x1080	N/A	1920x1080	1920x1080	1920x1080
Graphics	Zotac nVidia GeForce GTX 650 Ti	Intel HD Graphics 4000	Gigabyte nVidia GeForce GTX 650 Ti	MSI AMD Radeon HD 7770	Gainward nVidia GeForce GTX 660
Video memory	N/A	N/A	N/A	1GB	2GB
Connectivity	802.11b/g/n, gigabit ethernet	802.11b/g/n, gigabit ethernet	802.11b/g/n, gigabit ethernet	802.11b/g/n, gigabit ethernet	802.11b/g/n, gigabit ethernet
USB	3x USB 3.0, 6x USB 2.0	2x USB 3.0, 6x USB 2.0	6x USB 3.0, 2x USB 2.0	2x USB 3.0, 6x USB 2.0	2x USB 3.0, 7x USB 2.0
Media card slot	None	None	Yes	Yes	Yes
Sound	Onboard	Onboard	Onboard	Onboard	Onboard
Speakers	2x Logitech LS220	None	None	None	None
Case	Cooler Master Force 500	Zalman ZM-T1	Xigmatek Asgard 382	Cooler Master Elite 430	Cooler Master Elite 335U
Keyboard	Logitech MK260	Gigabyte GK-KM7580	Logitech MK260	Logitech MK330	Logitech MK260
Optical drive	LG BD-ROM/DVD±RW	Sony DVD±RW	BD-ROM, DVD±RW	Lite-On BD-ROM/DVD±RW	TSSTcorp 24x DVD±RW
Operating system	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit	Windows 8 64-bit
Bundled software	None	None	None	None	None
Sniper V2 Elite score (Low/High/Ultra)	147/59/14fps	26/7/5fps	154/62/14fps	130/43/9fps	205/59/15fps
Alien vs Predator score (720p/1080p)	52/27fps	8/5fps	53/27fps	47/24fps	77/41fps
PCMark 7 score	6177	4464	6282	2957	6134
Warranty	2-year collect-and-return	2-year collect-and-return	3-year return-to-base	3-year return-to-base (1 year parts)	2-year return-to-base, 1-year collect-and-return
FULL REVIEW	TINYURL.COM/KF6G3T7	TINYURL.COM/KPE3BAD	TINYURL.COM/RAGLIZ	TINYURL.COM/QHT5X2H	TINYURL.COM/NEVWQ4U






HEAD TO TINYURL.COM/PYWN4DA FOR OUR DESKTOP PC BUYING ADVICE

Internet security software	    				
	1	2	3	4	5
	Bitdefender Total Security	Qihoo 360 IS 4.3	Symantec Norton 360 2014	Kaspersky Pure 3.0 TS	Gdata TotalProtection 2014
Price	£55 inc VAT	Free	£60 inc VAT	£60 inc VAT	£50 inc VAT
Website	Bitdefender.co.uk	360safe.com	Norton.com/uk	Kaspersky.co.uk/pure	Gdatasoftware.com
Launch date	Jul 13	Not specified	Oct 13	Mar 13	Not specified
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Number of devices	3	Unlimited	3	3	3
Portable support	Android	Android	Android	Android	Android
Anti-malware	✓	✓	✓	✓	✓
Anti-spam	✓	x	✓	✓	✓
Firewall	✓	x	✓	✓	✓
Parental control	✓	x	✓	✓	✓
Online storage	2GB	N/A	2GB	2GB	N/A
50GB AV scan time	140 mins (1.39M files)	39 mins (68,100 files)	20 mins (176,000 files)	81 mins (334,000 files)	32 mins (8,800 files)
Scan rate (files/sec)	166	29	148	69	5
1GB copy with/without AV	41/48 secs	45/55 secs	43/69 secs	44/71 secs	52/54 secs
FULL REVIEW	TINYURL.COM/L9KNK29	TINYURL.COM/LY557M7	TINYURL.COM/LEZ8AHC	TINYURL.COM/N4ER2X2	TINYURL.COM/LZBQKEM







Antivirus	    				
	1	2	3	4	5
	Norton AntiVirus	Bitdefender Antivirus Pro	G Data AntiVirus	Kaspersky Anti-Virus	Trend Micro Titanium AV+
Price	£39 inc VAT	£24 inc VAT	£34 inc VAT	£39 inc VAT	£39 inc VAT
Website	Norton.com	Bitdefender.co.uk	Gdatasoftware.com	Kaspersky.co.uk	Uk.trendmicro.com
Launch date	Not specified	Jul 13	Not specified	Oct 13	Not specified
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Licence terms	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year	3 PCs, 1 year
Signature-based detection	98.7%	97.5%	99.4%	95.7%	98.4%
Malware blocking (full)	96%	68%	84%	88%	88%
Malware blocking (partial)	0%	20%	4%	4%	8%
Clean-up of active malware	80%	80%	80%	80%	80%
On-demand scan speed	121 secs	126 secs	111 secs	103 secs	187 secs
On-access scan speed	272 secs	327 secs	336 secs	310 secs	249 secs
Interface design	Very good	Very good	Very good	Very good	Very good
FULL REVIEW	TINYURL.COM/4P5YCXP	TINYURL.COM/66SK77U	TINYURL.COM/6BFXWCS	TINYURL.COM/6HQA2WB	TINYURL.COM/4HUORV3









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Sub-£150 printers	1	2	3	4	5
					
	Samsung Xpress M2070W	Canon Pixma MG5550	Brother HL-3140CW	Canon Pixma MX525	HP Photosmart 7520
Price	£130 inc VAT	£80 inc VAT	£120 inc VAT	£83 inc VAT	£130 inc VAT
Website	Samsung.com/uk	Canon.co.uk	Brother.co.uk	Canon.co.uk	Hp.com/uk
Launch date	Mar 14	Apr 14	Jan 14	Dec 13	Jan 13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Technology	Mono laser	Colour inkjet	Colour laser	Colour inkjet	Colour inkjet
Max print resolution	1200x1200	4800x1200dpi	2400x600dpi	4800x1200	9600x2400
Actual print speed	B=17.1ppm	B=11.8ppm C=8.7ppm	B=15.9ppm C=8.6ppm	B=11ppm C=5.5ppm	B=17.6ppm C=7.9ppm
Scan/fax facilities	1200x1200 scans	1200x2400 scans	None	1200x2400 scans, fax	1200x2400 scans
Supported interfaces	USB 2.0, 802.11b/g/n, NFC	USB 2.0, 802.11b/g/n	USB 2.0, 802.11b/g/n	USB 2.0, 802.11b/g/n, ethernet	USB 2.0, 802.11b/g/n, HP ePrint
Cost per page	B=3.8p	B=2.4p C=4.8p	B=2.3p C=11.1p	B=3.5p C=5.5p	B=2.4p C=4.8p
Media card/auto duplex	xx	x✓	xx	✓✓	✓✓
Input capacity	150 sheets	100 sheets	250 + 1 sheet	100 sheets + 30 ADF	125 sheets + 20 tray + 25 ADF
Dimensions	406x360x253mm	455x369x148mm	410x465x240mm	458x385x200mm	454x551x220mm
Weight	7.4kg	6.3kg	17.4kg	8.7kg	8.6kg
Warranty	1 year	1 year	1 year	1 year	1 year
FULL REVIEW	TINYURL.COM/OYZKJKE	TINYURL.COM/LKWLJDE	TINYURL.COM/P2P27TA	TINYURL.COM/ON28THH	TINYURL.COM/98G9XTE






£151+ printers	1	2	3	4	5
					
	Kyocera Mita FS-1320D	HP OfficeJet Pro X551dw	Canon i-Sensys LBP7780Cx	Samsung Xpress M2875FW	Lomond EvoJet 2 Office
Price	£176 inc VAT	£446 inc VAT	£440 inc VAT	£210 inc VAT	£50 - £150 per month
Website	Kyoceramita.co.uk	Hp.com/uk	Canon.co.uk	Samsung.com/uk	Lomond.com
Launch date	Apr 11	Aug 13	Jun 13	Mar 14	Mar 13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Technology	Mono laser	Colour inkjet	Colour laser	Mono laser	Colour laser
Max print resolution	1200x1200	2400x2400	9600x600	4800x600dpi	1600x1600
Actual print speed	B=26.1ppm	B=42.9ppm C=15.8ppm	B=23.2pp C=16.7ppm	B=21.4ppm	B=41.4ppm C=23.1ppm
Scan/fax facilities	None	None	None	1200dpi scanner, fax	None
Supported interfaces	USB 2.0	USB 2.0, ethernet, 802.11b/g/n	USB 2.0, ethernet	USB 2.0, ethernet, 802.11b/g/n	USB 2.0, ethernet
Cost per page	B=1.4p	B=1p C=4.3p	B=1.3p C=7.5p	B=1.7p	Variable
Media card/auto duplex	✓✓	x✓	x✓	x✓	xx
Input capacity	250 sheets	500 + 50 sheet	500 + 100 sheets	250 sheets + 1 sheet + 40 ADF	250 + 20 sheets
Dimensions	375x393x250mm	517x399x414mm	517x530x401mm	401x362x367mm	542x455x265mm
Weight	12kg	17.1kg	31kg	11.3kg	12.8kg
Warranty	2 years	1 year	1 year	3 years	1 year
FULL REVIEW	TINYURL.COM/6GG9UKV	TINYURL.COM/CZ05P65	TINYURL.COM/CCAPAJF	TINYURL.COM/QD5V3NF	TINYURL.COM/CLQAQ5V






HEAD TO TINYURL.COM/NJLUVUZ FOR OUR PRINTERS BUYING ADVICE

Blu-ray drives					
	1	2	3 	4	5
	Pioneer BDR-208EBK Retail	Pioneer BDR-208DBK OEM	LG BH16NS40	LG BP40NS20	Lite-On IHES112-115
Price	£61 inc VAT	£57 inc VAT	£70 inc VAT	£90 inc VAT	£54 inc VAT
Website	Pioneer.eu/uk	Pioneer.eu/uk	Uk.lge.com	Uk.lge.com	Liteonit.eu
Launch date	Nov 13	Nov 13	May 12	Jan 13	Oct 12
Overall rating	★★★★★	★★★★★	★★★★★	★★★★☆	★★★★★
Blu-ray speeds	15x -R, 14x -R DL, 2x -RE, 12x -ROM	15x -R, 14x -R DL, 2x -RE, 12x -ROM	16x -R, 12x -R DL, 12x -RE, 12x -ROM	6x -R, 6x -R DL, 2x -RE, 6x -ROM	12x -ROM
DVD speeds	16x ±R, 8x ±R DL, 6x -RW, 8x +RW, 16x -ROM	16x ±R, 8x ±R DL, 6x -RW, 8x +RW, 16x -ROM	16x ±R, 8x ±R DL, 6x -RW, 8x +RW, 12x -RAM, 16x -ROM	8x ±R, 6x ±R DL, 6x -RW, 8x +RW, 5x -RAM, 8x -ROM	8x ±R, 8x ±R DL, 6x -RW, 8x +RW, 8x -ROM
Max storage	128GB	50GB	50GB	100GB	8.5GB
Interface type	SATA (internal)	SATA (internal)	SATA (internal)	USB 2.0 (external)	SATA (internal)
Label technology	None	None	LightScribe	None	None
Software	ArcSoft TotalMedia Extreme	None	CyberLink Blu-ray Suite	PowerDVD, PowerProducer	None
Dimensions	148x180x42mm	148x180x42mm	146x170x41mm	160x153x22mm	158x145x22mm
Weight	740g	740g	749g	380g	700g
Warranty	1 year	1 year	1 year	1 year	2 years
FULL REVIEW	TINYURL.COM/LD47X7K	TINYURL.COM/LD47X7K	TINYURL.COM/8YTUJEF	TINYURL.COM/BS8UAFF	TINYURL.COM/8SYECMW










Wireless routers					
	1 	2 	3	4 	5
	Apple AirPort Extreme	TP-Link Archer C7	D-Link N600	Asus RT-AC68U AC1900	TP-Link TL-WDR4900
Price	£169 inc VAT	£99 inc VAT	£50 inc VAT	£180 inc VAT	£80 inc VAT
Website	Apple.com/uk	Tp-link.com	Dlink.com	Uk.asus.com	Tp-link.com
Launch date	Jan 14	Jan 14	Jan 13	Jan 14	Dec 13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Standards supported	802.11b/g/n/ac	802.11a/b/g/n/ac	802.11a/b/g/n	802.11a/b/g/n/ac	802.11a/b/g/n
Frequency modes	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz (concurrent)	2.4GHz/5GHz (concurrent)
Antennae	6x internal	3x external, 3x internal	2x internal	3x external, 3x internal	3x external, 3x internal
128bit/256bit WEP	✓ x	✓ x	✓ x	✓ x	✓ x
Modem/Parental Control	x✓	x✓	x✓	x✓	x✓
Firewall	NAT/SPI	NAT/SPI	NAT/SPI	NAT/SPI	NAT/SPI
Ports	Gigabit WAN, 3x gigabit LAN, USB	Gigabit WAN, 4x gigabit LAN, 2x USB	Gigabit WAN, 4x gigabit LAN, USB	Gigabit WAN, 4x gigabit LAN, 2x USB	10/100 WAN, 4x 10/100 LAN, 2x USB
Average power use	Not tested	Not tested	Not tested	Not tested	Not tested
Throughput (near, far, ac)	124, 105, 578/540Mbps	110, 89, 505/468Mbps	142, 115Mbps, N/A	98, 69, 610/570Mbps	127, 111Mbps, N/A
Dimensions, weight	98x168x98mm, 945g	32.5x243x160mm, 508g	111x93x145mm, 330g	160x83x220mm, 640g	243x161x33mm, 1.1kg
Warranty	1 year	3 years	1 year	2 years	1 year
FULL REVIEW	TINYURL.COM/MFDLLSC	TINYURL.COM/KKJMPCE	TINYURL.COM/9LGFF8Y	TINYURL.COM/K4ZATKV	TINYURL.COM/MUXCBNM







HEAD TO TINYURL.COM/PDYZU8D FOR OUR PERIPHERALS BUYING ADVICE

NAS drives	    				
	1	2	3	4	5
	Synology DS413j	Qnap TS-421	Synology DS1813+	Qnap TS-1079 Pro	Zyxel NSA325
Price	£270 inc VAT (diskless)	£387 inc VAT (diskless)	£775 inc VAT (diskless)	£2,287 inc VAT (diskless)	£95 inc VAT
Website	Synology.com	Qnap.com	Synology.com	Qnap.com	Zyxel.co.uk
Launch date	Oct 13	Mar 14	Jan 14	Sep 13	Jun 12
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Drive bays	4	4	8	10	2
Processor	1.6GHz Marvell mv6282	2GHz Marvell single-core ARM	2.13GHz Intel Atom D2700 dc	3.3GHz Intel Core i3-2120	1.6GHz processor
Memory	512MB DDR3	1GB DDR3	2GB DDR3	2GB DDR3	512MB DDR2
Remote access	✓	✓	✓	✓	✓
eSATA	*	✓	✓	✓	*
USB port	2x USB 2.0	2x USB 3.0, 2x USB 2.0	2x USB 3.0, 4x USB 2.0	2x USB 3.0, 4x USB 2.0	2x USB 2.0
Raid options	0/1/5/6/10/JBOD	0/1/5/6/10/JBOD	0/1/5/6/10/JBOD	0/1/5/5+hs/6/6+hs/10/10+hs/JBOD	0/1/JBOD
Software	DSM 4.1	Backup Station	DSM 4.3	Qnap QBack, MyCloudNAS	zPilot
Dimensions	184x168x230mm	177x180x235mm	175x340x233mm	218x327x321mm	108x205x147mm
Weight	2kg	3kg	5.2kg	9.8kg	1.8kg
Warranty	2 years	2 years	3 years	2 years	1 year
FULL REVIEW	TINYURL.COM/PL8XM8S	TINYURL.COM/MCYWUB8	TINYURL.COM/PWO4M6J	TINYURL.COM/PAAYD4Y	TINYURL.COM/7B9EPW8






USB drives	    				
	1	2	3	4	5
	WD My Passport Edge for Mac	G-Technology Professional	LaCie Little Big Disk TB	G-Technology Thunderbolt	Toshiba Stor.E Basics
Price	£70 inc VAT	£250 inc VAT	£799 inc VAT	£599 inc VAT	£100 inc VAT
Website	Wdc.com/en	G-technology.com	Lacie.com/uk	G-technology.com	Toshiba.co.uk
Launch date	Feb 13	Sep 13	Feb 14	Aug 12	Nov 13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Capacity tested	500GB	4TB	1TB	8TB	2TB
Capacity range	500GB	2TB to 4TB	512GB to 2TB	4TB to 8TB	320GB to 2TB
Disk size	2.5in	3.5in	2.5in	3.5in	2.5in
Spin speed	5400rpm	7200rpm	5400rpm	7200rpm	5400rpm
Transfer speed	94MB/s (USB 3.0)	N/A	635MB/s	329MB/s	94Mb/s (USB 3.0)
Encryption	Password protection	None	None	None	None
Other interfaces	None	FireWire 800	None	None	none
Software	WD utilities	None	LaCie Backup Assistant	None	None
Dimensions	112x83x11mm	235x130x46mm	40x140x85mm	235x130x85mm	119x79x21mm
Weight	164g	1.35kg	650g	2.3kg	215g
Warranty	3 years	3 years	1 year	3 years	1 year
FULL REVIEW	TINYURL.COM/BMG7SW9	TINYURL.COM/NV7F32F	TINYURL.COM//KRCL3VZ	TINYURL.COM/CXEF6MH	TINYURL.COM/LBHC8EL






HEAD TO TINYURL.COM/099Z6ZO FOR OUR STORAGE BUYING ADVICE

SSDs					
	1 	2 	3 	4	5 
	Samsung 840 EVO	Crucial M500	Plextor M5 Pro	Samsung 840 EVO mSATA	Samsung 840 Pro
Price	£330 inc VAT	£220 inc VAT	£165 inc VAT	£300 inc VAT	£350 inc VAT
Website	Samsung.com/uk	Crucial.com/uk	Plextor.com	Samsung.com/uk	Samsung.com/uk
Launch date	Nov 13	Aug 13	Aug 13	Apr 14	Aug 13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Capacity tested	750GB	480GB	256GB	500GB	512GB
Price per GB	44p	46p	64p	60p	68p
Memory cache	1GB LPDDR2	512MB DDR3	512MB DDR3	512MB LPDDR2	512MB LPDDR2
Controller	Samsung MEX (3-core ARM)	Marvell 88SS9187	Marvell 88SS9187	Samsung MEX (3-core ARM)	Samsung MDX (3-core ARM)
Encryption	AES 256-bit	AES 256-bit	AES 256-bit	AES 256-bit	AES 256-bit
Flash	Samsung 19nm Toggle NAND	Micron 20nm MLC NAND	Toshiba Toggle NAND	Samsung 19nm Toggle NAND	Samsung 21nm Toggle NAND
Firmware updated via	SSD Magician for Windows	ISO boot disc	ISO boot disc	SSD Magician for Windows	SSD Magician for Windows
ATTO peak sequential	R: 554MB/s; W: 537MB/s	R: 539MB/s; W: 433MB/s	R: 547MB/s; W: 457MB/s	R: 554MB/s; W: 536MB/s	R: 562MB/s; W: 519MB/s
CDM peak IOPS	104k (read)	89.8k (read)	103.3k (read)	102k (read)	103.8k (read)
AS SSD (points)	1141	1038	1124	1147	1094
Warranty	5 years	3 years	5 years	3 years	5 years
FULL REVIEW	TINYURL.COM/L5EDQOY	TINYURL.COM/M2NCSMJ	TINYURL.COM/PTYGG27	TINYURL.COM/MNKPM2Q	TINYURL.COM/OU4LEJG






Projectors					
	1	2	3 	4	5
	Epson EB-1945W	BenQ W1070	ViewSonic PJD7820HD	Asus P2B	Dell M900HD
Price	£1,340 inc VAT	£647 inc VAT	£550 inc VAT	£450 inc VAT	£754 inc VAT
Website	Epson.co.uk	Benq.co.uk	Viewsoniceurope.com/uk	Asus.com/uk	Dell.co.uk
Launch date	Mar 13	Nov 13	Jun 13	Feb 14	Nov 13
Overall rating	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Projection technology	3LCD	DLP	DLP	DLP	DLP
Resolution (pixels)	1280x800	1920x1080	1920x1080	1280x800	1280x800
Brightness ¹ , Contrast	4200, 3000:1	2000, 10000:1	3000, 15000:1	350, 3500:1	900, 700:1
Image size	280in	235in	300in	20-120in	80in
Supported aspect ratios	16:10, 16:9, 4:3	16:9	16:9, 4:3	16:10, 16:9, 4:3	16:10, 16:9, 4:3
Noise levels (dB)	37 (29 eco)	33 (30 eco)	35 (29 eco)	32 (24 eco)	38 (34 eco)
Connections	VGA, HDMI, DP, CM, USB, ET	VGA, HDMI, CM, USB	VGA, HDMI, CM, USB	HDMI, USB, microSD	HDMI, USB, WiDi
Lamp/lamp life	Not supplied/2500 hrs	240W/6000 hrs	Not supplied/5000 hrs	LED/30000 hrs	LED/30000 hrs
Dimensions	377x271x108mm	312x244x109mm	268x221x84mm	143x130x35mm	232x164x43mm
Weight	3.9kg	2.65kg	2.1kg	1.4kg	1.59kg
Warranty	5 years	2 years	3 years	1 year	1 year
FULL REVIEW	TINYURL.COM/CP95P7G	TINYURL.COM/LXADR7Q	TINYURL.COM/D2HO4CV	TINYURL.COM/JWV6PD6	TINYURL.COM/MAXQRG3






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Sub-£150 graphics cards					
	1	2	3	4	5
	MSI HD 7770	KFA2 GeForce GTX 650 Ti	Sapphire Radeon HD 7790	MSI GeForce GTX 650	Sapphire Radeon HD 7750
Price	£90 inc VAT	£96 inc VAT	£100 inc VAT	£75 inc VAT	£80 inc VAT
Website	Uk.msi.com	Kfa2.com	Sapphiretech.com	Uk.msi.com	Sapphiretech.com
Launch date	Sep 12	Aug 13	Aug 13	May 13	Jun 12
Overall rating	★★★★☆	★★★★★	★★★★☆	★★★★☆	★★★★☆
Graphics processor	AMD Radeon HD 7770	nVidia GTX 650 Ti Boost	AMD Radeon HD 7790	nVidia GeForce GTX 650	AMD Radeon HD 7750
Installed RAM	1GB GDDR5	1GB GDDR5	1GB GDDR5	1GB GDDR5	1GB GDDR5
Memory interface	128bit	192bit	128bit	128bit	128bit
Core clock/Boost	1GHz/none	966MHz/none	1GHz/none	1071MHz/none	800MHz/none
Memory clock/Effective	1125MHz/4.5GHz	1350MHz/5.4GHz	1500MHz/6GHz	1250MHz/5GHz	1125MHz/4.5GHz
Stream processors	640	768	896	384	512
Texture units	40	64	56	32	32
Power connectors	1x 6-pin	1x 6-pin	1x 6-pin	1x 6-pin	none
DirectX	11.1	11	11	11	11
Digital interface	DVI, HDMI, Mini-DP	2x DVI, HDMI, DisplayPort	2x DVI, HDMI, DisplayPort	2x DVI, Mini-HDMI	DVI, HDMI, DisplayPort
Warranty	3 years	3 years	3 years	3 years	2 years
FULL REVIEW	TINYURL.COM/BWJ7BL9	TINYURL.COM/DYE3OW8	TINYURL.COM/BPRUYS5	TINYURL.COM/AKT2XOM	TINYURL.COM/7ZB5OE3

£151+ graphics cards					
	1	2	3	4	5
	HIS Radeon R9 280X	Asus GeForce GTX 770 2GB	MSI Radeon R9 270X	XFX Radeon R9 290X Boost	Asus GeForce GTX 780 3GB
Price	£260 inc VAT	£270 inc VAT	£180 inc VAT	£401 inc VAT	£420 inc VAT
Website	Hisdigital.com	Uk.asus.com	Uk.msi.com	Xfxforce.com/en-gb	Uk.asus.com
Launch date	Mar 14	Aug 13	Dec 13	Apr 14	Dec 13
Overall rating	★★★★☆	★★★★★	★★★★☆	★★★★★	★★★★☆
Graphics processor	AMD Radeon R9 280X	nVidia GeForce GTX 770	AMD Radeon R9 270X	AMD Radeon R9 290X	nVidia GeForce GTX 780
Installed RAM	3GB GDDR5	2GB GDDR5	2GB GDDR5	4GB GDDR5	3GB GDDR5
Memory interface	384bit	256bit	256bit	512bit	384bit
Core clock/boost	850MHz/1GHz	1058MHz/1110MHz	1030MHz/1120MHz	1GHz/1GHz	863MHz/941MHz
Memory clock/Effective	1.5GHz/6GHz	1752MHz/7008MHz	1.4GHz/5.6GHz	1.25GHz/5GHz	1502MHz/6008MHz
Stream processors	2048	1536	1280	2816	2304
Texture units	128	128	80	176	192
Power connectors	2x 8-pin	1x 6-pin, 1x 8-pin	2x 6-pin	8-pin, 6-pin	1x 6-pin, 1x 8-pin
DirectX	11	11	11	11	11
Digital interface	DVI, HDMI, 2x Mini-DisplayPort	2x DVI, HDMI, DisplayPort	2x DVI, HDMI, DisplayPort	2x DVI, HDMI, DisplayPort	2x DVI, HDMI, DisplayPort
Warranty	2 years	3 years	2 years	2 years	3 years
FULL REVIEW	TINYURL.COM/OWVAP37	TINYURL.COM/OAG6277	TINYURL.COM/OYA2DFJ	TINYURL.COM/NPET8ER	TINYURL.COM/PN43VTL

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Sub-£200 flat-panel displays					
	1 PC ADVISOR RECOMMENDED	2 PC ADVISOR RECOMMENDED	3 PC ADVISOR RECOMMENDED	4 PC ADVISOR RECOMMENDED	5 PC ADVISOR RECOMMENDED
	BenQ GW2760HS	Samsung S24C650PL	Dell S2440L	ViewSonic VP2365-LED	BenQ GW2750HM
Price	£198 inc VAT	£179 inc VAT	£195 inc VAT	£171 inc VAT	£200 inc VAT
Website	Benq.co.uk	Samsung.co.uk	Dell.co.uk	Viewsoniceurope.com/uk	Benq.co.uk
Launch date	Not specified	Mar 14	Mar 13	Dec 11	Mar 13
Overall rating	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
Screen size	27in	23.6in	24in	23in	27in
Panel type	A-MCA	Plane-to-line switching	Vertical alignment	In-plane switching	Vertical alignment
Native resolution	1920x1080 (82ppi)	1920x1080 (93ppi)	1920x1080 (92ppi)	1920x1080 (96ppi)	1920x1080 (82ppi)
Pixel pitch	0.31mm	0.27mm	0.28mm	0.27mm	0.31mm
Brightness	300cd/m ²	250cd/m ²	239cd/m ²	238cd/m ²	313cd/m ²
Static contrast ratio	950:1	760:1	1200:1	681:1	1530:1
Response time	4ms	5ms	6ms	6ms	6ms
Ports	HDMI, DVI, VGA	HDMI, DP, VGA, USB	HDMI, VGA	DVI	HDMI, DVI, VGA
Dimensions	472x191x623mm	555x487x224mm	568x191x418mm	548x433x250mm	654x489x191mm
Weight	4.5kg	5.5kg	3.6kg	5.4kg	5.6kg
Warranty	2 years	3 years	3 years	3 years	3 years
FULL REVIEW	TINYURL.COM/NF3WVFY	TINYURL.COM/K969YMH	TINYURL.COM/CXWJLM	TINYURL.COM/5WMJLR9	TINYURL.COM/BQKT65S

£201+ flat-panel displays					
	1 PC ADVISOR RECOMMENDED	2 PC ADVISOR RECOMMENDED	3 PC ADVISOR RECOMMENDED	4 PC ADVISOR RECOMMENDED	5 PC ADVISOR RECOMMENDED
	BenQ BL2411	Hazro HZ27WIE	AOC Q2963PM	LG 29EA93	LG 23ET83V
Price	£237 inc VAT	£250 inc VAT	£325 inc VAT	£395 inc VAT	£230 inc VAT
Website	Benq.co.uk	Hazro.co.uk	Aoc-europe.com/en	Uk.lge.com	Lg.com/uk
Launch date	Apr 14	Mar 14	Mar 14	Aug 13	Mar 14
Overall rating	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆	★★★★★☆☆
Screen size	24in	27in	29in	29in	23in
Panel type	IPS	AH-IPS	AH-IPS	In-plane switching	IPS touchscreen
Native resolution	1920x1200 (94ppi)	2560x1440 (110ppi)	2560x1080 (96ppi)	2560x1080 (96ppi)	1920x1080 (96ppi)
Pixel pitch	0.27mm	0.23mm	0.27mm	0.26mm	0.27mm
Brightness	300cd/m ²	390cd/m ²	240cd/m ²	300cd/m ²	144cd/m ²
Static contrast ratio	650:1	540:1	530:1	560:1	420:1
Response time	5ms	6ms	5ms	5ms	5ms
Ports	DVI, DP, VGA	HDMI, DVI, DP, VGA	HDMI, DVI, DP, VGA	3x USB 3.0, 2x HDMI, DVI, DP	2x HDMI, VGA, USB
Dimensions	366x555x236mm	653x206x479mm	714x214x388mm	700x209x387mm	554x208x399mm
Weight	6.7kg	N/A	6.9kg	5.2kg	5.1kg
Warranty	3 years	2 years	3 years	2 years	3 years
FULL REVIEW	TINYURL.COM/PMV5L5V	TINYURL.COM/CTR7AAW	TINYURL.COM/NXDAGMK	TINYURL.COM/CTR7AAW	TINYURL.COM/K8WBR7R

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Internet comments survival guide

The great scientist Stephen Hawking once said that to achieve great things for mankind we should all keep talking. The fact that he was under the employ of BT at the time, which no doubt wrote the script and wasn't interested in whether you were planning to overthrow governments or cure world hunger as long as you stayed on the phone for a few hours a day, diminishes his message in no way at all. Of course, if he'd spent any time on the comments threads of most websites he may have given up on humanity and focused more on building a black-hole-powered teleportation device to get himself out of this manner-less wasteland.

In civilised society the goal of a discussion is to exchange ideas and opinions between mutually respectful individuals in search of a greater truth. This can be aided by comfortable chairs, a good supply of tea and a fine, warm pipe. Monocles are optional.

An example of the gentleman's exchange is as follows:

Chap 1: *That was a jolly fine game of football last night.*

Chap 2: *Indeed. Gerrard did well in the deep lying role.*

Chap 1: *Yes, that was surprising. He is an adaptable fellow. Although his lack of mobility might be a hindrance against a robust midfield.*

Chap 2: *I can see that. Excellent point. Can I borrow your lighter, my pipe seems to have gone out.*

Take this to the internet and it becomes an entirely different affair:

Chap 1: *What. A. Game! Gerrard was magnificent!*

Chap 2: *What were you watching? He was crap. His legs have gone and he should have been sent off twice. Your an idiot [sic]!*

Chap 3: *Chelsea would destroy your lot. KTBFFH!*

Chap 1: *Osman dived. If you knew anything about football you'd see that. Try getting out of your mum's basement once in a while.*

Chap 2: *My mum would be a better player in the central pivot.*

Chap 4: *I earned \$20,000 last year working from home.*

Click here to see how tinyurl.com/bty/567.

Now you might think that this is just the rambunctious banter of football fans, but you'll see similar threads with any subject: Apple versus Android; Christian versus Athiest; I've even seen a feud break out on a site where writers meet to share useful tips.

Godwin's Law states that: "As an online discussion grows longer, the probability of a comparison involving Nazis or Hitler approaches one." Spend any time following a thread and the inevitable truth of Godwin's Law becomes a reality.

If you can recognise the techniques of your would-be combatants, you may just make it out with your sanity intact. Here's a helpful guide to the denizens of digital dialogue, and the weapons they wield.

The Initiators: Regular contributors whose entire mission in life is to be first on the thread. Somehow they possess magical powers that give them prescience of when a writer will post an article.

The Passive Aggressive: Typically seems reasonable and calm, but this is merely the steel fist inside a velvet glove. They destroy their opponents by gently suggesting that the "point they're missing" or "the thing they're failing to understand is..."

The Aggressive Aggressive: No such subtlety here. Instead, a full frontal attack on all and sundry. Much easier to spot, but can reduce rational individuals to screaming maniacs in just a few comments.

The Troll: See above.

The Correctors: Notorious hunters of grammatical errors. Woe betide anyone who misuses 'their' instead of 'they're'. A variant of this clan will also hound any spelling mistakes with utter ruthlessness. Never trust autocorrect in their presence.

The Straw Men: While Godwin's Law foresees the Nazi arrival, the other common outcome is a declaration that your argument is a Straw man (often failing to understand what that even means).

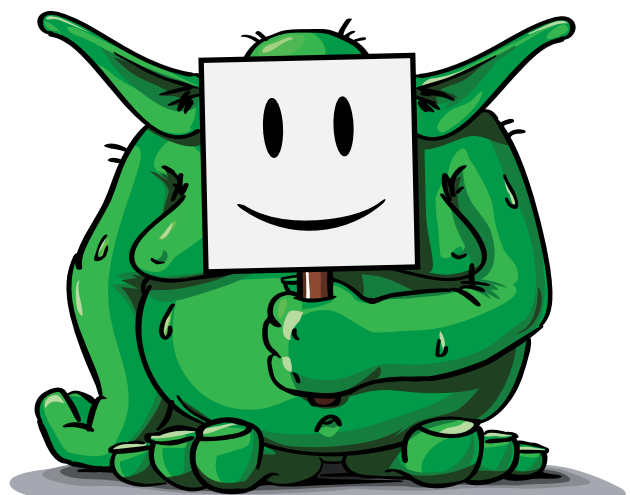
The Single-Track Determinants: No matter what the subject matter or current tangential direction everyone is taking, the STDs will hijack threads on to their singular, often wonderfully unrelated, area of interest. Expect multiple posts appearing on the thread until someone acknowledges their existence. It's most likely a cry for help.

Linkers: Having a discussion about anything vaguely science-related is a recipe for disaster. Before long these insidious monsters will be including hyperlinks to 10,000-word documents they insist you read to overcome your ignorance. You know they've never read them either.

The Opinionated: No matter what you say, feel or have experienced, you're wrong. They're just here to let you know that.

The Hurdler: These bewildering creatures often skip the article itself and just start commenting below. They have no qualms about insulting the author, subject matter or conclusions, as they already know everything anyway.

Thankfully, although a thread may contain any or all of these, it is also held together by an admirable set of normal, sensible, reasonable, polite and often intelligent people. They self-govern, protect the weak, and fend off onslaughts from the above. ☑



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i2369Vm

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Ultra-slim profile

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